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Footprints in Africa:
A Comparative Study of China and South Korea's Foreign Aid Policy in Africa

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Abstract

This thesis, with special emphasis on African recipient countries, aims to compare and clarify the foreign aid practices adopted by China and South Korea. While South Korea is mostly portrayed as an emerging donor country intending to tie economic relations to recipients, China draws a very diverse audience with reactions to its aid policy ranging from strong suspicion to sincere curiosity.

In this thesis, we examine relationships between economic indicators such as population, Gross Domestic Product (GDP), GDP per capita, trade, Foreign Direct Investment (FDI), energy production of African recipient countries and the foreign aid policies of these two donors. Through the statistical research method of panel data analysis, we found that the Chinese government has a tendency to provide its aid to more populous African countries, while the often hypothesized China's resource-securing aid intention is not confirmed. In the case of South Korea, Seoul has a more risk-avert attitude in its Official Development Assistance (ODA) by providing these funds to higher income-level recipients.

Keywords: Africa, China, South Korea, Foreign aid, ODA, Energy

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF DIAGRAMS

LIST OF ACRONYMS

DAC	Development Assistance Committee
EDCF	Economic Development Cooperation Fund
EIA	Energy Information Agency
FDI	Foreign Direct Investment
FOCAC	Forum on China-Africa Cooperation
GDP	Gross Domestic Product
ID	International Development
KOICA	Korea International Cooperation Agency
KOAFEC	Korea-African Economic Cooperation
LICs	Least Developed Countries
LMCs	Lower Middle Income Countries
MOFCOM	Ministry of Commerce
MOF	Ministry of Finance
MOSF	Ministry of Strategy and Finance
MOFA	Ministry of Foreign Affairs
MOFAT	Ministry of Foreign Affairs and Trade
NGOs	Non-Governmental Organizations
OPM	Office of Prime Minister
Other LICs	Other Low Income Countries
OECD	Organization for Economic Cooperation and Development
ODA	Official Development Assistance
OOF	Other Official Flows
PRC	People's Republic of China
ROK	Republic of Korea
SSC	South-South Cooperation
UMICs	Upper Middle Income Countries
UNDP	United Nations Development Program
US	United States
USD	United States Dollar

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Chapter 1

Introduction

1.1 Motivation

As the world witnessed the remarkable growth of the Asian economy before the Financial Crisis and also an equally notable recovery thereafter, its presence in other international facets has never been more strongly felt than today as well.[1] The rejuvenated South-South Cooperation (SSC)[2] of Asian developing countries which covers international development activities such as the exchange of technology, resources and knowledge between developing countries attests to the emergence of Asia's influence. Frequent and far-reaching international involvement of the People's Republic of China (PRC)[3] and the Republic of Korea (ROK)[4] has been at the forefront of this trend.

[1] According to the Economist, Asia's Gross Domestic Product (GDP) at purchasing power parity (PPP) is estimated to account for 35% of total GDP in 2010. In addtion, Asia's share of world currency reserves makes up for 61.1% of the total in 2008. Source: http://audiovideo.economist.com/ (accessed on Feb. 13, 2011)

[2] There is an official unit in the United Nations Development Program (UNDP) which is charged of South-South Cooperation. Official website is http://ssc.undp.org/ (accessed on Feb. 13, 2011)

[3] According to the New York Times, China's second quarter GDP (1.33 trillion USD) passed that of Japan (1.28 trillion USD) and became the second largest economy in the world as of second quarter of 2010. Source: http://www.nytimes.com/2010/08/16/business/global/16yuan.html (accessed on Feb. 13, 2011)

[4] Accoriding to the Central Intelligent Agency (CIA) of the US, South Korea's GDP of 2010 is 1.5 trillion USD (at the PPP criteria) and ranked as 13th largest economy in the world. Source: http://www.theodora.com/wfbcurrent/korea_south/korea_south_economy.html (accessed on Feb. 13) South Korea also joined the Organization for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) which composes of developed donor countries on November 25, 2010. Source:

China and South Korea share a unique foreign aid history. They started from very poor economic situations and received financial support from developed countries for a long period.[5] [6] Today they have changed their image to that of new leading donors. As for China, even though they started their foreign aid as far back to the early 1950's, the magnitude and diversity have dramatically increased since the 2000's.[7] [8] On the other hand, despite their short history as donor country, South Korea shows the ambition to be a competent actor both in the committed amount and the impact induced by foreign aid.[9]

However, despite the growing importance in the international development (ID) field, there is little concrete information available. Where it can be found, it tends to consist of subjective judgments or speculations based on insufficient and incomplete

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http://www.oecd.org/document/50/0,3343,en_2649_33721_44141618_1_1_1_1,00.html (accessed on Feb 13, 2011)

5 GDP per capita of China in 1980 was only 310.5 USD, while that of Korea was 1,689 USD in the same year. Retrieved from the Economist Intelligence Unit (EIU) database (accessed on Jan 5, 2011)

6 China had received 23.6 billion USD of bilateral ODA from 1979 to 1998. Takamine, Tsukasa (2006), The Political Economy of Japanese Foreign Aid: The Role of Yen Loans in China's Economic Growth and Openness, *Pacific Affairs*, 79(1), 32. South Korea had received the total foreign aid of 33.1 billiion USD from 1945 to 1999 from advanced countries and international organizations. Ministry of Finance and Economy (2007), *Economic Development Cooperation Fund 20 Years*, 34.

7 China and African countries launched the Forum on Chinia-Africa Cooperation (FOCAC) in 2000. President Hu Jintao committed to double the 2006 level of aid to Africa over the next three years at FOCAC of 2006 in Beijing. Brautigam (2008a), China's Foreign Aid in Africa: What Do We Know, in Rotberg, Robert I. (ed.), *China into Africa: Trade, Aid , and Influence*, Massachusetts: World Peace Foundation, 207.

8 According to Ministry of Commerce (MOFCOM, 商务部) of China, they have provided foreign aid to more than 16o countries in various forms since 1950. Source: http://yws.mofcom.gov.cn/aarticle/m/200801/20080105361773.html (accessed on May 22, 2011)

9 South Korea also committed to increase its ratio of ODA (Official Development Assistance)/GDP from 0.07% (approximately 1.0 billion USD) to 0.25% (approximately 3.3billion USD) by 2015. Source: http://article.joinsmsn.com/news/article/article.asp?total_id=3312868&cloc=rss%7Cnews%7Ctotal_list (accessed on Feb. 13, 2011) Furthermore, they have kept pace with developed donor countries by participating OECD DAC in 2010.

information. For instance, due to the incoherence of Chinese governmental agency's released data regarding its amount of aid, it is difficult to pinpoint the exact figure.[10] As for Korea, though the statistical system is comparatively open,[11] research on Korean foreign aid is not well documented.

This problem becomes even more exacerbated when it comes to the aid given to the African continent. China's *Grand Aid Plan* for Africa in 2006 was well-known for its unprecedented magnitude and extraordinary generosity. In particular, President Hu Jintao pledged that they would double their aid to Africa by 2009.[12] As for South Korea, although its aid volume toward Africa cannot meet that of China, Seoul has tried hard to increase their portion and volume of aid to Africa.[13] However, it still remains relatively unknown as to what the actual driving forces have been behind the foreign aid policies of Beijing and Seoul. Therefore, a wide spectrum of conjectures on each country's intention, means and expectation toward the recipient African countries have been formed but most are not academically substantiated.[14]

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[10] An associated press reported that China's Premier said that China has given Africa more than 44billion USD in aid since beginning aid program. However, there has not been publicized details. Brautigam, Deborah (2009), *The Dragon's Gift: The Real Story of China in Africa,* New York: Oxford University Press, 177.

[11] There are databases to calculate related Korean foreign aid statistics both in the website of OECD DAC (http://stats.oecd.org/Index.aspx?DatasetCode=TABLE2A) and the Korean Exim Bank (http://www.edcfkorea.go.kr/statistics/use.jsp?st_code=6&nd_code=1).

[12] Brautigam (2009), *op cit*., 206.

[13] Korean government announced at the Korea-Africa Economic cooperation Conference (KOAFEC) on Oct. 29, 2008 that Seoul will assist 760 million USD economic cooperation programs by 2012. Source: http://www.mosf.go.kr/_policy/policy06/policy06.jsp?boardType=general&hdnBulletRunno=76&cvbnPath=&sub_category=131&hdnFlag=1&cat=&hdnDiv=&select=subject&keyword=%EC%95%84%ED%94%84%EB%A6%AC%EC%B9%B4&hdnSubject=%EC%95%84%ED%94%84%EB%A6%AC%EC%B9%B4&&actionType=view&runno=86031&hdnTopicDate=2008-10-29&hdnPage=1 (accessed on Feb. 13, 2011)

[14] More than a few western commentators suspect that many emerging countries (especially China) have used foreign aid as a tool of securing energy resources or other political purposes. *China Safari: On the trail of Beijing's Expansion in Africa* written by Michel, Serge and Beuret, Michel (2009) is one of the examples.

Given the growing importance of these two countries' presence in Africa and the much needed development in the academic community about how they have implemented their financial assistance, we aim to clarify the significant underlying factors at work which have affected the two countries' foreign aid policies in the Dark Continent. The findings can serve as a stepping-stone for further studies concerning the purpose behind donor countries' aid strategy.

1.2 Definitions of Key Terms

Before moving to the main subject, we need to differentiate working definitions of related concepts such as International Development (ID), foreign aid and Official Development Assistance (ODA) in order to deal with the PRC and ROK's foreign aid system. Some of these definitions of foreign aid are reported in mixed fashion and hence are easily confused. Therefore, there is a potential danger to misuse these terms and jump to hasty conclusions, especially in the case of China.[15]

First, China is not a member of the Organization for Economic Cooperation and Development (OECD). Therefore, they do not rely on the widely-used concept of ODA which was the standardized version created by this international organization. In this sense, a precise and meaningful comparison between China's foreign aid and those of other donor countries is rather daunting and requires a scrutinized interpretation.

[15] There are some cases which show misinterpretations on the amount of Chinese foreign aid. Brautigam (2009), *op cit.,* 163-164.

There is no united concept regarding ID. However, from our perspective, ID is the broadest concept among these definitions as it includes activities ranging from aid in promoting human development, better education, enhanced governance, secured human rights, to constructing economic infrastructure.

In terms of scope, foreign aid is in between those of ID and ODA. Some define it as an international transfer of capital, goods, or services from a country or international organization for the benefit of a recipient country and its population.[16] This definition does not distinguish among different types of organizations (i.e., government vs. non-government agency). It includes the private flows implemented by private companies and Non-Governmental Organizations (NGOs). Others define foreign aid as funding given from governments to promote economic and social development in less-advantaged countries.[17] According to this definition, loans from governmental agencies such as Other Official Flows (OOF)[18] can be categorized as foreign aid regardless of concessional characteristics as long as it is related to governmental activities. In this thesis, we adopt the latter concept of foreign aid in making comparisons between countries.

ODA, the term accepted by most developed donor countries, is the narrowest concept among the three terms used to describe aid activities. ODA owes its origin to the

[16] Definition from the Encyclopedia Britannica. Source: http://www.britannica.com/EBchecked/topic/213344/foreign-aid (accessed on Feb 13, 2011)

[17] Brautigam (2009), *op cit.,* 13.

[18] Transactions by the official sector with countries on the List of Aid Recipients which do not meet the conditions for eligibility as Official Development Assistance or Official Aid, either because they are not primarily aimed at development, or because they have a Grant Element of less than 25 per cent Source: http://stats.oecd.org/glossary/detail.asp?ID=1954 (accessedon Mar 3, 2011)

OECD Development Assistance Committee (DAC).[19] According to the DAC, ODA refers to the official flows to developing countries that can be provided by official agencies. This ODA should satisfy two conditions: 1) administered with the promotion of the economic development welfare of developing countries 2) concessional in character so as to convey and grant an element of at least 25%.[20]

We believe that these distinctions important. Some time ago it was reported in the media that ODA was, in fact, not ODA but foreign aid or ID.[21] [22] As mentioned above, China is not a member of the OECD and therefore, does not produce ODA statistics. On the other hand, Korea is obliged to provide its ODA data annually as an OECD member. At this juncture, we have to compare these two countries under the situation of not having exactly comparable statistics. In this sense, we would say that when we refer to foreign aid of China, it means foreign aid – a broader concept than ODA. On the other hand, when we mention Korean foreign aid, it means ODA unless otherwise noted.

[19] The DAC first defined ODA in 1969, and tightened the definition in 1972. ODA is the key measure used in practically all aid targets and assessments of aid performance. Source: http://www.oecd.org/document/4/0,3746,en_2649_34447_46181892_1_1_1_1,00.html (accessed on Feb. 14, 2011)

[20] Source: http://stats.oecd.org/glossary/detail.asp?ID=6043 (accessed on Mar 3, 2011)

[21] The Nigerian Lagos-Kano railway project financed by China was reported as 9 billion USD aid in *the New York Times*, but according to an expert of Chinese foreign aid, it was mixed credit. Brautigam (2009), *op cit*., 176.

[22] The necessity of cautious of interpretation regarding Chinese foreign aid has been indicated in the US government agencies. Lum, Thomas, Fischer, Hannah, Gomez-Granger, Julissa and Leland, Anne (2009), "China's Foreign Aid Activities in Africa, Latin America, and Southeast Asia", Congressional Research Service, 2.

1.3 Literature Review

The literature that looks into the underlying factors of the East Asian countries' foreign aid can be classified into two major categories: One is research concerning the relationship between foreign aid and foreign direct investment (FDI) in economic terms. The other focuses on China's or Korea's foreign aid based on the country's individual characteristics from the perspective of political economy. We briefly survey these two strands of research below.

1.3.1 General Relationship between foreign aid and FDI

Controversies arise in the academic arena about whether or not foreign aid from a donor country tends to promote FDI from the same donor to the recipient country (the so-called *vanguard effect*).[23] Even advanced economies such as the United States (US) and Japan state that a reciprocal economic relation between aid and FDI would help the economies of developing countries[24], but whether or not a direct relation exists between these two economic activities is ambiguous because some multiple channels could affect the vanguard effect. For instance, foreign aid can increase the donor country's FDI by improving the recipient country's socio-economic infrastructure (*infrastructural effect*) and enhancing the economic capability of the developing countries to finance outflows from FDI *(financing effect*).[25] However, there are also some negative factors that hamper the vanguard effect. In these cases, foreign aid might not only encourage some major actors of the recipient country to

[23] Kimura, Hidemi and Todo, Yasuyuki (2010), "Is Foreign Aid a Vanguard of Foreign Direct Investment? A Gravity-Equation Approach", *World Developmen*t, 38(4), 482.

[24] *Ibid.*

[25] *Ibid.*

seek rent (*rent-seeking effect*) but also distort the resource allocations between economic sectors (*Dutch-disease effect*) and thus make investors from the rich country hesitate before investing more in the partner country[26].

Blaise (2005) focuses on Japan's foreign aid case in China. He argues that Japan's aid flow promoted its own FDI inflows at the provincial level of the PRC through a conditional logit model which was used in empirical studies of location choice from 1980 to 1999.[27] Kimura and Todo (2010) made an international comparison between Japan and other donor countries such as the US, the United Kingdom (UK) and France. They concluded that Japan's aid has a positive and significant effect on its FDI, while this correlation was not significant for any of the western countries.[28] To explain these statistical results, they assumed that the Japanese government's close coordination with private sectors in conducting its foreign aid has something to do with Japan's unique case.[29] Kang, Lee, and Park (2010) compared Korea's vanguard effect with Japan's past case. They 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 (grants or loans), region, and income level of recipient countries.[30] The authors also draw a conclusion that at the very least these two countries' foreign aid can lead to an increase in foreign investment flows.[31]

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[26] *Ibid.*

[27] Blaise, Severine (2005), "On the Link between Japanese ODA and FDI in China: a Microeconomic Evaluation using Conditional Logit Analysis", *Applied Economics*, 37(1), 51.

[28] Kimura and Todo (2010), *op cit.,* 491.

[29] Kimura and Todo (2010), *op cit.,* 492.

[30] Kang, Sung Jin, Lee, Hongshik, and Park, Bokyeong (2010), "Does Korea follow Japan in foreign aid? Relationships between aid and foreign investment", *Japan and the World Economy*, 3.

[31] Kang et al., (2010), *op cit.,* 9.

