A COMPARATIVE STUDY OF THE DETERMINANTS AND EFFECTS OF CHINA, JAPAN AND SOUTH KOREA'S FOREIGN AID POLICIES

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A Dissertation Submitted in Partial
Fulfillment of the Requirements for the Degree of
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ABSTRACT

Title of Dissertation	A Comparative Study of the Determinants and Effects of China, Japan and South Korea's Foreign Aid Policies
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This study investigates the determinants and effects of foreign aid policies, exploring the adaptability of the public finance theories of the pull and push factors such as economic-demographic theory, compensation theory, and incrementalism for the East Asian donor countries. To test this, the relationships between the socio-economic factors and the volume of aid given to their partner countries by China, Japan, and South Korea were examined utilizing panel data analysis (pull factors), correlation analysis (push factors), and ordinary least squares (OLS) regression. In the case of the pull factors, despite some conflicting signs between China, Japan, and South Korea, the economic-demographic theory factors and the compensation theory factors were strongly observed in the present study.

Regarding the push factors, economic-demographic theory (energy consumption in China, gross domestic product (GDP), GDP per capita both in Japan and South Korea), compensation theory (financial openness in Japan, trade, and financial openness in South Korea), and incrementalism (negative sign in Japan) were also observed in this study. With regards to the effects of foreign aid, through the OLS regression, the relationship between the official development assistance (ODA) average donation to a recipient country and the geometric mean of the change of each dependent variable was examined. Only China's aid to foreign direct investment (FDI) showed a significant impact, but the cases of the other two donors did not confirm a vanguard, infrastructure, or rent-seeking effect.

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ABBREVIATIONS

Abbreviations	Equivalence
CIDC	Committee for International Development Cooperation
CNY	Chinese Yuan
CPIA	Country Policy Institutional Assessment
DAC	Development Assistance Committee
EAP	East Asia and Pacific
ECA	East Europe and Central Asia
Exim Bank	Export-Import Bank
FDI	Foreign Direct Investment
FEC	Foreign Economic Cooperation
GDP	Gross Domestic Product
GOJ	Government of Japan
HDI	Human Development Index
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
KRW	Korean Won
LAC	Latin America and Caribbean
MENA	Middle East and North Africa
METI	Ministry of Economy, Trade, and Industry
MOF	Ministry of Finance
MOSF	Ministry of Strategy and Finance
MOFA	Ministry of Foreign Affairs
MOFCOM	Ministry of Commerce

ODA	Official Development Assistance
OECC	Overseas Economic Cooperation Council
OECD	Organization for Economic Cooperation and Development
OECD-DAC	OECD Development Assistance Committee
OLS	Ordinary Least Squares
SA	South Asia
SD	Standard Deviation
SSA	Sub-Saharan Africa
UN COMTRADE	United Nations Commodity Trade Database
UNDP	United Nations Development Programme
USD	United States Dollar
WGI	Worldwide Governance Indicator
WTO	World Trade Organization

CHAPTER 1

INTRODUCTION

1.1 Importance of the Research

International development has been an important avenue for tackling serious socio-economic problems such as economic poverty and social inequality through collaborative efforts. The Millennium Development Goals and Sustainable Development Goals, which were set up in September 2015, are important examples of achieving those goals at the global level. Different sources have estimated diverse amounts of investment so far. As one of the widely-used concepts among foreign aid, official development assistance (ODA) means the official flows to recipients and multilateral institutions for economic development and welfare purposes with grant elements.

According to the Organization for Economic Cooperation and Development (OECD) – Development Assistance Committee (DAC), the total ODA volume from 1995-2013 amounted to 2,007 billion USD at the current price OECD Statistics Website: 49). The Economist, a British newspaper, mentions that the aid spending is 135 billion USD a year and is rising. The estimations vary, but it is clear that huge amounts of money have been invested to handle this issue.

However, the picture is not that simple. The ambiguity is not just because it absorbs astronomical amounts of money, but because it includes multi-layered dynamics between international stakeholders and their considerations. Since developing countries cannot afford huge amounts of funds, which are needed for their own development, foreign aid has had room to intervene and has taken a significant role in this area. For decades, many advanced countries, influential developing countries, and international organizations have invested funds, or at least have reported to do so, to support their developing partners.

To be fair, these collective efforts have been said to contribute to enhancing the quality of life in the developing world to a certain degree. However, some scholars have been also suspicious about the real intentions and the positive impacts of the current foreign aid practices (Moyo, Dambisa, 2010), while other traditional schools of thought still emphasize the significant and productive role of aid in the developing world (Nsehe, Mfonobong, 2013).

If we combine these controversial viewpoints on the motivations and impacts of international development with the context of newly-emerging donors in East Asia, an interesting and realistic picture for both donors and recipients can be drawn. East Asia, specifically China, Japan, and South Korea, has had a very unique and dynamic history in this area. These Asian countries have interacted with each other in terms of their economic development and foreign aid policies, which have inevitably reflected their own domestic progress.

China's influence on the developing world with the leverage of foreign aid has been growing (Lum, Fischer, Gomez-Granger and Leland, 2009; Drecher and Fuchs, 2011). Beijing's aggressive delivery strategy has triggered some worries to the western world and to some developing partner countries. As China's political and economic clout grows, the doubts over the intention behind its aid become bigger.

When it comes to Japan, it has been acknowledged as a traditional and influential stakeholder in this arena. On the surface, Tokyo has followed the contemporary manner of their western counterparts, but it has also been described as developing its own commercially-oriented mechanism in some of the literature (Kimura and Todo, 2010; Park, 2014).

South Korea has a relatively small scale of ODA, but it has been recently highlighted as an emerging donor. Despite the recent global recession, the pace of Seoul's increasing foreign aid volume has been impressive. It has tried to find its own niche area to reflect its successful economic development considering its limited resources (Lee, 2012; Park, 2014).

Despite the value of the research on these countries regarding this topic, the concrete information has not been sufficient. This is not only because of a lack of transparency on the part of reliable sources, especially in the case of China, but also because of the sensitiveness of the results of the research, which might be used to

justify one's position. Surely, some try to justify their argument by focusing on sensational cases. This tendency has often been observed in journalism. This kind of approach can appeal to the general public, but the level of understanding of foreign aid is still constrained in terms of drawing a bigger picture of foreign aid policies. A more comprehensive and objective approach is necessary.

Based on the discussion above, this study is important both in terms of locus and focus. The comparison of the East Asian donors regarding foreign aid practices has rarely been tried. If the job is successful, the underlying factors behind their foreign aid will be exposed and clearer pictures of these can be seen.

In terms of focus, this research attempts to see foreign aid with a different focus, which has often been neglected. Public finance theories are used. This approach can offer a fresh but relevant viewpoint of the way to interpret foreign aid policies. Unlike many of the existing international relations theories, public finance theories such as the economic-demographic theory, the compensation theory, and incrementalism are applicable to properly analyzing the practices of foreign aid and better understanding them. This new approach helps to see the same situation from a different and proper perspective. It also facilitates a more interdisciplinary approach among the social sciences such as politics, economics, and public administration on this topic.

In addition, this study has potential for application in analyzing other donors' practices. This study focuses on the cases of China, Japan, and South Korea. However, the conceptual frameworks and statistical models developed in this research can be applied to other western donor countries or newly-emerging ones. These kinds of further research using a unified methodology are expected to offer a broader picture of donors' practices at the global level.

1.2 Objectives

This research aims to investigate the dimensions of the determinants and effects of foreign aid utilizing accessible national-level data. The objectives of the study are as follows:

1) To examine the socio-economic determinants of the foreign aid volume of China, Japan, and South Korea both from recipient countries' and donors' sides

2) To test the effects of the foreign aid from the three donors on their partner countries in terms of socio-economic aspects such as the expansion of foreign direct investment (FDI), trade volume, infrastructure development, corruption index, inequality, etc.

3) To clarify the backgrounds of the statistical outputs by analyzing the three East Asian donors' major considerations

4) To contribute to the applicability of related theories in this area and to provide some policy recommendations for mutually-beneficial policies between the donor and their partner countries

With these objectives in mind, this study will answer the following main research questions:

1) Which socio-economic factors have influenced the foreign aid policies of China, Japan, and South Korea in terms of aid to developing countries?

2) Does trade with a donor affect aid to developing countries? Does FDI from a donor influence aid to developing countries?

3) Has the foreign aid of the three Asian donors contributed to the donors' trade, FDI, and infrastructure development, or the recipient countries' social situation, which includes corruption and inequality?

4) What are the differences in the determinants and effects of the three countries' foreign aid to recipient countries and what causes these differences?

1.3 Scope and Limitations

This study focuses only on China, Japan, and South Korea as donors and their developing partners around the world. The number of recipient countries and the time periods varied in the models depending on the data availability. Some of data in certain countries were missing due to poor governance or other reasons. Given the limitations of data availability, the scope of the recipient countries was narrowed to certain countries, which provided consistent and reliable data sets.

This paper looks into the annual data of the three donor countries and their partner countries to test the relationship between the independent variables and the dependent variable in a given time period. Panel data analysis, correlation analysis, and ordinary least squares (OLS) regression were used in order to determine the variations in aid allocation and related indicators. These methodologies allowed the researcher to check the determinants and effects of foreign aid in relation to other socio-economic factors in an effective manner.

Despite the potential benefits mentioned below, the study still has some limitations particularly regarding the accessibility of the data. Even though this study incorporated all of the available data from reliable sources such as the World Bank, OECD, and United Nations Commodity Trade (UN COMTRADE) databases, some of the macro socio-economic data were still missing. Especially, it was very challenging to obtain detailed foreign aid data from China's side. China has not released comparable details of their aid to that of OECD-DAC. Even their own concept of so-called "foreign economic cooperation (FEC)" was difficult to utilize because of the "comparing apples to apples" issue. Though the estimated data from the research results of the RAND Corporation (Wolf, Wang and Warner, 2013) were alternatively used here, those calculations remained limitations in terms of arriving at broader interpretation. In the future, if it is possible to obtain more detailed and comparable data from China, a more accurate picture can be created.

Some underlying factors were difficult to capture and quantify and for this reason the study was limited to certain socio-economic factors that could be measured. Therefore, this study explained the area that could be quantified and ignored other parts that were difficult to measure.

1.4 Benefits

The results of this study contribute to both theory and policy. The expansion of the application of theory and drawing some practical policy implications make contributions in the following ways:

The analysis in this study can increase the understanding of the foreign aid of the three donor countries. The current discussion on the intention of donors' foreign

aid is rather subjective in the sense that whether the donors' policy orientation is philanthropic, economic, or something else has not been discussed with solid evidence. Therefore, this study offers a more objective view based on statistics, and the results will be useful for deciding which position reflects the reality to the greatest extent.

1) The study of the determinants and effects of the foreign aid of donors enhances the knowledge of the motivation behind foreign aid and aid effectiveness. Given the lively discussions on these topics, it is also useful to understand them in-depth and to develop them further.

2) This study adds to the literature both in the public finance and international development area. The findings from this study confirm some of the theories of public finance. Further research on this topic will be motivated by the results of this study.

3) This study offers some implications for development strategies for the countries themselves and other countries for establishing more mutually-beneficial aid plans and implementations.

1.5 Types of Data and the Unit of Analysis

Quantitative research was mainly employed in this study using secondary data. Some cases were utilized to further investigate the context of the practices of the donors. The unit of analysis in this paper was the "annual macroeconomic and social indicators of individual donors and their partner countries."

1.6 Organization of the Research

This study consists of seven chapters. Chapter 1 introduces the overview of the necessity of the study and the research objectives. Chapter 2 reviews the relevant theoretical and empirical studies in order to formulate the conceptual frameworks. Chapter 3 focuses on the research design, including the quantitative methodology as well as the rationale for the chosen variables for the research model. Chapter 4 addresses the current issues of the foreign aid policies of the donors utilizing statistics

and literature. Chapter 5 presents the findings of the proposed models based on the panel dataset (Model I-1) and correlation dataset (Model I-2) on the determinants of the foreign aid of the three donor countries and their respective partners. Chapter 6 deals with the findings of the proposed model (Model II) regarding the effects of the foreign aid of the three donor countries and their partners using OLS regression. Chapter 7 summarizes the results and discusses some of the theoretical and policy implications from the research findings and suggests further follow-up research points.

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In developing a model for analysis, it is important to visit relevant theories. The main purpose of this exercise was to find concepts from public expenditure theories that could be applied to foreign aid expenditure. Foreign aid is often neglected in public finance, but is still an important area. Some theories on the public spending can be applied to this area and the efforts should be encouraged. In this regard, multi-dimensional factors, which can influence the distribution and effects of foreign aid expenditure, are reviewed in this chapter.

2.1 Determinants of Foreign aid Expenditure: Theoretical Background

As a good starting point of the concept for public expenditure, Musgrave and Musgrave (1989: 3-14) suggested four functions: allocation function, distribution function, stabilization function, and coordination of budget functions. Foreign aid belongs to the distribution function because it is related to distributing wealth to the poor outside the country. Besides this traditional concept, some financial theories help to identify the possible driving forces of public expenditure, with the area of foreign aid as one of them.

Regarding the general determinants of government expenditure, there are many theories and hypotheses such as the economic-demographic theory, the compensation theory, incrementalism, the Keynesian counter-Cyclical theory, the median voter theory, the interest group model, the fiscal illusion model, the political business cycle model, etc. Among the wide variety of theories, some of them, such as the Keynesian counter-cyclical theory, the median voter theory, and the interest group model are suitable for the study of domestic dynamics. In other words, these models are more relevant to explaining domestic government expenditure. In the case of foreign aid expenditure, it is necessary to pay more attention to macroeconomic and

international dynamics. Under this criterion, three major theories can be considered to explain the factors of foreign aid expenditure: economic-demographic theory, compensation theory, and incrementalism, as explained the following sections.

2.1.1 Economic-demographic Theory

Economic-demographic theory originated from system theory. According to system theory, a political system is a set of institutions to convert societal demands into authoritative decisions and actions for the support of the society. It assumes that a social system or government usually reflects socio-economic demand from the society, to which the system belongs. It underscores the socio-economic environmental factors in shaping public policy and its expenditure. To put it another way, the logical conclusion of this approach is that public policy or expenditure is an output of a political system.

Adolph Wagner applied general system theory to the public finance area in order to explain the changes in public expenditure level. This is also known as Wagner's law. He indicates several reasons why public expenditure increases over time (Ponlapat Buracom, 2011: 119). Urbanization industrialization and increased population density invite more public activities for building public facilities. The growth in real income also increases the relative expansion of government expenditure, especially in the welfare area. In his model, various socio-economic factors such as income per capita growth rate, population growth rate, the proportion of the population in urban areas, inflation rate, and tax revenue as a percentage of GDP positively affect public expenditures as a percentage of the GDP.

Musgrave and Musgrave (1989: 120-124) analyzed government expenditure growth in the OECD countries. According to the authors, those countries' government expenditure to gross national product ratio had risen with the expenditure to gross national product elasticity mostly above one during the 1960s to 1970s. They attributed the reason to driving factors such as growth per capita income, population change, and urbanization.

2.1.2 Compensation Theory

Compensation theory highlights the relationship between globalization and domestic economic growth. The theory was proposed by international trade scholars.

Originally, the main idea was that higher levels of international economic risk caused by globalization could draw more risk associated with the international business cycle. This volatility ultimately leads to compensation via more social programs in public spending.

Rodrik (1998) focused on the positive relationship between external risk, which is measured by trade openness and trade volatility, and government size represented by welfare spending. Dowling and Valenzuela (2010) are supportive of the positive effects of globalization on economic growth. Their study picked up some of the key success factors of economic growth in Asia such as openness to international trade and investment, stable inflation policy, and substantial investment in human capital. Yoon (2009: 15) indicated that the effects of trade or gross capital flows and the power of popularly-based parties on welfare spending were statistically significant. In the meantime, Down (2007: 13) emphasized the dislocation effects of globalization. If globalization can be defined as a country's integration into international economy in terms of trade and finance, trade and financial openness tends to increase fluctuations in the domestic economy. He tested the impacts of globalization on macroeconomic and social indicators, which can be measured by trade and financial openness to fluctuations in the gross domestic product (GDP) and inequality in income distribution. Down found that smaller economies were more associated with larger fluctuations in demand than their larger counterparts, while their openness alleviated the fluctuations .

Overall, this theory assumes that socio-economic instability due to globalization pushes governments to increase certain areas of government expenditure, such as unemployment compensation, job training, etc. According to these studies, the trade and financial openness of the donor can be considered as one of the major push factors for aid. Considering that foreign aid is implemented in an international environment, its flow is, to some extent, understood to interact with trade and other financial flows.

2.1.3 Incrementalism

Among the decision-making theories, incrementalism was selected for this study because the previous year's aid amount factor was a plausible factor for the

international aid flows, whereas other decision-making theories were more relevant to explaining the power dynamics of domestic politics. This theory started with Herbert Simon and was developed by Charles Lindblom. Incrementalism is based on the idea of bounded rationality, which results from insufficient time, information, or money (Ponlapat Buracom, 2011: 122). Dye (2005: 18) described it as a continuation of past government activities with gradual changes. Incrementalism happens because government officials do not have enough time, information, or resources to review all of the options to replace existing policy. Policymakers also admit the influence of previous policies on the following policies due to uncertainty, which may be caused by completely new policies. In addition, the sunk costs in existing programs and the politically-expedient manner of incrementalism can encourage gradual tendencies in public policies.

This approach opposes the rational decision-making model by highlighting the importance of existing information, preferences, or demands in a society. While a rational decision-making model assumes the perfect knowing of problems and their policy alternatives, incrementalism is relevant to explaining why gradual change based on previous budget volumes has frequently been happening in real policies. In reality, slight modifications on the basis of the previous year rather than big changes have been observed in government programs. This tendency is intensified when there are many diverse groups. The enhanced degree of incrementalism is partly because policy making has been made through complex chains of steps with no clear-cut boundaries. Therefore, the complexity of the decision-making process usually results in a gradual change from the existing basis.

Incrementalism argues that policymakers also benchmark the previous year's budget and slightly change the present year's budget from the baseline in order to minimize any controversy. This theory is useful for testing whether donors rely on the previous year's baseline when they make a decision on the budget volume of the current year.

2.2 Empirical Evidence on the Determinants of Foreign Aid Expenditure

There are some candidate variables that can be regarded as the determinants of foreign aid expenditure. Some scholars have conducted research on the determinants

of foreign aid as well as the broader scope of public expenditure. It is necessary to carefully review the literature for setting up a relevant framework.

2.2.1 Economic-demographic Theory Determinants

There has been some research on the determinants of foreign aid at the country level. Lee (2012) for example conducted a comparative study between South Korea and other development assistance committee (DAC) member countries. He set up the volume of the ODA as the dependent variable and real GDP per capita, population, exports, FDI, civil rights, government effectiveness, infant mortality, etc. as the independent variables. Among the variables in his study, population can be interpreted as an economic-demographic factor, and according to his study, DAC members tend to provide more aid to recipient countries which have lower income and a greater population, while South Korea does not show any significant consistent relationship with such variables. This highlighted that the ODA practices of the DAC member countries had been focused on certain recipient groups compared to Korea's case. Dreher and Fuchs (2011) focused on China and concluded that there was no clear evidence whether China aid was linked with the energy production of their partner countries compared with other donors.

2.2.2 Compensation Theory Determinants

Lee (2012) used exports and FDI with the donor as the independent variables. Those variables can be considered in the context of compensation theory. Berthelemy and Tichit (2004) considered FDI and trade volume as well as the dummy variable of colonial experience in the cases of OECD-DAC members' aid. Cooray, Gottschalk, and Shahiduzaman (2005) chose trade with Japan as well as the GDP per capita of the recipient countries, distance, etc. as the important variables in Japan's ODA allocation.

2.2.3 Determinant of Incrementalism

There is relatively limited literature that considers the amount of the previous year's spending. This is partly because public finance has been paid less attention in this area than it deserves. One of the few cases is the study of Tuman, Emmert and

Sterken (2001). They used the previous year's aid as the control variable when they analyzed Japan's ODA determinants in South America.

