

# Capacity Development and Foreign Aid from Japan\*

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**Abstract:** We investigate the trend and characteristics of foreign aid from Japan, and attempt to gain academic and political implications by observing all the ODA flows from the past to the present. In particular, structural expenditures classified according to the DAC (Development Assistance Committee), are rearranged into those with the degree of how closely related to capacity development (CD) or capacity building. We analyze the bilateral flows of the grants, technical assistance (TA) and concessional loans, and will cover all the expenditures from the major donor institutions in Japan: JICA (Japan International Cooperation Agency) and JBIC (Japan Bank of International Cooperation).

**Keywords:** Capacity Development, Concessional Loans, Foreign Aid, Grants, Japan, Technical Assistance

## 1. INTRODUCTION

Even in this new century, the United Nations (UN) declared the Millennium Development Goals as our common objective of human beings to fight the extreme poverty and hunger widespread in the world. Despite of the substantial amounts and continuous efforts of foreign aid by the international communities, there still exist not a small number of under-developed countries and regions where people suffer from shortage of basic human needs and rights.

For more than three decades, Japan has been sending foreign aid to developing countries. Japanese foreign aid started as war compensations to Asian countries, and became larger and larger in accordance with its economy's miraculous growth. In a couple of years toward the end of the last century, Japan became a world's largest donor country while other donors barely kept their existing amounts affected by "Aid Fatigue." However, in recent years, Japan has been having a hard time to increase its aid amount, owing to the huge amount of public debts and its stagnant economic performances, so that its ranking of annual ODA size steadily went down to fifth in 2007. In 2008 when G8 summit was held in Hokkaido (a Northern island of Japan), Japanese government announced a new ODA policy to revive the total aid amount, in order to show its will to take its fair international responsibility. In particular, greater amount to Africa is promised partly because Japan hosted the TCAT meeting in Yokohama in the same year.

Although Japan seems to care about the total amount of aid in future, it really did not make clear other issues than the size except for an environment. For example, it is not sure which (African) countries will receive aid, or how Japanese aid will be spent in terms of sectors, projects and programs. Whenever we revise or reconsider any future foreign aid policy, it is indispensable to evaluate the past aid flows so that we can utilize as many lessons as possible. Efficiency of

foreign aid should be one of the most important themes to be discussed. Of course, each aid institution in Japan carries out most project based evaluations, but this paper overlooks all the past Japanese aid flows in much more aggregate way, such that we can achieve any time series finding and political direction.

Since we want to study the efficiency of Japanese aid to develop recipient countries, we deal with only bilateral flows not multilateral flows in this paper. ODA Data<sup>1</sup> used in this research consists of three forms: grants, concessional loans, and technical assistance (TA). Japanese International Cooperation Agency (JICA) distributes the majority of grants and TA expenditures while central government ministries and agencies control the rest. All the grants and loans, but TA only by JICA are included in this data. Most loans are provided by Japan Bank of International Cooperation (JBIC). In fact, JBIC was born from a merger of two former independent aid institutions: Overseas Economic Cooperation Fund (OECF) responsible for concessional loans, and Export and Import Bank of Japan in charge of other financial flows. This September, JICA and JBIC are forming a new JICA whose total ODA size could reach the second largest among all the bilateral and multilateral donor institutions. Hopefully, this study can provide the new institution with any useful information for the international development and cooperation.

This paper analyzes the effects of Japanese ODA on Capacity Development (CD) in recipient countries. CD originally is considered for the individual capacity to be enhanced as labor input. In this sense, foreign aid for CD was the aid expenditures for education and TA. Nowadays, capacities of a country and the government became important as targets of foreign aid for CD. After the UNDP (1992) examined the effectiveness of its past TA, it concluded that capacity develops by three dimensions: individual, institutional, and social levels. It recommended TA for CD of country wide (policy and government) in order to carry out foreign aid projects. World Bank economists, Burnside and Dollar (2000) wrote a very famous paper to test the efficiency of aid on the economic growth of recipients. They adopted a policy variable to represent the capacity level of a government of receiving foreign aid. After their regression analysis based on a new panel data of foreign aid, they concluded that growth rate becomes higher under a better political environment. Even when their study was published as a working paper (1997), this message was powerful enough to encourage a number of new foreign aid studies in the development field, as well as to influence the real foreign aid policies of international institutions and donor countries.

CD is very difficult to be defined as Matsuoka et al (2008) explained. CD can belong to many institutions, such as individuals, firms, and a government. At the same time, coverage of CD varies from households or villages to cities or a country. Moreover, appropriate CD would be widely diversified according to the development level of each recipient country. Thus, we had better start to reconsider all the aid flows from a scratch. This paper will define new variables of foreign aid for CD, reforming the traditional purposes of aid: i.e. structural aid expenditures by DAC.

The structure of this paper after the introduction is as follows. In Section 2, basic model of production is introduced, and foreign aid for CD is explained. Then, data and variables in this research are briefly explained. In Section 3, foreign aid expenditures for CD are analyzed for the total, grants, loans, and TA distributions. In Section 4, aid expenditures for CD to the recipients classified by different development stages are considered as a discussion. In Section 5, conclusions and directions for future research are provided.

## 2. MODEL

### 2.1 Production of Recipient Economy

As a benchmark, we consider a closed economy receiving foreign aid. Production is represented by meta-production function with labor and capital (Hayami and Ruttan 1970). According to Lau and Yotopoulos (1989), meta-production function ( $F$ ) is defined as a uniquely standardized production function commonly operated in all the economies in the world at a certain time. A single output ( $Y(t)$ ) in period  $t$  is produced using two inputs: labor ( $L(t)$ ) and capital stock ( $K(t)$ ),

$$Y^*(t) = F(L(t)^*, K(t)^*) \quad (1)$$

Asterisking on each variable to represent its efficiency equivalent unit, output amounts or each input amounts can be compared among all the recipient economies. However, we can obtain only measured units of them ( $Y(t)$ ,  $L(t)$  and  $K(t)$ ) because we cannot directly observe the efficiency units. According to Kim and Lau (1994), converting factors ( $A_Y(t)$ ,  $A_L(t)$ ,  $A_K(t)$ ) make measured units into efficiency ones as:  $Y^*(t) = A_Y(t)Y(t)$ ,  $L^*(t) = A_L(t)L(t)$ , and  $K^*(t) = A_K(t)K(t)$ . A converting factor for each variable changes to each country, with a different geographical location, climate, culture, educational level, and above all, production technology. Therefore,  $Y(t)$  can be given as:

$$Y(t) = A_Y(t)^{-1} F(A_L(t)L(t), A_K(t)K(t)) \quad (2)$$

An inverse of the converting factor of the output ( $A_Y(t)^{-1}$ ) can be interpreted as the Solow residual parameter, which represents an overall technological capacity of the economy or Total Factor Productivity (TFP). Also, an economy often experiences industrial transformations (from primary through secondary towards tertiary industries) especially when it grows from the low level of production. So, we introduce these three industries into the macro production function above where  $\alpha_i$  and  $\beta_i$  are labor and capital shares of  $i$ th industry:

$$Y(t) = A_Y(t)^{-1} \sum_i^3 F_i(A_{iL}(t)\alpha_i L(t), A_{iK}(t)\beta_i K(t)) \quad (3)$$

$$\sum_i^3 \alpha_i = 1, \sum_i^3 \beta_i = 1$$

We assume production functions as Cobb-Douglass with an identical capital labor substitution parameter in each industry ( $\gamma_i = \gamma > 0$ ). Furthermore, since converting factors for labor and capital tend to be closely related to the each economy's development level, they assumed to be identical for each industry ( $A_{iL}(t) = A_L(t)$ , and  $A_{iK}(t) = A_K(t)$  for each  $i$ ). Linearizing this equation by taking natural log:

$$\ln Y(t) = \ln A_Y(t)^{-1} + \gamma \ln A_L(t) + (1-\gamma) \ln A_K(t) + \gamma \ln L + \ln \sum_i^3 \alpha_i^\gamma (\beta_i K(t))^{1-\gamma} \quad (4)$$

## 2.2 CD and Foreign Aid

Foreign aid affects the amounts of inputs and the levels of productivity or capacity in a recipient economy. Aid to maintain the amount of labor is often necessary for the individuals in the recipient country just to survive by satisfying Basic Human Needs (BHN). Aid to increase capital stocks should be industry or sector specific such that its target is primary (agricultural), secondary (manufacturing), or tertiary industry (commercial sector). At the same time, aid to enhance capacities is factor or institution specific such that its target is TFP (economy or government), labor (individuals), or capital stock (firms).