Sanfilippo (2010) conducts research on China's FDI to the African continent. The author assumes that Chinese outward FDI to Africa is a function of Gross National Income (GNI), trade volume with China, debt risk of the recipient countries and so on. After operating his statistical model, he concludes that Chinese FDI to Africa is driven by its energy demand and the market potential of partners.[32] Zhang, Yuan, and Kong (2010) focus on relationships between Chinese foreign aid and FDI in terms of gross African continent. They test whether or not the PRC's foreign aid and FDI have complementary relations and draw a conclusion that Beijing's aid has had a tendency to lead to more FDI outflows to Africa, but recently, China has started to substitute its aid with its FDI in Africa.[33]

1.3.2 China and South Korea's foreign aid to Africa

1.3.2.1 Determining factors affecting China's foreign aid to Africa

In spite of the difficulties that exist in accessing the official statistics of China's foreign aid, research on Chinese foreign aid policy has been burgeoning in recent years.[34] Researchers have discussed some of the factors affecting Chinese foreign aid policy. Humanitarian demands from underdeveloped African countries that result from natural disasters or political turmoil would be one of the basic considerations.

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[32] Sanfilippo, Marco (2010), "Chinese FDI to Africa: What Is the Nexus with Foreign Economic Cooperation? ", *African Development Review*, 22(S1), 610.

[33] 张汉林，袁 佳，孔 洋（2010）, "中国对非洲 ODA 与 FDI 关联度研究(A Study on the Linkage between China's ODA andFDI to Africa) "，世界经济研究，2010 年 第 11 期 (Serial No. 201)，73.

[34] For example, there are a number of books and journals available such as *China's African Challenges* written by Raine, Sarah (2009), *China Safari: On the trail of Beijing's Expansion in Africa* written by Michel, Serge and Beuret, Michel (2009), and *China into Africa: Trade, Aid and Influence* edited by Rotberg, Robert I. (2008).

For instance, Brautigam (2009) indicates that China does make use of the Red Cross to provide humanitarian aid in natural disasters in Africa.[35]

Political factors also cannot be ignored because the African continent has many countries and therefore, exerts a big influence on the international community.[36] Davies, Martyn (2008) represents this position. When he selected the case of Chinese foreign aid with Ethiopia, he mentioned that Ethiopia has been critical for China because this country was not only the previous African chair of the Forum on China-Africa Cooperation (FOCAC), but also the headquarters of the African Union and one of its most populated countries.[37] In this sense, some scholars indicate that China tends to pay more attention to countries which have big voices among African countries.

Economic factors certainly make up a serious consideration in foreign aid policy. As the Chinese economy has grown rapidly, economic cooperation between China and African countries has increased congruently.[38] For example, the supply of natural resources from Africa has been playing a role in driving China's economy. Hurst, Cindy (2006) champions this view by arguing that Beijing has put their energy security ahead of everything else in Africa to meet its domestic industrial and

[35] Brautigm (2009), *op cit.*, 66.

[36] For example, African countries consist of a quarter of the total 192 member states. Source: http://www.un.org/en/members/growth.shtml#2000 (accessed on May 22, 2011)

[37] Davies, Martyn (2008), "How China delivers development assistance to Africa, Center for Chinese Studies", University of Stellenbosch, 8.

[38] China is African continent's largest trading partner in 2009. Source: http://english.cntv.cn/program/bizasia/20101015/101588.shtml (accessed on Feb 13, 2011)

consumer needs.[39] Stable energy supply is a central artery of the Chinese economy in terms of sustaining rapid industrialization and improving people's living standards.[40]

Regarding the energy supply factors which have affected China's foreign aid policy, there are two different points of view on whether or not energy demand is the major determinant on the volume of Chinese foreign aid to Africa. The first view purports to an energy-savvy aid policy. In this vein, Lagerkvist, Johan (2009) criticized China for using a ''no-strings-attached'' foreign aid policy to stabilize its supply of natural resources from authoritarian regimes in Africa.[41] Schiere, Richard (2010) warns that the unfair situation of Chinese aid style of free-ride would lend support to energy abundant dictatorships.[42] Woods, Ngaire (2008) also indicates that China has written off total debts of some 2.13 billion USD for 44 countries including 31 African countries in doing just that.[43]

The other position is more cautious and less judgmental with regards to the direct and close relationship between African countries which have abundant natural resources such as crude oil, natural gas and the volume of foreign aid of China. Brautigam (2009) is the representative scholar supporting this stance. While acknowledging the

[39] Hurst, Cindy (2006), "China's Oil Rush in Africa", the Institute for the Analysis of Global Security (IAGS), 16.

[40] This tendency has become more strengthened since China become a net-importer since the mid 1990s.

[41] Lagerkvist, Johan (2009), "Chinese eyes on Africa: Authoritarian flexibility versus democratic governance", *Journal of Contemporary African Studies*, 27(2), 119-134.

[42] Schiere, Richard (2010), "Building Complementarities in Africa between Different Development Cooperation Modalities of Traditional Development Partners and China", *African Development Review*, 22(s1), 615-628.

[43] Woods, Ngaire (2008), "Whose aid? Whose influence? China, emerging donors and the silent revolution in development assistance", *International affairs*, 84(6), 1209.

Chinese growing energy demand and the effort to secure energy supply, the author makes the point that it does not necessarily imply that Beijing's foreign aid policy toward African countries is the means to attain such a goal.[44] According to her argument, if we define foreign aid narrowly such as ODA, many of the Chinese international development activities cannot be classified as foreign aid. From this perspective, the author argues that there is no direct relationship between these two activities.

1.3.2.2 Determining factors that affect South Korea's foreign aid to Africa

Despite the relative ease in having access to details from the Korean side, ironically, research on Korean foreign aid is not too well developed. The lack of attention may be due to the relatively short history and small amount of Korean aid. There are some official publications which introduce Korean aid accomplishments through its 20-year long history.[45] They point out that Korea has tried to strike a balance between its responsibility toward the international community and the necessity to keep its economy going.[46] Brautigm (2008b) also briefly mentions the Korean case to make an analogy with that of China.[47] She, however, does not enter into any details. Kang *et al.* (2010) recently published an academic paper that deals with the comparison between Japan and Korea's ODA, and their FDIs to developing countries.[48]

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[44] Brautigam (2009), *op cit.*, 3.

[45] *Economic Development Cooperation Fund 20 Years* published by Ministry of Finance and Economy (currently Ministry of Strategy and Finace) and the Korean Exim Bank in 2007 is the example.

[46] *Economic Development Cooperation Fund 20 Years*, 36-37.

[47] Brautigam, Deborah (2008b), "China's African Aid: Transatlantic Challenges", The German Marshall Fund of the United States, 23.

[48] Kang et al. (2010), *op cit.*, 1-9.

Considering the rapidly growing trend, Korean aid will inevitably be put in the spotlight soon and this research can be a stepping-stone for advanced studies in the near future.

Korea also has various factors to take into consideration when it makes a decision on its foreign aid policy. Seoul certainly will contemplate about the distributional weights put on humanitarian demands[49] arising from natural catastrophes or political unrest, the strategic importance of certain countries, and the economic relationships between Korea and her partners. Among these many possibilities, we are going to place more emphasis on the economic aspect. There are some criticisms leveled on new emerging donors in terms of the purpose of their aid toward less-developed countries. These commentators argue that developing countries have a strong tendency to make use of their foreign aid as leverage for their FDI or own exports tied with donor's products and technology.

1.4 Research Design and Method

Until now, we have justified the necessity of this research and have surveyed the related literature. We find that the existing research has covered some parts of Chinese or South Korean foreign aid from various perspectives, but there is no explicit quantitative approach on what kinds of factors have affected the foreign aid policies of these two emerging donors.

[49] This is one of important official assistance criteria of foreign aid of Korean government agencies such as the Ministry of Foreign Affairs and Trade. Source: http://www.mofat.go.kr/state/multiplediplomacy/achievement/index.jsp (accessed on Feb. 13. 2011)

To fill the gap, we inquire: *"What kinds of economic indicators have affected China and South Korea's foreign aid policies?"* To answer this question, we will assume that aid policies *"a la"* the amount of the foreign aid can be explained by the set of dependent variables such as income level, economy size, natural resources of recipient countries and economic ties between the donors and their partners. Technically, we will utilize panel data analysis to observe whether or not there are significant differences with respect to the driving factors by African recipient countries and time.

1.5 Organization of Chapters

Following the present introduction, in Chapter 2 of this thesis, we will look into China and South Korea's foreign aid system to develop the background information that is necessary to understanding which factors have affected the foreign aid policies of these emerging donors. Chapter 3 and Chapter 4 will then explain how we organize related data and interpret the statistical outputs. Finally, in Chapter 5, we present some concluding remarks.

Chapter 2

China and South Korea's foreign aid system

2.1 China's foreign aid system

China presents a unique foreign aid system. It was founded on a much different motivation than those of Western countries and has not followed the standard of its peers. We describe their aid system in more details below.

2.1.1 Total amount and the amount to Africa

Officially, details of Chinese foreign aid figures have been kept confidential.[50] The Chinese government only announced that they had spent a total of $30 billion (including $ 13billion of grants) in aid since 1950s.[51] However, there is no detail by region, type or sector. There is much speculation regarding the total amount and the portion allocated to Africa because the Chinese government has not revealed the exact amount of foreign aid given. According to the US Congress Research Service, PRC's grant and debt cancellation toward Africa was estimated at 2.7 billion USD from 2002

[50] 中国商务年鉴 2004, 中国商务年鉴 编辑委员会 编，中国商务年鉴出版社, 875. According to the ministry, they do not produce any information of their foreign aid. (中国也提供援助，但未提供数据.)

[51] Chinese Premier Wen Jiabao anounced that at a high-level meeting on the Millennium Development Goals in 2008. Source: http://www.china-embassy.org/eng/zmgx/zmsbzyjw/C/t515279.htm (accessed on May 22, 2011). Wen said that 206.5 billion yuan (including 90.8 billion yuan free aid) have been provided. The figure was converted by USD by Brautigam, Brautigam (2009), *op cit.,* 165.

to 2007.[52] Brautigam (2009), one of the experts on Chinese foreign aid to Africa, argued that the total amount of Chinese foreign aid in 2007 was estimated as 3,046 million USD and the amount of money to Africa 1,380 million USD[53] as shown in Table 1, but she could not provide more detailed data which would be of interest for our research.

Table 1: Chinese aid from 2003 to 2009

(Unit: USD million)

	2003	2004	2005	2006	2007	2008	2009
A. Total Chinese Aid (B+C+D)	1,314	1,498	1,787	2,172	3,046	n/a	n/a
B. China official budget for external assistance	631	733	912	1,028	1,466	n/a	n/a
C. Exim bank concessional loans	233	315	425	693	1,130	1,842	3,003
D. Chinese debt cancellation	450	450	450	450	450	450	n/a
E. Total Chinese aid to Africa (F+G+H)	769	753	861	1,030	1,380	1,811	2,476
F. Official budget for external assistance to Africa	278	220	273	309	440	515	600
G. Exim bank concessional loans to Africa	117	158	213	347	565	921	1,501
H. Debt relief to Africa	375	375	375	375	375	375	375

Source: Brautigam (2009), *op cit.*, 317.

[52] Lum (2009) *et al.*, *op cit.,* 7.

[53] Brautigam (2009), *op cit.,* 317.

2.1.2 Brief History

Even though China's foreign aid has only recently been spotlighted, China's foreign aid has a long history starting from the 1950's contrary to what many people believe. Reflecting on many experts' opinions[54] and our research, we can categorize Chinese aid history into four stages: Phase I (1950-1974), Phase II (1974-1990), and Phase III (1991-2000), and Phase IV (2001-present).

Phase I (1950-1974) can be summarized as a stage of ideological aid to obtain political support from the outside world. The aid environment to China was not so friendly because the Cold War was in progress and moreover, there was even diplomatic competition across communist lines with the Soviet Union. At that time, there was serious diplomatic competition between China and Taiwan, so the establishment of official diplomatic ties was normally followed by aid assistance.[55] Former Chinese Premier Zhou Enlai's eight principles[56] which were announced when he traveled to Africa in 1964 were produced in this context. To attract attention from the Third World including African, Asian and Latin American countries and

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[54] Li, Xiaoyun (2008), "China's Foreign Aid and Aid to Africa: overview", 2-4. Source: http://www.oecd.org/dataoecd/27/7/40378067.pdf (accessed on May 22, 2011) and Brautigam (2008b), *op cit.*, 8-12.

[55] Brautigam (2008b), *op cit.,* 8.

[56] Former Premier Zhou Enlai's "Eight Principles for China's Aid to Foreign Countries" in 1964 can be summarized like this: i) equality and mutual benefit, ii) respect for sovereignty, iii) form of interest-free or low-interest loans, iv) support for recipient countries' self-sufficiency, v) efficient aid, vi) provision of best equipment, vii) transfer of required techniques, viii) the same treatment between Chinese experts and locals.

break through the 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 their economy in the 1980's, its aid goal also started to take on a perspective that was more economical in nature. Because Beijing made some adjustments in its domestic economic policies as well as its aid projects, Beijing announced a relatively small amount of new projects.[57] When Former Chinese Premier Zhao Ziyang visited Africa in 1982, he said that China would diversify in aid forms which implied a change from unilateral support to mutual economic cooperation.[58] The Chinese government apparently seemed to recognize the benefit of the spillover effect between external aid projects and domestic economic growth.

In the 1990's of Phase III (1991-2000), China refocused its relationship with African 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. Former Premier Li Peng, on a trip to six African countries in 1997, 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".* [59]

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[57] Li (2008), *op cit.,* 3 and Brautigam (2008b), *op cit.,* 10.

[58] Brautigam (2008b), *op cit.,* 8 .

[59] Brautigam (2008b), *op cit.,* 12.

In Phase IV (2001-present), China apparently seems to have recognized itself as a big country to compete with other developed donors. To take hegemony to the ID field, they started to hold the FOCAC in October 2000 for the first time. Many experts interpret the purpose of the establishment of this meeting as being to solidify economic ties with African countries including obtaining a supply of natural resources as well as to show its influence as a responsible player. In this sense, they tried hard to secure natural resources and support the efforts of Chinese companies to win contacts and establish ventures in developing countries.[60] In 2006, President Hu Jintao committed to double the 2006 level of aid to Africa over the next three years.[61] It was not officially announced, but we found through our research that some adjustment activities such as reducing new projects in 2005 were observed to process such huge commitments.[62]

2.1.3 Governance

The State Council is the highest authority to make major decisions regarding foreign aid policy.[63] Under the coordination of the council, the Ministry of Commerce (MOFCOM) is in charge of governing China's aid program including concessional loans and grants.[64] To support this program, the Ministry of Finance (MOF) on consultation with MOFCOM is responsible for preparing the foreign aid budget. The Ministry of Foreign Affairs (MOFA) is in charge of China's Africa policy and

[60] Brautigam (2008b), *op cit.,* 10.

[61] Source: http://chinadigitaltimes.net/china/africa-summit/ (accessed on May 21, 2011)

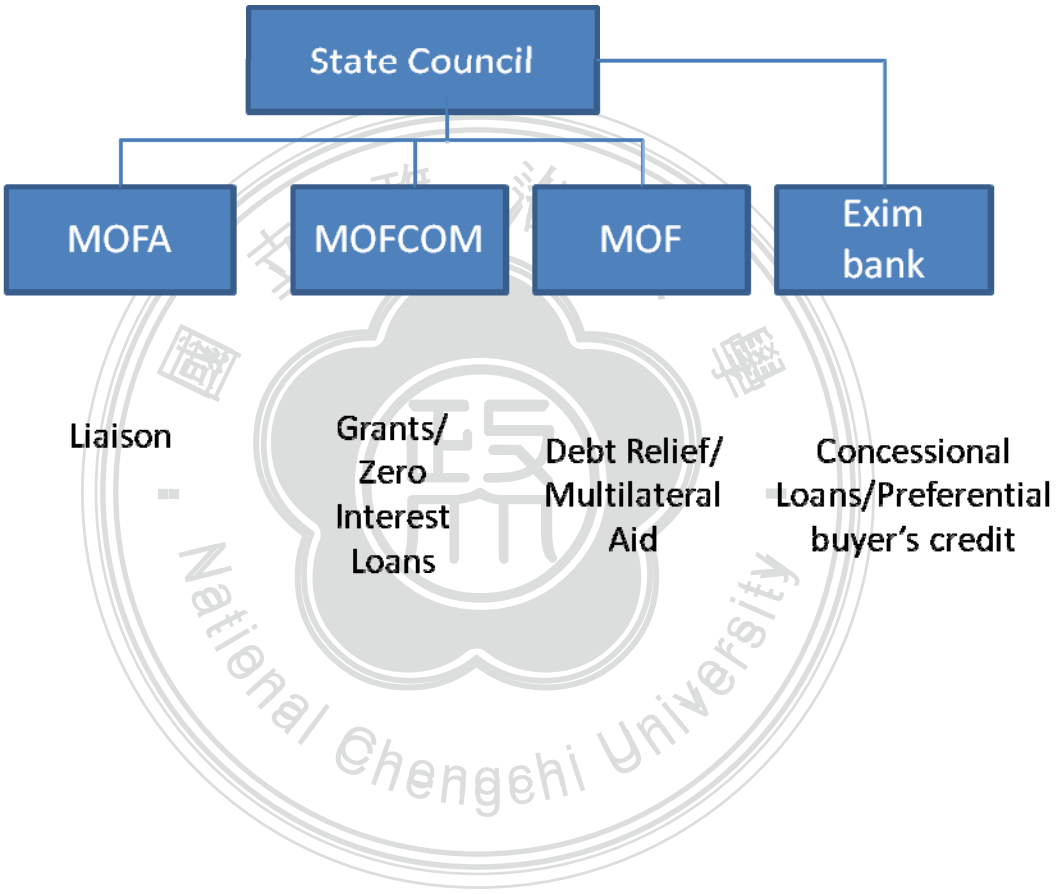
[62] We will elaborate on that in the section of Chapter 3.