2.2.4 Other Considerations

Lee (2012) also utilized civil rights, government effectiveness, and infant mortality as the independent variables. Tuman et al. (2001) used human rights abuse factors when they analyzed Japan's ODA determinants in South America in their study. Gounder set the living standard level, population, and the growth rate of the GDP per capita of the recipient countries as Australia's aid determinants (quoted in Cooray et al., 2005). According to the literature on the levels of social development in the recipient countries, the Human Development Index (HDI) can also be used to represent the level of social development. Table 2.1 summarizes the pull and push factors reviewed in the existing literature.

Table 2.1 Pull and Push Determinants Used in Empirical Studies

Variables	Expected sign	Source
<Pull factors>		
A. Economic-demographic theory factors		
1. GDP	+	Musgrave (1986)*
2. Population of recipient	+	Lee (2012)
3. Energy deposits	+	Dreher and Fuchs (2011)
B. Compensation theory factors		
1. Trade with donor	+	Cooray et al. (2004), Berthelemy and Tichit (2002)
2. FDI from donor	+	Berthelemy and Tichit (2002)
C. Others		
1. Governance	+	Lee (2012)
2. HDI	+	Tuman et al. (2001)
3. GDP per capita	-	Lee (2012)
<Push factors>		
A. Economic-demographic theory factors		
1. GDP of donor	+	Musgrave (1986)*
2. GDP per capita of donor	+	Musgrave (1986)*

Table 2.1 (Continued)

Variables	Expected sign	Source
3. Energy consumption of Donor	+	Dreher and Fuchs (2011)*
B. Compensation theory factors		
1. Trade openness of donor	+	Rodrik (2012)
2. Financial openness of Donor	+	Rodrik (2012)
C. Incrementalism		
1. Aid amount of previous year	+	Tuman et al. (2001)

Note: * It is inferred from the basic ideas of the literature.

2.3 Effects of Foreign Aid Expenditure: Theoretical Background

Originally, the proposed three effects such as the vanguard effect, the infrastructure effect, and the rent-seeking effect aimed to explain the impacts of aid only on FDI (Mody, Razin, and Sadka (2003) and Kimura and Todo (2010)). However, these concepts are also useful when applied to the effect of aid on trade volume, infrastructure development, corruption, and inequality as well as FDI. This effort is expected to expand the applicability of the FDI-focused effects to other relevant areas.

2.3.1 Vanguard Effect

Mody et al. (2003) underscored the importance of FDI by saying that information on the recipient countries plays an important role in attracting FDI flows because investing huge amounts of money is risky. Kimura and Todo (2010) developed the idea that foreign aid may pave the way for a donor country's business opportunities, including FDI. In other words, it enhances the economic capability of the developing countries to finance outflows from FDI.

2.3.2 Infrastructure Effect

There have been some explanations of the effects of foreign aid on infrastructure. Harms and Lutz (2006) argued for example that foreign aid can increase the donor country's FDI by improving the recipient country's socio-economic infrastructure. According to this school of thought, foreign aid is also expected to improve the infrastructure of the recipient countries by building roads and telephone lines as well as more abstract investment in education and training (Kimura and Todo, 2010).

2.3.3 Rent-seeking Effect

There are also some negative factors that hamper the two positive effects mentioned above. Offering aid may lead private firms to engage more in rent-seeking from foreign aid and become less involved in improving their productivity. In such cases, foreign aid might encourage some major actors of the recipient country to seek rent. This makes investors from the rich country hesitate before investing more in the partner country.

There are also some opposite perspectives on the impacts of aid on corruption and inequality. Traditional idealism regarding international development views that foreign aid even helps the improvement of governance by decreasing inequality and corruption. Considering these conflicting viewpoints, it is interesting to test whether aid improves or aggravates these factors.

2.4 Empirical Evidence on the Effects of Foreign Aid Expenditure

2.4.1 Vanguard Effect

Kimura and Todo (2010) tested whether foreign aid from a donor country tends to promoted FDI from the same donor to the recipient country. The researchers selected the top five donor countries-France, Germany, Japan, the United Kingdom, and the United States-and the recipient countries from the low-income or middle-income countries. According to them, even advanced economies such as the United States and Japan seek a reciprocal economic relation between aid and FDI, which would help the economies of developing countries. Whether or not a direct relation

exists between these two economic activities is ambiguous because multiple channels could affect the vanguard effect.

Schiere (2010) focused on China's total trade with Africa. He assumed that FDI was a function of population growth, domestic savings per capita, aid invested in physical capital, aid invested in complementary factors, and so on. In his model, aid invested in physical capital crowds out FDI, while aid for complementary factors attracts more FDI. GDP per capita and FDI lagged, which means that the previous FDI had positive correlations with FDI. Savings per capita had a negative relation with the dependent variable.

Sanfilippo (2010: 610) conducted research on China's FDI to other region such as Africa. The author assumed that Chinese outward FDI to Africa was a function of gross national income, trade volume with China, the debt risk of the recipient countries and so on. He concluded that Chinese FDI to Africa was driven by its energy demand and the market potential of partners.

Zhang, Yuan, and Kong (2010: 73) focused on the relationships between Chinese foreign aid and FDI. They examined whether China's foreign aid and FDI had complementary relations. Their conclusion was that recently, China's aid has had a tendency to lead to more FDI outflows to Africa and that Beijing has started to substitute its aid with its FDI in Africa.

Kang, Lee, and Park (2011: 3, 9) compared South Korea's vanguard effect with the case of Japan. They used FDI as the dependent variable and set up the FDI of the previous year and the vector of the independent variables, including ODA stock, ODA flow, the GDP of the recipient country, the GDP of the donor country, the tariff rate of the recipient country, exports from the donor to the recipient, and corruption index in the recipient country as the independent variables. These Korean scholars indicated that the current manner of Korea's foreign aid has largely followed in the footsteps of Japan's and Korea's foreign aid by type, region, and income level of the recipient countries. They drew the conclusion that at the very least these two countries' foreign aid can lead to an increase in foreign investment flows.

When it comes to the impacts on trade, an OECD-World Trade Organization (WTO) joint report (2013: 155) argued that aid for trade was positively associated with trade increase, especially in the low-income countries.

2.4.2 Infrastructure Effect

Kimura and Todo (2010) found that Japanese foreign aid had a vanguard effect, while there was no clear infrastructure and rent-seeking effect. Cali and Velde (2009) indicated that aid for infrastructure significantly affected manufacturing and mining exports, while other sectors had only marginal or no substantial effects on exports. In the meantime, Harms and Lutz (2006) argued in their empirical research that the quality of governance affected aid-financed public infrastructure, especially where a strict regulatory burden discouraged infrastructure supply from the private sector.

2.4.3 Rent-seeking Effect

Svensson (1998) claimed in his research that foreign may increase rent-seeking and reduce productive public spending. He suggested that a binding policy commitment on the part of the donor community may alleviate this tendency. Kalyvitis and Vlachaki (2012) also placed emphasis on the relationship between governance and aid. They used the political regime as the dependent variable and the given amount of foreign aid, and other observable variables such as trade initial GDP, population as the independent variables. Their research showed that foreign aid had a negative effect on the regime. Besides this, the negative effect of aid flows on the political regime of the recipient countries was moderated when aid flows were preceded by economic liberalization. Table 2.2 summarizes the effects of foreign aid in the existing literature.

Table 2.2 Effects of Foreign Aid Used in Empirical Studies

Variables	Expected sign	Source
A. Vanguard effect		
1. Expansion of FDI	+	Kimura and Todo (2010)
2. Trade volume	+	OECD and WTO (2013)
B. Infrastructure effect		
1. Infrastructure development	+	Harms and Lutz (2006), Kimura and Todo (2010)

Table 2.2 (Continued)

Variables	Expected sign	Source
C. Rent-seeking effect		
1. Corruption index	+	Kimura and Todo (2010), Kalyvitis and Vlachaki (2012)
2. Inequality	+	Kimura and Todo (2010)

2.5 Conceptual Framework

From the literature, it was learned that foreign aid can be determined by various factors and has multiple effects on the recipient countries. In order to reflect the literature review of foreign aid policies in general and the practices of individual countries, especially focusing on China, Japan, and South Korea, the conceptual framework was separated into three parts. The first two focus on the determinants of aid. The last one highlights the effects of foreign aid: 1) the pull factors for attracting more foreign aid to recipient countries, 2) the push factors from donors to spend more on foreign aid, and 3) the effects of foreign aid on the recipient countries.

2.5.1 Determinants of Foreign Aid (Model I)

Since it is impossible to consider all of the factors at once, the study concentrates on the specific points on which it is more focused.

2.5.1.1 Pull Factors

1) Economic-demographic Variables

Many economic factors have been considered in the literature, as shown in the previous section. Among the various variables, the focus was narrowed down. From the viewpoint of Wagner's law, GDP, the population, and energy production of the recipient countries can be considered as driving factors to attract foreign aid from the donor country. Despite some conflicting signs between the proposed independent variables and foreign aid depending on the literature, this study relied on some of the theoretical concepts and assumed a positive relationship among the three variables. Figure 2.1 visualizes those pull factors of economic and demographic theory.

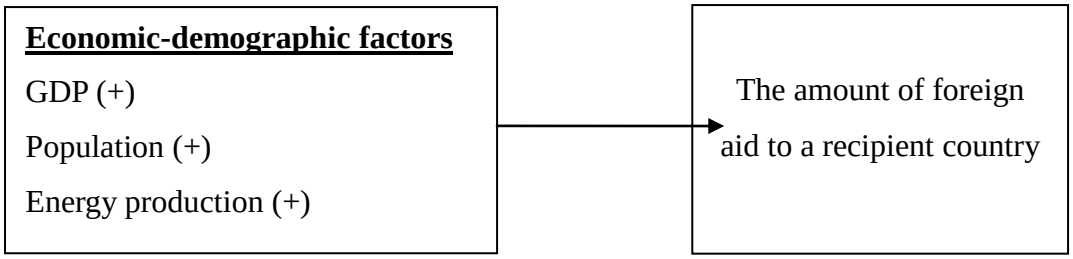

Figure 2.1 Conceptual Framework Derived from the Pull Factors of Economic-demographic Theory

2) Compensation Variables

According to compensation factors, FDI inflow from the donor and trade with the donor can be considered as compensation variables. Some of the studies show the positive effect of FDI and trade with the donor on the amount of the donor's aid to the recipient country (Lee, 2012, and Berthelemy and Tichit, 2002). Therefore, it was assumed that these two variables had a positive relationship with aid amount. Figure 2.2 summarizes the pull factors of compensation theory.

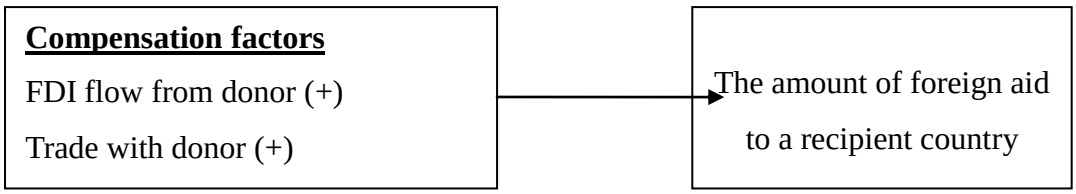

Figure 2.2 Conceptual Framework Derived from the Pull Factors of Compensation Theory

3) Other Variables

As for other considerations, some of the studies show a positive effect of governance and HDI level on the amount of donor's aid (Lee, 2012 and Berthelemy and Tichit, 2002). It was assumed here that these two variables had a positive relationship with aid amount. In the case of income level (or GDP per capita), it can be also considered as one of the important factors for humanitarian purposes. Figure 2.3 shows the pull factors of other variables.

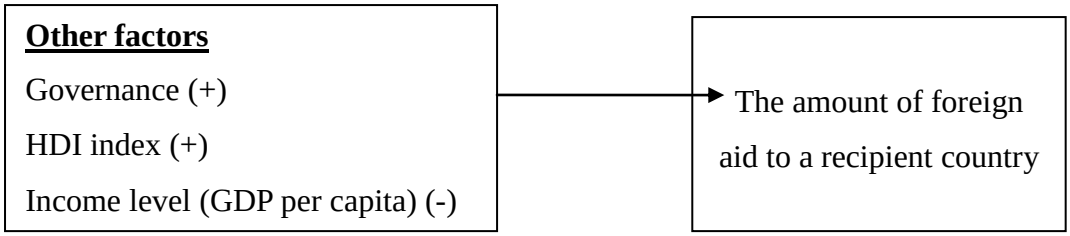

Figure 2.3 Conceptual Framework Derived from the Pull Factors of Other Considerations

4) Conceptual Framework I-1

The factors discussed above belong to the pull factors. Figure 2.4 represents the pull factors for attracting more foreign aid to the recipient. It was assumed that the GDP of the recipient countries (usually having a positive (+) relationship with foreign aid), population of recipient countries (+), FDI from the donor and trade with the donor (+), energy production (+), governance (+), and degree of social development (HDI (+)) affected the amount of foreign aid of China, Japan, and South Korea.

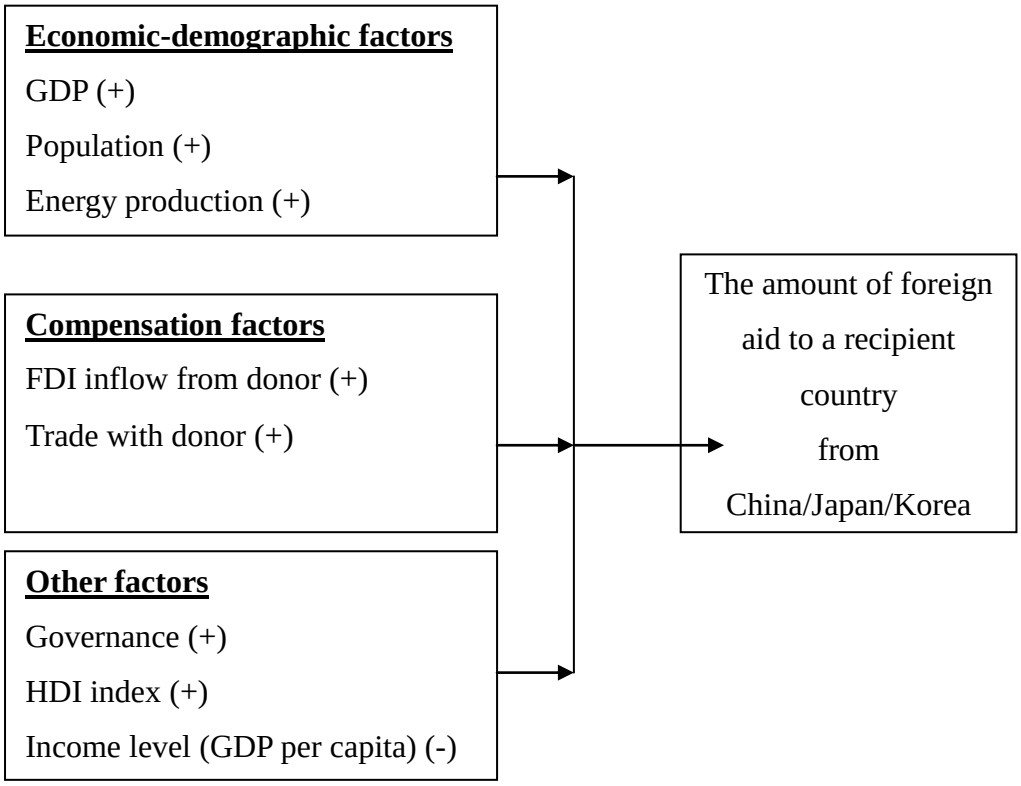

Figure 2.4 Conceptual Framework I-1 (Model I-1)

2.5.1.2 Push Factors

1) Economic-demographic Theory Variables

From the push factors' side, choosing some representative economic-demographic variables was necessary. Through the literature review and insights from the related research, the donor's GDP, GDP per capita, and the energy consumption of the donor were selected. The empirical studies indicated that the signs of the relationship between these variables and foreign aid were mixed. However, based on the basic concept of economic-demographic theory, the theory's variables were assumed to have positive effects of the economic-demographic theory variables on the aid amount. Figure 2.5 summarizes the push factors according to economic-demographic theory.

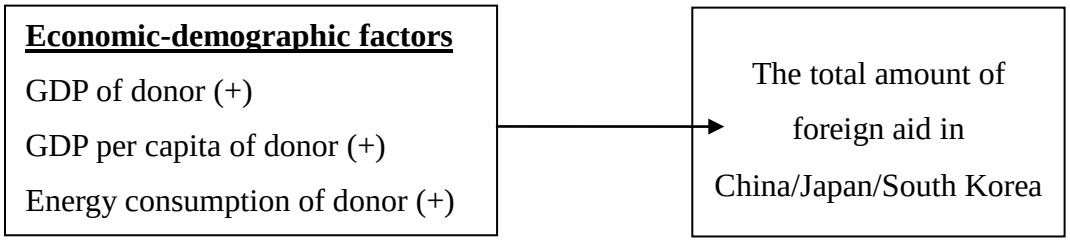

Figure 2.5 Conceptual Framework Derived from the Push Factors of Economic-demographic Theory

2) Compensation Theory Variables

Compensation theory deals with the relationship between the degree of globalization and public expenditure. Financial and trade openness were expected to positively affect the amount of foreign aid to the donor countries (Lee, 2012 and Berthelemy and Tichit, 2002). Hence, the degree of the financial and trade openness of the donors was taken into consideration in this study. Figure 2.6 illustrates the push factors of compensation theory.

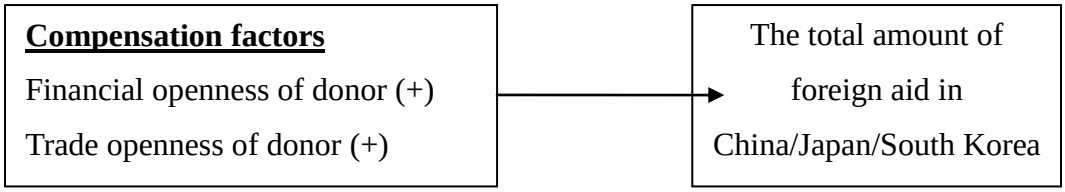

Figure 2.6 Conceptual Framework Derived from the Push Factors of Compensation Theory

3) Incrementalism Variable

Because of its prominence in previous studies, the previous year's aid budget is considered as an independent variable (Tuman et al., 2001). In general, the incremental variable showed a positive sign with the current year's public expenditure. The one-year lagged foreign aid amount was considered as an independent variable here. The push factor of incrementalism theory is indicated in Figure 2.7.

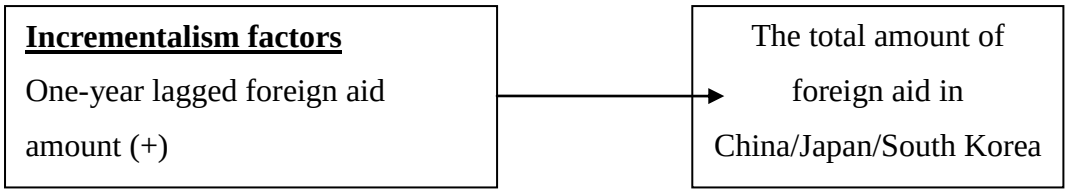

Figure 2.7 Conceptual Framework Derived from the Push Factor of Incrementalism

4) Conceptual Framework I-2

Figure 2.8 summarizes some of the push factors for spending more on aid from the supply side. Based on the literature review on the push factors determining foreign aid amount, it can be hypothesized that the GDP per capita of the donor (+), trade and financial openness of the donor (+), energy consumption of the donor (+), and the previous year's spending (+) affected the volume of the three countries' foreign aid. The independent variables were supported by the economic-demographic theory, compensation theory, and incrementalism respectively.