Based on the production function (Equation 4), we define following variables to represent purposes of foreign aid in terms of CD and non CD. Aid purposes for CD of government ( $A_Y(t)^{-1}$ ), CD of individuals ( $A_L(t)$ ), and CD of firms ( $A_K(t)$ ) are called as G, I, and F, respectively. Aid purposes for non CD concerns not quality but quantity of labor and capital stock. An aid purpose for labor quantity ( $L(t)$ ) is called as B which maintains BHN of individuals. Aid purposes for capital quantity ( $K(t)$ ) are called as A which invests in the primary (agricultural) industry, M which invests in the secondary (manufacturing) industry, and C which invests in the tertiary (commercial) industry.

It is clear that optimal contents and conditions of foreign aid differ from recipient to recipient. Generally speaking, ideal purposes of aid are closely related to the development level of each recipient. For example, when an economy is in the lowest level of development, B is the most desirable since a large number of individuals seem to struggle for survival. As the economy evades the worst situation, I and A become the most preferable in order to improve the food production. Then, the economy begins to demand F, M and C for the development of the manufacturing and commercial sectors. Meanwhile, it starts to care about G for the improvement of political

capability and governance. Of course, any of each input or factor should not be zero (otherwise nothing is produced), but the optimal mix of aid purposes should be determined according to the development stage of each recipient economy.

### **2.3 Data and Variables**

Japanese ODA data in this research is constructed by the author's project<sup>ii</sup>. This panel data of bilateral aid<sup>iii</sup> covers the annual distribution of structural expenditures (aggregate and per capita) to each recipient from 1964 to 2003. Structural uses of this data classified by DAC are as follows: Social and Administrative Infrastructure (Education, Health, Water Supply, Sanitation and Sewerage, General Environmental Protection, Culture and Recreation), Economic Infrastructure (Energy, Transportation, Communication), Production (Agriculture, Fishery, and Forestry, Industry, Mining and Construction, Trade and Tourism), Multi-Sector, General Program Assistance (Commodity Aid and General Program Assistance, Sector Program, Non-Project Aid), Debt Relief, Food Aid, Emergency Assistance, Support to Private Voluntary Organization, Administrative Costs to Donors, and Unallocated/Unspecified. This data consists of Grants (1968-2003), loans (1968-2003), and TA (1988-2003) although TA are only JICA spending.

We reform these structural uses by DAC into those variables defined in the previous section, whose grants and loans data covers from 1970 to 2003. Examining roles and contents of each structural spending, we arrived at a following reformation: G (General Environmental Protection, Culture and Recreation, Commodity Aid and General Program Assistance, Sector Program, Non-Project Aid), I (Education), F (Water Supply, Sanitation and Sewerage<sup>iv</sup>, Energy, Transportation, Communication, Multi-Sector), B (Health, Food Aid, Emergency Assistance, Support to Private Voluntary Organization), A (Agriculture, Fishery, and Forestry), M (Industry, Mining and Construction), C (Trade and Tourism). Debt Relief and Unallocated/Unspecified are neglected in this research, and so not included in the total aid expenditures. Debt Relief is for the loans of previous aid flows which were already counted as the other variables in the past. Unallocated/Unspecified does not seem to make any substantial effect on a recipient economy.

## **3. CAPACITY DEVELOPMENT**

### **3.1 Japanese Total ODA**

We begin with the analysis of the Japanese total ODA spending<sup>v</sup> (1988-2003). Sum of grants, loans, and TA kept the high mark of 8000 billion yen from 1988 to 1997, almost reached 10000 bn. yen in 1991 and 1993, and passed 10000 in 1996 and 1997. However, it dumped to 6000 in 1998 and never recovered after (see Figure 1). Share of F (CD of firms) has been by far the highest from 40 to 60% (see Figure 2). G (CD of Government) had been the second until 1997 with more or less 20%, but has been competing with A (Agriculture), B (BHN), I (CD of individuals) and G (CD of government) after 1997. M (Manufacturing) was close to 20% in 1988, but continued to decrease to less than 2 % in 2003 with some ups and downs. On the contrary, I was close to 3 or 4 % in

1988, but continued to increase to more than 10 % in 2003.

CD share (F+I+G) during this period has been constantly 40 to 60 % so that CD is a major purpose of Japanese aid. Still, a unique characteristic of Japanese ODA is that F holds by far the largest share. So, although Japanese ODA can be CD oriented, it really leans to CD of firms or production infrastructure and technology. Therefore, an overall evaluation of Japanese ODA for CD could be that its distribution is not appropriate for the recipients of the low level of development.

Of course, we should be careful on the above evaluation. First, since aid distribution shares are fairly unstable in this short time period (16 years), we may not expect any reliable conclusion. Also, if distribution shares of grants, loans and TA are greatly different from each other, the above evaluation will be somehow weakened. Since total sum of Japanese ODA is enormous, not a small amount will be distributed for BHN, individuals and agriculture if B,I, and A are major purposes of grants and/or TA. We will see this in the next section.

Besides, even if the above evaluation is perfectly true, Japanese attitude to stick to CD of firms should not be overly blamed. As Takase (1995) showed in the study of structural aid distributions among OECD countries, some countries have their own strength in a particular use of aid (France: Social and Administrative Infrastructure, Japan: Economic Infrastructure, Switzerland: Production, and so on) while others distribute aid more or less in the equal manner (Canada, Germany, Netherlands, New Zealand and Norway). This may suggest the existence of a Nash equilibrium among donors. Since each donor has been observing other donors' conducts for many years, each became to know with each other. So, if Japan continued to concentrate on aid spending for CD of firms, other donors can free ride on it, and seek different purposes of aid suitable to their preference. In this sense, Japan plays a fair and important role in the international aid distribution, carrying a heavier load on the CD of firms.

### **3.2. Grants, Concessional Loans and TA**

Aid distribution of Japanese grants spending is analyzed (1970-2003). From more than 30 years of long time series data of aid, we find a tremendous growth trend of the grants until 1997 when it reached close to 2500 bn. yen, but a rapid downturn after, diminishing to almost 1600 in 2003 (see Figure 3). Shares of grant distributions are quite unstable (see Figure 4). In the early 1970s, B (BHN) showed a dominant share mostly from 80 to 60%, reduced its share in the late 1980s and the early 1990s, down to less than 20%, and recovered from the end of 1990s, reaching almost 30% again.