[63] Lancaster, Carol (2007), "The Chinese Aid System", Center for Global Development Essay, 3.

[64] Davies (2008), *op cit.,* 13.

controls Chinese embassies in the region. The Exim bank of China covers concessional loan financing. Diagram 1 shows the foreign aid governance structure of China.[65]

Diagram 1: Governance of Chinese foreign aid



[65] Brautigam (2009), *op cit.*, 108.

2.2 South Korea's foreign aid system

2.2.1 Total amount and the amount to Africa

The statistics of Korean foreign aid (exactly speaking, ODA) are more transparent than those of China in terms of accessibility and consistency. According to the databases of the OECD-DAC, the total amount of Korean aid was 815.54 million USD and the amount of foreign aid to Africa was 94.48 million USD in 2009 as shown in Table 2. Compared with the volumes of China (3,046 million USD of 2007 in total, 1,380 million USD of 2007 to Africa), the amount is small. However, the Korean government has also recently started to emphasize the African continent because of its attractiveness as a potential market and source of natural resources. The proportion of Korean bilateral ODA to Africa has been significantly increased from 7.7% (18.98 million USD) of the total bilateral ODA in 2003 to 16.3% (94.48 million USD) in 2009.

Table 2: Korean aid from 2003 to 2009

(Unit: USD millions)

	2003	2004	2005	2006	2007	2008	2009
Total ODA(A+B)	365.91	423.32	752.32	455.25	696.11	802.34	815.54
Bilateral(A)	245.17	330.76	463.30	376.06	490.52	539.22	580.6
(to Africa)	(18.98)	(28.11)	(39.14)	(47.83)	(70.17)	(104.06)	(94.48)
Multilateral(B)	120.74	92.56	289.01	79.19	205.59	263.12	234.94

Source: OECD DAC database, net disbursements criteria.

2.2.2 Brief History

We can classify Korean aid history into three stages: Stage I (1987-1997), Stage II (1998-2005), and Stage III (2006-Present). Officially South Korea started its own aid to other countries in the form of a training program for officials from other developing countries in 1968, but its main aid activities were launched only after the late 1980s.

In Stage I (1987-1997), Korea's economy grew rapidly and their reputation was enhanced through the organization of the 1986 Asian games and the 1988 Seoul Olympics. South Korea started to provide major foreign aid from the 1980's onwards. The huge Current Account Surplus in the late 1980s strengthened this economic cooperation.[66] In this sense, the original motivation of foreign aid was economic orientation. To organize foreign aid activities, Seoul established the Economic Development Cooperation Fund (EDCF) in 1987 and the Korea International Cooperation Agency (KOICA) in 1991.

During Stage II (1998-2005), Seoul needed to adjust directions and efficiency of foreign aid after experiencing the harsh Asian financial crisis of the late 1990s. Reflecting on this trend, few new projects were launched in the early 2000s.[67] Seoul faced the dilemma of having to accept budget constraints while at the same time showing its presence in the aid arena. That is one of the major reasons why the Korean government preferred small social projects to huge economic infrastructure constructions during this time.

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[66] *Economic Development Cooperation Fund 20 Years*, 36.

[67] *Economic Development Cooperation Fund 20 Years*, 66.

Stage III (2006-Present) represents a new movement for South Korean aid. As the Korean economy recovered gradually, Seoul started 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 Ministry of Finance and Economy (currently Ministry of Strategy and Finance (MOSF)). The ROK has also tried hard to promote the quality and quantity of its foreign aid by reflecting on 20 years of 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. South Korea has also committed to increase its ratio of ODA/GDP from 0.07% (approximately 1.0 billion USD) to 0.25% (approximately 3.3billion USD) by 2015.[68]

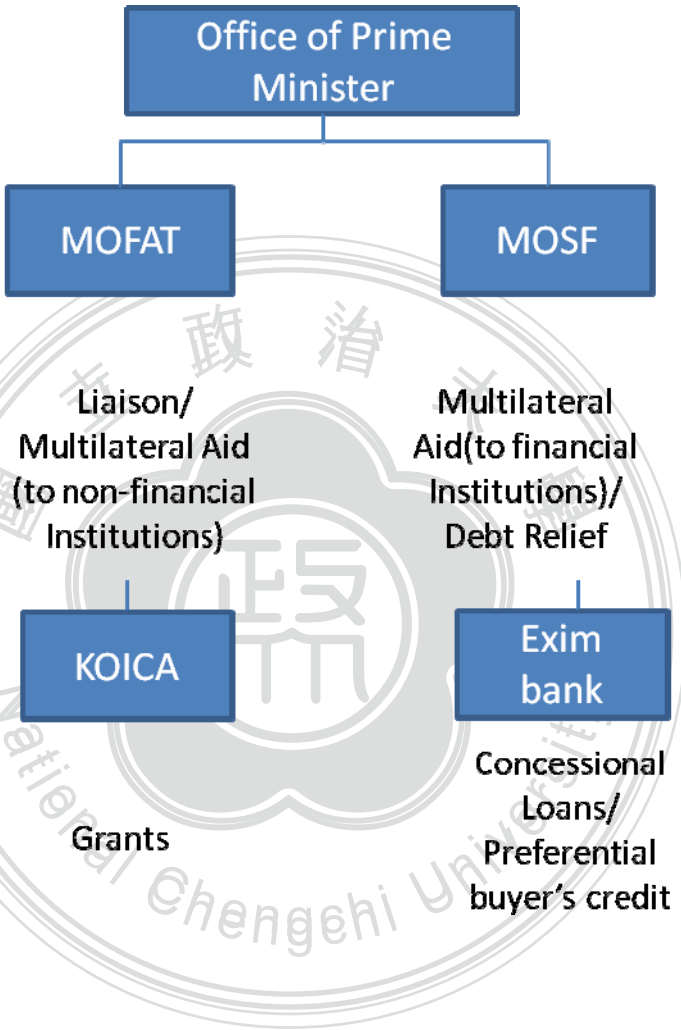
2.2.3 Governance

As shown in Diagram 2, Korean governance structure of foreign aid looks similar to that of China in that it also has a coordination agency known as the Office of Prime Minister (OPM) of Korea. The Korean foreign aid system has two axes under the coordination of the Office of Prime Minister (OPM). One of them is the MOSF which is responsible for concessional loans and multilateral aid to international financial institutions. The Korea Exim bank implements concessional loans to support MOSF. The other axis is comprised of MOFAT and KOICA. MOFAT is in charge of grants and multilateral aid to non-financial institutions while KOICA

[68] Source: http://article.joinsmsn.com/news/article/article.asp?total_id=3312868&cloc=rss%7Cnews%7Ctotal_list (accessed on Feb. 13, 2011)

covers the grants of MOFAT. However, in many cases, the MOFAT and the MOSF have more autonomy in making decisions than their counterpart agencies in China.

Diagram 2: Governance of Korean foreign aid



2.3 Comparisons between China and South Korea's foreign aid systems

2.3.1 Structure of foreign aid

China and South Korea have common characteristics in that they are both regarded as new emerging donors in many cases. However, there are some distinctions in terms of

origination, size, and governance because they have developed their own aid systems by adapting themselves to different political and economic context. The summary of comparison between the aid systems of China and South Korea is shown in Table 3.

Table 3: Comprehensive Comparison between China and South Korea

Country	China	South Korea
Starting time	1950[69]	1963[70]
Legal Basis	-The Law of Management of Foreign Aid[71]	-The Law of Cooperation of International Development[72] -The Law of EDCF -The Law of KOICA
Total Amount of Foreign Aid	3,046 million USD (2007) [73]	696 million USD (2007)[74]
Amount to Africa	1,380 million USD(2007)	70 million USD(2007)
Governance	-Coordination: State Council -Loans: MOFCOM, Exim bank -Grants: MOFCOM -Multilateral aid: MOFA	-Coordination: OPM -Loans : MOSF, Exim bank -Grants: MOFAT, KOICA -Multilateral aid: MOSF, MOFAT

[69] Source: http://yws.mofcom.gov.cn/aarticle/m/200801/20080105361773.html

[70] It was a training program of workers of developing countries. I think that Korean government's foreign aid substantially started from the establishment of Economic Development Cooperation Fund(EDCF) in 1987. Source: http://www.edcfkorea.go.kr/statistics/oda.jsp?st_code=6&nd_code=8

[71] The name of the law in Chinese is "对外援助成套项目管理办法". Source: http://yws.mofcom.gov.cn/aarticle/o/a/200901/20090105998123.html

[72] The name of the law in Chinese is "國際開發協力基本法".

[73] Brautigam(2009), *op cit.*, 317.

[74] Source: OECD DAC database, net disbursement criteria.

2.3.2 Compositions of foreign aid

In this part, we will look into the compositions of China and South Korea's foreign aid to Africa by type, sector, and income level of recipient countries. The official figures from the Korean foreign aid are relatively easy to acquire because official statistics are open to everyone at international organizations such as OECD DAC and the Korean government website.

The official figures of Chinese foreign aid are, however, not explicitly reported. Furthermore, the different concepts of foreign aid that China and South Korea have adopted make it more difficult to draw comparisons. To overcome this difficulty, we will use academic research relating to Chinese foreign aid. Garne (2007)[75] and Davies (2008)[76] have collected data based on media reports that can reveal the hitherto undisclosed Chinese foreign aid statistics.[77] Admittedly there are some limitations involved in the interpretations of the exact figure of Chinese statistics. Nevertheless, these data sets can serve as an alternative in China's case.

Under this consensus, we categorize the composition of foreign aid into three parts: aid type (grants/loans), income level of recipient countries (Least Developed Countries (LICs) / Other Low Income Countries (Other LICs)/ Lower Middle Income

[75] Garner, Matthew (2007), "Old Friends, New Partnerships: Chinese Foreign Aid to Africa and its Relation to Chinese Security Interests", Natinal Chinese Flagship, the Ohio State University.

[76] Davies (2008), *op cit.,* 66-68.

[77] If there is some lack of clarity in the classification by sector or type, we will categorize individual project based on its title for each Chinese case.

Countries (LMICs) / Upper Middle Income Countries(UMICs))[78], and sector (social / economic /production / multi-sector / humanitarian / others).

With regards to aid type, grants mean a transfer to developing countries without any obligation to return. Concessional loans are loans which consist of at least 25% grants element. Income level of partner countries can be classified into LDCs, Other LICs, LMICs, and UMICs. Aid sector consists of social infrastructure (e.g. education, health, and government/civil society), economic infrastructure (e.g. transport/storage, communications, energy and financial services), production (e.g. agriculture / forestry / fishing / industry / mining / construction, and trade policies), multi-sector (e.g. general environment protection), humanitarian aid (e.g. emergency response and reconstruction relief / rehabilitation), and others (e.g. action relating to debt, commodity aid, and administration costs of donors).

Table 4 below summarizes the composition of these two countries' foreign aid from 2000 to 2006 to the 55 African territories for which data is available.[79]

[78] According to the World Bank, countries are classified into four categories (2009 criteria); Low income countries had GNI per capita of US$995 or less. Lower middle income countries had GNI per capita between US$996 and US$3,945. Upper middle income countries had GNI per capita between US$3,946 and US$12,195. High income countries had GNI above US$12,196. Source: http://data.worldbank.org/about/country-classifications (accessed on June 7, 2011)

[79] In Alphabetical order, these territories are Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep., Chad, Comoros, Congo DR, Congo Rep., Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Morocco, Mozambique, Namibia, Niger, Nigeria, Kenya, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, St. Helena, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

Table 4: China and Korea's aid (Commitments) to Africa from 2000 to 2006

(Unit: USD million)

	China*		South Korea**		DAC	
	Amount	Portion(%)	Amount	Portion(%)	Amount	Portion(%)
By Type						
-Grants	3,318.31	15.81	92.68	35.49	122,299.89	89.91
-Loans	17,626.39	84.18	168.49	64.51	13,729.10	10.09
By Income level						
-LDCs	12,792.36	60.99	125.16	48.00	73,207.76	53.82
-Other LICs	6,254.67	29.82	71.64	27.47	31,161.67	22.91
-LMICs	1,820.58	8.68	60.36	23.15	25,638.30	18.85
-UMICs	107.09	0.51	3.61	1.38	6,02139	4.43
By Sector						
-Social	2,033.43	9.72	53.86	84.49	41,254.44	31.31
-Economic	16,363.49	78.19	4.99	7.82	9,604.09	729
-Production	266.31	1.27	2.92	4.59	7,147.84	5.42
-Multi-sector	0.00	0.00	1.14	1.79	6,687.48	5.08
-Humanitarian	22.01	0.11	0.76	1.19	11,809.16	8.96
-Others	2,243.46	10.72	0.07	0.11	55,254.38	41.94

Source: OECD-DAC's database, Garner (2007), Davies (2008).

* Due to lack of official China's foreign aid data in detail, we refer to some related articles which review various sources including newspapers. Here, the scope of Chinese foreign aid tend to be broader than that of Official Development Assistance (ODA).

** Discrepancy between Korea's total amount of sector and type results from incomplete Korean data by sector from 2000 to 2005.

2.3.2.1 On Aid type

As shown in Table 4, Chinese aid is very different from that of advanced countries in terms of type. China's loans account for 84.18% of the total aid, while that of DAC member countries makes up only 10.09% of the total. The portion of loans of South Korea (64.51%) is in between China and DAC countries.

Our interpretation is that this phenomenon shows a transitional stage of foreign aid type. In the past, developed countries also relied more heavily on concessional loans[80], but their aid type transformed from loans to grants as their economies and civil societies became mature. However, China does not seem to be ready to follow in the footsteps of the rich countries for now because they are concerned about the potential for domestic backlash that could result from pouring huge amounts of money in foreign countries without resolving internal economic inequalities.[81] With regards to South Korea's case, it is an undeniable trend that the proportion of loans has been decreasing, with grants filling in the gap.[82] We think that this change reflects the transition of Korea's foreign aid as the Korean economy and society have matured.

2.3.2.2 On Different Income levels of recipient countries

Regarding income level of partner countries, the table indicates that China supports less developed countries than does South Korea. The portion of China's aid to LDCs

[80] For example, Japan's portion of loans of the total aid between 1985-1986 was 63% and it decreased to 47% between 2002 and 2006. Sung et al. (2010), *op cit.,* 9.

[81] Li, Anshan (2008), China's New Policy toward Africa, in Rotberg, Robert I. (ed.), *China into Africa: Trade, Aid , and Influence*, Massachusetts: World Peace Foundation, 39.

[82] In the case of Korea, portion of grants (net disbursements) has increased from 36% of the total in 2000 to 68% in 2008. Source: database of Korea Exim bank

is up to 60.99% of total, while those of Korea and DAC make up 48.00% and 53.82 % of total aid respectively. This signals mixed information because at first glance, China's aid puts more emphasis on countries in need, while sometimes these recipients overlap with countries which have abundant natural resources.[83] In this sense, it is a little bit hasty to conclude that China's aid pays more attention to the income level of its partner countries.

In the case of South Korea, they tend to focus on other LICs and LMICs rather than LDCs. Considering Korea's relatively small ODA volume and risk-avert tendency,[84] we believe that Seoul tries to provide their funds to African countries which have more predictable environments unlike in China's case.

2.3.2.3 On Sectoral Differences

China's aid shows that they focus more on economic sectors. Of China's total aid to Africa, 78.19% can be categorized into the economic sector. After Deng Xiaoping's economic reform, the Chinese foreign aid policy has also started to emphasize mutual

[83] It is not difficult to find African countries which is still very poor even though they have abundant natural resourses. Source: http://www.economist.com/node/5323394 (accessed on Mar 14, 2011)

[84] According to the website of MOSF, the International Development Cooperation Committee subordinate to OPM was held on March 9, 2011 and publicized that the Korean government is to provide a total aid amount of 1.7 trillion Korean Won (equivalant to 1.6 billion USD) in 2011. This fund will consist of grants (60 million Korean Won), EDCF (60million Korean Won), and funds provided to multilateral organizations (50 million Korean Won).

Regarding EDCF, Seoul emphasizes the need to carefully review the capabilitiy of recipient countries' (especially LDCs) repayments before launching new projects.