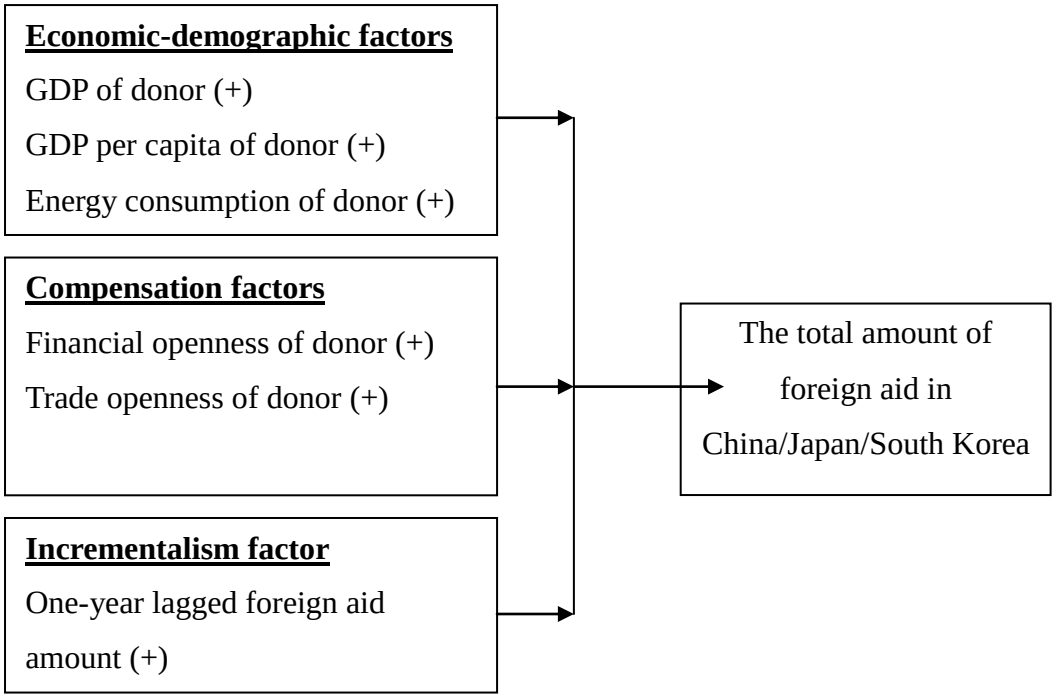

Figure 2.8 Conceptual framework I-2 (Model I-2)

2.5.2 Effects of foreign aid (Model II)

2.5.2.1 Vanguard Effect

Inferring from some research, it is believed that foreign aid also invites more FDI and trade with the donor (Kimura and Todo, 2010, Kang et al., 2010, and OECD and WTO, 2013). Expansions of FDI and trade volume represent the vanguard effect. Figure 2.9 shows the vanguard effects of foreign aid.

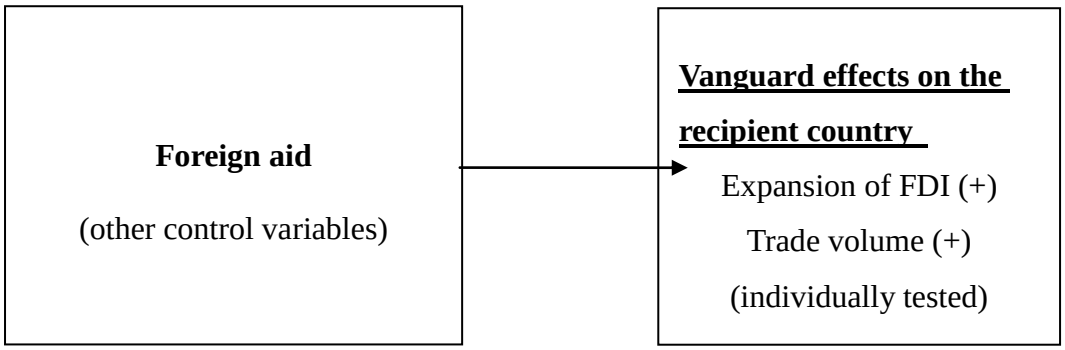

Figure 2.9 Conceptual Framework Derived from the Vanguard Effects of Foreign Aid

2.5.2.2 Infrastructure Effect

Because of the results that were revealed in previous studies, the degree of infrastructure development was tested, assuming that aid positively affected infrastructure development (Harms and Lutz, 2006). In this study, the degree of infrastructure development was measured as the infrastructure effect. Figure 2.10 illustrates the vanguard effects of foreign aid.

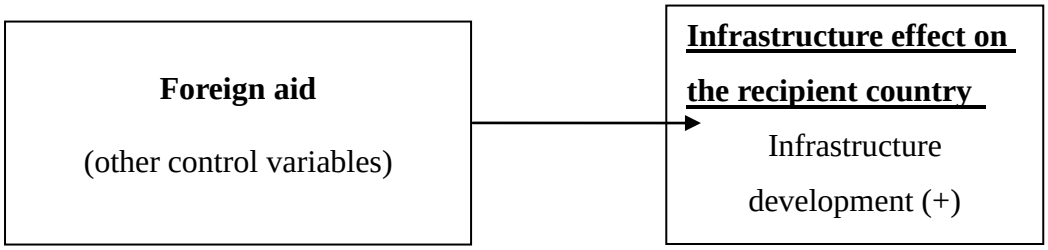

Figure 2.10 Conceptual Framework Derived from the Infrastructure Effect of Foreign Aid

2.5.2.3 Rent-seeking Effect

Some of the related studies suggest the negative impacts of aid on corruption and inequality improvement (Svensson, 1998; Kalyvitis and Vlachaki, 2012). Considering those factors, aggravation of inequality and corruption are represented as rent-seeking effects here. Figure 2.11 summarizes the rent-seeking effects of foreign aid.

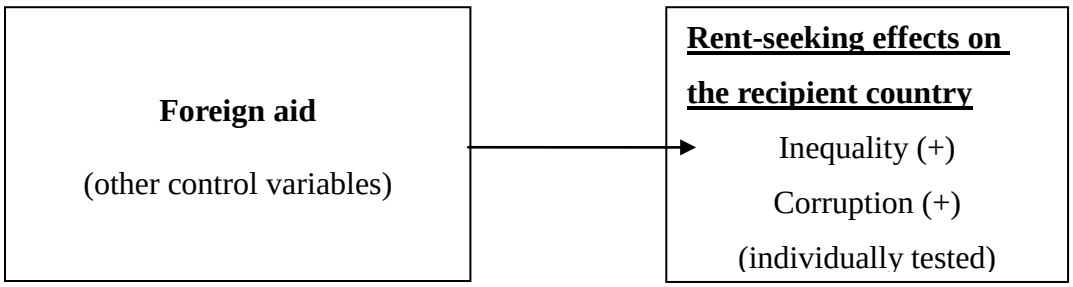

Figure 2.11 Conceptual Framework Derived from the Rent-seeking Effects of Foreign Aid

2.5.2.4 Conceptual Framework II

In order to test the vanguard effect, infrastructure effect, and rent-seeking effect of aid, Conceptual framework II was established. Figure 2.12 shows the effects of foreign aid on the economy of the recipient countries. The foreign aid of the three countries was assumed to have impacts on FDI (+), trade (+), infrastructure development (+), corruption (+), and inequality (+).

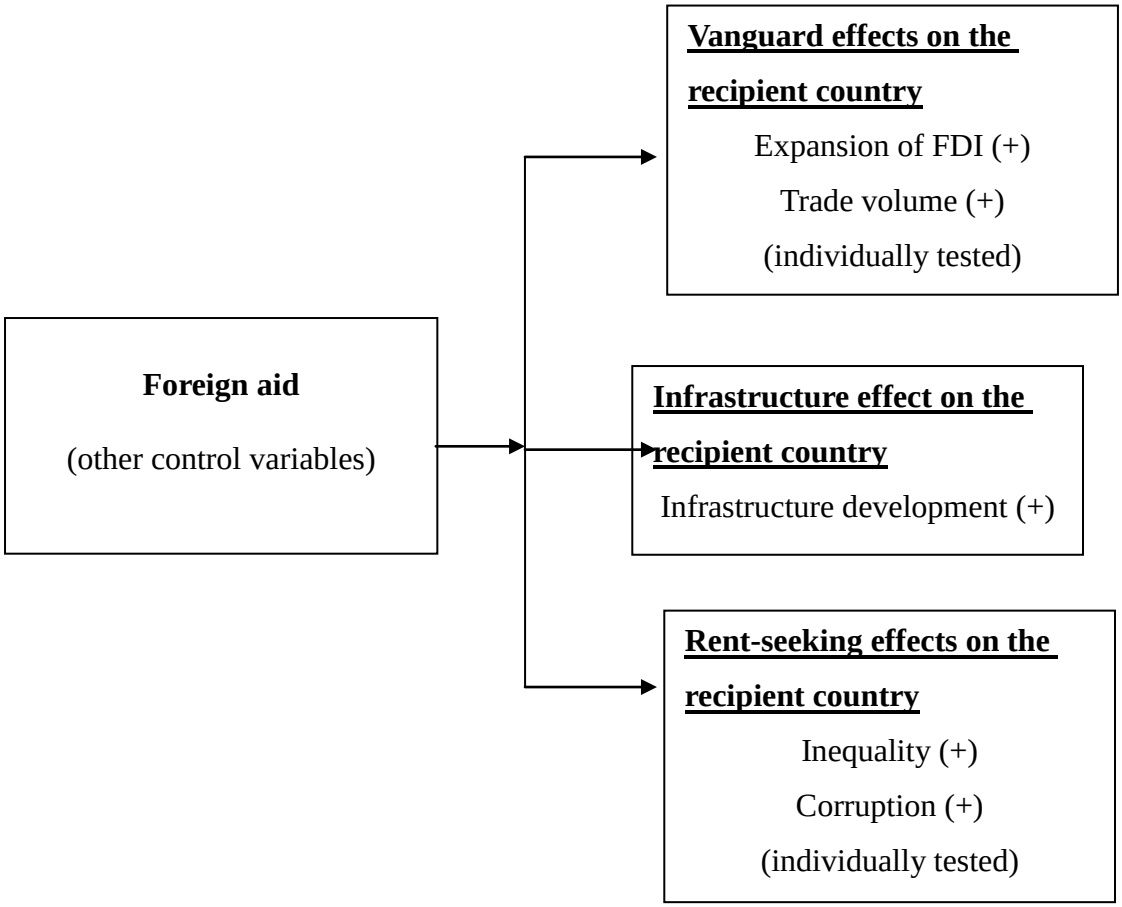

Figure 2.12 Conceptual Framework II (Model II)

2.5.3 Hypotheses

The following hypotheses were developed from the conceptual frameworks so as to reflect the literature review and to follow the conceptual frameworks.

2.5.3.1 Determinants of Foreign Aid (pull factors)

H_1: The scale of the recipient country's GDP positively affects the aid amount from the donor (economic-demographic factor).

H_2: The size of the recipient country's population positively affects the aid amount from the donor (economic-demographic factor).

H_3: The size of the recipient country's energy production positively affects the aid amount from the donor (economic-demographic factor).

H_4: The FDI inflow from the donor positively affects the aid amount from the donor (compensation factor).

H_5: The total trade volume between the donor and recipient countries positively affects the aid amount from the donor (compensation factor).

H_6: The level of governance of the recipient country positively affects the aid amount from the donor (other factors).

H_7: The HDI level positively affects the aid amount from the donor (other factors).

H_8: The GDP per capita (income level) negatively affects the aid amount from the donor (other factors).

2.5.3.2 Determinants of Foreign Aid (push factors)

H_9: The size of the GDP of the donor positively affects the aid amount of the donor (economic-demographic factor).

H_{10}: The GDP per capita of the donor positively affects the aid amount of the donor (economic-demographic factor).

H_{11}: The level of energy consumption of the donor positively affects the aid amount of the donor (economic-demographic factor).

H_{12}: The financial openness of the donor positively affects the aid amount of the donor (compensation factor).

H_{13}: The trade openness of the donor positively affects the aid amount of the donor (compensation factor).

H_{14}: The previous aid amount of the donor positively affects the aid amount of the donor (incrementalism factor).

2.5.3.3 Effects of Foreign Aid

H_{15}: The aid amount of the donor positively affects the expansion of FDI from the donor (vanguard effect).

H_{16}: The aid amount of the donor positively affects the total trade volume with the donor (vanguard effect).

H_{17}: The aid amount of the donor positively affects the level of infrastructure development (infrastructure effect).

H_{18}: The aid amount of the donor increases inequality (rent-seeking effect).

H_{19}: The aid amount of the donor increases corruption (rent-seeking effect).

CHAPTER 3

METHODOLOGY

This chapter aims to establish models for measuring the determinants and effects of the foreign aid of China, Japan, and South Korea through the conceptual frameworks, which are discussed in Chapter 2.

3.1 Research Approach

This research relies on quantitative methodology. Specifically, panel data analysis for Model I-1, correlation analysis for Model I-2, and OLS regression for Model II were adopted. In Model I-1, since the study covers cross-sectional dimensions over time and countries, the panel data analysis was considered the most appropriate in the sense that this can repeat measures of one or more variables of one or more object. The advantage of this statistical method is that individual dynamics by country and time can be effectively observed.

Model I-2 focuses on the donor country's aid amount and the determinants over time. Initially, time-series data analysis was attempted, but the t-values were not properly displayed due to an insufficient number of data, etc. Correlation analysis was utilized instead. Despite its limitation in interpreting the causal relationship, correlation analysis still can measure and identify the associations between two variables.

In Model II, OLS regression, as one of the simplest linear regressions, was used. The relationship between the donor's ODA average amounts to the recipient country and the geometric average of the change of each dependent variable was tested. Geometric average can reflect a central tendency during a certain period and measure it more accurately in terms of fluctuations. To actualize these three models, statistical package STATA 13.1 was utilized.

3.2 Determinants of Foreign Aid Expenditure (Model I)

3.2.1 Pull Factors of Foreign Aid Expenditure (Model I-1)

3.2.1.1 Decomposition of Independent Variables

As explained in the conceptual framework I-1, the pull factors of foreign aid from recipient countries are the GDP of the recipient countries, the population of the recipient countries, the volume of FDI and trade with the donor, the energy production of the recipient countries, the governance of the recipient countries, the HDI in the recipient countries, and the income level (or GDP per capita) of the recipient countries.

1) GDP

The GDP of the recipient countries refers to the GDP at the purchaser's prices of the recipient country, which sum up the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

2) Population of Recipient Countries

The population of the recipient countries is the number of all residents midyear in the territory regardless of legal status or citizenship except for refugees not permanently settled in the country of asylum.

3) Trade with donor

Trade with the donor is the recipient countries' sum of export and import of goods and services with each donor. The data were extracted from the UN COMTRADE database using Standard International Trade Classification.

4) FDI from Donor

FDI here is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital from the donor. The data were obtained from the OECD database.

5) Energy Production

There are various types and sources for measuring energy or mineral deposits. However, the comprehensive and consistent way of measuring them in a broader concept would be "total primary energy production", which is available at the World Bank website. The energy production of the recipient countries refers to

forms of primary energy, such as petroleum (crude oil, natural gas liquids, and oil from nonconventional sources), natural gas, solid fuels (coal, lignite, and other derived fuels) and combustible renewables and waste, and primary electricity, all converted into oil equivalents.

6) Governance

Governance can be represented by the Worldwide Governance Indicator (WGI). It aggregates six dimensions of voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. However, there is no united index in the WGI. Therefore, it is necessary to judge and choose one of them after seeing which one reflects the intention of this study the most.

Since it is necessary to measure the level of the governance of a government, “government effectiveness” was used. It captures the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The estimation of government effectiveness gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

7) HDI

The degree of social development can be represented by HDI from United Nations Development Programme (UNDP), which summarizes the average achievement of human development such as long and healthy lives, education and a decent standard of living ranging from 0 to 1.

8) Income Level (or GDP per capita)

Income level is exchangeable with GDP per capita here. GDP per capita is the gross domestic product divided by midyear population. The GDP is the sum of the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.

3.2.1.2 Dependent Variable

The dependent variable of Model I-1 is the amount of foreign aid. It is necessary to be cautious about the concept of foreign aid here because there are several concepts of this. The most widely accepted concept is ODA. The term is defined according to the most developed donor countries. According to the OECD-DAC, a club of the richest countries, ODA refers to the official flows to the DAC list of ODA recipients and to multilateral institutions which are: 1) provided by official agencies, including state and local governments, or by their executive agencies; and 2) each transaction which: a) is administered with the promotion of the economic development and welfare of developing countries as its main objective; and b) is concessional in character and conveys a grant element of at least 25% (calculated at a discount rate of 10 per cent).

Japan and South Korea's foreign aid follows this concept. Among disbursement and commitment, commitment is adopted to balance the concept of Chinese aid, which is explained later. The amount of ODA of Japan and Korea is available in the database of the OECD-DAC). The database offers accumulated aid figures of member countries in a time series format.

In the case of Chinese foreign aid, the definition is tricky. There are some official statistics labeled as FEC. According to the China Trade and External Economic Statistical Yearbook (China Statistics Press, 2008: 801), the activities include 1) overseas civil engineering construction projects by foreign investors; 2) overseas projects financed by the Chinese government through its foreign aid programs; 3) construction projects of Chinese diplomatic missions, trade offices and other institutions stationed abroad, and so on. It provides some annual figures by recipient countries. However, these statistics cover very broad economic activities, including overseas projects funded by foreign countries as well as foreign aid. Therefore, it is difficult to rely on FEC in this study.

An alternative is to find other researchers' estimations. Some work has been carried out by authors such as that of Wolf Wang and Warner. (2013) and Brautigam (2009) on the estimation of the scale of China aid. To be selected, the data should be comprehensive and consistent. In light of this, Wolf et al. (2013) study satisfies the criterion in the sense that they review carefully Chinese foreign aid,

which has been obtained through collective work including research on media reports revealing Chinese foreign aid statistics in a systematic manner. The concept is close to foreign aid commitment. Hence, this study employs their work.

3.2.2 Push Factors of Foreign Aid Expenditure (Model I-2)

3.2.2.1 Decomposition of Independent Variables

The independent variables for the push factors from a donor's side are the GDP per capita of the donor, the trade and financial openness of the donor, the energy consumption of the donor, and foreign aid spending of the previous year.

1) GDP per capita

GDP per capita can be calculated by dividing GDP by the midyear population of the donor country.

2) Trade Openness

The trade openness of the donors can be measured using the trade to GDP ratio of the donor (Lim and McNelis, 2014: 4).

3) Financial Openness

The financial openness of the donors can be measured using the FDI net inflow to GDP ratio of the donor. Data accessibility was considered in adopting this concept for this study. According to the World Bank, FDI inflows are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net outflows of investment from the reporting economy to the rest of the world and is divided by GDP.

4) Energy Consumption of Donor

Energy consumption here is the donor's "total primary energy consumption" per capita, which was defined in the World Bank website. It refers to the use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.

5) Previous Year's Aid Amount

The previous year's spending is the aid amount of the donor during the previous year. It was considered to test the incremental decision-making factor.

3.2.2.2 Dependent Variable

The dependent variable, the amount of foreign aid from a donor country to a recipient country, is the same as in section of 3.2.1.2. The Japanese and South Korean ODA commitment follows the OECD-DAC definition. Chinese aid commitment has been estimated by some scholars (Wolf et al., 2013).

3.3 Effects of Foreign Aid Expenditure (Model II)

3.3.1 Decomposition of Independent Variables

3.3.1.1 Foreign Aid

The amount of foreign aid of each donor with an average amount of ODA (aid in the Chinese case) to the selected recipient country is an independent variable. In order to run an OLS regression, each mean ODA (or aid) of the donors to their respective partner country was set up.

3.3.1.2 Control Variables

Macro socio-economic variables such as GDP are to be considered as control variables if there is a clear statistically-significant relation found between the major independent variable and the dependent variable.

3.3.2 Decomposition of Dependent Variables

The dependent variables of each of the different models are FDI, trade, corruption, and inequality.

3.3.2.1 FDI Expansion

The expansion of FDI here is the geometric average of net FDI inflow change from a donor to the recipient country during the donor's ODA offering period.

3.3.2.2 Trade Promotion

Trade volume is the geometric average of the sum of exports and imports of the recipient country with a donor change during the donor's ODA period.

3.3.2.3 Infrastructure Development

The degree of development here is defined as the geometric average of the percentage change of the paved road in the recipient country. Paved roads are defined as those surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones, as a percentage of all the country's roads, measured in length. The data were extracted from the World Bank database and were originally produced by International Road Federation, World Road Statistics.