A (Agriculture) rapidly increased its share passing through 30 to 40 %, attained a top share position mostly during 1980s, and lost its momentum quickly to less than 10% in 2003. F (CD of firms) has a growth trend from 15 to 40% except for a couple of worst years in the early 1970s. I (CD of individuals) sustains a steady share of 10 to 20% while G (CD of government) rapidly increased its share to 20% in 1987, and has been holding its share. CD aid share (F+I+G) has been close to 60%, so that CD in Japanese grants is as important as in the total ODA. However, CD of

individuals and government becomes more important in grants than in the total because sum of I and G are approximately 30%. Also, high shares of B and I especially in recent years might be interpreted as Japan's reaction against strong pressures from international institutions (such as UN, World Bank and DAC).

Next, we analyze Japanese aid distribution of loans (1970-2003). Loans size shows more unstable trend than the total and the grants (see Figure 5). Sum of loans had been increasing from 1970 to 1987 with some ups and downs, finally reached almost 7000 bn. yen mark three times with two sharp declines during 1988 and 1997, and sank from 3000 to 2000 after 1997. Patterns of share distribution imply a very clear picture of Japanese loans (see Figure 6). First, they are really unstable with dominant three variables (M, F, and G). Second, except for a few years, F (CD of firms) shows a dominant share of 40 to 80%, and recently reached more than 90% in 2001 and 2003. M (Manufacturing) and G (CD of government) fluctuate rapidly, with shares of less than 10% to almost 50% year by year. Japanese concessional loans are extremely CD oriented or rather simply for CD because CD aid share (F+I+G) passes well over 90%. Of course, we know that only CD of firms is intended by Japanese loans since F occupies a greater share than 80%. Thus, Japanese loans aid could be not suitable for most LLDC or even some LDC countries.

Lastly, Japanese TA distribution is analyzed (1988-2003). TA had been steadily increasing the total amount from 800 bn. yen in 1988 to 1400 in 1997, and kept this amount until 2001, and has been diminishing it from 2002, down to less than 1200 in 2003 (see Figure 7). Contrary to grants and loans, TA shows a relatively stable share distribution, and each variable occupies a fair share (see Figure 8). F (CD of firms) or A (Agriculture) holds the largest share of 20 to 30%, exchanging a top position in some years. Both I (CD of individuals) and G (CD of government) hold more than 10 but less than 20%. M (Manufacturing) started to hold 20% but continuously reduced its share to less than 10%. Stable distribution should be stressed as a unique characteristic of Japanese TA, compared with the grants and loans. CD aid (F+I+G) share is 50 to 60% so that Japanese TA is CD oriented. Still, different from grants and loans, A and B (BHN) counts almost 40% in TA spending. Thus, Japanese TA by JICA is suitable to the countries of low level of development.

## **4. DISSCUSSIONS**

### **4.1 Development Stage**

In the early 1960's, a famous paradigm of economic development was born of Rostow's book, "Stages of Economic Growth" (1960). According to Bauer and Wilson (1962), Rostow argued that an economy grows passing through distinctive stages, such as, traditional society, preconditions for take-off, take off to modern society of high and mass consumption. His analysis was powerful enough to impact all the economic policies of developed and developing countries. Thus, it is natural that a recipient country needs different mixed CDs through foreign aid in accordance with each development stage.

One way of categorizing recipient countries into multiple development stages is to follow the income groups of aid recipients by DAC. Recipients are categorized by their income levels (per capita GNI) into Least Less Developed Countries (LLDC), Low Income Countries (LIC), Lower Middle Income Countries (LMIC), Upper Middle Income Countries (UMIC), or Higher Income Countries (HIC). Still, this method inherits a serious weakness that categorization rules (i.e. income limits separating each group) are redefined quite often. So, this paper suggests to apply this idea into another simple method as a proxy. We observe and compare CD and non CD purposes of foreign aid to East Asia and Sub-Sahara Africa. There seem to be a clear development gap between these two regions because a greater number of members in East Asia are MIC or HIC while most members in Sub-Sahara Africa are LLDC or LIC.

Aid distributions of Japanese grants to East Asia and Sub-Sahara Africa are analyzed (1970-2003). Size of grants to both regions shows a similar trend: a clear growth pass toward the end of 1990's, a relatively bumpy road still keeping high marks until 2000, and a rapid downturn after 2000 (see Figure 9 and Figure 11). Speed of growth of grants to East Asia is faster, but the level to Sub-Sahara Africa became almost identical or even went ahead after the end of 1980's. This tells a preference of the Japanese government to send more grants to the recipients of low level of development. However, shares of grants to both show a quite similar but unstable trend, which could suggest no difference in terms of CD and non CD variables (see Figure 10 and Figure 12). In the early 1970s, B showed a dominant share, but F and I became competing a top share in 1980's and after. Still, there is a small difference that G also holds a large share in East Asia while B still sustains a large share in Sub-Sahara Africa. This might be interpreted that Japan tends to determine an appropriate CD and non CD grants, according to the development levels of recipients.

Next, we analyze Japanese loans to East Asia and Sub-Sahara Africa (1970-2003). Although size of Loans to both regions shows an unstable trend with pretty rough bumps, there can be seen big differences (see Figure 13 and Figure 15). Loans to East Asia show an upward trend throughout the years while those to Sub-Sahara Africa show an upward trend until 1988 but turned downward after. Moreover, size to East Asia is 5 to 10 times larger than to Sub-Sahara Africa in most years, and loans to Sub-Sahara Africa shrinks to zero in a couple of years. Contrary to the grants, this can show a preference of the Japanese government to send more loans to the recipients of high level of development. However, similarly to the grants case, shares of loans to both show a quite similar but unstable trend (see Figure 14 and Figure 16). Since shares exhibit an almost identical feature between both regions (F, I, and G are major variables), Japan tends to choose the CD and non CD loans, irrespective of development levels of recipients. Therefore, we should conclude that Japan considers development levels more seriously when it determines the modalities of aid (grants or loans) than the purposes of aid (CD or non CD).

#### **4.2 Sector Development**

As we have argued, stages of development are often represented by the transformation of primary to



tirthly industries. In particular, economic growth of a typical recipient is measured by a pattern of shifting share of capital stock ( $\beta_i$ ) in Equation 4. A newly born economy holds high  $\beta_1$  (low  $\beta_2$  and  $\beta_3$ ), and  $\beta_2$  becomes higher ( $\beta_1$  and  $\beta_3$  becomes lower) as it grows. Finally, a fully developed economy attains high  $\beta_3$  (low  $\beta_1$  and/or  $\beta_2$ ).

Thus, we can characterize capital aid to each recipient by forward, simultaneous, and backward types. Defining  $\hat{\beta}_i$  as share of industry  $i$  in the capital aid, these three types to a recipient of LLDC are shown as follows: a simultaneous type as  $\hat{\beta}_1 \cong \beta_1$ , a forward type as  $\hat{\beta}_1 < \beta_1$  ( $\hat{\beta}_2 > \beta_2$  and/or  $\hat{\beta}_3 > \beta_3$ ), and a backward type as  $\hat{\beta}_1 > \beta_1$  ( $\hat{\beta}_2 < \beta_2$  and/or  $\hat{\beta}_3 < \beta_3$ ). In the same way, capital aid to a recipient of LMIC is simultaneous as  $\hat{\beta}_2 \cong \beta_2$ , forward as  $\hat{\beta}_2 < \beta_2$  ( $\hat{\beta}_3 > \beta_3$ ), or backward as  $\hat{\beta}_2 > \beta_2$  and/or  $\hat{\beta}_3 > \beta_3$  ( $\hat{\beta}_3 < \beta_3$ ). We may be allowed to conclude that capital aid of simultaneous type (or sometimes forward type) is appropriate to each recipient.