Source:
http://www.mosf.go.kr/_policy/policy06/policy06.jsp?boardType=general&hdnBulletRunno=76&cvbnPath=&sub_category=131&hdnFlag=1&cat=&hdnDiv=&select=dept&keyword=%EA%B0%9C%EB%B0%9C%ED%98%91%EB%A0%A5%EA%B3%BC&hdnDept=개발협력과&&actionType=view&runno=4008901&hdnTopicDate=2011-03-07&hdnPage=1 (accessed on Mar 14, 2011)

benefits based on efficient foreign aid projects.[85] This proportion of economic sector implies that China is more interested in constructing its partner's economic infrastructure such as railways, communications, and energy.

As for South Korea, the social sector makes up 84.49% of the total. We assume that Korean government tries to maximize their efficiency of foreign aid by investing their resources into small but influential social projects such as building hospitals, schools, and training African government officials. Compared with China's foreign aid size, Korea's competence is very restricted. Despite this limitation, Korea should show its presence even in Africa. In this sense, the most practical measure is to implement small-sized social projects which can also boost Korea's reputation.

[85] Brautigam (2008), *op cit.*, 203-204.

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Chapter 3

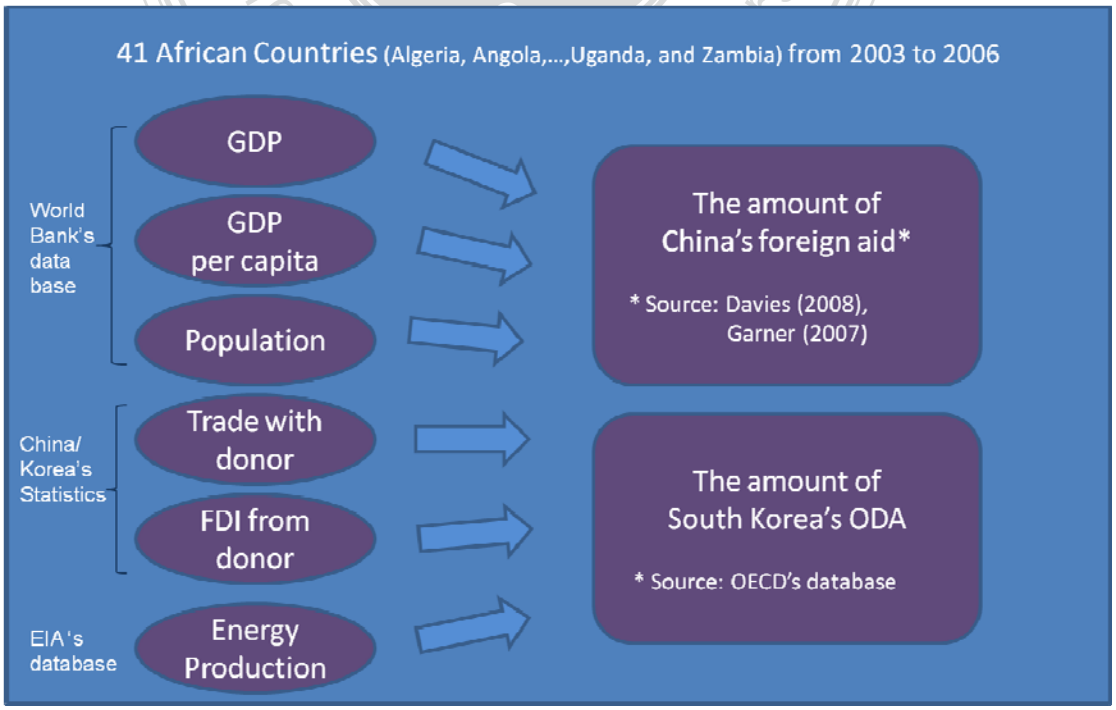
Panel Data Analysis (I) : Foreign Aid

Reflecting on our understanding of China and South Korea's foreign aid systems described in the above chapters, we are going to examine our "question" with regards to the relationships between the two countries' foreign aid policies and other economic factors possibly affecting them.

3.1 Data sets

Diagram 3 summarizes how we collected and organized the data sets relating to this research. Details are explained later on.

Diagram 3: Summary of data collection sources



3.1.1 African countries

According to the database of the World Bank, other governmental sources, there are 53 countries which have economic indicators including population, GDP, GDP per capita, trade volume, energy production etc. However, data of some African countries have been missing due to poor governance or other unknown reasons. Given the limitations of data availability, we have to narrow down the scope of the countries to the 41 countries[86] which provide consistent and reliable data sets. Detailed data of 41 African countries are shown in Appendix 1.

3.1.2 The donor countries' foreign aid

Under the assumption that the amount of foreign aid of these two countries has reflected their foreign aid policies, we have collected the two countries' aid volume. To obtain the amount of Korean foreign aid, we make use of database of OECD-DAC.[87] The database of OECD-DAC has efficiently accumulated aid figures of membership countries including South Korea in time series.

In the case of Chinese foreign aid, we rely on some literature such as the works of Garner (2007)[88] and Davies (2008)[89] which have been collected through research on

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[86] In alphabetical order, the 41 countries are Algeria, Angola, Botswana, Burundi, Cameroon, Cape Verde, Central Africa Rep., Congo DR, Congo Rep.,Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tuinisia, Uganda, and Zambia.

[87] Sourece: http://stats.oecd.org/index.aspx (accessed on Jan 7, 2011)

[88] Garner (2007), *op cit.*

[89] Davies (2008), *op cit.,* 66-68.

media reports revealing Chinese foreign aid statistics as mentioned in Chapter 1. Even though some official statistics labeled as *Foreign Economic Cooperation* (对外经济合作) can be observed, according to definitions of the figures[90], these statistics cover very broad economic activities including overseas projects funded by foreign countries as well as foreign aid.[91] In light of this, we start analyzing Chinese aid based on the literature sources mentioned above.

3.1.3 Economic factors affecting the aid

Concerning economic factors affecting the volume of foreign aid, we have selected GDP, GDP per capita, population, trade volume between the donor and the recipient country, FDI from the donor country, and energy production. We now assume that population implies size of the countries which may be linked to political influences in the continent, while GDP of recipient countries corresponds to their economic size. GDP per capita is an indicator to show the income level of the African countries. Trade volume between aid partners and FDI from the donor countries reflects economic closeness between the countries. Production of recipient countries' energy resources shows the importance from the perspective of energy security from the donor countries.

[90] 中国贸易外经统计年鉴 2008，国家统计局贸易外经统计司 编，中国统计出版社，801. According to this yearbook, These 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.

[91] Chinese *Foreign Economic Cooperation* by recipient country is shown in the fourth column of Appendix 1. Even though these figures do not exactly reflect the exact foreign aid size, they are actually the only detailed official figures that could be obtained from the Chinese authorities. So, for comparison purposes, we are going to handle its statistical output in Chapter 4 separately.

Regarding data sources, we make use of World Bank's database to obtain data sets of population, GDP, and GDP per capita. The bank owns a wide variety of consistent time series economic indicators including these variables. Here, GDP of the African countries is calculated at the current market prices[92] in million US dollars, while GDP per capita comes from the GDP divided by population of the recipient country. FDI from China and South Korea to African countries and trade volume between the donor and its partner are gathered from the statistical yearbook of the donor countries.[93] With regards to supply of core natural resources, we obtain these data sets from the database of the Energy Information Agency (EIA) as they provide relatively reliable and consistent time series data. The metrics we utilize in our study include *total primary energy production* comprised of petroleum (crude oil and natural gas plant liquids), dry natural gas, and coal, and the net generation of nuclear, hydroelectric, and non-hydroelectric renewable electricity.[94]

Based on the data collection methods explained above, we compile the complete data set. A summary of our statistical table is as shown in Table 5. The average amount of Chinese aid to a given recipient country is 107.49 million USD with a maximum

[92] The criteria of current market prices is useful as long as consumer prices do not fluctuate drastically. According to EIU database, consumer prices of sub-Saharan Africa from 2003 to 2006 were 8.4%, 4.9%, 7.7%, 5.1% respectively. Since 2003, the consumer prices have been relatively stablized. For example, the consumer prices of year 2001 was 40.5% and that of 2002 was -13.6%. Source: http://secure.alacra.com/cgi-bin/alacraswitchISAPI.dll (accessed on June 1, 2011)

[93] Chinese data come from China's Commercial Yearbook（中国商务年鉴）and China Statistical Yearbook (中国统计年鉴) (e.g. http://www.stats.gov.cn:82/tjsj/ndsj/2008/indexch.htm)，while Korean statistics from Overseas Direct Investment Yearbook and the website of Korean statistical information service (http://www.kosis.kr/).

[94] Source: http://www.eia.gov/cfapps/ipdbproject/docs/IPMNotes.html#t1 (accessed on May 27, 2011)

value of 4,200 million USD, while the corresponding figures of Chinese *Foreign Economic Cooperation*[95] are 282.92 million USD and 9,614 million USD respectively. Korean aid averages out to 1.23 million USD while its maximum amount to an individual African country is 35.02 million USD. Other relevant indicators such as population, GDP, GDP per capita, bilateral trade, FDI inflow, and total energy production are shown below.

Table 5: Summary of Statistics for 41 African countries from 2003 to 2006

Item	Aid from China (Commitment, current million USD)	Chinese *Foreign Economic Cooperation* (current million USD)	Aid from Korea (Commitment, current million USD)	Population	GDP (at market prices (current USD)	GDP per capita (current USD)	Bilateral trade with China (thousand USD)	Bilateral trade with Korea (thousand USD)	FDI inflow from China (thousand USD)	FDI inflow from Korea (thousand USD)	Total Primary Energy Production (Quadrillion Btu)
Average	107.49	282.92	1.23	20,241,092	21,329,840,504	1,628	799,021	268,671	7,757	2,318	0.79512
Standard Deviation	488.03	1,049.94	4.68	26,949,923.56	41,219,688,154	2,337	1,660,539.86	562,799.48	20,284.13	11,458.04	1.82166
Maximum	4,200	9,614	35.02	144,719,953	257,729,745,476	15,355	11,827,481	3,260,641	146,700	123,297	7.74823
Minimum	0.00	0.00	0.00	462,440	235,922,971	86	2,596	12	-8,510	0	0.00000

3.2 Methodology

After we collected time series data of China, South Korea, and the African countries explained above, we still need to settle on a statistical tool to analyze these data sets. Because our study involves cross-sectional dimensions over time and countries under

[95] This concept will be explained later on in this section.

the control of unobserved heterogeneity, panel data analysis is the most appropriate. Panel data analysis is a statistical method to repeat measures of one or more variables on one or more objects. This is widely applied when someone has the same samples in time order. The advantage of this method is that it is very informative in that we can observe individual dynamics by country and time simultaneously. To do this, we operated "fixed and *Random Effec*ts regression model" [96] by using the LIMDEP 8.0 software.

In applying this statistical design, we divide the model into two different simulations. Some independent variables considered in this research design have the potential to interrupt each other and therefore can be underestimated as driving factors because they are closely related. For example, if we consider both of GDP and GDP per capita together, the contributions to the dependent variable would be diffused by these two similar factors. Therefore, we present two models considering different independent variables to alleviate such interruption effects.

Model I is designed to test relationships between the amount of foreign aid and population, GDP, trade volume with the donor, FDI inflows from the donor and total energy production of the recipient country.

In Model II, we examine relationships between aid amount per capita and several variables including GDP per capita, trade volume with the donor, FDI inflows from the donor and total energy production of the recipient country.

[96] Source: http://www.limdep.com/features/capabilities/panel_data/fixed_and_random_linear_models_1.php (accessed on May 27, 2011)

3.3 Analysis

3.3.1 Model I

The equation of Model I is shown below:

$$\text{Model I}: FA_{it} = \alpha + ß_1 P_{it} + ß_2 G_{it} + ß_3 T_{it} + ß_4 F_{it} + ß_5 E_{it} + \varepsilon_{it} \quad (1)$$

In this model, FA_{it} (i=1,…,N, t=1,2,..,T) stands for the amount of foreign aid, while α means a constant value. ß represents unknown parameters, while P_{it} stands for population of recipient country, G_{it} means GDP of recipient country, T_{it} is representative of trade volume between the donor and the recipient country, F_{it} represents FDI inflow from the donor to the partner and E_{it} is total energy production of the recipient country. Lastly, ε_{it} means error.

3.3.1.1 China

The statistical outputs are as Table 6 follows[97]: Under *the Random Effects Model* which assumes each difference of the African countries results from random deviation from some mean difference, population (t-ratio: 2.446), trade with China (4.993), and FDI from China (2.279) all have significant positive relationships with the amount of Chinese foreign aid to the African recipient country, while GDP (-2.762) has a

[97] We assume that if the t-ratio is more than 1.96 or less than -1.96, we can reject the arguement that the independent variable has not affect the aid amount (so-called null hypothes) aid at 95% confidence level (significance level 0.05).

negative relationship with the aid amount. However, energy production (.283) does not show any significant impact to the Chinese foreign aid under *the Random Effects*. This result implies the Chinese government tends to provide more substantial aid to bigger countries in terms of population and GDP, or countries which have closer FDI and trade ties with more its aid but its aid policy is not closely related to energy-oriented policy.

In the meantime, when it comes to the *Fixed Effects Model* which assumes that every African recipient country has its own intercept factor, we can find that population (2.911) still has a positive relation with the amount of aid, but other factors such as GDP, trade with China, FDI from China, and energy production do not have a significant influence on the aid.

Table 6: Model I – China's case: *Random Effects* and *Fixed Effects*

VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	-36.2337262 (-.773)	-3243.52721 (-3.259)*
POPULATION	.416449D-05 (2.446)*	.00015187 (2.911)*
GDP	-.484052D-08 (-2.762)*	.554611D-08 (.875)
TRADE WITH CHINA	.00014993 (4.993)*	.363001D-04 (.516)
FDI FROM CHINA	.00447400 (2.279)*	.00362926 (1.348)
ENERGY PRODUCTION	10.2841848 (.283)	127.739843 (.335)
R-SQUARED	.4878156	.5130149
ADJUSTED R-SQUARED	.2924910	.3097515

Note: t-ratios are in parentheses, * Significant at 5%.

Regarding *Fixed Effects* shown in Table 7, 35 countries among 41 countries show significant *Fixed Effects*. It means that there are some other underlying factors such as

political events or natural environment affecting the amount of foreign aid consistently regardless of population, GDP, trade with China, FDI from China and energy production. In every case, there is a unique set of reasons, potentially including some special political tensions or partnership with the donor, the recipient country's domestic situation and weather. If we check some representative cases having the highest t-ratios here, Eritrea (3.21544) and Liberia (3.21228) have a tendency to receive a disproportionately large amount of Chinese foreign aid, while South Africa (-3.36470) and Egypt (-3.40222) show opposite tendencies.

As for time, year 2005 (-2.28737) has a negative *Fixed Effect* as shown in Table 7. The year 2006 is well-known as a turning point in the expansion of China's foreign aid volume. FOCAC, a huge political event marking China's generous aid package to Africa, was held at that time. Before the announcement of this big jump, China still needed to adjust itself to its newly-settled aid environment. We believe that the Chinese government tried to put new projects on hold to maximize the effect of President Hu Jintao's announcement. In light of this background, we infer that Beijing chose to modify a certain part of the volume toward African countries and the year 2005 was a time period during which China adjusted its foreign aid just before going public with its landmark decision.

Table 7: Model I – China's case: *Fixed Effects* by country and year

Country	Coefficient (t-ratio)
Algeria	-3391.17252 (-1.42960)
Angola	1432.33495 (2.22779)*
Botswana	2911.58523 (3.06041)*
Burundi	2135.04175 (3.19593)*
Cameroon	721.86478 (2.42306)*
Cape Verde	3172.08163 (3.19143)*
Central African Rep.	2609.63581 (3.20058)*
Congo, Dem. Rep.	-5650.01239 (-2.74853)*
Congo, Rep.	2611.74558 (3.12178)*
Cote d'Ivoire	222.64226 (.74600)
Djibouti	3117.90884 (3.19419)*
Egypt, Arab Rep.	-9334.68849 (-3.40222)*
Equatorial Guinea	2964.37205 (2.99474)*
Eritrea	2575.93289 (3.21544)*
Ethiopia	-7998.95363 (-2.78223)*
Gabon	2905.24531 (3.02042)*
Ghana	-114.16983 (-.31921)
Guinea	1803.80858 (3.04015)*
Guinea-Bissau	3022.28152 (3.20225)*
Kenya	-2210.02940 (-2.48496)*
Lesotho	2939.02763 (3.19239)*
Liberia	2740.32902 (3.21228)*
Libya	1633.50591 (1.10428)
Madagascar	555.14820 (1.65401)
Mali	1464.62371 (2.93199)*
Mauritania	2780.20464 (3.18037)*
Mauritius	2990.68251 (3.08390)*
Morocco	-1646.45599 (-2.62132)*
Mozambique	751.49864 (2.51722)*
Namibia	2894.46830 (3.10485)*
Niger	1233.22454 (2.82909)*
Nigeria	-18518.98154 (-3.09040)*
Senegal	1499.99023 (2.89325)*
Sierra Leone	2467.50728 (3.18363)*
South Africa	-6176.55615 (-3.36470)*

Sudan	-2699.74141 (-2.61857)*
Tanzania	-2694.68194 (-2.52148)*
Togo	2308.61048 (3.15708)*
Tunisia	1529.88354 (2.53302)*
Uganda	-1092.19157 (-1.86089)
Zambia	1532.44904 (3.08985)*
Year	Coefficient (t-ratio)
2003	102.16224 (1.56561)
2004	49.60837 (.88221)
2005	-128.77980 (-2.28737)*
2006	-22.99081 (-.34690)

Note: t-ratios are in parentheses, * Significant at 5%.