3.3.2.4 Corruption Index

The corruption Index is the geometric average of the corruption index change of the recipient country during the donor's ODA offering period. Specifically, the World Bank's Country Policy Institutional Assessment (CPIA) rates transparency, accountability, and corruption in the public sector (1=low to 6=high), which are available from World Bank's Development Indicators. Transparency, accountability, and corruption in the public sector are assessed in terms of the extent to which the executive can be held accountable for his or her use of funds and for the results of the actions by the electorate and by the legislature and judiciary. They are also evaluated according to the extent to which public employees within the executive are required to account for administrative decisions, use of resources, and results obtained. The three main dimensions assessed here are the accountability of the executive to oversee institutions and public employees for their performance, access of civil society to information on public affairs, and state capture by narrow vested interests.

3.3.2.5 Inequality

Inequality here is summarized according to the geometric mean of Gini coefficient index change of the recipient country, which sees the distribution of income or consumption expenditure among individuals or households in an economy. It varies from 0 to 1, and a higher figure represents a more unequal distribution of income.

3.4 Model Specifications

3.4.1 Determinants of Foreign Aid Expenditure (Model I)

Model I has two sub-models; Model I-1 for the pull factors and Model I-2 for the push factors. Model I-1, the amount of foreign aid from a donor to a recipient country, is a function of the GDP of the recipient countries, the population of the recipient countries, the volume of FDI and trade with the donor, the energy production of the recipient countries, the governance of the recipient countries, and the degree of social development. In the setting of panel data analysis, both fixed effect and random effect were tested. Based on the above mentioned conceptual framework and variables, formula (1) of Model I-1 for the determinants of the pull factors of foreign aid is shown below:

$$\text{Foreign aid}_{it} = \alpha + \beta_1 \text{GDP}_{it} + \beta_2 \text{Population}_{it} + \beta_3 \text{Trade}_{it} + \beta_4 \text{FDI}_{it} + \beta_5 \text{Energy Production}_{it} + \beta_6 \text{Governance}_{it} + \beta_7 \text{HDI}_{it} + \beta_8 \text{Income level}_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

i means the individual recipient country and *t* means year. α means constant, β represents unknown parameters, μ means error term from fixed effect and ε means error term.

In Model I-2, correlation analysis was adopted. The amount of foreign aid was compared with the GDP per capita of the donor, the trade and financial openness of the donor, the energy consumption of the donor, and foreign aid spending of the previous year individually. Formulas (2) to (7) explores the determinants of the push factors of foreign aid, as indicated below:

$$\text{Correlation } (\Delta\text{Foreign aid}_t, \Delta\text{GDP}_t) \quad (2)$$

$$\text{Correlation } (\Delta\text{Foreign aid}_t, \Delta\text{GDP per capita}_t) \quad (3)$$

$$\text{Correlation } (\Delta\text{Foreign aid}_t, \Delta\text{Trade openness}_t) \quad (4)$$

Correlation (ΔForeign aid_t, ΔFinancial $openness_t$) (5)

Correlation (ΔForeign aid_t, ΔEnergy $consumption_t$) (6)

Correlation (ΔForeign aid_t, ΔODA_{t-1}) (7)

In the formulas, *t* means year and Δ means the first difference.

3.4.2 Effects of Foreign Aid Expenditure (Model II)

The dependent variables are the geometric mean of the change of FDI inflows from the donor, the trade volume with the donor, corruption, and the inequality of the recipient countries to reflect conceptual framework II. Formulas (8) to (12) reflect the respective effects of foreign aid as follows:

$$\Delta FDI_{i \text{ geometric average}} = a + b_1 \text{ Foreign } aid_{i \text{ average}} + b_n \Delta \text{Control variables}_{i \text{ geometric average}} + e \quad (8)$$

$$\Delta Trade_{i \text{ geometric average}} = a + b_1 \text{ Foreign } aid_{i \text{ average}} + b_n \Delta \text{Control variables}_{i \text{ geometric average}} + e \quad (9)$$

$$\Delta \text{Infrastructure development}_{i \text{ geometric average}} = a + b_1 \text{ Foreign } aid_{i \text{ average}} + b_n \Delta \text{Control variables}_{i \text{ geometric average}} + e \quad (10)$$

$$\Delta Corruption_{i \text{ geometric average}} = a + b_1 \text{ Foreign } aid_{i \text{ average}} + b_n \Delta \text{Control variables}_{i \text{ geometric average}} + e \quad (11)$$

$$\Delta Inequality_{i \text{ geometric average}} = a + b_1 \text{ Foreign } aid_{i \text{ average}} + b_n \Delta \text{Control variables}_{i \text{ geometric average}} + e \quad (12)$$

i means the individual recipient country. *a* means constant, and b represents unknown parameters. Δ means the first difference and e means the error term.

3.5 Data Collection

Considering the characteristics of the vast variety of worldwide political, social, and economic indicators, this study relies on secondary data. The major sources of the datasets are the World Bank, the OECD, or other governmental and academic sources. The ODA of Japan and South Korea can be obtained from the database of the OECD. That of China will be mainly estimated from Wolf et al. (2013) work due to the reasons stated in the section 3.2.1.2. The World Bank database was utilized especially for some socio-economic indicators including population, GDP, GDP per capita, trade volume, total FDI, and so on. Table 3.1 summarizes the definitions and sources of data that are discussed.

Table 3.1 Definitions and Sources of Data

Variable	Definition	Source of data
ODA	The official flows to the DAC list of ODA recipients and to multilateral institutions	OECD (for Japan and South Korea) and Wolf et al. (2013) (for China)
GDP	Gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products	World Bank
Population	Number of all residents midyear in the territory regardless of legal status or citizenship except for refugees not permanently settled in the country of asylum	World Bank
Trade	The sum of exports and imports of goods and services	UN COMTRADE
FDI	The sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital	OECD

Table 3.1 (Continued)

Variable	Definition	Source of data
Energy production	Primary energy - petroleum (crude oil, natural gas liquids, and oil from nonconventional sources), natural gas, solid fuels (coal, lignite, and other derived fuels), and combustible renewables and waste--and primary electricity, all converted into oil equivalents	World Bank
Governance	Government effectiveness, which captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies	World Bank
HDI	Average achievement in human development such as long and healthy lives, education and a decent standard of living	UNDP
GDP per capita	GDP divided by the midyear population	World Bank
Trade openness	Trade to GDP ratio	UNCOMTRADE and World Bank
Financial openness	FDI net inflows to GDP ratio	OECD and World Bank
Energy consumption	Use of primary energy per capita before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.	World Bank
foreign aid_{t-1}	The ODA (aid in the case of China) amount in the previous year	OECD and WTO (2013); Wolf, Wang and Warner (2013)

Table 3.1 (Continued)

Variable	Definition	Source of data
Infrastructure development	The percentage of the paved road	World Bank
Corruption	CPIA transparency, accountability, and corruption in the public sector rating	World Bank
Inequality	Gini coefficient index, which sees the distribution of income or consumption expenditure among individuals or households in an economy	World Bank

3.6 Estimation Procedure and Method

Each equation was tested independently using panel data analysis (Model I-1), correlation analysis (Model I-2), and OLS regression (Model II). In the case of the panel data analysis, the fixed effect and random effect were reviewed and the Hausman test sorted out which one was more suitable. In the correlation analysis, the delta value of the original data was used to examine the correlations properly. In Model II, OLS regression was used after checking the assumptions.

CHAPTER 4

THE ANALYSIS OF FOREIGN AID POLICY AND FOREIGN AID EXPENDITURE

Before moving on to the empirical estimation section of the present study, an analysis of foreign aid of the three Asian donor countries and their aid expenditure patterns will offer a better understanding of the results. A brief discussion of basic statistics and foreign aid history serves this purpose.

4.1 Descriptive Statistics

4.1.1 China

In various points, China presents a unique foreign aid system. It was founded on much different motivations from Western countries and has not necessarily followed them. Its scale and aid system are described in detail below.

4.1.1.1 Total Amount

Traditionally, the details of Chinese foreign aid figures have been confidential. They usually do not provide details by region, type or sector (Ministry of Commerce, 2007: 875). Therefore, there has been much speculation regarding the total amount and portion allocated in China's aid.

According to Brautigam (2009: 6, 165-317), they are estimated to have spent a total of 30 billion USD (including 13 billion USD in grants) in aid since the 1950s and, specifically, 9.8 billion USD during 2002-2007. According to Lum et al. (2009), the Chinese government is estimated to have offered 66.7 billion USD from 2002 to 2007. The most recent studies such as that of Wolf et al. (2013: 6, 18) estimated Chinese aid up to 850 million USD, including loans. According to the authors, Chinese aid commitment to 93 recipient countries amounted to 189.3 billion USD in 2011 and was equivalent to around 3 percent of China's total GDP.

In 2008, Chinese then Premier Wen Jiabao announced at a high-level meeting on the Millennium Development Goals that 206.5 billion CNY (including 90.8 billion CNY free aid) was been provided by the end of June 2008 (Embassy of the People's Republic of China in the United State of America, 2008). In 2011, a few more details were published. The Chinese government released its first "White Paper on Foreign Aid to quench others' transparency concerns. It was written that 256 billion CNY (around 39.6 billion USD) of the total amount of aid from 1950 to 2009 was offered (State Council, 2011). This was the most recent and comprehensive explanation of Chinese aid from a Chinese official site. In 2014, there was another White Paper released focusing on the development of China's aid policies during 2010-2014 (State Council, 2014). Table 4.1 summarizes the estimations of the scale of China's aid.

Table 4.1 Estimations of China's Aid Volume

	Bruatigam (2010)	**Lum et al. (2009)**	**State Council (2011)**	**Wolf et al. (2013)**
Period	2003-2009	2002-2007	1950-2009	2001-2011
Amount	9.8 billion USD	66.7 billion USD	256 billion CNY (equivalent to 39.6 billion USD)	671.1 billion USD
Remarks		Defined as People's Republic of China aid	Official announcement	Pledged China aid

Source: Brautigam (2009: 317); Lum et al. (2009: 6); State Council (2011); and Wolf et al. (2013: 19)

In terms of region, the State Council (2011) mentioned that Africa accounted for 45.7% of the total, followed by Asia (32.8%), Latin America (12.7%) and Oceania (4.0%), as shown in Table 4.2.

Table 4.2 Regional Allocation of China's Aid

	1950-2009
	Africa (45.7%), Asia (32.8%), Latin America (12.7%), Oceania (4.0%), Others (4.8%)

Source: State Council, 2011.

In terms of Chinese aid modality, there are some differences between that of the Chinese and the conventional ODA modalities in the OECD-DAC (Brautigam, 2009 quoted in Tang, Ma, and Li, 2013: 18). Chinese foreign aid consists of three types: aid grants, interest-free loans, and concessional loans. Grants are usually used in building hospitals, schools, sanitation facilities, and other small projects for social development. Interest-free loans are used for bigger projects for constructing public facilities. The total period of the loans is basically 20 years. It includes 5 years of use, 5 years of grace period, and a 10-year repayment period. Concessional loans are used for large and medium-sized projects. The annual interest rate is 2-3 % and it lasts for 15-20 years, including a 5 to 7 year grace period. There are some other foreign aid tools such as preferential buyer's credit, China-Africa development funds, and African SME development loans. According to Tang et al. (2013: 16), the proportion of loans (62.3% in 2010-11) is bigger than grants (37.8% in the same period). In terms of composition, grants make up 41.4%, interest-free loans 29.9%, and concessional loans 28.7% (Tang et al., 2013).

As for aid sectors, agriculture, industry, economic infrastructure, public facilities, education, medical/health care, and newly-proposed cleaning energy have been covered by its aid. Among those areas, infrastructure has been reported as a major area (Lancaster, 2007). According to Wolf et al. (2013: 22) database and their own category, natural resource development consists of 40%, infrastructure 40%, and others 18% of the total of China aid.

4.1.1.2 Brief History

Even though China's foreign aid has only recently been spotlighted, it has had a long history beginning in the 1950s, contrary to what many people believe. Reflecting on some experts' opinions (Li, 2008 and Brautigam (2009) and the present study, Chinese aid history can be categorized into four stages: Phase I (1950-1974), Phase II (1974-1990), and Phase III (1991-2000), Phase IV (2001-present).

Phase I (1950-1974) is the stage of ideological aid to obtain political support from the outside. During this period, the environment external to China was not so friendly because the Cold War was in progress. Moreover, there was even diplomatic competition across communist lines with the Soviet Union. There was also serious diplomatic competition between China and Taiwan, so the establishment of official diplomatic ties was normally followed by aid assistance (Brautigam, 2008: 8). Former Chinese Premier Zhou Enlai's eight principles, which were announced when he traveled to Africa in 1964, were produced in this context. These "Eight Principles for China's Aid to Foreign Countries" can be summarized as follows: 1) equality and mutual benefit, 2) respect for sovereignty, 3) form of interest-free or low-interest loans, 4) support for recipient countries' self-sufficiency, 5) efficient aid, 6) provision of best equipment, vii) transfer of required techniques, and viii) the same treatment between Chinese experts and locals. In order to attract attention from the third world including African, Asian, and Latin American countries, and to break through international isolation, China declared the principles focused on equality and mutual benefit in the field of foreign aid.

After moving to Phase II (1974-1990), China began to open up its economy in the 1980s, and its aid goal also started to take on a perspective that was more economic in nature. Since they made some adjustments in their domestic economic policies as well as their aid projects, Beijing announced a relatively small amount of new projects (Li, 2008: 3, Brautigam, 2008: 10). For example, when then Chinese Premier Zhao Ziyang visited Africa in 1982, he said that China would diversify its aid forms, which implied a change from unilateral support to mutual economic cooperation (Brautigam, 2008: 8). The Chinese government recognized the benefit of the spillover effect between external aid projects and domestic economic growth.

In the 1990s of Phase III (1991-2000), China refocused its relationship with developing countries facing the Tiananmen Square incident in 1989 and checkbook diplomacy competition with Taiwan in the 1990s. Even while expanding its aid volume, Beijing still had considered the effectiveness of its foreign aid toward underdeveloped countries. On a trip of Former Premier Li Peng to six African countries in 1997, he made a comment that reflected those concerns: "China's basic policy of providing aid to Africa has not changed (but)…China's policy has moved from aid donation to economic cooperation for mutual benefit" (quoted in Brautigam, 2008: 12).

In Phase IV (2001-present), China apparently seems to have recognized itself as a big country in terms of competing with other developed donors. For instance, they started to hold the Forum on China-Africa Cooperation in October 2000 for the first time to take hegemony to the area of international development. Many experts interpreted the purpose of the establishment of this meeting as being to solidify economic ties with developing countries including obtaining a supply of natural resources as well as to show its influence as a responsible player.

Table 4.3 China's Aid Characteristics by Phase

(Unit: 100 Million CNY, %)

Phase	Year	Foreign aid	Total financial expenditure	Percentage of foreign aid in foreign expenditure	GNP	Percentage of foreign aid in GNP
I	1953-1978	18.49	536.34	3.45	1,869.77	0.99
II/III	1979-2000	20.01	4,740.47	0.42	32,901.32	0.06
IV	2001-2012	99.95	56,829.48	0.18	269,368.76	0.04

Source: Tang et al., 2013: 15.

4.1.2 Japan

4.1.2.1 Total Amount

According to official data from the OECD-DAC database, the total amount of Japanese ODA net disbursement was 323.6 billion USD at current prices during 1966-2013 and ODA commitment was 509.1 billion USD (http://www.oecd-ilibrary.org/development/). After its peak in 1997, the volume of Japanese ODA stagnated. This trend remained after the Tohoku Great Earthquake in 2011 and has been reviving since adopting some proactive economic policies to break through the stagnation. Table 4.3 shows Japan's ODA scale by year.

Table 4.4 Japan's ODA Scale by Year

(Unit: Million USD, current prices)

Year	**1970**	**1980**	**1990**	**1995**	**2000**	**2005**	**2010**	**2013**	**1966-2013**
Commitment	593	4,435	12,072	22,023	17,113	19,436	21,824	24,660	509,058
Net disbursements	458	3,353	9,069	14,489	13,508	13,126	11,058	11,582	323,555

Source: OECD-DAC database

When it comes to regional aid allocation, Asia was the destination of Japanese aid (70%) and Africa was the second largest destination in 2012. Japanese Asia-oriented aid has been enhanced, while the proportion going to the Middle East has been reduced. Table 4.5 summarizes the ODA by region.

Table 4.5 Japan's ODA by Region

(Unit: %)

Year	**2008**	**2009**	**2010**	**2011**	**2012**
Africa	15	17	17	25	17
Asia	58	69	65	61	70
America	6	6	7	6	4
Middle East	16	2	3	4	6
Oceania	1	1	1	1	1
Europe	4	4	6	3	2
Total	100	100	100	100	100

Source: OECD, 2014: 95.

In terms of sectors, economic infrastructure and services accounted for 41%, followed by social infrastructure and services (25%), the multi-sector (11%), and the production sector (9%) for the 2011-2012 average (OECD, 2014, p. 97). Compared to that of 2001-2005 and 2006-2010, the proportion of social and economic infrastructure and services has increased, while the proportion of action related to debt has decreased. Table 4.6 shows Japanese ODA by sector.

Table 4.6 Japan's ODA by Sector

(Unit: %)

Sector	**2001-2005 average**	**2006-2010 average**	**2011-2012 Average**
Social infrastructure and services	21	24	25
Economic infra and services	30	35	41
Production sectors	9	9	9
Multi-sector	4	6	11
Commodity and programme aid	1	5	3
Action related to debt	27	13	-
Others	7	8	10
Total	100	100	100

Source: OECD, 2014: 97.

In terms of ODA categories, gross bilateral ODA accounted for 77% of the total, while the proportion of gross multilateral ODA was 23% in 2012. Among bilateral ODA, investment projects made up 44%, followed by administrative costs (4%), general budget support (1%), etc. (OECD and WTO, 2013: 94).

4.1.2.2 Brief History

Japan has also had a long history of foreign aid. According to some of the research and the present research, Japan's aid history can be categorized into three stages: Phase I (1954-1976), Phase II (1977-2000), and Phase III (2001-present) (Ohno, 2013: 69; Hirono, 2013: 32).

In Phase I (1954-1963), Japan began to offer development assistance by joining the Colombo Plan in 1954 after re-establishing its economy from World War II. Based on those experiences, Japan launched the Overseas Technical Cooperation

Agency (OTCA) and the Overseas Economic Cooperation Fund in 1961. Since becoming a founding member of the OECD-DAC in 1961, Japan has followed the concept of the ODA and has invested a lot of money in recipient countries. After the 1960s, trade promotion and securing energy and raw materials (1970s) became important issues. The ODA had been linked to those economic interests during this period (Ohno, 2013).

Phase II was during 1977-2000. The ODA amount was increased until the mid-1990s and became a top donor. In the 1990s, Japan tried to improve its ODA policy and institutional framework by formulating the first ODA Charter in 1992 and the Medium-Term Policy on ODA in 1999 (Ohno, 2013: 71). These documents clearly mentioned four principles: the support for the self-help of partner countries, humanitarian assistance, interdependence, and environmental conservation (Government of Japan (GOJ), 1992 cited in Ohno, 2013). After the Gulf War, the Japanese government diverted its attention to the importance of global peace and security and sending Self-Defense Forces personnel on peace-keeping operations.

During Phase III (2001-present), Japanese ODA has been steadily declined due to economic stagnation and increased fiscal deficits (Hirono, 2013: 31). For instance, Japan's ODA budget faced more than a 10% cut in 2002 compared to the previous year (Ohno, 2013: 71). The new ODA Charter in 2003 made the goal of Japan's ODA clear - contributing to the peace and development of the international community and to help Japan's own security and prosperity, and it also suggested five detailed policies: "1) supporting self-help efforts of developing countries, 2) incorporating human security perspectives, 3) assurance of fairness, giving consideration to vulnerable groups, iv) utilizing Japan's experience and expertise, and partnership and collaboration with the international community" (GOJ, 2003 quoted in Ohno, 2013: 74). Some structural changes occurred during this period. In 2006, the Overseas Economic Cooperation Council (OECC), which is chaired by the Prime Minister and includes cabinet members, was established. In 2008, the new Japan International Cooperation Agency (JICA) was launched, merging the function of ODA loans from Japan Bank for International Cooperation (JBIC) and a part of the grant aid from the MOFA. In 2011, the instrument of private sector investment finance, which offers loans and equity investments to private companies and special purpose companies for the implementation of projects, was added to the JICA (Ohno, 2013: 77).