In this paper, shares of A, M and C in capital grants<sup>vi</sup> to East Asia and Sub-Sahara Africa are compared, thanks to a large development gap between both regions (1970-2003). A similar and stable trend for both regions is found that an approximately 90% share is held by A although remaining shares are held by C in East Asia and by M in Sub-Sahara Africa (see Figure 17 and Figure 18). Since an almost identical trend is observed for both regions, Japan may not consider development levels of recipients when it determine the mix of sector shares in capital grants.

## 5. CONCLUTIONS

This paper analyzed Japanese foreign aid distribution of the total sum, the grants, the loans, and TA. Structural aid expenditures are redefined in term of CD or non CD, based on a macro production function of a recipient country. Three variables of aid spending for CD are supposed to enhance CD for individuals, firms, and government. Four variables for non CD are supposed to increase the quantity of labor, and of capital stocks installed in three sectors: Agriculture, Manufacturing, and Commerce. In general, Japanese ODA spending is found to be CD oriented, in particular, CD of firms, which is a dominant purpose of aid in loans. CDs of individuals and government become major purposes of aid in grants, and BHN is added in TA. Therefore, from the view of the development level of recipients, three modalities of aid show a clear difference. Loans are for middle or high income countries, and TA s are for low income countries while grants are somehow in the middle of them.

JICA managing a greater half of grants and TA, and JBIC distributing most concessional loans, are going to merge into a new JICA, which can be exaggeratedly understood like a merger of UN and the World Bank. Of course, aggregating internal financial and administrative structures into one must be a tremendous challenge, but the gap between two institutions on the past ODA flows would be real obstacles. It is true that differences among loans, grants and TAs are obvious, but differences of aid purposes between both institutions could be essential. We hope that this ambitious challenge will be successful for peoples of Japan and recipient countries.

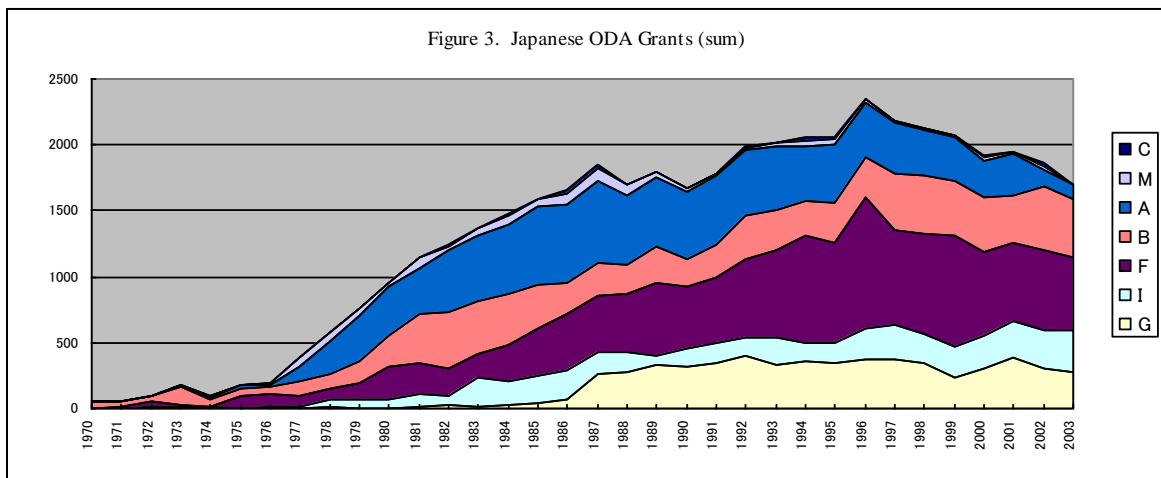
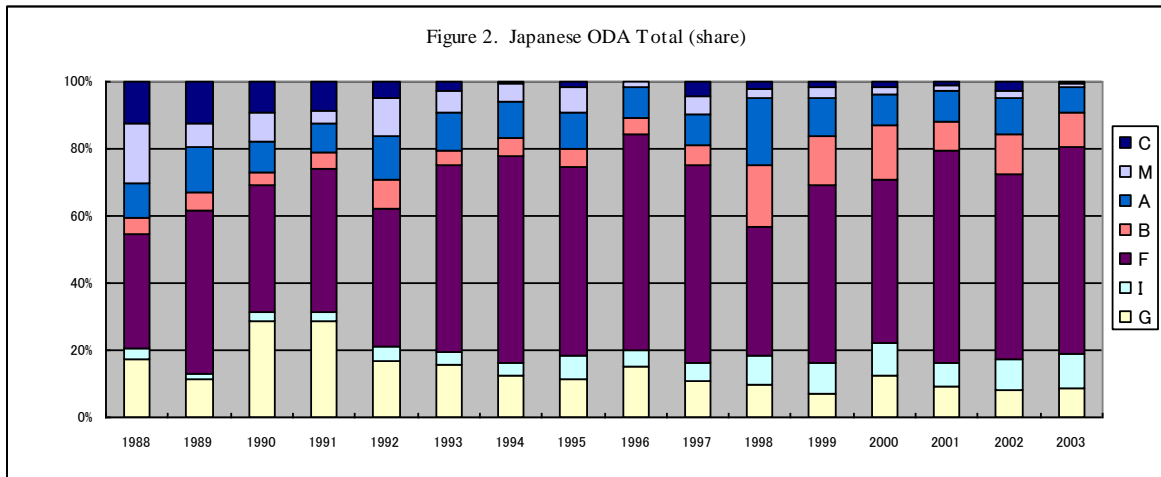
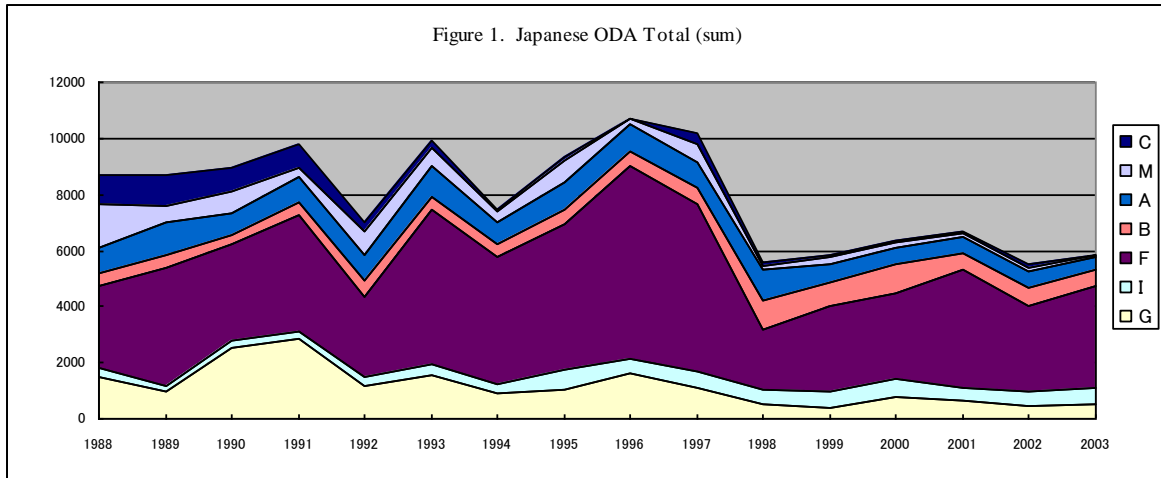
An immediate step from this paper should apply income groups (such as LLDC, LIC, and

MIC) into this research. Regional analysis other than East Asia and Sub-Saharan Africa (South Asia, South America and so on) will be interesting also. Then, empirical studies based on this panel data of CD are strongly demanded, after deriving econometric models of foreign aid on CD for each recipient.