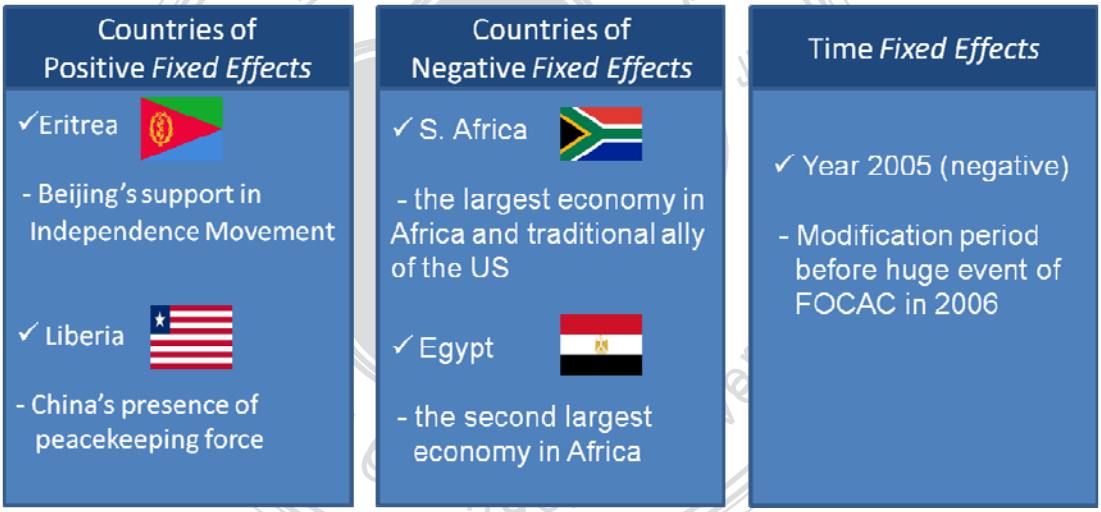
Diagram 4 exhibits some examples of China's *Fixed Effects* cases in Model 1. In the case of Eritrea, China has a close relationship with the African country because Beijing had supported the Eritrean independence movement (e.g. Eritrean Liberation Front) from Ethiopia. After its independence in 1993, China was the first country to establish its diplomatic ties with Eritrea[98] and has financed various projects such as communication infrastructure and energy development. In 2007, the two countries signed economic deals to remove tariffs on Eritrean products imported to China and partially cancel Eritrea's debt with China. The relations between China and Liberia are a little complex in that they broke off diplomatic ties several times in checkbook diplomacy between China and Taiwan. Finally, Liberia reestablished its relationship with China in 2003. The deployment of China's peacekeeping force to Liberia[99] is seen as one of the major reasons affecting the aid amount.

[98] Source: http://www.shaebia.org/artman/publish/article_5779.shtml (accessed on May 28, 2011)

[99] According to Chinese official websites, 558 Chinese troops are in Liberia in 2010. http://eng.mod.gov.cn/DefenseNews/2010-12/07/content_4212718.htm (accessed on May 28, 2011)

However, South Africa and Egypt seem to hesitate to accept Chinese offer of aid in open manners. Both countries are among the most influential African countries in terms of politics and economics. South Africa and Egypt rank as the largest and second largest economies[100] in Africa and they have taken important roles in African politics such as liberation and democratization movements. Also, these two nations have been traditional US allies in the region. In this sense, we tend to conclude that they do not want to be regarded as disadvantaged countries which need Chinese good will in the field of international development.

Diagram 4: Model I – China's case: *Fixed Effects*



3.3.1.2 South Korea

In the case of the *Random Effects* model of South Korea in Table 8, no significant factors affecting the amount of Korean foreign aid can be observed. Population (.069), trade with Korea (1.201), and energy production (.742) are positive, but not

[100] Source: http://www.clickafrique.com/Magazine/ST014/CP0000002788.aspx (accessed on May 28, 2011)

significant enough, while GDP (-.449) and FDI from Korea (-.047) have a negative effect, but still not significant. In light of *Random Effects* of Model I, South Korea does not seem to be captured by the specific parameters.

However, if we take *Fixed Effects* into consideration, we can see that energy production (4.550) has a strong positive relationship with the amount of Korean foreign aid. Other factors such as population (-7.06), GDP (-.917), trade with Korea (-.085), FDI with Korea (.464) still do not have a meaningful impact on the aid.

Table 8: Model I – South Korea's case: *Random Effects* and *Fixed Effects*

VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	.79434721 (1.233)	-2.09640356 (-.208)
POPULATION	.157519D-08 (.069)	-.362849D-06 (-.706)
GDP	-.104124D-10 (-.449)	-.618677D-10 (-.917)
TRADE WITH KOREA	.130636D-05 (1.201)	-.170545D-06 (-.085)
FDI FROM KOREA	-.154214D-05 (-.047)	.204153D-04 (.464)
ENERGY PRODUCTION	.35580524 (.742)	15.0837917 (4.550)*
R-SQUARED	.5036589	.5103526
ADJUSTED R-SQUARED	.3143763	.3059780

Note: t-ratios are in parentheses, * Significant at 5%.

We can interpret the output of energy production (4.550) in Table 8 as showing that energy production of African countries has affected the Korean aid. According to EIA's database[101], South Korea's gap between total primary energy production and consumption is bigger than that of China as shown in Table 9. We can infer from this

[101] Source: http://www.eia.gov (accessed on May 28, 2011)

fact that the Korean government should stabilize its energy supply in various channels including foreign aid.

Table 9: Total Primary Energy Production & Consumption of China and Korea

(Unit: Quadrillion Btu)

		2003	2004	2005	2006
Total Energy Production (A)	China	49.44333	59.3806	64.44684	66.78357
	S. Korea	1.34121	1.34367	1.49622	1.51193
Total Energy Consumption (B)	China	51.15543	62.91903	68.24567	72.890649
	S. Korea	8.65312	8.91069	9.22774	9.34094
Total Energy Gap (A-B)	China	-1.7121	-3.5384	-3.79883	-6.10703
	S. Korea	-7.31191	-7.56702	-7.73152	-7.82901

Source: EIA's database.

Concerning *Fixed Effects* in Table 10, 11 countries of the total have significant *Fixed Effects*. Ghana (3.21898) and Cote d'Ivoire (2.89174) mark the highest positive *Fixed Effects* as shown in Diagram 5. Ghana has been one of the most traditional partners with South Korea since the two countries signed a contract of EDCF loans in oil refinery storage complex project in 1991.[102] In addition, Ghana received a debt cancellation of 4billion USD which accounts for two third of the total debt from the aid community so-called the *Paris Club* in 2001 due to its successful economic efforts and democratization. Korea also joined the debt cancellation activities. In the case of Cote d'Ivoire, there has been severe political unrest following the military coup in

[102] *Economic Development Cooperation Fund 20 years*, 309.

1999.[103] Developed countries provided huge humanitarian help to resolve such humanitarian needs and Korea also participated in the aid activities. The *Fixed Effects* of the above two African countries can be explained by these political considerations.

On the other hand, Algeria (-4.53801) and Libya (-3.84289) show some significant negative *Fixed Effects*. Algeria has produced and accumulated funds by exporting oil and ranks as the fourth largest economy on the African continent.[104] It is known that they are sensitive to being a borrower of concessional loans from foreign countries in that they have a lot of foreign reserves. Libya also has a similar tendency. In the past, Korea had relied on oil money from Libya construction projects for a long time until the 1990s. As a result of this situation, Algeria and Libya do not want to receive aid from Korea.

Regarding *Fixed Effects* of time in the Korean case, no significant *Fixed Effect* can be observed. T-ratios of Year 2003, 2004, 2005 and 2006 are -.92025, .98441, .10835, and -.00971 respectively.

[103] Source: https://www.cia.gov/library/publications/the-world-factbook/geos/iv.html (accessed on May 28, 2011)

[104] Source: http://www.clickafrique.com/Magazine/ST014/CP0000002788.aspx (accessed on May 28, 2011)

Diagram 5: Model I – South Korea's case: *Fixed Effects*

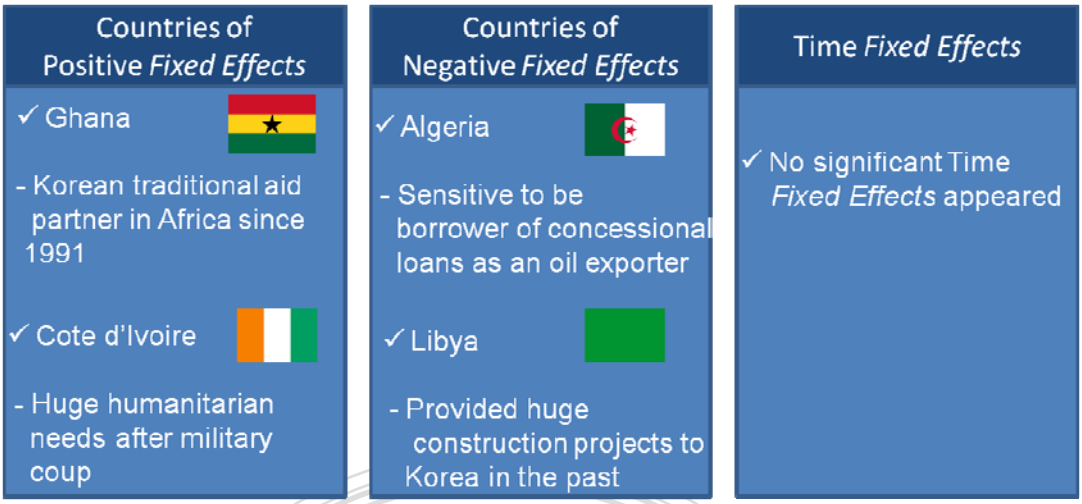


Table 10: Model I – South Korea's case: *Fixed Effects* by country and year

Country	Coefficient (t-ratio)
Algeria	-90.83056 (-4.53801) *
Angola	-11.40384 (-1.69632)
Botswana	3.03463 (.31786)
Burundi	4.86031 (.71694)
Cameroon	6.99107 (2.45989) *
Cape Verde	2.32866 (.23154)
Central African Rep.	3.69022 (.44647)
Congo, Dem. Rep.	21.93491 (1.10003)
Congo, Rep.	-4.01866 (-.46780)
Cote d'Ivoire	8.18384 (2.89174) *
Djibouti	2.62069 (.26496)
Egypt, Arab Rep.	-6.68590 (-.23884)
Equatorial Guinea	-2.63723 (-.26209)
Eritrea	3.83331 (.47175)
Ethiopia	31.15550 (1.11092)
Gabon	-5.05449 (-.52350)
Ghana	9.89229 (3.21898) *
Guinea	5.60473 (.94188)
Guinea-Bissau	2.67438 (.27964)
Kenya	21.92937 (2.57128) *
Lesotho	2.86925 (.30771)

Liberia	3.68780 (.39583)
Libya	-51.23366 (-3.84289) *
Madagascar	8.51464 (2.70568) *
Mali	6.57739 (1.31305)
Mauritania	3.24710 (.36627)
Mauritius	2.92199 (.29922)
Morocco	18.16728 (2.67384) *
Mozambique	7.76374 (2.90063) *
Namibia	3.02250 (.32177)
Niger	7.01727 (1.62352)
Nigeria	-33.11365 (-.54900)
Senegal	7.03496 (1.35430)
Sierra Leone	4.04201 (.51453)
South Africa	-57.81266 (-3.39995) *
Sudan	8.83965 (.92598)
Tanzania	18.91694 (1.85366)
Togo	4.43963 (.59723)
Tunisia	8.70848 (1.46062)
Uganda	12.77479 (2.35364) *
Zambia	5.51133 (1.13909)
Year	Coefficient (t-ratio)
2003	-.58397 (-.92025)
2004	.53106 (.98441)
2005	.05901 (.10835)
2006	-.00609 (-.00971)

Note: t-ratios are in parentheses, * Significant at 5%.

3.3.2 Model II

The equation of model II is shown below.

$$FAC_{it} = \alpha + \beta_1 GC_{it} + \beta_2 T_{it} + \beta_3 F_{it} + \beta_4 E_{it} + \varepsilon_{it} \quad (2)$$

It is designed to test the relationship between aid per capita of recipient countries and independent variables such as GDP per capita, trade and FDI with the donor country, and energy production of the recipient country. We presented Model II considering the amount of foreign aid per capita as a dependent variable. Model II has the advantage in that we can make exact comparisons in terms of per capita amount by country, while Model I which focuses on the total aid amount of individual African country is appropriate for checking country to country relations in terms of macro volume of the funds.

In this model II, FAC_{it} (i=1,2,…,N, t=1,2,…,T) stand for the amount of foreign aid per capita from the donor in different recipient countries and times. α represents a constant value and ß means unknown parameters. Meanwhile, GC_{it} signifies GDP per capita of recipient country, T_{it} is representative of trade volume between the donor and the recipient country, $F_{it,}$ stands for FDI inflow from the donor to the partner and $E_{it,}$ means total primary energy production. Finally, ε_{it} stands for error.

3.3.2.1 China

As for the statistical outputs of China, trade with China (5.830) shows a significant positive relation with the aid, while energy production (-2.230) has a significant

negative impact on aid under the assumption of *Random Effects* in Table 11. Other factors such as GDP per capita (-1.263), FDI from China (.002) do not have any effects. In the case of the *Fixed Effects* model, we cannot observe any apparent relationship between the amount of aid and the other independent variables. It is interesting that both of the statistical outputs contradict many arguments suspicious of connections between African countries and China providing aid in return for energy resources.

Table 11: Model II – China's case: *Random Effects* and *Fixed Effects*

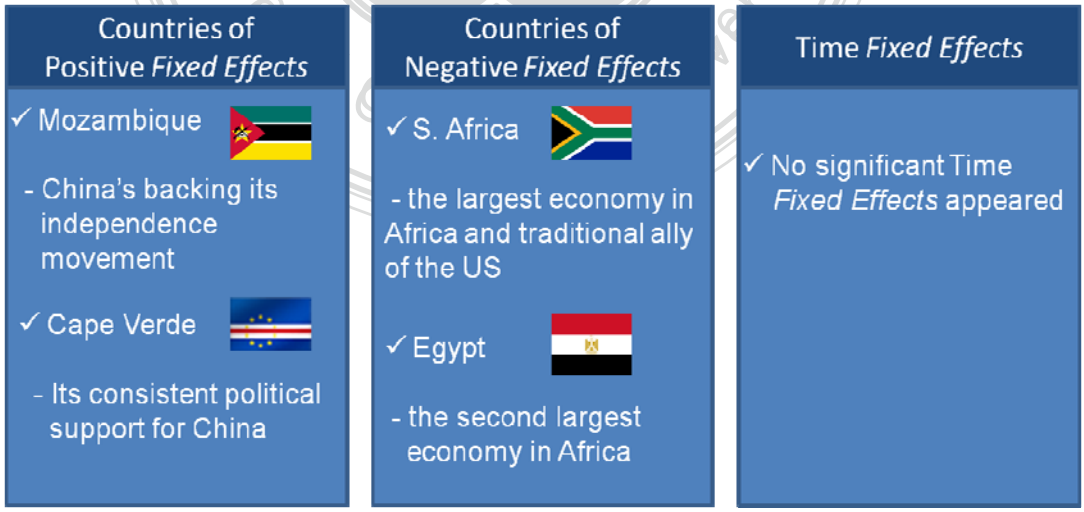
VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	3.91983096 (1.754)	-15.6222590 (-1.431)
GDP PER CAPITA	-.00098017 (-1.263)	-.00353742 (-1.634)
TRADE WITH CHINA	.741610D-05 (5.830)*	.401596D-05 (1.494)
FDI FROM CHINA	.155387D-06 (.002)	.496107D-04 (.448)
ENERGY PRODUCTION	-2.79607551 (-2.230)*	29.9532068 (1.933)
R-SQUARED	.5155592	.5314182
ADJUSTED R-SQUARED	.3364382	.3415618

Note: t-ratios are in parentheses, * Significant at 5%.