4.1.3 South Korea

4.1.3.1 Total Amount

The total amount of South Korean ODA net disbursement was 12.4 billion USD at current prices during 1987-2013 and its ODA commitment was 20.1 billion USD during 1987-2013 (http://www.oecd.org/dac/). Table 4.7 demonstrates the trend of South Korea's rapidly-increasing aid volume both in commitment and net disbursements.

Table 4.7 South Korea's ODA Scale by Year

(Unit: Million USD, current prices)

Year	**1990**	**1995**	**2000**	**2005**	**2010**	**2013**	**1987-2013**
Commitment	40	237	325	772	1,996	2,646	20,080
Net disbursements	61	116	212	752	1,174	1,755	12,418

Source: OECD-DAC database

In the case of bilateral ODA allocation by region, Asia has ranked top and the aid allocation to Asia has been steadily increased. Africa ranks the second and its proportion has fluctuated. The proportion of the other regions is not that high. Table 4.8 shows its regional allocation.

Table 4.8 South Korea's ODA by Region

(Unit: %)

Year	**2006**	**2007**	**2008**	**2009**	**2010**
Africa	14	15	21	18	16
Asia	49	54	56	58	67
America	7	12	14	10	8
Middle East	20	15	6	4	4
Oceania	-	1	1	-	1
Europe	9	4	3	9	5
Total	100	100	100	100	100

Source: OECD, 2012: 105.

In terms of sector, the proportion of economic infrastructure and services has been steadily increased, while that of social infrastructure and services has fluctuated. South Korea's proportion of the other sectors is not very high. Table 4.9 summarizes South Korean ODA by sector during 1999-2010.

Table 4.9 South Korea's ODA by Sector

(Unit: %)

Sector	**1999-2003 average**	**2004-2008 average**	**2009-2010 average**
Social infrastructure and services	49	52	40
Economic infra and services	37	32	47
Production sectors	5	7	5
Multi-sector	3	2	5
Commodity and programme aid	-	-	-
Action relating to debt	-	-	-
Others	5	7	3
Total	100	100	100

Source: OECD, 2012: 107.

In terms of ODA main categories, gross bilateral ODA accounted for 77% of the total, while the proportion of gross multilateral ODA was 23% in 2010. Among bilateral ODA, investment projects made up 53%, followed by administrative costs (3%), etc. (OECD, 2012: 104).

4.1.3.2 Brief History

Due to its relatively short period, South Korean aid history can be classified into three phases: Phase I (1987-1997), Phase II (1998-2005), and Phase III (2006-present). Officially South Korea began its aid by providing a training program for officials from other developing countries in 1968, but it is usually thought that its main aid activities began only after the late 1980s.

In Phase I (1987-1997), South Korea's economy grew rapidly. A huge current account surplus occurred in the late 1980s (Ministry of Finance and Economy, and the Export-Import Bank of Korea, 2007: 36). Their enhanced reputation through the 1986 Seoul Asian games and the 1988 Seoul Olympics also added pressure to

contribute to the international community, as South Korea also had benefited from the help of the international community. To accommodate those demands, the South Korean government established the Economic Development Cooperation Fund (EDCF) in 1987 and the Korea International Cooperation Agency (KOICA) in 1991.

During Phase II (1998-2005), Seoul had to adjust the directions and efficiency of foreign aid after experiencing the Asian financial crisis in the late 1990s. Only a few new projects were launched in the early 2000s. It faced the dilemma of having to accept budget constraints, while still continuing to show its presence in the aid arena. That was one of the major reasons why the Korean government preferred small social projects to huge economic infrastructure constructions during this time.

Phase III (2006-Present) represents a new movement for South Korean aid. As the Korean economy recovered gradually, Seoul began paying more attention to relatively undeveloped aid environments such as Africa. Under this backdrop, the Korea-African Forum led by Ministry of Foreign Affairs and Trade (MOFAT) was launched in 2006. In the same year, the Korea-African Economic Cooperation (KOAFEC) was established by the Ministry of Finance and Economy (currently, the Ministry of Strategy and Finance (MOSF)). The ROK has also tried to promote the quality and quantity of its foreign aid by reflecting on previous trials and errors. South Korea upgraded its quality of foreign aid by establishing the Law of Cooperation of International Development and joining OECD DAC in 2010. At that time, the South Korean government announced its ambitious target by increasing its ratio of ODA/GDP from 0.07% (approximately 1.0 billion USD) to 0.25% (approximately 3.3 billion USD) by 2015 (OECD, 2012: 46). Considering the ODA/GNI ratio in 2013 (0.13%) (http://www.oecd.org/dac/korea.htm), the target was not likely to be attained in 2015. However, it is still notable that the South Korean government has scaled up the aid amount, even though that of many other donors has stagnated.

4.2 Aid System and Policy

4.2.1 China

The State Council is the highest authority for making major decisions regarding foreign aid policy (Lancaster, 2007: 3). Under the coordination of the

council, the Ministry of Commerce (MOFCOM) is in charge of governing China's aid program including zero interest loans and grants. To support this program, the Ministry of Finance (MOF) in consultation with MOFCOM is responsible for preparing the foreign aid budget. The Ministry of Foreign Affairs (MOFA) is in charge of China's foreign policies and embassies in the region. The export-import bank (Exim Bank) of China covers concessional loan financing. Figure 4.1 shows the structure of the Chinese foreign aid system (Brautigam, 2009: 108). The other sources for information on the Chinese aid system are also similar to this figure in terms of overall structure (Li, et al., 2012: 17; Lim, 2013: 128).

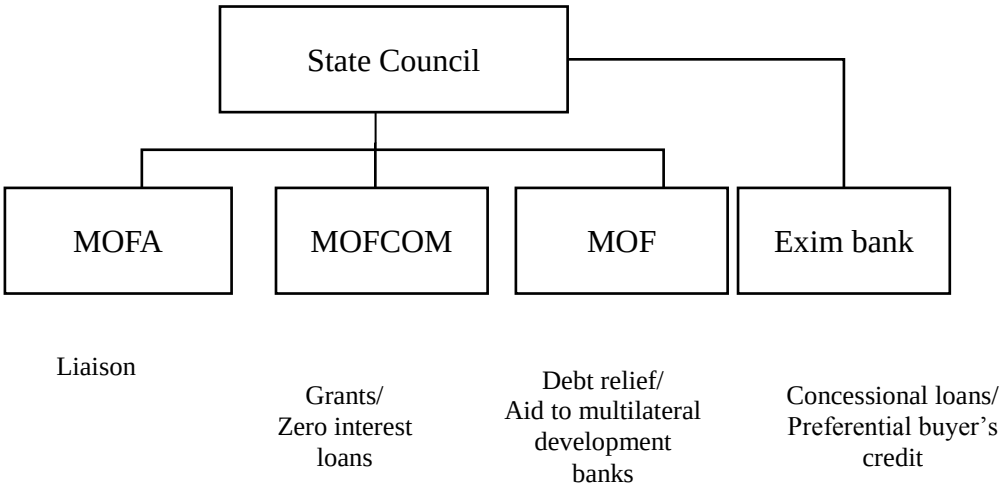

Figure 4.1 Governance of China's Foreign Aid
Source: Brautigam, 2009: 108.

4.2.2 Japan

After 2008, important restructuring of Japan's aid system was undertaken. The Japanese government merged some components of the JBIC with the previous Japan International Cooperation Agency (JICA) and made it the new JICA, which has been responsible for grants, loans, and technical cooperation as shown in Figure 4.2. In Japan, there are many other ministries that are involved in ODA activities. Among them, the MOFA takes a role of central coordination with the support of the JICA under the coordination of the OECC. The MOF covers the cooperation with multilateral development banks such as the International Monetary Fund and the

Asian Development Bank. The Ministry of Economy, Trade and Industry (METI) also approve the JICA loan budget along with the MOF.

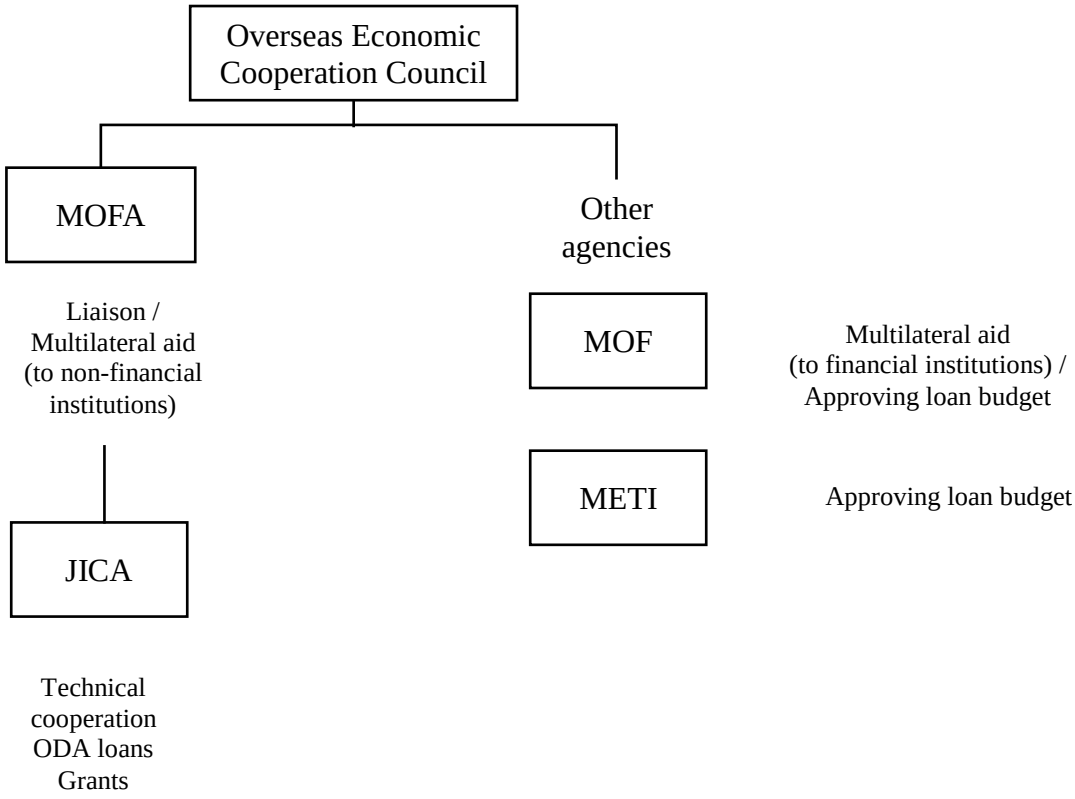

Figure 4.2 Governance of Japan's ODA

Source: OECD, 2012: 51.

4.2.3 South Korea

As shown in Figure 4.3, the South Korean foreign aid architecture has two axes under the coordination of the Committee for International Development Cooperation (CIDC) of the Office of Prime Minister. One axis is comprised of the MOFA and KOICA. The MOFA is in charge of grants and multilateral aid to non-financial institutions, while the KOICA implements the grants of the MOFAT. The other axis is the MOSF and the Exim Bank of Korea. The MOSF is responsible for concessional loans and multilateral aid to international financial institutions. The Exim Bank covers concessional loans under the supervision of the MOSF.

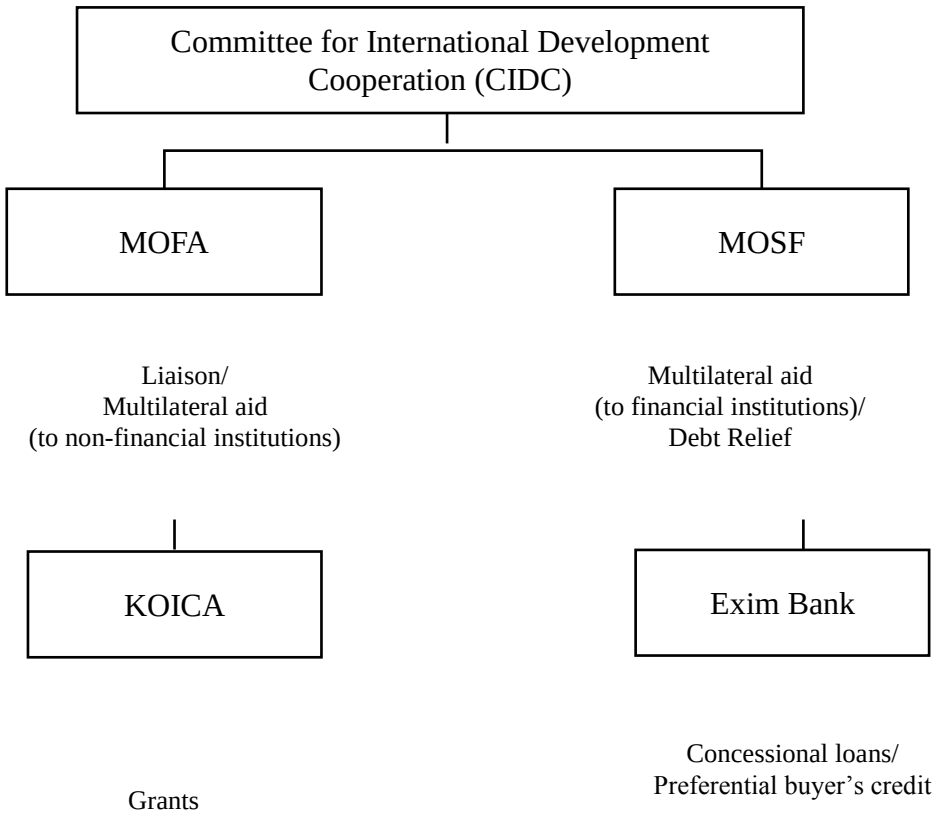

Figure 4.3 Governance of South Korea's ODA

4.3 Comparisons

4.3.1 Aid Amount and Regional Distribution

Based on the previous discussion on China aid, it is clear that China has been scaling up its aid volume from various research sources. The estimations of the scale of China's aid depending on the definition, period, and, methodology vary. The Chinese official source mentions 39.6 billion USD during 1950-2009. However, it goes up to 671 billion USD in commitment terms as elaborated in section 4.1.1.1. In the case of Japan, it has played an influential role in the ODA community as a major donor. ODA commitment during 1960-2014 was 509.1 billion USD. The volume of South Korea's aid was relatively small, but it has been rapidly increasing. ODA commitment during 1987-2013 was 20.1 billion USD.

China's largest aid destination is Africa (45.7%), followed by Asia (32.8%), Latin America (12.7%), and Oceania (4.0%) (State Council, 2011). Japan and South

Korea have placed more emphasis on Asia (Japan, 70% of the total, South Korea, 67% of the total). In the case of Japan, Africa (17%) and the Middle East (6%) ranked the second and third respectively in 2012. In South Korea, the second largest region was Africa (16%) and the third one was America (8%). Table 4.10 compares the three donor's aid allocation by region.

Table 4.10 Comparison of Foreign Aid Scale and Regional Allocation

	China	**Japan**	**South Korea**
Total amount	39.6 billion USD (1950-2009, State Council), 671 billion USD * (2001-2011, Wolf et al.)	509.1 billion USD * (1966-2013)	20.1 billion USD * (1987-2013)
Regional allocation	Africa (45.7%), Asia (32.8%), Latin America (12.7%), Oceania (4.0%), Others (4.8%) (1950-2009, State Council)	Asia (70%), Africa (17%), Middle East (6%), America (4%), Europe (3%), Oceania (1%) (2012)	Asia (67%), Africa (16%), America (8%), Europe (5%), Middle East (4%), Oceania (1%) (2010)

Source: State Council, 2011; Wolf et al., 2013 and OECD Database

Note: *Commitment

4.3.2 Aid Governance

In China, under the coordination of the State Council, the MOFCOM is mainly responsible for China's aid program, zero interest loans, and grants (Lancaster, 2007: 3). The MOF (foreign aid budget), the MOFA (China's liaison offices in the region), and the Exim Bank of China (concessional loan) have division of labor. Japan's major ODA agencies are the MOFA and the JICA. After the revamping of the previous JBIC and JICA, the JICA has been in charge of grants, loans, and technical cooperation, as illustrated in the Figure 4.0. The MOFA takes a coordination role with the MOF and the METI under the supervision of the OECC. In South Korea, under the coordination of the CIDC, the MOFA and KOICA take charges of grants. The MOSF and the Exim Bank cover concessional loans and multilateral aid to international financial institutions. Table 4.11 summarizes aid governance in China, Japan, and South Korea.

Table 4.11 Comparison of Aid Governance in China, Japan, and South Korea

	China	**Japan**	**South Korea**
Coordination	State Council	OECC	CIDC
Major agencies	MOFCOM EXIM Bank	MOFA JICA	MOFA, KOICA MOSF, EXIM Bank
Related agencies	MOF	METI, MOF	Other Ministries

Source: Lancaster, 2007, OECD, 2012, and OECD, 2014.

4.3.3 Aid Policy Orientation

China indicated five principles in the White Paper in 2011: 1) helping recipient countries build up their self-development capacity, 2) imposing no political conditions, 3) adhering to equality, mutual benefit, and common development, 4) remaining realistic while striving for the best, and 5) keeping pace with the times and paying attention to reform and innovation (State Council, 2011).

The Japanese ODA emphasizes three goals: i) realizing a prosperous, free, and stable international community, ii) supporting the growth of emerging and developing economies together with the growth of the Japanese economy, and iii) promoting human security and strengthening trust in Japan. At the same time, they promote public-private partnerships and cooperating with Japanese small and medium-sized enterprises (Ohno, 2013: 79).

The South Korean government makes five basic principles clear in Framework Act on International Development Cooperation: 1) reducing poverty in developing countries, 2) improving the human rights of women and children and achieving gender equality, 3) realizing sustainable development and humanitarianism, 4) promoting cooperative economic relations with developing country partners, and 5) pursuing peace and prosperity in the international community (OECD, 2012: 25). Table 4.12 summarizes the three donor countries' aid policy orientation.

Table 4.12 Comparison of the Three Donor's Aid Policy Orientation

	China	Japan	South Korea
Policy orientation	1) Building up self-development capacity, 2) No political conditions, 3) Equality and mutual benefit 4) Remaining realistic while striving for the best, 5) Paying attention to reform and innovation	1) Realizing a prosperous, free, and stable international community 2) Supporting the growth of emerging and developing economies with the growth of the Japanese economy, 3) Promoting human security and strengthening trust in Japan	1) Reducing poverty 2) Improving the human rights 3) Realizing sustainable development and humanitarianism 4) Promoting cooperative economic relations 5) Pursuing peace and prosperity

Source: State Council, 2011; OECD, 2012; Ohno, 2013.

CHAPTER 5

EMPIRICAL RESULTS AND DISCUSSION OF ESTIMATION (MODEL I)

5.1 Model I-1 Specification

Model I-1 represents the determinants of foreign aid from the pull factor side. The results of this model serve to explain which factors affect the allocation of foreign aid expenditure. Table 5.1 to Table 5.3 manifests the mean, standard deviation (SD), and maximum and minimum values of the considered variables in the study.

5.1.1 Summary Statistics

Table 5.1 comprises the summary statistics for China's aid and its determinants. The Chinese aid data only show 4.3 years on average, but the mean of aid (1,958,715) was significantly large compared to that of Japan and South Korea. The mean of the GDP (133,000,000) and population (47,500,000) of China's partners was the highest among the donors. The average level of FDI (358,416) was in between Japan and South Korea. The trade average (6,507,624) was much higher than that of Japan and South Korea. The mean of energy production (85,280) was slightly less than that of Korea, but higher than that of Japan. The mean of governance (-0.62) was the lowest among the three donors. The average of the GDP per capita (2.986) of the recipient countries was the highest. The mean of the HDI (0.5833) was the second highest after South Korea.