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# FIGURES



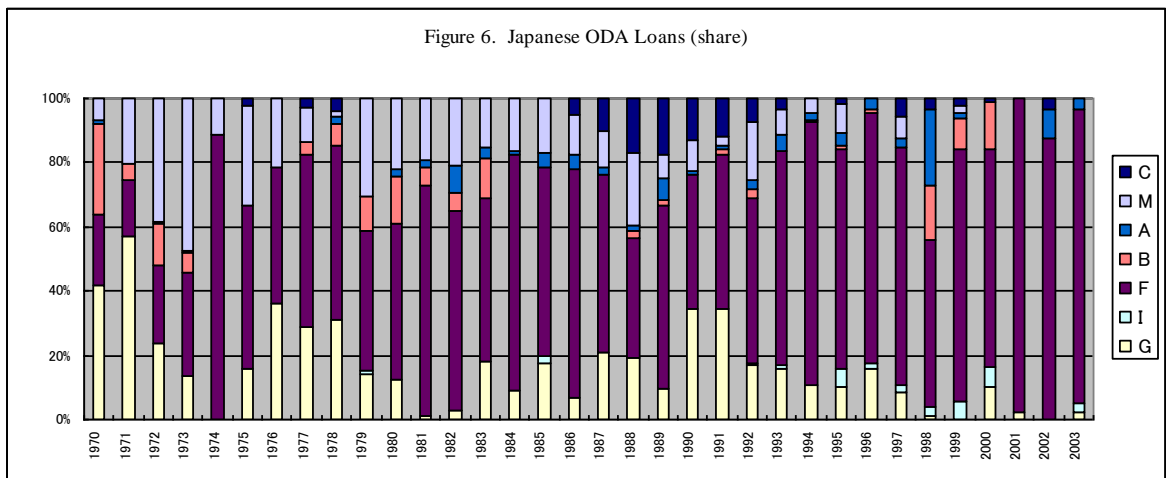
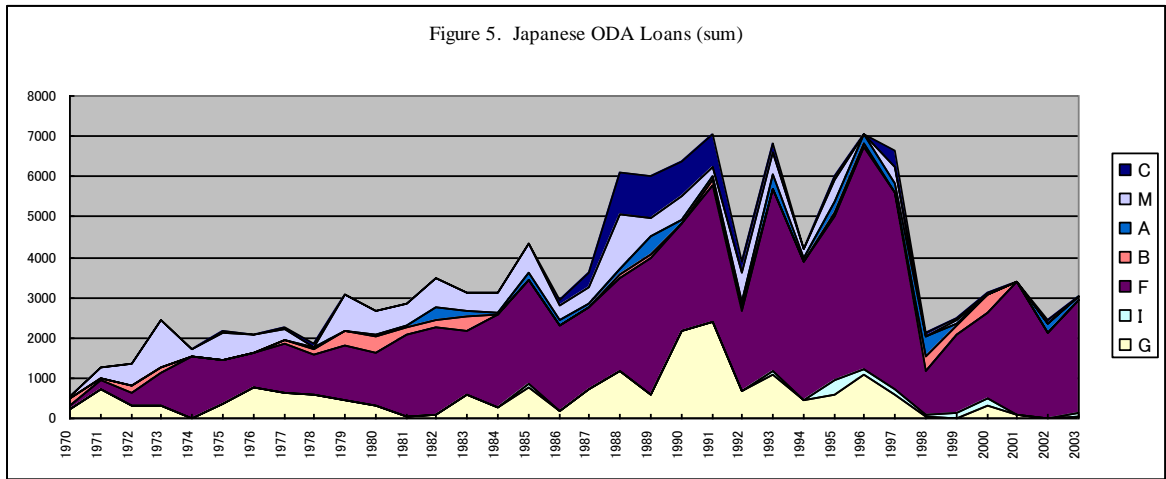
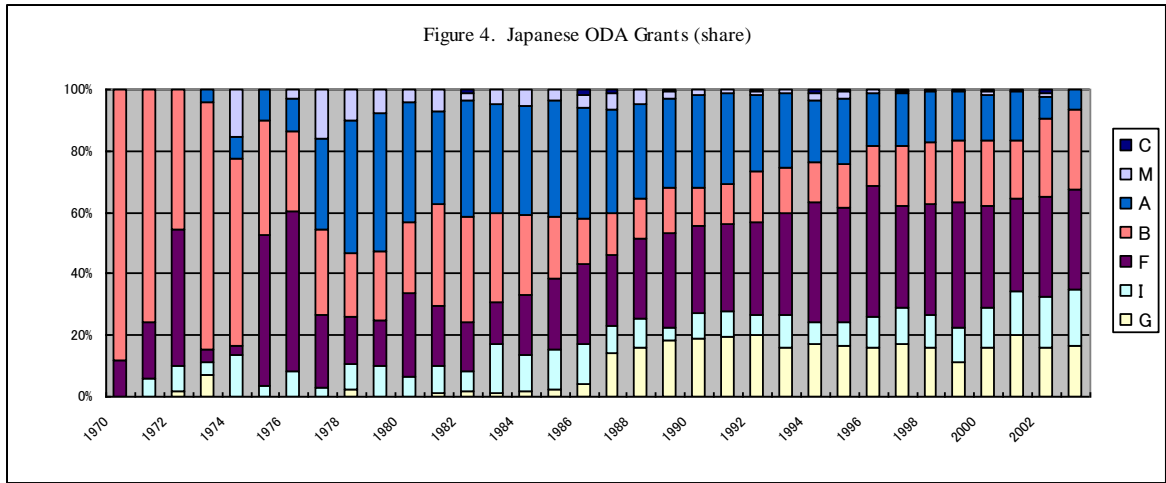


Figure 7. Japanese ODA TA (sum)

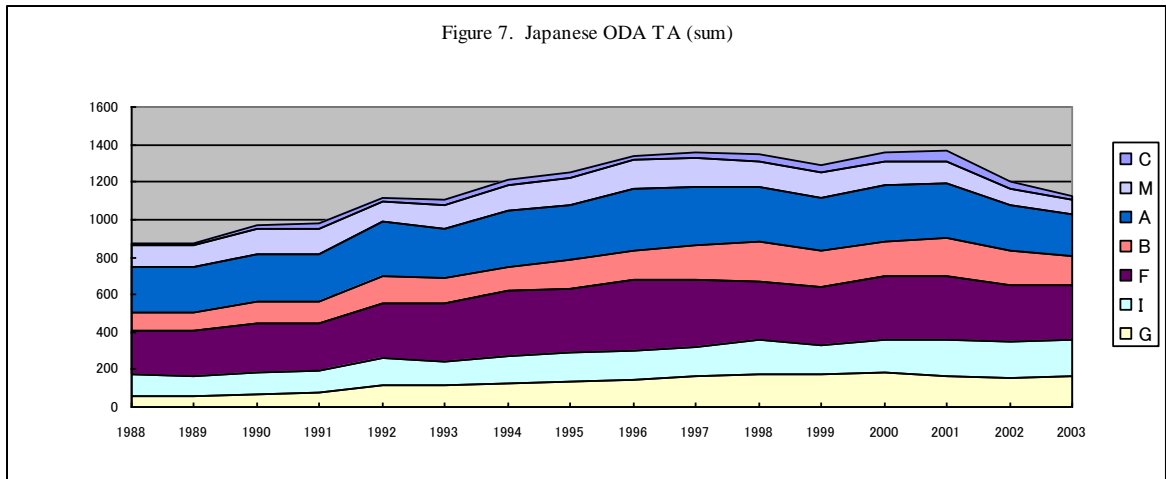


Figure 8. Japanese ODA TA (share)