With regards to details of *Fixed Effects*, 9 countries of the total 41 African countries have significant *Fixed Effects* as illustrated in Table 12. Diagram 6 summarizes our interpretations of these statistical outputs. Mozambique (3.49318), Cape Verde (2.63198), South Africa (-2.45158) and Egypt (-2.30046) are countries representative of significant *Fixed Effects*.

The story of China and Mozambique's relationship is quite similar politically to that of China and Eritrea. China supported Mozambique's independence movement against Portuguese rule. China established diplomatic ties with this country just after its independence in 1975. Based on such traditional friendship, China not only relieved some of the expired debt of Mozambique which should have been repaid by the end of 1999, but also signed the Promotion and Reciprocal Protection of Investment trade agreement with Mozambique.[105] Cape Verde has also been a traditional partner for China in that this country has not been affected by Taiwan's efforts to disconnect the ties with China and the economic relations between the two countries have been strengthened since the mid 1990s.[106] These specific situations are likely to result in such *Fixed Effects*. As for South Africa and Egypt, these two African giants do not want to have the reputation of being as recipient nations as has been interpreted already in the section on Model I. As for time, no significant *Fixed Effect* can be observed in Table 12.

Diagram 6: Model II – China's case: *Fixed Effects*



[105] Source: http://www.china.org.cn/english/features/focac/183432.htm (accessed on May 28, 2011)

[106] Source: http://www.opensourcesinfo.org/journal/2008/1/4/china-in-cape-verde-the-dragons-african-paradise.html (accessed on May 28, 2011)

Table 12: Model II – China's case: *Fixed Effects* by country and year

Country	Coefficient (t-ratio)
Algeria	-204.06378 (-2.03325) *
Angola	4.19047 (.17631)
Botswana	40.36997 (2.34521) *
Burundi	16.04901 (1.16909)
Cameroon	26.95376 (2.30217) *
Cape Verde	37.24001 (2.63198) *
Central African Rep.	18.03269 (1.31522)
Congo, Dem. Rep.	11.11875 (.86381)
Congo, Rep.	18.83955 (1.75886)
Cote d'Ivoire	12.99196 (1.04947)
Djibouti	22.13188 (1.59952)
Egypt, Arab Rep.	-81.30558 (-2.30046) *
Equatorial Guinea	31.40269 (1.45260)
Eritrea	18.83948 (1.37169)
Ethiopia	14.54540 (1.04740)
Gabon	25.64446 (1.91839)
Ghana	13.84837 (1.01152)
Guinea	16.14541 (1.15839)
Guinea-Bissau	17.39369 (1.26706)
Kenya	14.38070 (1.06003)
Lesotho	20.21482 (1.47229)
Liberia	18.39492 (1.31467)
Libya	-80.42886 (-1.74564)
Madagascar	15.57903 (1.12133)
Mali	16.45503 (1.18766)
Mauritania	18.49826 (1.34671)
Mauritius	32.72776 (1.93609)
Morocco	21.21386 (1.51208)
Mozambique	42.75648 (3.49318) *
Namibia	27.10107 (1.81008)
Niger	16.29281 (1.18403)
Nigeria	-170.25696 (-2.12662) *
Senegal	17.54501 (1.27154)
Sierra Leone	16.51705 (1.19818)
South Africa	-176.35639 (-2.45158) *

Sudan	-3.98423 (-.29127)
Tanzania	14.37879 (1.04143)
Togo	14.69703 (1.02843)
Tunisia	17.03721 (1.43106)
Uganda	16.07436 (1.17980)
Zambia	30.79405 (2.27219) *
Year	Coefficient (t-ratio)
2003	2.73901 (1.06217)
2004	.59485 (.25354)
2005	-4.54407 (-1.91784)
2006	1.21022 (.47196)

Note: t-ratios are in parentheses, * Significant at 5%.

3.3.2.2 South Korea

As for Korea's *Random Effects* under model II which are summarized in Table 13, GDP per capita (5.426) shows strong positive relationships with the amount of Korean ODA. Other factors such as trade with Korea (-.101), FDI from Korea (-.449), and energy production (-.878) do not have any significant influence on the amount of aid. When it comes to *Fixed Effects*, the result is not much different. GDP per capita (4.133) still has a significant impact on the Korean ODA, while trade with Korea (-.263), FDI from Korea (-.012) and energy production (-.320) do not show such an effect. It means that if the income level of African countries is higher, they tend to receive more money from the Korean side.

This result might reflect the Korean government's risk-avert tendency to make safe use of funds. As explained in Chapter 2 dealing with comparisons between Chinese and Korean foreign aid, Korean government tries to utilize their funds efficiently and

safely. Providing aid to African countries which have relatively higher income and less debt can be an effective way to achieve this aim.

Table 13: Model II – South Korea's case: *Random Effects* and *Fixed Effects*

VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	-.46565651 (-1.584)	-1.24525559 (-.925)
GDP PER CAPITA	.00053726 (5.426)*	.00126002 (4.133)*
TRADE WITH KOREA	-.478961D-07 (-.101)	-.286694D-06 (-.263)
FDI FROM KOREA	-.755665D-05 (-.449)	-.265470D-06 (-.012)
ENERGY PRODUCTION	-.14382265 (-.878)	-.58417648 (-.320)
R-SQUARED	.3444936	.3632025
ADJUSTED R-SQUARED	.1021215	.1051898

Note: t-ratios are in parentheses, * Significant at 5%.

Regarding details of Korean *Fixed Effects*, only 3 countries show negative significant *Fixed Effects*. Botswana (-2.33190), Gabon (-2.98337) and Mauritius (-2.10347) are the cases. Diagram 7 shows the way we interpret it. Botswana, Gabon and Mauritius established formal relations with South Korea in 1968, 1962, 1971 respectively. However, they seem unlikely to benefit from this close relationship with South Korea in that they also have diplomatic ties with North Korea in 1974, 1974, 1973 respectively. Furthermore, they did not have urgent humanitarian need in the sense that the income levels of these three countries (UMICs) were relatively high. In terms of time *Fixed Effec*ts, there is no significant *Fixed Effect* as shown in Table 14. The t-ratios of year 2003, 2004, 2005 and 2006 are .51932, -.11211, 1.25822 and -1.57475.

Diagram 7: Model II – South Korea's case: *Fixed Effects*

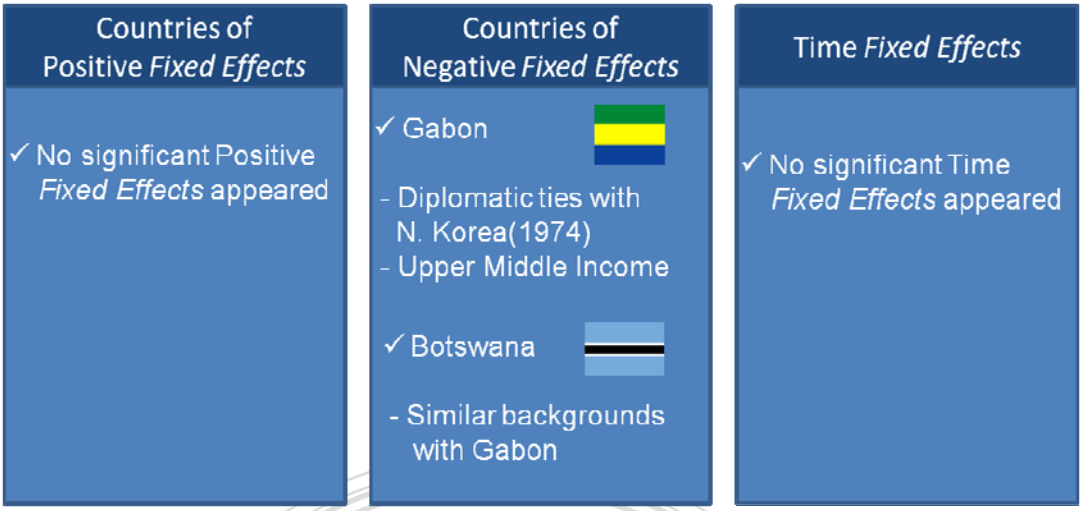


Table 14: Model II – South Korea's case: *Fixed Effects* by country and year

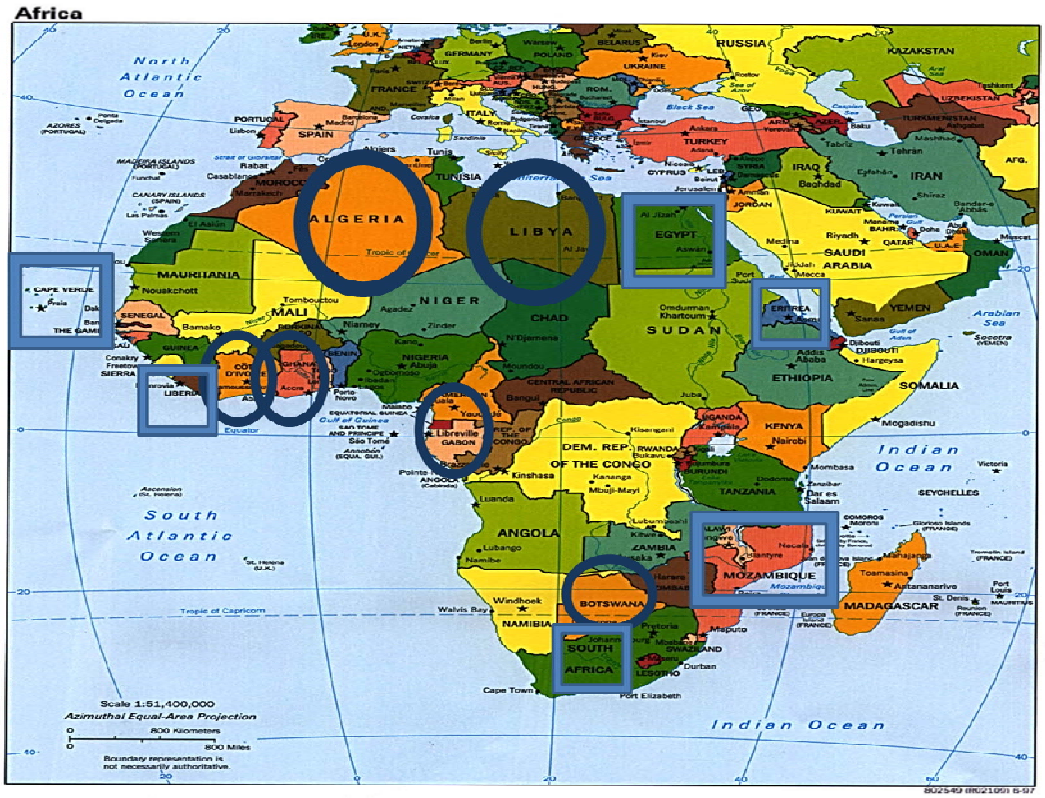
Country	Coefficient (t-ratio)
Algeria	2.20146 (.18438)
Angola	1.97953 (.59646)
Botswana	-5.56247 (-2.33190) *
Burundi	1.13033 (.62939)
Cameroon	.33118 (.20881)
Cape Verde	-1.36241 (-.71995)
Central African Rep.	.85504 (.47586)
Congo, Dem. Rep.	1.16681 (.70367)
Congo, Rep.	-.29591 (-.22001)
Cote d'Ivoire	.32086 (.19627)
Djibouti	.39346 (.21721)
Egypt, Arab Rep.	1.90991 (.44168)
Equatorial Guinea	-3.60082 (-1.16934)
Eritrea	1.00313 (.55815)
Ethiopia	1.10173 (.62451)
Gabon	-5.67753 (-2.98337) *
Ghana	.74429 (.43201)
Guinea	.81043 (.44994)
Guinea-Bissau	1.02183 (.56855)
Kenya	.85504 (.49217)
Lesotho	.43574 (.24199)

Liberia	1.66423 (.56523)
Libya	-4.22044 (-.80465)
Madagascar	.88577 (.48747)
Mali	.69483 (.38665)
Mauritania	.55408 (.31096)
Mauritius	-4.84399 (-2.10347) *
Morocco	-1.05012 (-.55945)
Mozambique	.96887 (.59614)
Namibia	-2.92325 (-1.44391)
Niger	.95604 (.53361)
Nigeria	4.23361 (.43826)
Senegal	.36697 (.20379)
Sierra Leone	.96402 (.53640)
South Africa	-.55996 (-.06150)
Sudan	.88448 (.70447)
Tanzania	.92891 (.52796)
Togo	.83373 (.46384)
Tunisia	-1.61828 (-.98635)
Uganda	.88806 (.49978)
Zambia	.63081 (.37019)
Year	Coefficient (t-ratio)
2003	.19294 (.51932)
2004	-.03750 (-.11211)
2005	.42438 (1.25822)
2006	-.57981 (-1.57475)

Note: t-ratios are in parentheses, * Significant at 5%.

For reference, the cases of China and South Korea's *Fixed Effects* as explained above are shown in Diagram 8.

Diagram 8: Map of China and South Korea's *Fixed Effects* countries



Note: The rectangles and circles represent the largest *Fixed Effects'* cases of China and South Korea respectively.

Chapter 4

Panel Data Analysis (II) ： Chinese *Foreign Economic Cooperation*

As explained above in the part entitled Data Sets in Chapter 3, among the various concepts of Chinese foreign aid，Chinese *Foreign Economic Cooperation* seems likely to be the only Chinese official data which has details by recipient country. We think that this official data is worthwhile as a reference.

4.1 Introduction

According to the China Trade and External Economic Statistical Yearbook, Chinese *Foreign Economic Cooperation* 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.[107] Reflecting on this definition, we understand that the scope of this concept is so broad that it includes not only Chinese foreign aid but also domestic construction projects funded by foreign governments and other projects *unrelated* to aid purposes. It is not noted what percentage the Chinese foreign aid makes up among the total.

[107] 中国贸易外经统计年鉴 2008，国家统计局贸易外经统计司 编, 中国统计出版社，801.

4.2 Analysis

4.2.1 Model III: Chinese *Foreign Economic Cooperation*

In the case of the statistical outputs of Model III adopting the equation of Model I, [108] FDI from China (5.275) and energy production (2.107) exhibit significant positive relations with this activity, while other factors such as population (1.101), GDP (-.887) and trade with China (1.636) do not show significant effects under the assumption of *Random Effects* in Table 15. In the case of the *Fixed Effects* model, population (2.377) and GDP (3.852) have affected the Chinese *Foreign Economic Cooperation* significantly. On the other hand, trade with China (-1.298), FDI from China (1.759) and energy production (1.759) do not have any meaningful influence.

Table 15: Model III – China's case: *Random Effects* and *Fixed Effects*

VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	-98.3629714 (-.932)	-5738.88312 (-3.313)*
POPULATION	.419783D-05 (1.101)	.00021579 (2.377)*
GDP	-.339974D-08 (-.887)	.424792D-07 (3.852)*
TRADE WITH CHINA	.00010178 (1.636)	-.00015894 (-1.298)
FDI FROM CHINA	.01981665 (5.275)*	.00824594 (1.759)
ENERGY PRODUCTION	168.266459 (2.107)*	1019.91932 (1.536)
R-SQUARED	.6583232	.6812192
ADJUSTED R-SQUARED	.5280227	5481629

Note: t-ratios are in parentheses, * Significant at 5%.

[108] The only difference is replacing Chinese foreign aid with Chinese *Foreign Economic Cooperation* as a dependent variable.

With regards to *Fixed Effects*, as shown in Table 16, 33 countries of the total have significant *Fixed Effects*. Mali (3.67739) and Niger (3.67134) exhibit the highest positive *Fixed Effects.* On the other hand, South Africa (-5.92078) and Egypt (-3.61485) show some significant negative *Fixed Effects*.

When it comes to time *Fixed Effects*, the year 2003 (2.10681) shows strong positive *Fixed Effects*, while the year 2005 (-2.51603) has the opposite tendency.