Table 5.1 Summary Statistics for Model I-1 (China)

	Mean	S.D.	Min.	Max.	Obs (countries)	Obs (years)
Aid	1,958,715	6,084,660	17	60,400,000	87	4.2989
GDP	133,000,000	288,000,000	361,616	2,480,000,000	84	4.1905
Population	47,500,000	95,800,000	70,542	1,210,000,000	87	4.2989
FDI from donor	358,416	956,672	10	5,168,340	26	2.7308
Trade with donor	6,507,624	12,900,000	1,827	90,000,000	86	4.3372
Energy production	85,280	117,039	256	531,304	29	4.3793
Governance	-0.6175895	0.7284920	-2.4500400	2.2814500	86	4.1047
GDP per capita	2.9860000	5.1357180	0.1080150	52.8705400	84	4.1905
HDI	0.5832547	0.1418163	0.2930000	0.8960000	63	2.5556

Note: * The unit of GDP, trade, FDI, GDP per capita, and China's aid is 1,000 USD.

Table 5.2 illustrates the basic statistics for Japan's ODA. Japan had long years of offering ODA to recipient countries (33.23 years on average) and the ODA volume (67,415 on average) was much larger than that of Korea. When compared with China's aid, the volume was relatively small. The mean of the GDP (49,300,000) and population (31,800,000) of Japan's recipients were the lowest among the three donors. The mean of the FDI (448,292) was higher than that of Japan and South Korea, but average trade (2,659,897) was the second after China. The mean of energy production (62,185) was the lowest. The mean of governance (-0.45) was higher than that of China and South Korea. The average of GDP per capita (2.675) of the recipient countries was less than that of South Korea and China. The mean of the HDI (0.5787) was lower than those of China and Japan.

Table 5.2 Summary Statistics for Model I-1 (Japan)

	Mean	S.D.	Min.	Max.	Obs (countries)	Obs (years)
ODA	67,415	247,498	10	4,344,680	161	33.2298
GDP	49,300,000	255,000,000	8,824	8,230,000,000	158	31.3924
Population	31,800,000	127,000,000	8,160	1,350,000,000	160	33.3937
FDI from donor	448,292	1,423,883	-2,642,888	13,500,000	81	5.6296
Trade with donor	2,659,897	15,100,000	1	343,000,000	134	24.8358
Energy production	62,185	190,092	1	2,432,505	50	32.4800
Governance	-0.4478604	0.6511115	-2.4500400	1.5957100	147	12.7279
GDP per capita	2.6745240	4.0372360	0.0566337	45.2326300	159	31.3270
HDI	0.5786630	0.1430919	0.1910000	0.8300000	141	6.4397

Note: * The unit of GDP, trade, FDI, GDP per capita, ODA is 1,000 USD.

Table 5.3 summarizes the overall characteristics of South Korea's dataset. Compared to the two other donors, the ODA volume (4,800 on average) was small. The ODA period (17.25 years) was shorter than that of Japan (33.23 years). In the case of China, it has had long history of aid, as described in Chapter 4, but the available data were 4.30 years on average. The mean of the GDP and population of South Korea's recipients were in between China and Japan. In terms of FDI and trade, the mean of Seoul's partners (128,339 and 1,948,004 respectively) was the lowest among the three donors. In terms of energy production, the mean of South Korea's case (88,154) was higher than that of China and Japan. The mean of governance (-0.46) was between China and Japan. The average of GDP per capita (2.679) of the recipient countries was almost same as that of Japan and slightly less than that of China (2.986). The mean of the HDI (0.5914) was slightly higher than China's and Japan's cases.

Table 5.3 Summary Statistics for Model I-1 (South Korea)

	Mean	S.D.	Min.	Max.	Obs (countries)	Obs (years)
ODA	4,800	19,922	10	308,700	151	17.2517
GDP	77,000,000	349,000,000	9,365	8,230,000,000	150	16.9400
Population	42,900,000	158,000,000	9,056	1,350,000,000	151	17.2517
FDI from donor	128,339	548,085	-51,593	5,406,049	99	5.5152
Trade with donor	1,948,004	13,500,000	1	256,000,000	117	14.4615
Energy production	88,154	250,067	43	2,432,505	48	16.9167
Governance	-0.4623393	0.6164383	-2.4500400	1.4786600	141	11.4255
GDP per capita	2.6786140	3.3126070	0.0799462	28.0200900	150	16.9600
HDI	0.5913867	0.1353738	0.2740000	0.8300000	134	5.1716

Note: *The unit of GDP, trade, FDI, GDP per capita, ODA is 1,000 USD.

5.1.2 Checking Assumptions

In running the dataset of Model I-1 in STATA, it indicated that the dataset is a "strongly balanced" one. As a panel data set, fixed effect and random effect were reviewed and only those specifications that passed the Hausman test for the endogeneity issue were selected. In this sense, it was assumed that Model I-1 had satisfied the assumptions of the panel data analysis.

5.1.3 Panel Data Analysis Results

Table 5.4 shows the statistical results of Model I-1 for China. In Model I, Specification (1) (random effect) indicates that there is no significant relationship between any of the independent variables and the ODA volume. In Specification (2) (random effect), the GDP of recipient countries and trade with China have a positive relationship with its aid volume. In Specification (3) (random effect), trade with donor has a positive relationship with Chinese aid volume, while governance level shows a negative relationship. In Specification (4) for fixed effect, the FDI from China has a strong positive relationship with Chinese aid volume, while GDP (+) and energy

production (-) also show a relationship with the aid volume at a 10% significance level. In Specification (5) (fixed effect), population has a negative impact and trade with China has a positive one at a 1% significance level, whereas energy production has a positive relationship at a 5% significance level. In Specification (6) (fixed effect), trade volume with China and the income levels of recipient countries have a positive relationship at a 1% significance and 5% significance levels respectively.

Table 5.4 Statistical Results for Model I-1 (China)

Dependent variable: Aid amount

	(1) Random effect	**(2) Random effect**	**(3) Random effect**	**(4) Fixed effect**	**(5) Fixed Effect**	**(6) Fixed effect**
GDP	.00258	.0035069**		.02243*		
	(0.25)	(2.21)		(1.89)		
Population	.0316682			.4342398	-.1893119***	
	(0.39)			(0.70)	(-3.02)	
Trade with donor	.2173725	.067232**	.1470228***	.1145671	.2390582***	.1540949***
	(0.93)	(2.01)	(5.28)	(0.53)	(3.18)	(2.80)
FDI from donor	.7149472			22.98674***		
	(0.51)			(5.20)		
Energy production	-48.86403			-466.5568*	77.18716**	
	(-0.61)			(-1.95)	(2.28)	
Governance	-3763632		-1289000**	-3763632		
	(-0.93)		(-2.46)	(-0.93)		
HDI	4279719			4279719		
	(0.19)			(0.19)		
GDP per capita	-53492.27			-53492.27		637285.8**
	(-0.09)			(-0.09)		(2.08)
No. of obs	26	351	353	26	127	351
No. of groups	13	83	86	13	29	83
R-squared	0.5600	0.0703	0.07939	0.0251	0.0222	0.0398
Prob>chi2 (Random) or Prob>F(Fixed)	0.0052	0.0000	0.0000	0.0075	0.0000	0.0000

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

These statistical results imply that, in general, China's aid has a closer relationship with a bigger-scale economy (GDP(+)), a country with more trade with China (Trade (+)), a country with more FDI from China (FDI(+)), and a country with a low level of governance index (-). The signs of energy production are mixed.

If the White Paper in 2011 is revisited, it can be seen that some of these trends are in line with that. Among the five principles, the principle of "adhering to equality, mutual benefit and common development" and "helping recipient countries build up their self-development capacity" emphasize the reciprocity and practical considerations in China's economic benefits. The top 15 aid recipient countries, such as Venezuela, Iran, Niger, Brazil, and Argentina, which are shown in Table 5.5, also support the fact that China's aid also considers those factors as important. In the case of energy, it is still not clear whether The Chinese government mainly utilizes its foreign aid energy as the leverage for stable energy supply. Many western scholars and journalists support this view, while Brautigam (2009) and the Chinese government refute it. At least this statistical result indicates that the energy-oriented suspicion was not confirmed. Economic-demographic theory (GDP), compensation theory (trade and FDI) and other considerations (e.g. governance) can be applied to determining the ODA volume in China's aid.

Table 5.5 Top 15 Countries Receiving Aid from China

Rank	Country name	Region	Aid amount (1,000 USD)
1	Venezuela	LAC	28,100,000
2	Iran	MENA	9,935,267
3	Niger	SSA	9,698,301
4	Brazil	LAC	9,496,920
5	Argentina	LAC	6,942,100
6	Pakistan	SA	6,937,672
7	Indonesia	EAP	5,865,138
8	Chad	SSA	5,590,740
9	DRC	SSA	5,000,000

Table 5.5 (Continued)

Rank	Country name	Region	Aid amount (1,000 USD)
10	Ghana	SSA	3,698,039
11	Guinea	SSA	3,502,000
12	Madagascar	SSA	3,410,091
13	Iraq	MENA	2,787,100
14	Zimbabwe	SSA	2,718,699
15	Thailand	EAP	2,691,996

Source: Dataset for Model I-1

Table 5.6 illustrates the statistical results of Model I-1 for Japan. In the table, Specification (1) for the random effect shows that the population of the recipient countries and the FDI inflow from Japan have a significant positive relationship with Japanese ODA volume. In Specification (2) (random effect), energy production and HDI level have a positive impact on the ODA level, while trade volume with Japan and income level (GDP per capita) have a negative relationship. In Specification (3) (random effect), the FDI from Japan has a positive relationship and the GDP per capita of recipient countries has a negative relationship. In Specification (4) (random effect), GDP (-), population (+), and FDI inflow from the donor (+) show a strong relationship with ODA volume at a 1% significance level. In Specification (5) for fixed effect, the FDI still has a positive relationship and trade with Japan has a negative relationship with its ODA volume. In Specification (6) (fixed effect), the similar trend with Specification (2) is observed in terms of trade with donor, HDI, and GDP per capita.

Table 5.6 Statistical results for Model I-1 (Japan)

Dependent variable: ODA amount

	(1) Random effect	(2) Random effect	(3) Random effect	(4) Random effect	(5) Fixed effect	(6) Fixed effect
GDP	-.0000121			-.0002933***	.0001856	
	(-0.09)			(-6.68)	(0.58)	
Population	.0018445***			.001506***	.0067698	
	(3.01)			(12.61)	(1.33)	
Trade with donor	-.0056613	-.018907***			-.0238192**	-.0039953***
	(-0.78)	(-6.78)			(-2.23)	(-5.82)
FDI from donor	.0762674**		.0302068**	.0651475***	.0693783*	
	(1.97)		(2.10)	(3.16)	(1.82)	
Energy production	-.4655133	3.131707***			1.736439	
	(-0.39)	(6.07)			(0.75)	
Governance	-25407.14				113311.3	
	(-0.13)				(0.15)	
HDI	588101.9	1139467***			569517.3	1245056***
	(0.43)	(2.64)			(0.12)	(5.37)
GDP per capita	-30504.66	-18499.88**	-15761.21***		-24123.15	-14231.35***
	(-1.25)	(-2.00)	(-2.85)		(-0.76)	(-2.62)
No. of obs	53	201	448	448	53	613
No. of groups	18	40	80	80	18	112
R-squared	0.7449	0.2472	0.1604	0.4682	0.5233	0.0124
Prob>chi2 (Random) or Prob>F(Fixed)	0.0000	0.0000	0.0044	0.0000	0.0002	0.0000

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

The statistical results hint that Japan's ODA has a positive relationship with a more populous recipient country (population (+)), a country with more FDI from Japan (FDI(+)), and a country with higher HDI (HDI(+)). In the meantime, it has a negative relationship with a recipient country with more trade (trade(-)) and a country with less income per head (GDP per capita(-)). The top 15 aid recipient countries such as China, Indonesia, India, and the Philippines are listed in Table 5.7.

Keeping in mind the three goals of the Japanese ODA, some of these trends support the principles. The principle of "realizing a prosperous, free, and stable international community" goes with offering more aid to lower-income countries (GDP per capita (-)) and countries with higher HDI (HDI(+)). Providing more ODA to a country with more FDI from Japan (FDI(+)) and a populous country (population (+)) is in line with the principle of "supporting the growth of emerging and developing economies together with the growth of the Japanese economy." Interpreting the sign of trade is tricky. It might be that a country with less trade attracts more attention for Japanese ODA.

Regarding the application of finance theory to the motivation of government expenditure, economic-demographic theory (population), compensation theory (trade and FDI), and other considerations (e.g. HDI and GDP per capita) can be relevant in explaining the determinants of Japan's foreign aid.

Table 5.7 Top 15 Countries Receiving Aid from Japan

Rank	Country name	Region	ODA Amount (1,000 USD)
1	China	EAP	974,780
2	Indonesia	EAP	958,828
3	India	SA	706,865
4	Philippines	EAP	509,928
5	Viet Nam	EAP	472,170
6	Thailand	EAP	454,674
7	Pakistan	SA	319,294
8	Iraq	MENA	301,823
9	Bangladesh	SA	283,529
10	Sri Lanka	SA	210,666
11	Malaysia	EAP	202,006
12	South Korea	EAP	170,000
13	Central Africa Rep	MENA	148,118
14	Turkey	ECA	120,336
15	Kenya	SSA	108,120

Source: Dataset for Model I-1

Table 5.8 indicates the statistical results for Model I-1 for South Korea. Specification (1) for random effect shows that there is no significant relationship between any of the independent variables and the ODA volume. In Specification (4) for fixed effect, trade with the donor shows a negative sign. In these models, trade with the donor shows a negative relationship with South Korea's ODA volume, while the FDI from the donor has a positive impact. In Specification (6), recipient countries with a higher level on the HDI and a relatively lower level income have a tendency to receive more ODA from South Korea.

Table 5.8 Statistical Results for Model I-1 (South Korea)

Dependent variable: ODA amount

	(1) Random effect	**(2) Random effect**	**(3) Random effect**	**(4) Fixed effect**	**(5) Fixed Effect**	**(6) Fixed Effect**
GDP	2.56e-06			.0000676		
	(0.16)			(1.08)		
Population	-.000064			-.0011243		
	(-1.10)			(-1.07)		
Trade with	-.0007121	-.0006243***		-.0049858**	-.0005189**	-.0002055**
donor	(-0.71)	(-3.30)		(-2.23)	(-2.52)	(-2.54)
FDI from donor	.0048967	.0268041***	.0108894***	-.0372954	.0205727***	
	(0.23)	(3.43)	(2.81)	(-1.50)	(2.61)	
Energy	.0778239			.3712266		
production	(0.60)			(1.09)		
Governance	18163.83			122696		
	(1.07)			(1.61)		
HDI	-36304.1			295348.2		228807.2***
	(-0.27)			(0.50)		(6.20)
GDP per capita	-5436.711			-4111.59		-1590.379**
	(-1.61)			(-0.70)		(-2.24)
No. of obs	57	413	546	57	413	476
No. of groups	22	78	99	22	78	100
R-squared	0.2906	0.0375	0.0180	0.0017	0.0338	0.0001
Prob>chi2 or Prob>F	0.2929	0.0027	0.0050	0.4667	0.0275	0.0000

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

These statistical results generally demonstrate that South Korea's ODA has a relationship with a country with more FDI from the donor (FDI(+)), a country with less trade with it (Trade (-)), and a country with less income per head (GDP per capita(-)). The top 15 aid recipient countries such as Viet Nam, South Sudan, Cambodia, and Bangladesh in Table 5.9 are also in line with these factors.

The results imply that two out of five South Korean ODA principles are supportive of these trends. For example, the principle of "reducing poverty in developing countries" goes with ODA to lower income countries (GDP per capita (-)). The principle of "promoting cooperative economic relations with developing country partners" is in line with the economic relations with South Korea including FDI(+)) and Trade(-). In terms of the applicability of public finance theory, compensation theory (trade and FDI) and other considerations (e.g. GDP per capita) are more relevant in the determinants of South Korea's foreign aid.

Table 5.9 Top 15 Countries Receiving aid from South Korea

Rank	Country name	Region	ODA Amount (1,000 USD)
1	Viet Nam	EAP	87,708
2	South Sudan	SSA	42,910
3	Cambodia	EAP	31,836
4	Bangladesh	SA	31,706
5	Philippines	EAP	31,324
6	Indonesia	EAP	30,278
7	Sri Lanka	SA	23,282
8	Iraq	MENA	20,110
9	Tanzania	SSA	19,716
10	China	EAP	17,723
11	Afghanistan	SA	17,723
12	Mongolia	EAP	14,815
13	Angola	SSA	13,330
14	Jordan	MENA	12,984
15	Lao PDR	EAP	11,920

Source: Dataset for Model I-1

5.2 Model I-2 Specification

Model I-2 concerns the determinants of foreign aid from the push factor side. The results of the model clarify which factors affect the allocation of foreign aid expenditure from donors.

5.2.1 Summary Statistics

Figure 5.1 visualizes China's, Japan's, and South Korea's foreign aid volumes. The table-type summary statistics for China, Japan, and Korea can be found in the Appendix. According to Wolf et al. (2013), China's aid volume (commitment) drastically increased to 210,000,000 in 2012 and its mean was 57,100,000 for 13 years. Japan has continuously kept its ODA volume stable. Its ODA maximum volume was 18,000,000 and 8,627,317 for 46 years. South Korea, as a new donor, increased its volume to 1,809,620, but compared to the two other peer donors, the absolute volume is still quite small. Its average volume was 540,630 for 25 years.

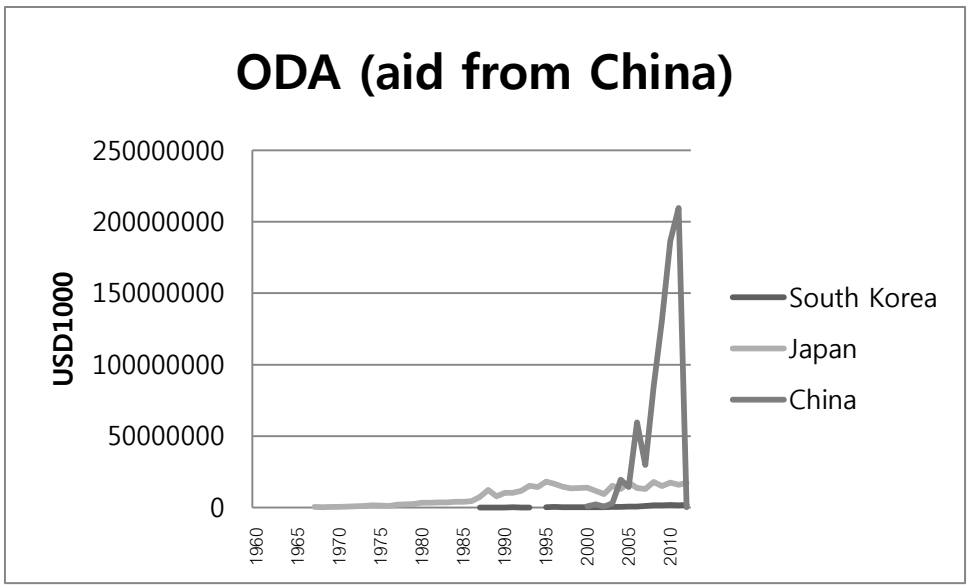

Figure 5.1 Comparisons of ODA Volume between China, Japan, and South Korea for Model I-2

Figure 5.2 illustrates China's, Japan's, and South Korea's GDP. China's GDP rapidly increased and caught up with that of Japan in mid-2000. Its maximum annual volume was 8,230,000,000 and its average GDP for 13 years was 3,620,000,000. Japan's GDP had rapidly increased until the mid-1990s and there were some fluctuations afterwards. Its maximum GDP was 5,940,000,000 and the average of GDP for 46 years was 2,800,000,000. In the case of South Korea, despite its relative small scale, the GDP has increased. Its maximum was 1,220,000,000 and the average GDP for the latest 25 years was 646,000,000.