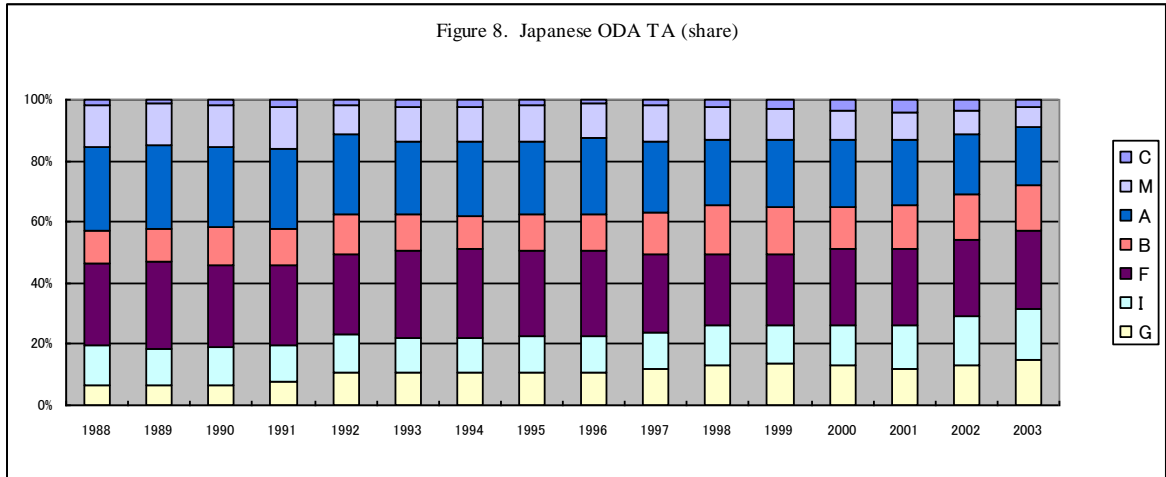


Figure 9. Japanese Grants to East Asia (sum)

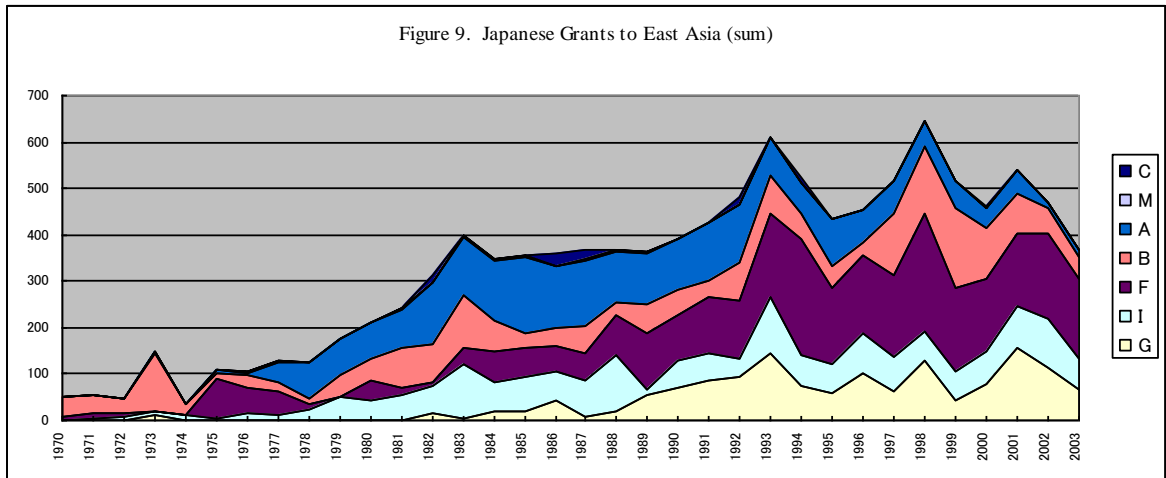


Figure 10. Japanese Grants to East Asia (share)

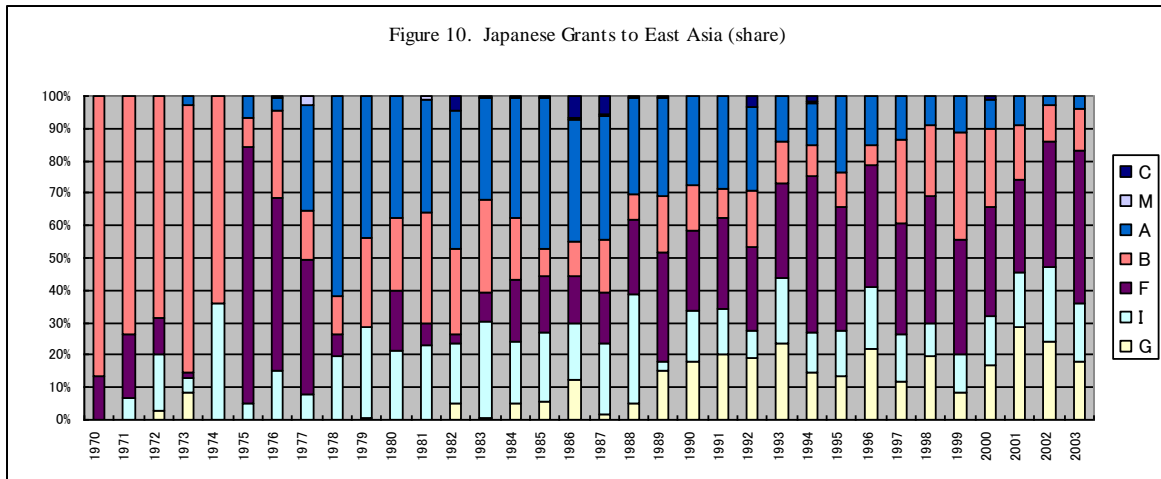


Figure 11. Japanese Grants to Sub Sahara Africa (sum)