Table 16: Model III – China's case: *Fixed Effects* by country and year

Country	Coefficient (t-ratio)
Algeria	-10097.48707 (-2.44554)*
Angola	1094.76853 (.97825)
Botswana	4981.95821 (3.00848) *
Burundi	4141.28823 (3.56143) *
Cameroon	1137.38290 (2.19337) *
Cape Verde	5609.59887 (3.24242) *
Central African Rep.	4793.62214 (3.37761) *
Congo, Dem. Rep.	-7173.72409 (-2.00490) *
Congo, Rep.	4647.86349 (3.19170) *
Cote d'Ivoire	850.52333 (1.63725)
Djibouti	5564.45496 (3.27505) *
Egypt, Arab Rep.	-17263.57640 (-3.61485) *
Equatorial Guinea	4958.18265 (2.87770) *
Eritrea	4774.55743 (3.42401) *
Ethiopia	-10344.62624 (-2.06715) *
Gabon	4654.63568 (2.78015) *
Ghana	734.16817 (1.17929)
Guinea	3677.78252 (3.56113) *
Guinea-Bissau	5443.38243 (3.31349) *
Kenya	-2481.00995 (-1.60268)
Lesotho	5272.79810 (3.29041) *
Liberia	5046.80966 (3.39879) *

Libya	-626.33213 (-.24325)
Madagascar	1810.38740 (3.09882) *
Mali	3197.47216 (3.67739) *
Mauritania	5079.94840 (3.33855) *
Mauritius	5220.30018 (3.09259) *
Morocco	-3070.68185 (-2.80868) *
Mozambique	1053.75879 (2.02783) *
Namibia	5065.11331 (3.12146) *
Niger	2785.62853 (3.67134) *
Nigeria	-32106.04864 (-3.07809) *
Senegal	3091.92199 (3.42629) *
Sierra Leone	4611.87726 (3.41853) *
South Africa	-18918.32304 (-5.92078) *
Sudan	-3096.22920 (-1.72533)
Tanzania	-2882.88943 (-1.54979)
Togo	4446.64439 (3.49353) *
Tunisia	2182.66714 (2.07618) *
Uganda	-656.24635 (-.64237)
Zambia	2787.67755 (3.22917) *
Year	Coefficient (t-ratio)
2003	239.29594 (2.10681)*
2004	-.78495 (-.00802)
2005	246.56473 (-2.51603)*
2006	8.05375 (.06981)

Note: t-ratios are in parentheses, * Significant at 5%.

4.2.2 Model IV: per capita China's *Foreign Economic Cooperation*

As for Model IV which is parallel with Model II[109], as shown in Table 17, GDP per capita (9.249), trade with China (3.352), FDI from China (2.847) have significant positive relationships with the *Economic Cooperation* activities under *Random Effects*.

[109] The difference between Model IV and Model II is the dependent variable. Chinese foregin aid per capita (dependent variable) is substituted with per capita Chinese *Foreign Economic Cooperation* in this model.

At the same time, energy production (-2.215) shows a significant negative effect. In the case of the *Fixed Effects* model, GDP per capita (6.551) still has a strong positive effect, while other variables become insignificant.

Table 17: Model IV – China's case: *Random Effects* and *Fixed Effects*

VARIABLE	RANDOM EFFECTS MODEL'S COEFFICIENT (T-RATIO)	FIXED EFFECTS MODEL'S COEFFICIENT (T-RATIO)
CONSTANT	-9.97850536 (-1.843)	-42.0209330 (-2.575)*
GDP PER CAPITA	.01609122 (9.249)*	.02120054 (6.551)*
TRADE WITH CHINA	.842502D-05 (3.352)*	.643618D-05 (1.602)
FDI FROM CHINA	.00041272 (2.847)*	.00032393 (1.958)
ENERGY PRODUCTION	-6.48992674 (-2.215)*	26.2093889 (1.131)
R-SQUARED	.8145362	.8193345
ADJUSTED R-SQUARED	.7459614	.7461338

Note: t-ratios are in parentheses, * Significant at 5%.

If we take a look at *Fixed Effects* in Table 18, we can observe that 9 countries of the total demonstrate significant *Fixed Effects*. Guinea-Bissau (2.82861) and Mauritania (2.13365) rank as two of the highest positive *Fixed Effects* countries, while Gabon (-3.40024) and Libya (-2.56214) are representatives of the opposite tendency.

When it comes to *Fixed Effects* of time, no significant effects can be observed. The t-ratios of year 2003, 2004, 2005 and 2006 are 1.40999, -.39514, -1.33727 and .17922 respectively.

Table 18: Model IV – China's case: *Fixed Effects* by country and year

Country	Coefficient (t-ratio)
Algeria	-150.76280 (-1.00474)
Angola	-5.43786 (-.15303)
Botswana	-26.01628 (-1.01089)
Burundi	40.25063 (1.96113) *
Cameroon	18.25258 (1.04274)
Cape Verde	29.73744 (1.40576)
Central African Rep.	37.04453 (1.80715)
Congo, Dem. Rep.	31.86850 (1.65599)
Congo, Rep.	17.37363 (1.08489)
Cote d'Ivoire	19.15894 (1.03514)
Djibouti	36.58684 (1.76860)
Egypt, Arab Rep.	-76.71330 (-1.45177)
Equatorial Guinea	30.39470 (.94040)
Eritrea	44.29528 (2.15713) *
Ethiopia	38.17061 (1.83843)
Gabon	-67.95681 (-3.40024) *
Ghana	29.25622 (1.42931)
Guinea	42.20612 (2.02541) *
Guinea-Bissau	58.05427 (2.82861) *
Kenya	30.11036 (1.48453)
Lesotho	33.35176 (1.62471)
Liberia	39.05882 (1.86712)
Libya	-176.49311 (-2.56214) *
Madagascar	35.94050 (1.73026)
Mali	43.19635 (2.08533) *
Mauritania	43.81742 (2.13365) *
Mauritius	-32.67654 (-1.29294)
Morocco	3.44739 (.16435)
Mozambique	34.85727 (1.90479)
Namibia	-9.72606 (-.43449)
Niger	37.21649 (1.80899)
Nigeria	-145.20690 (-1.21313)
Senegal	33.42341 (1.62017)
Sierra Leone	40.05780 (1.94361)
South Africa	-266.73789 (-2.48013) *

Sudan	3.02848 (.14808)
Tanzania	36.38707 (1.76274)
Togo	31.94087 (1.49494)
Tunisia	-24.68888 (-1.38706)
Uganda	36.79285 (1.80623)
Zambia	27.13931 (1.33940)
Year	Coefficient (t-ratio)
2003	5.43604 (1.40999)
2004	-1.38601 (-.39514)
2005	-4.73714 (-1.33727)
2006	.68711 (.17922)

Note: t-ratios are in parentheses, * Significant at 5%.

4.3 Discussions

In this chapter, we have reviewed the statistical results of Chinese *Foreign Economic Cooperation*. This activity is meaningful in the sense that the Chinese government provides official data on its actions in the international development arena by recipient country. However, it has by default the weaknesses which disallow us from putting it to full use in that we cannot separate the data which we are interested in, Chinese foreign aid, from other international economic activities. These aid-irrelevant activities unfortunately correlated heavily with trade and FDI figures. Hence, we do not provide explanation and implications related to these statistical outputs. We hope that further studies regarding this concept can be conducted, taking into consideration the aforementioned strengths and weaknesses of these statistics.

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Chapter 5

Conclusion

5.1 Summary

Each country's foreign aid policy has been shaped through very complex decision making processes and various considerations. Every country has developed its own aid policy under different political economic contexts. China and South Korea are not exceptions. However, we tried to clarify which economic factors of these emerging donors have affected their aid policies significantly and obtained some results of panel data analysis as shown in Table 19.

According to this analysis of 41 African countries, Chinese foreign aid has strong positive relationships with population, trade with its African partner and FDI, while it has a negative relationship with GDP in the *Random Effects* of Model I. However, in the case of Korea, no significant relationship is observed. In terms of *Fixed Effects* of Model I, population factor is still influential to Chinese aid, but other factors become insignificant, while Korean foreign aid is not related to most of the independent variables except the energy production of its African partners.

With regards to Model II, Chinese aid amount has been positively affected by trade amount with the African county, while the aid amount also has a negative relationship with energy production of the partner under the assumption of the *Random Effects.* In

contrast, only GDP per capita of the recipient country has a significant relationship with the volume of aid in Korea's case under the *Random Effects*. If we assume *Fixed Effect* in Model II, there are no significant driving factors in the Chinese case, while GDP per capita still affects Korean aid.

Table 19: Summary of statistical analysis of China and South Korea's aid

Model	Method	Donor	Population	GDP	GDP per capita	Trade	FDI	Energy Production
Model I	*Random Effects*	China	.416449D-05*	-.484052D-08*		.00014993*	.00447400*	10.2841848
		Korea	.157519D-08	-.104124D-10		.130636D-05	-.154214D-05	.35580524
	Fixed Effects	China	.00015187*	.554611D-08		.363001D-04	.00362926	127.739843
		Korea	-.362849D-06	-.618677D-10		-.170545D-06	.204153D-04	15.0837917*
Model II	*Random Effects*	China			-.00098017	.741610D-05*	.155387D-06	-2.79607551*
		Korea			.00053726*	-.478961D-07	-.755665D-05	-.14382265
	Fixed Effects	China			-.00353742	.401596D-05	.496107D-04	29.9532068
		Korea			.00126002*	-.286694D-06	-.265470D-06	-.58417648

Note: Coefficients are in table, * Significant at 5%.

5.2 Policy Implications

From these statistical outputs, we can infer several things. First, China's case show mixed results. GDP, trade volume between China and its African partners and FDI inflows vary depending on different assumptions. However, considering the

consistent positive relationship shown between population and Chinese aid amount, we can interpret this to mean that China tends to exercise its political influence or occupy potential economic markets of the Dark Continent by providing more aid to big and influential African players.

The factor of energy production also shows interesting results. Contrary to many scholars' beliefs, the amount of Chinese aid is not related with the energy production of its African partner. There is even a negative relationship between these two variables in some cases. As Brautigm (2009) argues,[110]Chinese foreign aid policy seems mix production with various political and economic consideration and seems to be more complex than simply focusing on energy supply from the continent.

In the case of South Korea, there seem to be no close relationships between the independent variables and Korean aid amount in most cases. However, GDP per capita consistently shows a significant relationship with the aid volume. The current Korean government's tendency to adopt a risk aversion policy is understandable in that it has faced multiple challenges. The Korean government should satisfy international demand for South Korea's increasingly responsible role in the international aid community, and at the same time, Seoul should be aware of domestic criticisms associated with pouring huge amounts of government funds into other countries. By choosing relatively financially safe countries and supporting them, Seoul seems to try to strike a balance between these conflicting demands.

[110] Brautigam (2009), *op cit.*, 3.

5.3 Limitations

An ideal comparison study would be based on exact standardized data sources. However, this task is almost impossible in the amount of Chinese foreign aid as mentioned earlier in the section of China's foreign aid system in Chapter 2. Alternatively, we employ existing literature and Chinese official statistics regarding aid amount and develop our research. Nonetheless, we still have a necessity to exercise caution in interpreting the statistical results of this research. We hope that the Chinese government can provide transparent ODA data in the near future for enhancing validity.

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Appendix 1: Data sets of foreign aid related variables

Country	Year	Aid from China (Commitment, current million USD)	Chinese *Foreign Economic Cooperation* (current million USD)	Aid from Korea (Commitment, current million USD)	Population	GDP at market prices (current USD)	GDP per capita (current USD)	Bilateral trade with China (thousand USD)	Bilateral trade with Korea (thousand USD)	FDI inflow from China (thousand USD)	FDI inflow from Korea (thousand USD)	Total Primary Energy Production (Quadrillion Btu)
Average		107.49	282.92	1.23	20,241,092	21,329,840,504	1,628	799,021	268,671	7,757	2,318	0.79512
Standard Deviation		488.03	1,049.94	4.68	26,949,923.56	41,219,688,154	2,337	1,660,539.86	562,799.48	20,284.13	11,458.04	1.82166
Maximum		4,200	9,614	35.02	144,719,953	257,729,745,476	15,355	11,827,481	3,260,641	146,700	123,297	7.74823
Minimum		0.00	0.00	0.00	462,440	235,922,971	86	2,596	12	-8,510	0	0.00000
Algeria	2003	0.00	669.86	1.16	31,885,164	68,018,606,041	2,133	745,154	416,247	2,470	666	7.00023
Algeria	2004	48.00	961.84	1.13	32,365,777	85,013,944,728	2,627	1,239,597	595,031	11,210	1,667	7.14448
Algeria	2005	0.00	1,828.37	0.34	32,854,159	102,339,097,272	3,115	1,768,150	506,430	84,870	2,751	7.74823
Algeria	2006	0.00	8,048.68	1.82	33,351,137	116,460,413,099	3,492	2,090,636	968,146	98,930	2,901	7.72555
Angola	2003	11.00	669.86	0.00	15,646,832	13,956,268,299	892	2,351,726	292,387	190	0	1.95654
Angola	2004	2,000.00	446.31	0.00	16,135,465	19,775,218,958	1,226	4,910,857	1,951,510	180	0	2.29303
Angola	2005	1,212.30	1,329.09	31.46	16,617,589	30,632,364,954	1,843	6,954,620	1,518,075	470	4,711	2.72163
Angola	2006	2,400.20	4,077.23	35.02	17,089,111	45,163,239,832	2,643	11,827,481	1,255,759	22,390	278	3.09084
Botswana	2003	0.00	163.13	0.00	1,795,203	8,277,571,715	4,611	24,946	3,635	800	0	0.02111
Botswana	2004	29.63	3.22	0.00	1,815,097	9,827,416,994	5,414	52,402	5,610	270	0	0.02298
Botswana	2005	18.29	1.34	0.00	1,835,938	10,512,506,868	5,726	62,510	5,625	3,690	0	0.02478
Botswana	2006	0.00	186.15	0.03	1,858,163	11,006,462,360	5,923	69,948	5,520	2,760	0	0.02278
Burundi	2003	3.60	0.00	0.00	6,955,720	595,002,974	86	5,190	838	0	0	0.00102
Burundi	2004	0.00	1.69	0.00	7,162,083	664,493,919	93	5,133	663	0	0	0.00090
Burundi	2005	0.00	11.94	0.17	7,378,129	795,882,875	108	12,220	1,032	0	0	0.00099
Burundi	2006	0.00	0.08	0.20	7,603,492	918,823,351	121	11,925	693	0	0	0.00091
Cameroon	2003	4.90	7.80	0.42	17,018,907	13,621,809,492	800	180,155	65,240	280	0	0.18123
Cameroon	2004	0.00	122.35	0.63	17,409,433	15,775,357,312	906	248,923	284,737	370	0	0.18255
Cameroon	2005	0.00	21.80	0.69	17,795,149	16,587,863,738	932	196,620	337,249	190	0	0.21604
Cameroon	2006	1,100.00	23.20	0.31	18,174,696	17,956,985,511	988	390,809	437,234	730	0	0.22654
Cape Verde	2003	26.50	1.85	0.00	462,440	797,314,310	1,724	2,596	73	0	0	0.00000
Cape Verde	2004	0.00	32.82	0.00	470,028	924,644,653	1,967	2,746	400	0	0	0.00000

Cape Verde	2005	0.00	18.30	0.00	477,438	1,006,371,941	2,108	5,190	343	320	0	0.00006
Cape Verde	2006	0.00	7.04	0.00	484,659	1,201,635,931	2,479	10,094	639	230	0	0.00006
Central African Republic	2003	12.79	16.64	0.00	4,059,572	1,139,211,629	281	4,440	647	0	0	0.00085
Central African Republic	2004	6.00	0.47	0.00	4,123,325	1,269,621,729	308	9,569	579	0	0	0.00083
Central African Republic	2005	3.60	7.89	0.07	4,191,429	1,350,047,285	322	16,080	711	0	0	0.00099
Central African Republic	2006	0.00	4.31	0.00	4,264,806	1,476,870,078	346	10,302	518	0	0	0.00108
Congo, Dem. Rep.	2003	0.00	27.10	0.07	55,174,963	5,673,197,494	103	51,656	2,676	60	100	0.11229
Congo, Dem. Rep.	2004	23.00	58.41	0.01	56,917,959	6,594,329,042	116	136,571	3,262	11,910	31	0.11830
Congo, Dem. Rep.	2005	0.00	78.07	0.32	58,740,547	7,238,816,984	123	225,480	2,957	5,070	0	0.11857
Congo, Dem. Rep.	2006	0.00	124.58	0.31	60,643,890	8,785,320,102	145	437,315	9,313	36,730	1,100	0.11993
Congo, Rep.	2003	280.00	9.97	0.01	3,260,769	3,564,177,564	1,093	874,553	379,616	0	0	0.53852
Congo, Rep.	2004	0.00	310.82	0.06	3,341,052	4,342,922,605	1,300	1,662,093	298,176	510	0	0.51381
Congo, Rep.	2005	0.00	16.86	0.08	3,416,654	6,087,004,330	1,782	2,422,740	436,052	8,110	0	0.50231
Congo, Rep.	2006	0.00	171.02	0.25	3,486,073	7,731,262,789	2,218	3,033,115	846,850	13,240	0	0.52964
Cote d'Ivoire	2003	0.00	22.77	0.13	18,453,355	13,737,489,762	744	264,979	29,974	620	1,510	0.10904
Cote d'Ivoire	2004	0.00	10.38	0.19	18,839,434	15,481,092,869	822	231,469	33,454	6,750	1,722	0.12155
Cote d'Ivoire	2005	0.00	9.10	0.26	19,244,866	16,363,441,576	850	222,120	32,039	8,740	2,884	0.14732
Cote d'Ivoire	2006	0.00	49.20	1.03	19,673,411	17,367,283,750	883	352,967	49,017	-2,910	1,424	0.19745
Djibouti	2003	12.00	9.97	0.04	776,784	622,044,666	801	66,007	8,296	0	0	0.00000
Djibouti	2004	0.00	7.46	0.09	790,344	666,072,102	843	72,734	8,150	0	0	0.00000
Djibouti	2005	0.00	15.20	0.10	804,206	708,843,637	881	112,000	15,432	0	0	0.00000
Djibouti	2006	0.00	10.59	0.53	818,508	760,652,934	929	155,334	21,485	0	0	0.00000
Egypt, Arab Rep.	2003	0.00	13.49	1.71	74,296,319	82,923,680,622	1,116	1,089,581	620,612	2,100	3,403	2.85180
Egypt, Arab Rep.	2004	35.00	202.04	6.26	75,718,360	78,845,185,709	1,041	1,576,370	875,217	5,720	14,850	2.85753
Egypt, Arab Rep.	2005	52.15	334.61	4.40	77,154,409	89,685,724,889	1,162	2,145,180	908,152	13,310	3,547	3.24386
Egypt, Arab Rep.	2006	13.60	310.46	6.59	78,602,081	107,484,034,648	1,367	3,192,270	1,303,227	8,850	5,586	3.46530
Equatorial Guinea	2003	0.00	77.24	0.00	576,342	2,952,360,964	5,123	416,935	283	480	0	0.45991
Equatorial Guinea	2004	10.00	67.66	0.00	592,466	5,240,842,353	8,846	1,006,774	31,082	1,690	0	0.73870
Equatorial Guinea	2005	0.00	241.47	20.05	608,807	8,217,298,404	13,497	1,456,630	450	6,350	0	0.79029
Equatorial Guinea	2006	0.00	206.23	0.00	625,394	9,603,185,319	15,355	2,578,700	88,838	10,190	0	0.76150
Eritrea	2003	2.00	18.06	0.05	4,175,647	597,715,870	143	5,467	1,748	0	0	0.00000
Eritrea	2004	1.80	25.38	0.00	4,353,526	631,235,606	145	8,052	2,974	0	0	0.00001
Eritrea	2005	0.00	71.34	0.22	4,526,722	1,161,451,573	257	8,240	849	0	0	0.00001