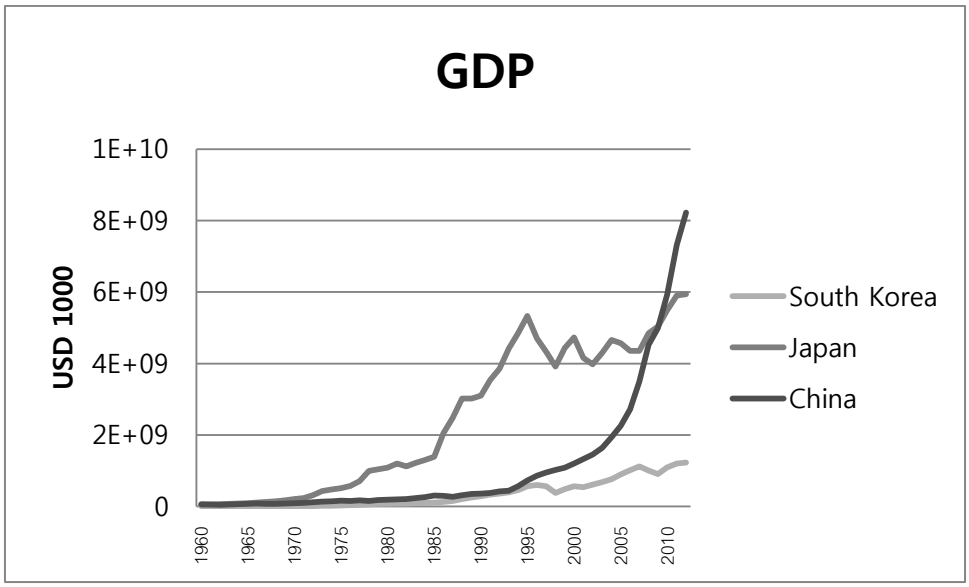

Figure 5.2 Comparisons of GDP between China, Japan, and South Korea for Model I-2

Figure 5.3 focuses on China's, Japan's, and South Korea's GDP per capita. China's GDP per capita continuously increased to 6.10 and its average was 2.74 for 13 years. Japan's GDP per capita has also increased despite some reduction in the mid-1990s and early 2010s. The mean of the Japanese GDP per capita for 46 years was 22.36 and maximum was 46.68. South Korea also increased its GDP per capita level out of some decreases in the mid-1990s, early 2000s, and early 2010s. Its maximum was 24.45 and the mean of South Korean GDP per capita was 13.62 for 25 years.

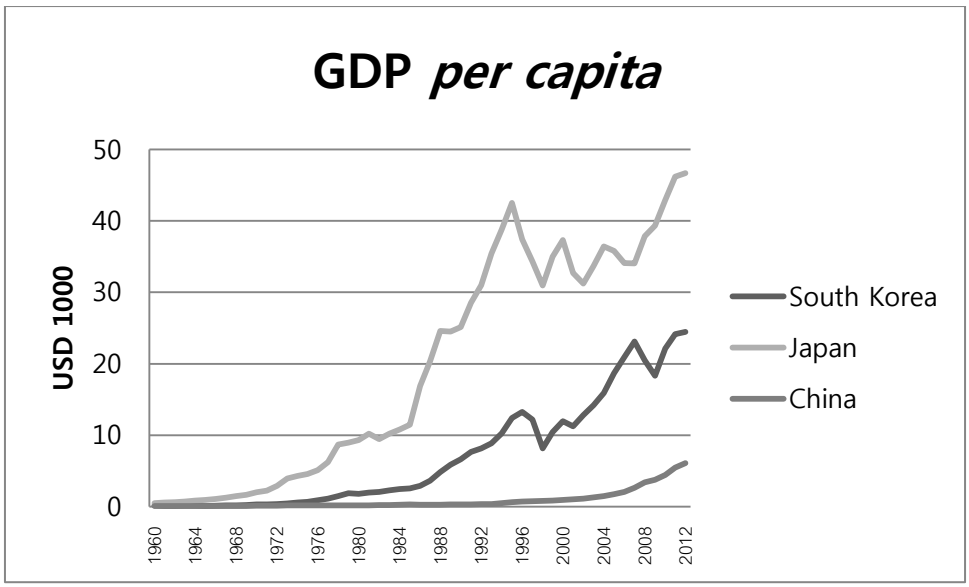

Figure 5.3 Comparisons of GDP between China, Japan, and South Korea for Model I-2

Figure 5.4 summarizes China's, Japan's, and South Korea's trade openness. China's trade openness was a maximum of 0.62 and its mean was 0.50 for 13 years. The maximum of Japan's trade openness was 0.32 and its average was 0.20 for 46 years. In the case of South Korean trade openness, the maximum was 0.89 and its mean was 0.59 for 25 years. South Korea's mean of trade openness (0.59) was higher than that of China (0.50) and Japan (0.20).

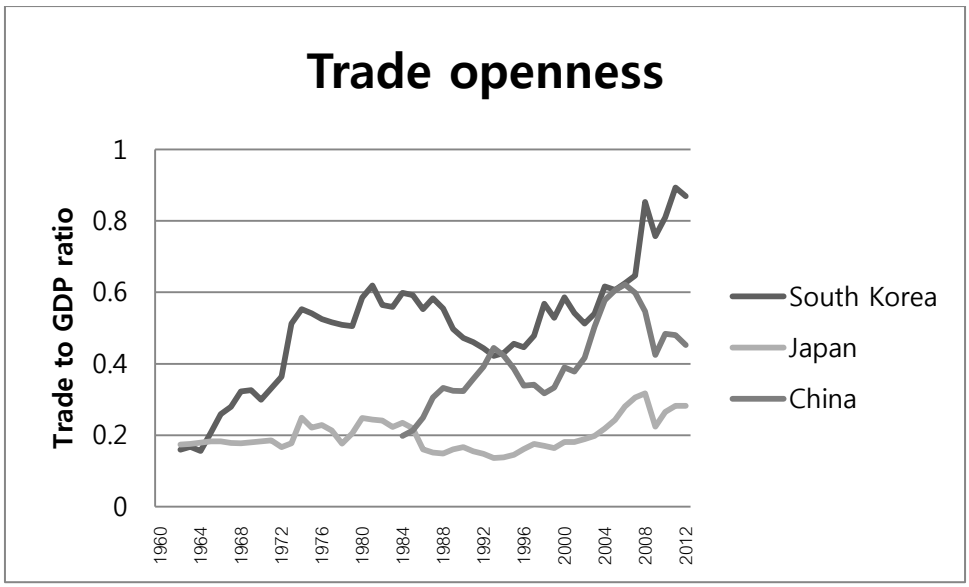

Figure 5.4 Comparisons of Trade Openness between China, Japan, and South Korea for Model I-2

Figure 5.5 shows the financial openness of the three countries. South Korea's financial openness mean (1.95) was higher than that of the other two donors (China: 1.31, Japan: 1.67). China's financial openness was 1.60 and its average was 1.31 for 13 years. The maximum of Japan's financial openness was 2.34 and its average was 1.67 for 46 years. Regarding South Korea's financial openness, the maximum was 2.58 and its mean was 1.95 for 8 years.

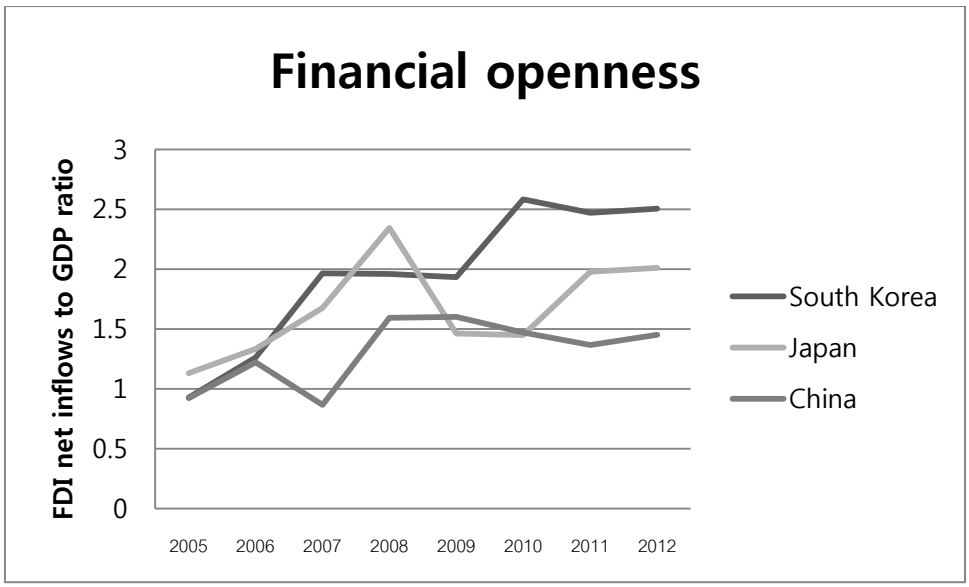

Figure 5.5 Comparisons of Financial Openness between China, Japan, and South Korea for Model I-2

Figure 5.6 shows energy consumption per capita. The level of South Korea's energy consumption exceeded that of Japan in the early 2000s, while the level of China was still lower than the other two. China's maximum energy consumption was 2,029 and its average level was 1,402 for 12 years. The maximum level of Japan's energy consumption was 4,091 and its average was 3,335 for 46 years. In the South Korea's case, the maximum was 5,260 and its mean was 3,660 for 25 years.

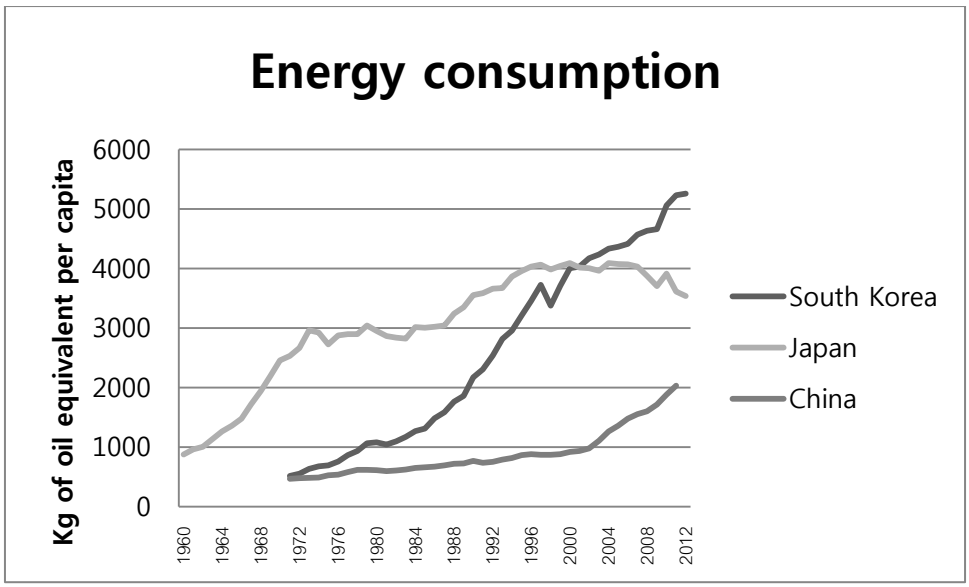

Figure 5.6 Comparisons of Energy Consumption between China, Japan, and South Korea for Model I-2

5.2.2 Checking Assumptions

In Model I-2, the first difference (delta value), instead of the original data, was utilized to run the correlation analysis properly.

5.2.3 Correlation Analysis Results

Table 5.10 summarizes the results of the correlation analysis of the push factors for China. In the case of China, aid change has a negative bivariate correlation with GDP change, GDP per capita change, and the previous aid volume change. Trade openness change, financial openness change, and energy consumption change have a positive correlation with the aid change. In terms of the level of correlation coefficient, energy consumption change (0.3560), which is over 0.2, shows a more meaningful correlation with the Chinese aid change. Since it just shows the correlations without the significance level, it is difficult to judge whether or not this correlation is statistically meaningful. Energy consumption (0.3560) implies that economic-demographic theory for the push factors can be considered in China's case.

Table 5.10 Statistical Results for Model I-2 (China)

Bivariate correlation coefficients between aid change and a variable

	GDP change	**GDP *per capita* change**	**Trade openness change**	**Financial openness change**	**Energy consumption change**	**Aid_{t-1} change**
Aid change	-0.0811	-0.0653	0.0695	0.1873	0.3560	-0.0790
No. of obs	12	12	12	7	11	11

In the case of Japan, most of the variables such as GDP change, GDP per capita change, trade openness change, and energy consumption change have individually a positive correlation with Japan's ODA change. The ODA of the previous year has only a negative correlation with ODA change. Among them, GDP change (0.4993), GDP per capita change (0.4977), financial openness change (0.4381), and the change of the previous year's ODA (-0.4648) have a closer bivariate correlation with the Japan's ODA change. In view of related public finance theories, economic-demographic theory (GDP and GDP per capita), compensation theory (financial openness), and incrementalism (ODA amount of previous year) can be considered. Interestingly, unlike the assumed positive sign in incrementalism, the ODA amount for the previous year shows a negative sign. Table 5.11 summarizes the correlation analysis results for Japan.

Table 5.11 Statistical Results for Model I-2 (Japan)

Bivariate correlation coefficients between ODA change and a variable

	GDP change	**GDP *per capita* change**	**Trade openness change**	**Financial openness change**	**Energy consumption change**	**ODA_{t-1} change**
ODA change	0.4993	0.4977	0.0892	0.4381	0.0940	-0.4648
No. of obs	45	45	45	7	45	44

In South Korea, the trend is similar to that of Japan. GDP change, GDP per capita change, trade openness change, and energy consumption change demonstrate a positive bivariate correlation with its ODA change. Only the previous year's ODA change has a negative correlation with ODA change. Among these variables, GDP change (0.2307), GDP per capita change (0.2254), trade openness change (0.3298), financial openness change (0.6056) have a more significant bivariate correlation with the South Korea's ODA change. In terms of the theory application, economic-demographic theory (GDP and GDP per capita) and compensation theory (trade openness and financial openness) are more appropriate here. Table 5.12 illustrates the correlation analysis results for South Korea.

Table 5.12 Statistical Results for Model I-2 (South Korea)

Bivariate correlation coefficients between ODA change and a variable

	GDP change	**GDP *per capita* change**	**Trade openness change**	**Financial openness change**	**Energy consumption change**	**ODA_{t-1} change**
ODA change	0.2307	0.2254	0.3298	0.6056	0.0608	-0.0692
No. of obs	23	23	23	7	23	21

5.3 Comparisons Among the Empirical Estimation

Considering the statistical results for the pull factors and push factors of the three donors, the tendencies of the foreign aid policy of the donor countries are compared here.

5.3.1 Pull Factors

For the pull factors, the three donor countries demonstrate different characteristics. For example, the pull factors for China spread widely, while Japan emphasizes economic factors and some humanitarian ones. South Korea narrows down its interest to economics and considers only a few humanitarian components.

In the case of China, unlike the cases of South Korea and Japan, trade volume between China and recipient countries has a positive relationship with its aid volume. FDI from China does not show a significant sign in the chosen specifications. GDP, trade with China, and FDI from China show a positive sign in affecting its aid amount, while governance and population show a negative sign. Examining the hypotheses in Chapter 2, H_1 (the scale of a recipient country's GDP positively affects the aid amount from the donor; economic-demographic factor), H_4 (the FDI inflow from the donor positively affects the aid amount from the donor; compensation factor), and H_5 (the trade volume between the donor and recipient countries positively affects the aid amount from the donor; compensation factor) could not be rejected.

In Japan, the population of recipient countries (+), the FDI from Japan (+), the HDI (+), trade volume with Japan (-), and the GDP per capita of the partner countries (-) have the same sign as that of South Korea. In testing the proposed hypotheses, H_2 (the size of a recipient country's population positively affects the aid amount from the donor; economic-demographic factor), H_4 (the FDI volume from the donor positively affects the aid amount from the donor; compensation factor), H_7 (the HDI level positively affects the aid amount from the donor; other factors), and H_8 (the GDP per capita (income level) negatively affects the aid amount from the donor; other factors) could not be rejected.

In the case of South Korea, FDI from Seoul has a positive relationship with its ODA to the recipient country, while trades with Korea and the GDP per capita of the recipient countries have a negative relationship in the selected models. As regards the hypotheses, H_4 (the FDI volume from the donor positively affects the aid amount from the donor; compensation factor) and H_8 (the GDP per capita (income level) negatively affects the aid amount from the donor; other factors) could not be rejected.

Table 5.13 summarizes the signs between the ODA (China aid) amount and the pull factors. A few interesting observations can be made here. The population of China's partner countries shows a negative sign with China's aid amount, while Japan shows a positive sign. Considering the top 15 aid recipient countries in Table 5.5, not very populous, but geopolitically important countries such as Venezuela (top recipient country, 44^{th} populous country among 214 countries), Niger (3^{rd} recipient country, 59^{th}/214 countries), and Chad (8^{th} recipient country, 72^{nd}/214 countries) are listed

(http://data.worldbank.org/). However, in the case of Japan, as clearly mentioned in its ODA charter, the growth of developing countries should go with that of the Japanese economy. In this sense, populous countries such as China, Indonesia, and India rank the top 3 recipient countries in Japan's ODA.

With regard to trade with the donor, Japan's and South Korea's trade volume has a negative relationship with their ODA amount, while China shows a positive relationship. It can be arguably interpreted that the two donors try to reverse the trade trend by offering more foreign aid. The economic-orientation of the ODA charter of Japan and the Framework Act on International Development Cooperation of Korea support this idea.

Table 5.13 Signs between ODA (China aid) Amount and Pull Factors

Dependent variable: ODA (China aid) amount

	China	**Japan**	**South Korea**
GDP	+		
Population	-	+	
Trade with donor	+	-	-
FDI from donor	+	+	+
Energy production			
Governance	-		
HDI		+	
GDP per capita		-	-

5.3.2 Push Factors

For the push factors, the three donor countries also show some different features as shown in Table 5.14. For instance, China's domestic energy consumption has a closer relation with its aid scale. In Japan, GDP, GDP per capita, financial openness and the previous year's ODA level have a closer bivariate correlation with the Japan's ODA. When it comes to South Korea, GDP, GDP per capita, trade openness, and financial openness have a stronger correlation with South Korea's ODA.

China's aid change shows a relatively strong positive correlation with energy consumption change. In examining the hypotheses in Chapter 2, H_{11} (the level of energy consumption of a donor positively affects the aid amount from the donor; economic-demographic factor) is more relevant.

In the case of Japan, GDP change, GDP per capita change, financial openness change, and the change of the previous year's ODA have a closer bivariate correlation with Japan's ODA change. In testing the hypotheses, H_9 (the size of the GDP of a donor positively affects the aid amount from the donor; economic-demographic factor), H_{10} (the GDP per capita of the donor positively affects the aid amount from the donor; economic-demographic factor), and H_{12} (the financial openness of the donor positively affects the aid amount from the donor; compensation factor) were relatively suitable.

The pattern of the push factors for South Korea is similar to that of Japan. GDP change, GDP per capita change, trade openness change, and financial openness change have a more significant bivariate correlation with the South Korea's ODA change. In the hypotheses for the push factors, H_9 (the size of the GDP of the donor positively affects the aid amount from the donor; economic-demographic factor), H_{10} (the GDP per capita of the donor positively affects the aid amount of the donor; economic-demographic factor), H_{12} (the financial openness of the donor positively affects the aid amount of the donor; Compensation factor), and H_{13} (the trade openness of the donor positively affects the aid amount of the donor; compensation factor) are more appropriate.

A few notable things are the negative sign of the GDP change and GDP per capita change in the case of China. This is contrasted with the positive sign of Japan and South Korea in such variables. Even though the level of correlation coefficients is not very high (below -0.02), one possible explanation is that China tries to extend its aid influence regardless of its domestic economic conditions. This is perhaps related to its political motivation to influence the third world in order to obtain more political support for Beijing.

Another point is the negative sign of the change of the previous aid budget in the three donors. Only Japan's case shows a closer correlation, but, unlike conventional wisdom, it is shown here that the previous level of foreign aid does not

necessarily increase the current budget level. This is perhaps because of the fluctuation of incoming project cycles. Exploring new projects and aid programs is less predictable than domestic ones due to its complexity and the multi-dimensions in the international community.

Table 5.14 Bivariate Correlation Coefficient with ODA (China aid) Change

	China	**Japan**	**South Korea**
GDP change	-0.0811	0.4993	0.2307
GDP per capita change	-0.0653	0.4977	0.2254
Trade openness change	0.0695	0.0892	0.3298
Financial openness change	0.1873	0.4381	0.6056
Energy consumption change	0.3560	0.0940	0.0608
The ODA (or aid) change of previous year	-0.0790	-0.4648	-0.0692

CHAPTER 6

EMPIRICAL RESULTS AND DISCUSSION OF ESTIMATION (MODEL II)

6.1 Model II Specification

In this chapter, the empirical results for Model II are tested for the effects of the donors' foreign aid using OLS regression. Table 6.1 shows the summary statistics of the concerned variables for the model. It shows the mean as well as the S.D., maximum, and minimum value of the variables.