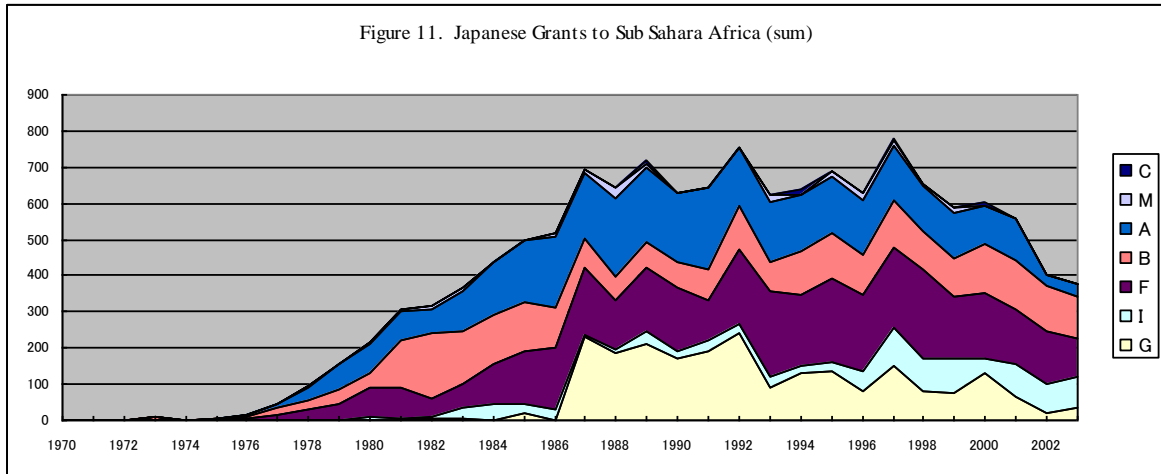
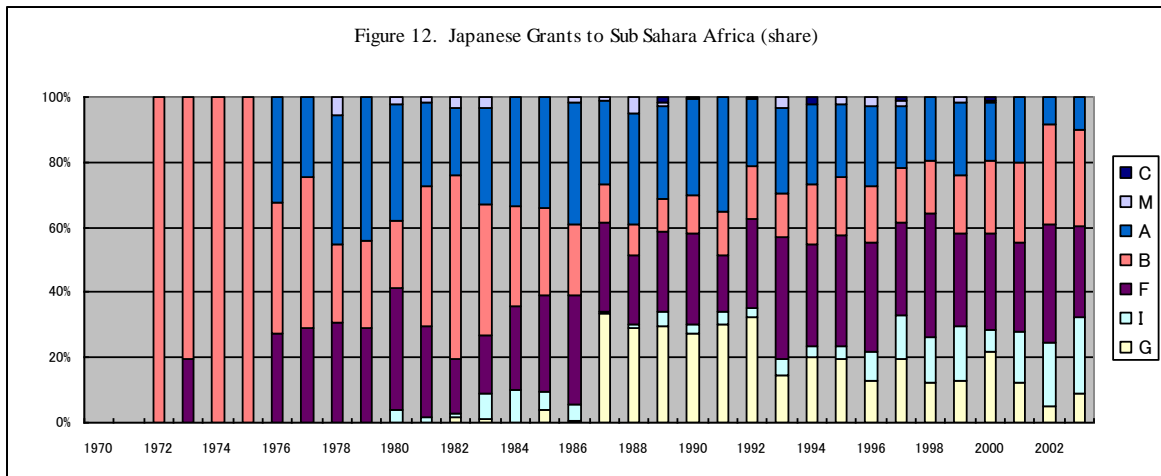


Figure 12. Japanese Grants to Sub Sahara Africa (share)



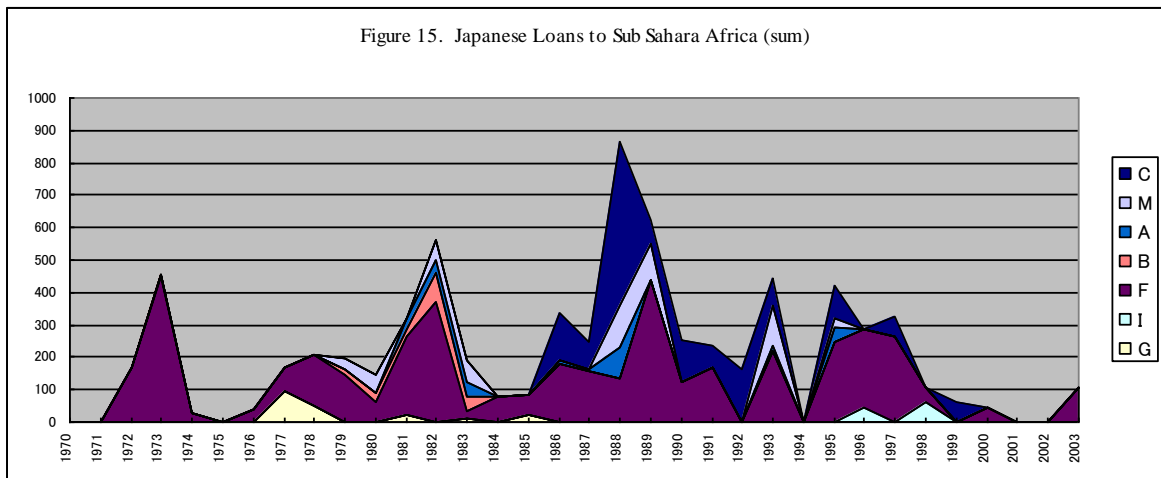
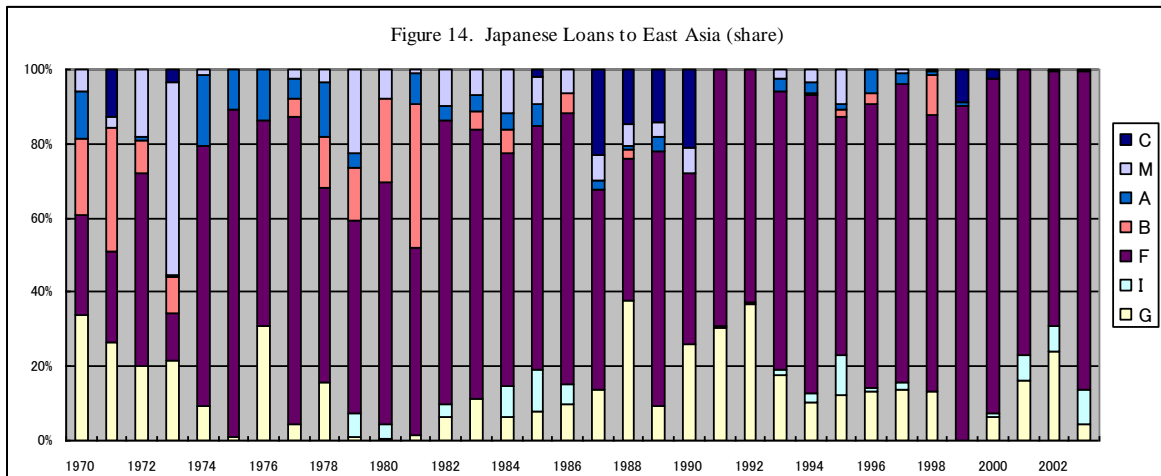
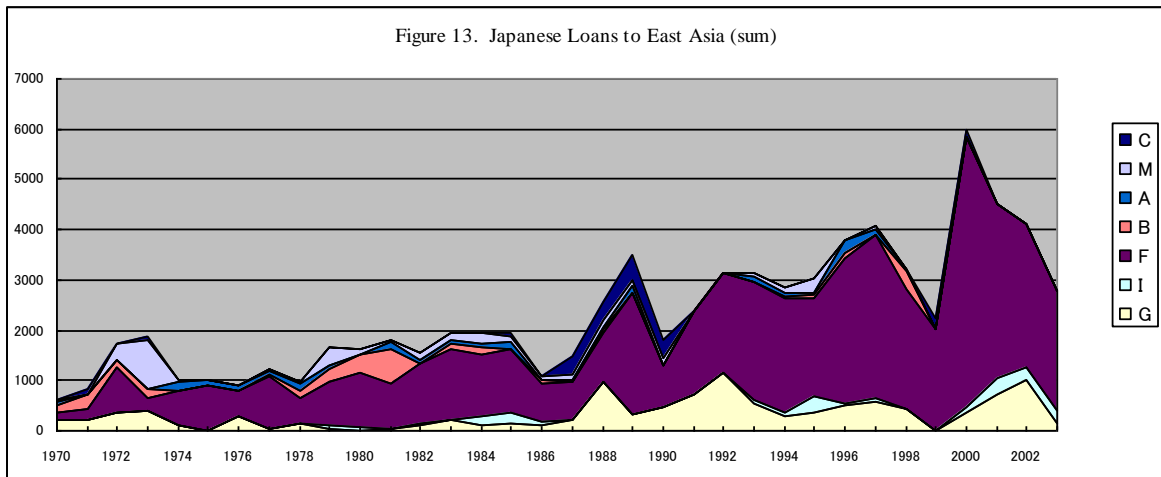