Eritrea	2006	43.80	4.25	0.01	4,692,115	1,281,737,511	273	38,654	1,513	10	0	0.00002
Ethiopia	2003	236.00	53.30	1.05	70,880,658	8,556,181,761	121	157,485	21,204	980	0	0.02311
Ethiopia	2004	0.30	196.56	2.29	72,746,225	10,052,219,783	138	208,441	20,372	430	0	0.02501
Ethiopia	2005	5.30	293.18	2.37	74,660,901	12,304,798,734	165	369,710	53,048	4,930	0	0.02805
Ethiopia	2006	3.50	873.54	2.27	76,627,697	15,165,859,353	198	562,594	65,656	23,950	0	0.03200
Gabon	2003	34.90	3.47	0.02	1,315,994	6,054,886,442	4,601	309,490	122,775	0	0	0.53136
Gabon	2004	7.20	53.62	0.04	1,342,701	7,178,135,733	5,346	414,444	45,269	5,600	0	0.52779
Gabon	2005	0.00	49.13	0.05	1,369,229	8,665,738,964	6,329	392,960	89,207	2,080	0	0.58418
Gabon	2006	0.00	63.67	0.00	1,395,613	9,545,984,815	6,840	880,638	21,748	5,530	0	0.52287
Ghana	2003	4.50	55.90	0.42	20,954,557	7,624,164,926	364	356,096	81,338	2,890	135	0.05455
Ghana	2004	3.65	86.80	0.20	21,435,257	8,871,872,035	414	590,783	82,330	340	1,570	0.06760
Ghana	2005	99.60	135.90	0.27	21,915,168	10,720,345,993	489	768,430	95,720	2,570	133	0.06872
Ghana	2006	0.00	10.55	0.27	22,393,338	12,715,096,717	568	882,770	109,631	500	1,141	0.06818
Guinea	2003	0.00	80.51	0.00	8,869,959	3,619,435,936	408	83,738	136,072	1,200	0	0.00406
Guinea	2004	0.00	39.53	0.00	9,040,537	3,938,327,867	436	107,812	122,625	14,440	50	0.00550
Guinea	2005	0.00	58.27	0.05	9,220,768	3,260,598,086	354	147,310	183,298	16,340	300	0.00489
Guinea	2006	9.00	264.08	0.05	9,411,881	3,203,923,161	340	187,772	140,815	750	0	0.00452
Guinea-Bissau	2003	0.00	25.31	0.00	1,403,045	235,922,971	168	12,350	12	0	0	0.00000
Guinea-Bissau	2004	6.38	35.81	0.03	1,437,940	285,110,713	198	6,024	1,519	0	69	0.00000
Guinea-Bissau	2005	0.00	27.58	0.07	1,472,626	301,816,217	205	5,790	1,716	0	0	0.00000
Guinea-Bissau	2006	0.00	28.98	0.03	1,506,905	317,083,899	210	5,677	1,530	0	0	0.00000
Kenya	2003	0.00	18.08	0.26	33,779,932	14,903,634,448	441	250,448	50,324	740	0	0.05189
Kenya	2004	4.70	47.52	25.18	34,674,703	16,091,625,616	464	365,763	64,289	2,680	0	0.05218
Kenya	2005	1.31	67.24	0.50	35,598,952	18,769,012,891	527	474,570	75,399	2,050	192	0.05304
Kenya	2006	45.00	385.24	1.05	36,553,490	22,478,648,008	615	645,456	209,973	180	263	0.05542
Lesotho	2003	20.00	5.41	0.05	1,949,772	994,257,248	510	24,883	3,234	0	0	0.00333
Lesotho	2004	0.00	15.46	0.03	1,965,823	1,289,785,130	656	47,454	10,345	30	0	0.00298
Lesotho	2005	0.00	13.80	0.00	1,980,831	1,375,997,538	695	56,150	3,709	600	0	0.00347
Lesotho	2006	0.00	10.09	0.00	1,994,888	1,517,512,470	761	65,702	10,888	0	0	0.00196
Liberia	2003	0.00	0.00	0.00	3,137,852	410,200,004	131	68,144	1,530,996	400	0	0.00000
Liberia	2004	26.40	7.90	0.00	3,224,643	459,999,996	143	198,327	1,734,427	580	0	0.00000
Liberia	2005	8.60	7.13	0.00	3,334,222	530,200,009	159	163,800	1,994,670	8,650	0	0.00000
Liberia	2006	7.50	12.14	0.01	3,471,020	611,859,675	176	531,772	3,260,641	-7,030	0	0.00000
Libya	2003	0.00	43.56	0.00	5,682,648	23,822,414,727	4,192	215,681	139,871	100	21,982	3.30084
Libya	2004	0.00	40.12	0.00	5,799,484	30,498,084,291	5,259	671,743	457,381	60	27,037	3.60892
Libya	2005	0.00	116.29	0.08	5,918,217	41,743,119,266	7,053	1,302,220	367,485	250	51,887	4.00121
Libya	2006	0.00	241.63	0.06	6,038,643	49,710,718,636	8,232	2,398,051	435,497	-8,510	34,118	4.23549

Madagascar	2003	0.00	80.26	0.08	16,656,727	5,473,940,630	329	118,651	13,585	680	0	0.00619
Madagascar	2004	2.00	5.14	0.08	17,131,317	4,363,835,956	255	166,161	15,881	13,640	2,604	0.00635
Madagascar	2005	0.00	53.10	0.02	17,614,261	5,038,577,100	286	196,640	15,636	140	178	0.00653
Madagascar	2006	0.00	51.39	0.05	18,105,439	5,515,222,624	305	246,373	17,692	1,170	30,218	0.00589
Mali	2003	0.00	73.61	0.07	10,929,518	4,362,442,243	399	63,594	4,910	5,410	692	0.00240
Mali	2004	0.00	134.30	0.07	11,264,724	4,874,185,884	433	165,523	3,348	0	198	0.00249
Mali	2005	0.00	148.90	0.07	11,611,090	5,305,318,991	457	145,190	2,329	0	0	0.00255
Mali	2006	0.00	208.65	0.01	11,968,376	5,866,095,675	490	189,228	1,986	2,600	0	0.00261
Mauritania	2003	4.50	47.34	0.10	2,801,196	1,285,179,087	459	64,193	4,157	1,700	0	0.00042
Mauritania	2004	0.00	43.58	0.62	2,882,186	1,547,861,048	537	114,732	2,461	90	0	0.00044
Mauritania	2005	0.00	48.89	0.12	2,963,105	1,836,589,501	620	78,360	3,915	360	0	0.00049
Mauritania	2006	19.89	62.14	0.08	3,043,639	2,662,577,888	875	511,256	3,527	4,780	0	0.06594
Mauritius	2003	0.00	10.51	0.01	1,222,811	5,248,142,578	4,292	110,500	20,011	10,270	155	0.00120
Mauritius	2004	0.00	42.38	0.05	1,233,386	6,064,344,862	4,917	157,844	21,894	440	0	0.00121
Mauritius	2005	5.00	67.84	0.00	1,243,253	6,289,630,350	5,059	185,620	22,980	2,040	0	0.00113
Mauritius	2006	0.00	36.18	0.01	1,252,987	6,433,125,205	5,134	205,080	30,330	16,590	0	0.00075
Morocco	2003	0.00	43.15	0.68	29,520,444	49,822,651,702	1,688	110,500	163,143	190	0	0.01900
Morocco	2004	0.00	82.38	2.64	29,838,668	56,948,015,336	1,909	157,844	203,253	1,800	0	0.02068
Morocco	2005	0.00	240.53	1.40	30,142,709	59,523,857,868	1,975	185,620	263,425	850	34	0.01482
Morocco	2006	0.00	146.36	2.56	30,496,553	65,637,107,776	2,152	205,080	310,040	1,780	0	0.01488
Mozambique	2003	0.00	30.83	0.10	19,609,837	4,666,190,666	238	71,618	5,748	0	0	0.11408
Mozambique	2004	0.00	188.51	0.05	20,078,143	5,697,991,419	284	119,440	18,397	660	0	0.11914
Mozambique	2005	3.00	39.81	0.16	20,532,675	6,578,515,376	320	165,010	8,818	2,880	0	0.13877
Mozambique	2006	2,600.00	71.45	0.13	20,971,449	7,094,993,738	338	207,713	15,441	0	0	0.20655
Namibia	2003	0.00	34.30	0.02	1,968,514	4,934,391,534	2,507	74,575	3,179	620	0	0.01533
Namibia	2004	0.00	32.68	0.01	1,993,832	6,605,804,205	3,313	99,115	4,348	0	0	0.01589
Namibia	2005	6.20	27.81	0.01	2,019,677	7,261,676,364	3,595	136,740	30,238	180	0	0.01641
Namibia	2006	0.00	68.63	0.03	2,046,555	7,978,877,400	3,899	255,015	83,485	850	0	0.01577
Niger	2003	0.00	8.98	0.02	12,367,244	2,708,362,010	219	19,336	4,946	0	0	0.00482
Niger	2004	12.00	10.55	0.05	12,807,896	2,897,003,662	226	25,007	65,033	1,530	0	0.00512
Niger	2005	3.72	18.00	0.11	13,264,190	3,330,008,645	251	33,900	4,324	5,760	0	0.00466
Niger	2006	0.00	64.17	0.07	13,736,722	3,645,827,994	265	72,689	7,890	7,940	0	0.00469
Nigeria	2003	2.50	526.96	0.09	134,659,379	67,656,023,324	502	1,857,630	707,109	24,400	0	5.70931
Nigeria	2004	60.00	659.66	0.11	138,001,086	87,845,420,492	637	2,181,775	1,231,359	45,520	181	5.89869
Nigeria	2005	28.25	978.98	0.21	141,356,083	112,248,609,250	794	2,830,040	1,196,598	53,300	0	6.54435
Nigeria	2006	4,200.00	9,614.60	1.72	144,719,953	146,868,981,934	1,015	3,129,899	1,435,164	67,790	123,297	6.35193
Senegal	2003	0.00	24.30	0.28	10,706,962	6,857,949,988	641	79,134	14,932	650	0	0.00555

Senegal	2004	0.00	30.69	0.39	10,989,452	8,029,975,134	731	112,249	16,111	0	0	0.00492
Senegal	2005	0.00	66.33	0.31	11,281,296	8,687,643,225	770	140,960	19,965	0	0	0.00475
Senegal	2006	0.00	247.16	0.85	11,582,863	9,366,561,148	809	196,627	27,123	0	0	0.00440
Sierra Leone	2003	6.00	16.92	0.09	4,732,526	991,113,463	209	16,606	2,091	0	0	0.00016
Sierra Leone	2004	0.00	19.46	0.06	4,925,922	1,073,047,866	218	29,860	1,760	5,920	0	0.00016
Sierra Leone	2005	0.00	19.43	0.08	5,106,977	1,214,786,527	238	32,120	2,757	490	0	0.00018
Sierra Leone	2006	0.00	24.78	0.00	5,270,799	1,422,630,117	270	39,958	3,347	3,710	0	0.00018
South Africa	2003	0.00	47.94	0.07	45,801,325	166,653,579,928	3,639	3,869,350	1,311,815	8,860	196	5.91399
South Africa	2004	0.00	47.81	0.08	46,347,516	216,011,676,208	4,661	5,912,107	1,958,337	17,810	123	6.06450
South Africa	2005	0.00	52.51	0.07	46,892,428	242,801,690,515	5,178	7,269,020	2,413,840	47,470	26,697	6.05424
South Africa	2006	0.00	194.89	0.14	47,391,025	257,729,745,476	5,438	9,853,067	3,179,294	40,740	5,983	6.04095
Sudan	2003	0.00	1,143.02	0.20	37,142,156	17,780,302,822	479	1,920,240	175,577	0	0	0.51233
Sudan	2004	1,814.21	1,479.29	1.48	37,899,766	21,683,916,158	572	2,521,764	279,407	146,700	0	0.64831
Sudan	2005	33.00	721.85	0.71	38,698,472	27,386,029,458	708	3,908,050	303,916	91,130	20	0.66196
Sudan	2006	28.20	1,886.72	0.66	39,545,065	36,401,483,581	921	3,353,810	496,199	50,790	987	0.71509
Tanzania	2003	13.50	89.83	0.78	36,929,648	10,282,802,720	278	219,037	48,629	0	0	0.02726
Tanzania	2004	20.00	260.54	1.24	37,945,476	11,351,426,577	299	284,241	27,551	1,620	112	0.02944
Tanzania	2005	5.29	385.90	2.37	39,007,359	14,141,921,494	363	474,300	32,337	960	169	0.03460
Tanzania	2006	0.00	149.38	5.80	40,117,243	14,331,230,929	357	535,451	50,164	12,540	293	0.03479
Togo	2003	0.00	11.74	0.00	5,698,109	1,758,946,963	309	284,650	18,569	30	0	0.00126
Togo	2004	0.00	0.57	0.09	5,843,292	2,061,009,613	353	445,126	22,202	1,850	0	0.00082
Togo	2005	0.10	5.16	0.11	5,992,080	2,108,220,690	352	569,970	17,463	310	0	0.00075
Togo	2006	0.00	6.89	0.12	6,144,899	2,217,981,077	361	725,613	22,635	4,580	0	0.00092
Tunisia	2003	0.00	24.69	0.22	9,839,800	24,992,239,038	2,540	200,890	46,765	0	0	0.25644
Tunisia	2004	16.89	27.06	19.25	9,932,400	28,129,265,355	2,832	279,221	77,000	220	0	0.27032
Tunisia	2005	0.00	32.77	0.89	10,029,000	28,967,848,882	2,888	339,630	90,491	0	0	0.26403
Tunisia	2006	6.26	8.46	0.50	10,128,100	30,962,208,866	3,057	408,078	94,314	1,730	0	0.26643
Uganda	2003	3.80	17.69	0.13	26,890,404	6,606,892,462	246	54,893	5,692	1,000	0	0.01794
Uganda	2004	10.10	102.25	0.21	27,778,909	7,923,509,515	285	88,068	7,201	150	0	0.01892
Uganda	2005	0.00	93.21	0.12	28,699,255	9,225,012,109	321	99,370	9,253	170	0	0.01839
Uganda	2006	23.10	44.53	0.16	29,651,734	9,956,510,728	336	155,587	10,330	230	0	0.01151
Zambia	2003	607.60	34.56	0.12	11,218,960	4,373,861,968	390	82,762	50,963	5,530	0	0.08919
Zambia	2004	0.00	108.51	0.02	11,472,278	5,423,200,513	473	222,147	162,033	2,230	0	0.08686
Zambia	2005	0.50	51.54	0.11	11,738,432	7,156,845,308	610	300,560	263,053	10,090	0	0.09162
Zambia	2006	219.40	283.36	0.21	12,019,481	10,675,368,303	888	372,882	440,058	87,440	30	0.09824