6.1.1 Summary Statistics

The mean of China's aid is 1,603,327. As stated in Chapter 4, the scale of China's aid is much bigger than that of Japan and South Korea. The geometric mean of the FDI changes from China is 12.55, which is slightly smaller than that of Japan and South Korea. The geometric mean of the trade volume changes between China and the recipient countries is 12.27. This is quite bigger than that of the other two donors. The geometric mean of the corruption index change is .3850 and is lower than that of South Korea, but higher than that of Japan. The geometric mean of the Gini coefficient change is .1084, which is higher than that of the other two donors.

The average of Japan's ODA is 55,422; the amount is much bigger than that of South Korea, but smaller than China's aid. The geometric mean of the recipient countries' FDI change vis-à-vis Japan is 13.84. It is bigger than the other two donors. The geometric mean of trade change with Japan is .3928, quite smaller than that of the other two countries. The geometric mean of the corruption index change is .2143, lower than that of China and South Korea. The geometric mean of Gini coefficient change is .0411, which is the lowest one among the donors.

In the case of South Korea, the mean of ODA is 4,080, which is smaller than the other two donors. The geometric mean of the FDI change with South Korea is

13.06, which is in between that of Japan and China. The geometric mean of trade change with Korea is .9359, which marks the second largest after China. The geometric mean of the corruption index change and the Gini coefficient change is .2148 and .0472 respectively. These means are also in between those of the other two donors.

Table 6.1 Summary Statistics for Model II

		Mean	S.D.	Min.	Max.	Obs
China	Mean of Aid	1,603,327	3,635,486	17.28	2.81e+07	87
	Gmean of FDI change	12.5528	30.2962	.2699688	129.2	19
	Gmean of trade change with China	12.26914	58.69246	.1434964	453.2268	75
	Gmean of Corruption index change	.3850195	.261108	.1666667	1	14
	Gmean of Gini coefficient change	.1084005	.0720462	.0268948	.283697	12
Japan	Mean of ODA	55,422.27	140392.7	10	974779.7	161
	Gmean of FDI change	13.83847	85.31615	.0007987	640.2	56
	Gmean of trade change with Japan	.3927612	.7811903	.0406257	7.774995	131
	Gmean of Corruption index change	.2143185	.0700937	.125	.5	32
	Gmean of Gini coefficient change	.0411416	.0415398	.0082859	.2057985	37
South Korea	Mean of ODA	4,080.031	9,723.395	10	84,708.26	151
	Gmean of FDI change	13.05783	55.72352	.1269396	457.9799	77
	Gmean of trade change with Korea	.9358985	3.170242	.0936778	32.06007	112
	Gmean of Corruption index change	.2147804	.0712029	.125	.5	31
	Gmean of Gini coefficient change	.0471629	.0492741	.008286	.2057985	34

6.1.2 Checking Assumptions

In principle, the variance inflation factor is expected to be tested to tackle the multicollinearity issue. However, the results of the OLS regression below between the dependent variable and the major independent variable (mean of ODA or China aid) in Model II mostly have not shown a statistically-significant output. Therefore, a multicollinerity test, which assumes multiple independent variables, was not undertaken in Model II.

6.2 OLS Regression Results

In Model II, the relationship between the donor's ODA average to a recipient country and the geometric average of the change of each dependent variable was tested. However, except for China's aid to FDI, none of them passed the criteria of significance level 5% and 1%. Considering the relatively larger scale of the economy of the recipient countries, the mid-term impact of foreign aid from an individual donor country is not so great. It can be interpreted that its socio-economic impact on its recipient countries is minimal in most cases of China as well as those of Japan and South Korea.

6.2.1 FDI Expansion

The results of the impact of each donor's ODA on its respective partner's FDI from the donor are shown in Table 6.2. China's aid has a statistically significant impact on its FDI expansion to its partner countries at a 5% significance level. In the case of Japan, the relationship between ODA and FDI is negative, but statistically insignificant. South Korea's ODA shows a positive sign with FDI, but is also not significant.

Table 6.2 Statistical Results for FDI Expansion in Model II

Dependent variable: Geometric mean of FDI from the donor changes in a recipient country

	China	**Japan**	**South Korea**
Mean of ODA	5.64e-06**	-.0000137	.000179
(Mean of China aid)	(2.27)	(-0.26)	(0.33)
No. of obs	19	56	77
R-squared	0.2331	0.0012	0.0015
Prob>F	0.0363	0.7972	0.7394

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

6.2.2 Trade Promotion

When it comes to the effect on trade promotion, the foreign aid of the three donor countries does not have a significant relationship with their trade volume expansion. China's case illustrates a negative sign, but the t-value is very low. Japan's ODA also shows the same negative sign, but it is not significant. Unlike the other two peer donors, South Korea's ODA has a positive relationship, but it also does not exceed the significance level.

Table 6.3 Statistical Results for Trade Promotion in Model II

Dependent variable: Geometric mean of trade changes with the donor in a recipient country

	China	**Japan**	**South Korea**
Mean of ODA	-3.90e-07	-3.93e-07	.0000422
(Mean of China aid)	(-0.22)	(-0.86)	(0.99)
No. of obs	75	131	112
R-squared	0.0007	0.0057	0.0088
Prob>F	0.8272	0.3925	0.3247

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

6.2.3 Infrastructure Development

Table 6.4 shows the results of the foreign aid impact on the infrastructure level of the recipient countries. China shows a negative sign, while Japan and South Korea have a positive sign. However, the t-values are not very high and it is statistically difficult to say that it has a substantial impact on infrastructure development.

Table 6.4 Statistical Results for Infrastructure Development Change in Model II

Dependent variable: Geometric mean of paved road percentage changes with the donor in a recipient country

	China	**Japan**	**South Korea**
Mean of ODA	-1.91e-08	1.06e-08	7.16e-07
(Mean of China aid)	(-0.65)	(0.19)	(0.45)
No. of obs	22	121	112
R-squared	0.0208	0.0003	0.0018
Prob>F	0.5220	0.8487	0.6526

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

6.2.4 Corruption

The results of the effects of foreign aid on the corruption level in a recipient country are displayed in Table 6.5. The foreign aid of all the three donors shows a negative sign with the corruption index. However, the t-values indicate that it is still statistically not significant. In terms of coefficient, South Korea has the biggest, followed by Japan and China, but the levels of the t-values are all below the significance criteria.

Table 6.5 Statistical Results for Corruption Change in Model II

Dependent variable: Geometric mean of corruption index changes with the donor in a recipient country

	China	**Japan**	**South Korea**
Mean of ODA	-2.22e-08	-3.56e-08	-5.75e-07
(Mean of China aid)	(-0.77)	(-0.15)	(-0.31)
No. of obs	14	32	31
R-squared	0.0466	0.0007	0.0034
Prob>F	0.4584	0.8847	0.7561

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

6.2.5 Inequality

Table 6.6 shows the result of the donor countries' impact on the inequality level of the recipient countries. China shows a negative sign, while Japan and South Korea have a positive sign. However, the t-values are not high and it is statistically difficult to say that it has a substantial impact on the inequality level.

Table 6.6 Statistical Results for Inequality Change in Model II

Dependent variable: Geometric mean of Gini coefficient changes with the donor in a recipient country

	China	**Japan**	**South Korea**
Mean of ODA	-1.43e-09	3.55e-08	2.58e-07
(Mean of China aid)	(-0.22)	(0.88)	(0.17)
No. of obs	12	37	34
R-squared	0.0049	0.0218	0.0009
Prob>F	0.8286	0.3829	0.8668

Note: *, **, and *** denotes significance at the 10%, 5%, and 1% levels respectively. The numbers in brackets are t-values.

6.3 Comparisons Among the Empirical Estimations

In Model II, China's effect on the FDI from the donor shows a significant positive effect at a 5% significance level, but the other donors do not show any significant impact in the four specifications. Regarding FDI expansion, China's aid has a relatively significant effect on China's FDI to its partner countries. South Korea shows a positive sign and Japan illustrates the opposite. However, neither is statistically significant. In terms of trade promotion, China and Japan have a negative sign, while South Korea has a positive one. All of these are statistically insignificant. When it comes to infrastructure development, China shows a negative sign whereas Japan and South Korea have a positive sign. However, the t-values are still not high. In the case of corruption, the foreign aid of all three donors shows a negative sign with the corruption index. However, the t-values show that the coefficients are statistically not significant. Regarding inequality improvement, China shows a negative sign, while Japan and South Korea have a positive sign. However, the t-values are not high enough to surpass the statistical criteria. Table 6.7 summarizes the statistical results of Model II.

In testing the hypotheses of Chapter 2, only the effect of China's aid for FDI (H_{15}) is confirmed at a 5% significance level. Recalling the scale of China's foreign aid and its FDI figure in Table 6.1, the mean of China's aid is much bigger than that of Japan and South Korea, while the level of the mean in gmean of the FDI change is more or less the same. The other dependent variables still show some differences. Hence, China's significant impact on FDI is plausible.

Table 6.7 Comparisons of statistical results of Model II

Independent variable: Mean of ODA (China aid)

Dependent variable	**China**	**Japan**	**South Korea**
Gmean of FDI change	5.64e-06**	-.0000137	.000179
	(2.27)	(-0.26)	(0.33)
Gmean of trade change	-3.90e-07	-3.93e-07	.0000422
	(-0.22)	(-0.86)	(0.99)
Gmean of the percentage of	-1.91e-08	1.06e-08	7.16e-07
paved road change	(-0.65)	(0.19)	(0.45)

Table 6.7 (Continued)

Dependent variable	China	Japan	South Korea
Gmean of corruption index	-2.22e-08	-3.56e-08	-5.75e-07
change	(-0.77)	(-0.15)	(-0.31)
Gmean of Gini coefficient	-1.43e-09	3.55e-08	2.58e-07
change	(-0.22)	(0.88)	(0.17)

These results point out that the impacts of the foreign aid of China, Japan, and South Korea on FDI, trade, corruption, and inequality are not very significant in general. The follow-up question to answer is why there is no statistically significant relationship and what other factors have affected the proposed dependent variables.

One possible explanation for the insignificance of foreign aid in relation to the respective dependent variables is because of its vast coverage of the recipient countries. Some of the recipient countries in this study have only received a small amount of aid from the donors. If the scope is narrowed to top 10 or 20 recipient countries from the respective donor, the impact of the foreign aid might be more vigorous. The objective of this study was to test all of the available countries, so limiting the number of the target countries was not separately taken into consideration.

In addition to that, from the donor side, if the absolute amount of foreign aid is not big enough to influence the socio-economic factors, the impacts may also be negligible. Even though China and Japan have shown great presence in the global foreign aid community, the absolute amount might not be so big as to have significant impacts on the partner countries. In some cases, foreign aid is still small compared to the macroeconomic indicators, such as total trade and GDP. For example, Cambodia is a small country and is a least developed country. In 2010, China’s foreign aid to Cambodia was estimated at 14.1 million USD, while total trade was 10,328 million USD and was more than 700 times bigger than the scale of China’s aid at that time. In this sense, it is not surprising that the impact of foreign aid is not as apparent as it was expected to be. This implies that more holistic and integrated aid strategy in the global community is needed. This point is elaborated in the policy implication part of the present study.

Another explanation is more focused on other underlying factors besides foreign aid. The GDP can be possibly considered as an influential underlying factor on the proposed socio-economic indicators. For instance, Halmos (2011) conducted research on the GDP's impact on the Gini index in Eastern European countries and found a significant effect. Besides the GDP, the factors such as infrastructure and natural resources can also affect the level of FDI and total trade. According to an OECD report (2000), the size of the economy, the speed of economic growth of the Chinese economy, natural and human resource endowment, and physical and financial infrastructure are considered as the determinants of the FDI volume in China. Shabbir and Anwar (2007) suggested that economic freedom, globalization, level of education, and distribution of income level were negatively related to corruption level in their empirical study.

Since the main focus of this study is on the impact of foreign aid, those independent variable candidates mentioned above are not directly addressed. This study focuses rather on the limited range of variables and the variables mentioned above were expected to be dealt with in future in-depth studies.

CHAPTER 7

CONCLUSION AND POLICY RECOMMENDATIONS

7.1 Summary

This study investigates the determinants and effects of foreign aid. The relationships between socio-economic factors and the aid volume of China, Japan, and South Korea with their partner countries are examined using panel data analysis (pull factors), correlation analysis (push factors), and OLS regression analysis (effects).

Regarding the pull factors of Model I-1, despite some conflicting signs between China, Japan, and South Korea, the economic-demographic theory factors and compensation theory factors were frequently observed. In the case of China, the economic-demographic theory factors (e.g. GDP), compensation theory factors (trade and FDI), and other factors (governance) also seemed to affect China's aid volume depending on the specifications. In the case of Japan, in addition to the compensation theory factors such as FDI from Japan, other humanitarian considerations (e.g. HDI and GDP per capita of the partner countries) also influenced its ODA volume. In South Korea, besides FDI from Korea, humanitarian considerations such as the GDP per capita of the recipient countries affected its ODA volume in the selected specifications.

Regarding the push factors of Model I-2, China's domestic energy consumption has a closer relation with its aid scale. In Japan, GDP, GDP per capita, financial openness and the previous year's ODA level have a closer bivariate correlation with Japan's ODA. In the case of South Korea, GDP, GDP per capita, trade openness, and financial openness have a stronger correlation with South Korea's ODA.

In Model II, the relationship between the donor's ODA mean to a recipient country and the geometric average of the change of each dependent variable was

tested. However, except for the effect of China's aid for FDI, none of them passed the criteria of a significance level of 5% and 1%. It is difficult to confirm whether the results support one of the proposed theories such as the vanguard effect, the infrastructure effect or the rent-seeking effect, except for the vanguard effect in the China.

7.2 Theoretical Contributions

This study adds to the literature in both the public finance and international development area by confirming the applicability of public finance theories in the area. The expansion of theory application is in the following ways:

Overall, economic-demographic theory and compensation have been confirmed, while incrementalism and other hypotheses such as the vanguard effect have not been confirmed in this study.

Regarding the pull factors, in details, China's aid shows that economic-demographic theory (GDP), compensation theory (trade and FDI), and other considerations (e.g. governance) can be applied in determining the China's aid volume. In Japan, economic-demographic theory (population), compensation theory (trade and FDI) and other considerations (e.g. HDI and GDP per capita) are relevant to explaining the determinants of Japan's foreign aid. In the case of South Korea, compensation theory (trade and FDI), and other considerations (e.g. GDP per capita) are more relevant as the determinants of South Korea's foreign aid.

In terms of the push factors, they require more careful interpretation due to the limitations of statistical methodology. However, economic-demographic theory (energy consumption in China, GDP, GDP per capita both in Japan and South Korea), compensation theory (financial openness in Japan; trade and financial openness in South Korea), and incrementalism (negative sign in Japan) have been observed.

In the case of the effects of foreign aid, except for the vanguard effect of China, the other proposed hypotheses such as the vanguard effect, the infrastructure effect, and the rent-seeking effect have not been confirmed.

7.3 Policy Implications

The analysis in this study increases the understanding of the determinants of the foreign aid of the three donor countries and offers some policy implications. Regarding the determinants of foreign aid, the policy should be evidence-based rather than relying on speculations. From this point of view, this study confirms that the East Asian donors are neither purely economically-oriented nor only philanthropically-oriented. Economic motivations from the donor side do not have to be demonized. The more important thing is to seek mutual benefits by monitoring and measuring reciprocally-agreed-on targets and subsequent indicators during the whole process.

In terms of the effects of the foreign aid of the donors, they indicate that even though two of the three donors demonstrated the large scale of their aid, the impacts on FDI, trade, corruption, and inequality were not very high. This result raises a big question concerning what should be done if foreign aid has no clear impact on the socio-economic indicators of the recipient countries in order to improve them.

A recent report from Custer, Rice, Masaki, Latourell, and Parks (2015) offers a clue on how to address this issue. The researchers conducted comprehensive interviews with policymakers and practitioners in developing countries regarding their experiences with outside donors creating a “value for money” index. According to the research, the Inter-American Development Bank, the World Bank, and some small donors such as Luxembourg and New Zealand received better value, while well-known big donors such as the United States, Japan, and Germany did not do very well, and neither did South Korea. In their research, China was not included due to data accessibility. In order to enhance foreign aid effectiveness, the authors suggest that donors allocate more aid to multilateral institutions.

This result of their research highlights the necessity for a more holistic and comprehensive approach at the global level. The authors above give much credits to multilateral institutions rather than bilateral donors in the sense that the multilateral ones are less influenced by geostrategic or commercial interests of the specific donor countries.

However, the scope of policy does not have to be limited only to the support of multilateral organizations. If the individual donor invests his or her funds to too

many countries and sectors without focus, the impacts of the foreign aid would not be great enough as tested for the East Asian donors in this study. The important point is to focus on the alignment of the limited resources with the priorities of the recipient countries through collective efforts among multilateral, bilateral donors and recipient countries.

The recent 17 Sustainable Development Goals and 169 associated targets for the 2030 Development Agenda, which were adopted in the UN General Assembly in September 2015, can be an authoritative benchmark for finding the focus (Sustainable Development Goals, 2015). The goals were set through intergovernmental negotiations and a wide variety of international stakeholders such as civil society, the private sector, local authorities, and scientific and knowledge institutes.

To sum up, more streamlined and coordinated efforts from the whole donor community are crucial in improving aid effectiveness. Beyond that, a holistic approach cooperating with other stakeholders such as the business sector and the civil society in order to finance the developing countries will have greater synergy.

7.4 Suggestions for Further Studies

This study has attempted to find a way to confirm the push and pull factors, the effects of foreign aid, and provide reasons as to why different signs for them are observed between donors. However, more detailed clarifications need to be made regarding the reasons for following studies. During the research process, the applications of public finance theories are expected to be used as one of the inter-disciplinary approaches.

Regarding Model II, the results, indicating that there was a lack of significant effects of foreign aid, might have been caused by the comprehensiveness of foreign aid coverage. In general, foreign aid consists of grants and concessional loans. In future studies, if each component is separately tested, especially for concessional loans, the results might be different from the current lump-sum ones.

Comparisons with the OECD-DAC member countries and other emerging donors such as India, Brazil, and Russia also represent an interesting area for further investigation. Some limitations on the data accessibility of emerging donors are likely

to be found; however, this future study will provide a broader picture of the foreign aid arena. In addition, if it is possible to obtain more detailed and comparable data from China, it would be worthwhile reexamining the comparisons among the three Asian donors.

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APPENDIX

APPENDIX

Summary Statistics in Model I-2

Donor	Variable	Mean	S.D.	Min.	Max.	Obs (years)
China	Aid	57,100,000	74,100,000	144,000	210,000,000	13
	GDP	3,620,000,000	2,390,000,000	1,200,000,000	8,230,000,000	13
	GDP per capita	2.739041	1.750253	0.949178	6.092782	13
	Trade openness	0.498401	0.084809	0.378082	0.621855	13
	Financial openness	1.311383	0.284639	0.867053	1.601202	8
	Energy consumption	1,402.237	372.764	919.778	2,029.363	12
Japan	ODA	8,627,317	6,309,483	263,200	18,000,000	46
	GDP	2,800,000,000	1,940,000,000	124,000,000	5,940,000,000	46
	GDP per capita	22.357460	15.068930	1.228909	46.679270	46
	Trade openness	0.202126	0.046633	0.135771	0.317063	46
	Financial openness	1.673167	0.407049	1.130064	2.343569	8
	Energy consumption	3,334.977	635.891	1,720.550	4,090.515	46
South	ODA	540,630	604,383	9,790	1,809,620	25
Korea	GDP	646,000,000	328,000,000	151,000,000	1,220,000,000	25
	GDP per capita	13.617350	6.363332	3.627601	24.453970	25
	Trade openness	0.590689	0.141134	0.421824	0.893797	25
	Financial openness	1.950879	0.597616	0.927478	2.583821	8
	Energy consumption	3,659.816	1,111.331	1,585.414	5,259.578	25

Note: * The unit of GDP, GDP per capita, aid, and ODA is 1,000 USD.

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