Figure 16. Japanese Loans to Sub Sahara Africa (share)

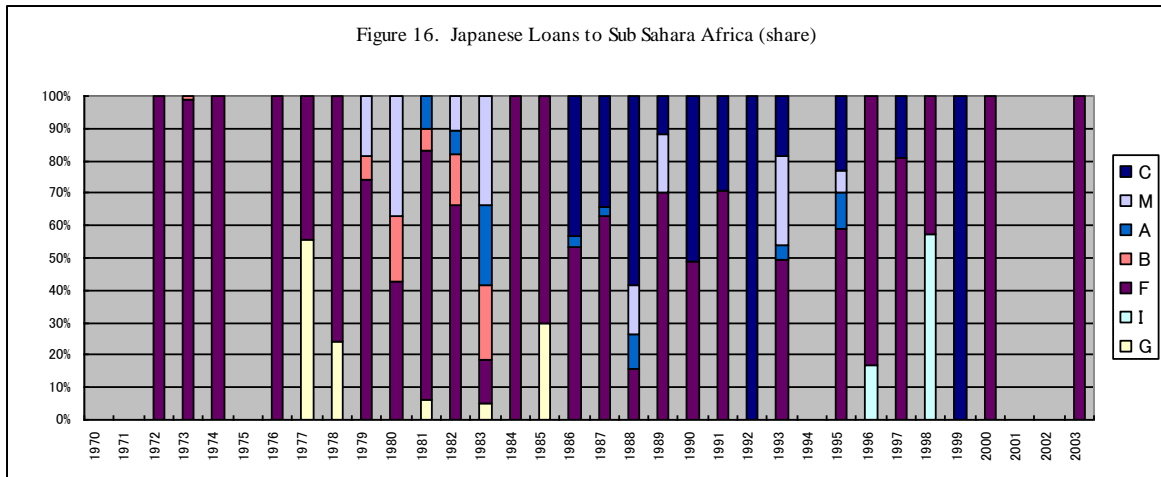


Figure 17. Japanese Capital Grants to East Asia (share)

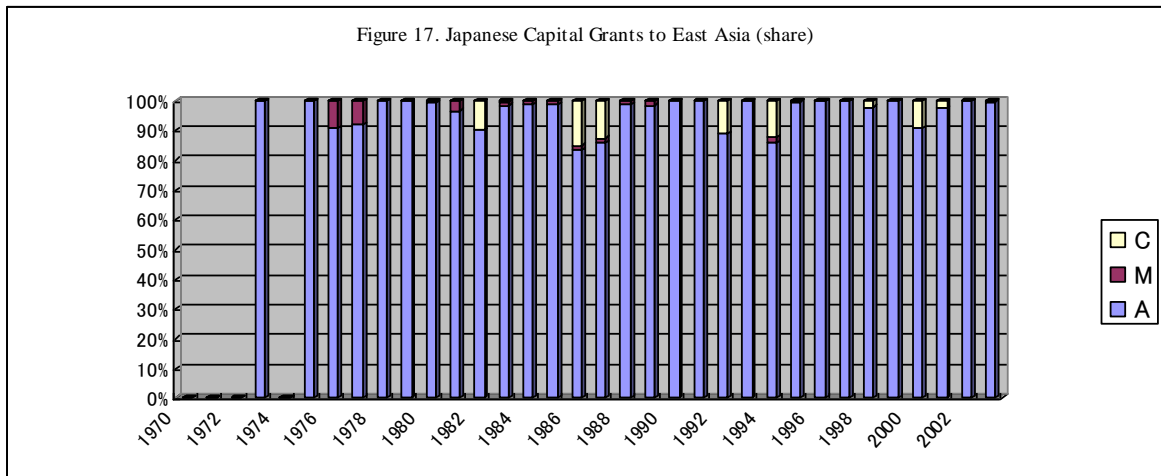
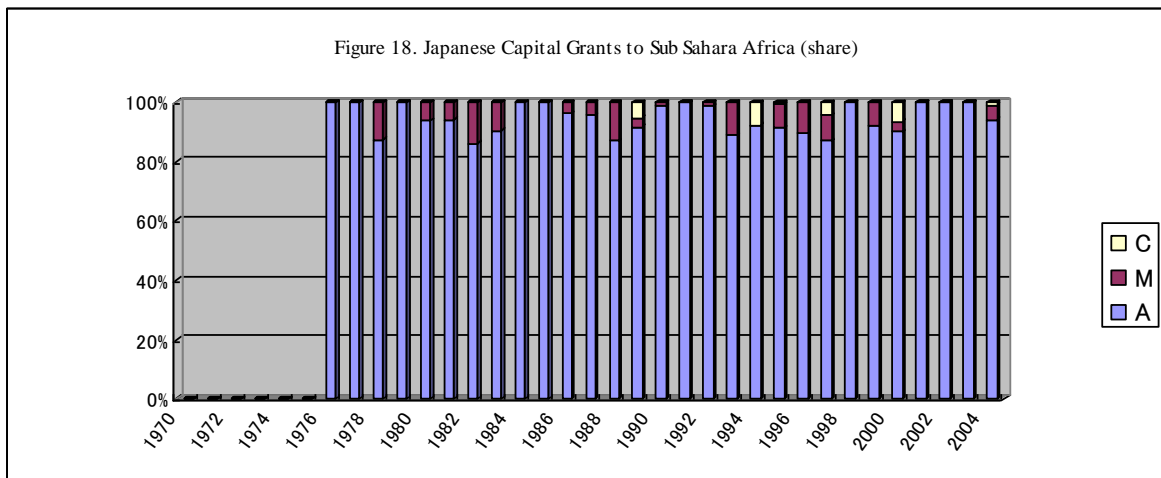


Figure 18. Japanese Capital Grants to Sub Sahara Africa (share)





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<sup>i</sup> Figures in this data set are commitment base except for the emergency aid though those of disbursement are ideal in order to represent real aid distributions. Still, reliability of this research will not be greatly affected since Japanese commitments are almost identical to disbursements.

<sup>ii</sup> Main data sources of grants and loans are white papers by METI (Ministry of Economy, Trade and Industry) and MOFA (Ministry of Foreign Affairs). Also, we directly asked some unpublished information to JBIC and JICA. Recently, most original data became available through web pages (JBIC Homepage: <http://www.jbic.go.jp/> and JICA Homepage: <http://www.jica.go.jp/>).

<sup>iii</sup> Geographical regions of recipient countries used in this research are those of the white paper by METI, which originated from the World Bank. Total of 167 recipients are as follows: East Asia (Indonesia, Vietnam, Cambodia, North Korea, Singapore, Thailand, South Korea, Taiwan, China, Philippine, Burney, Hong Kong, Macau, Malaysia, Mongolia, Laos), South Asia (Afghanistan, India, Sri Lanka, Nepal, Pakistan, Bangladesh, Bhutan, Burma, Maldives), Central Asia (Azerbaijan, Armenia, Uzbekistan, Kazakhstan, Kyrgyz, Georgia, Tajikistan, Turkmenistan), Middle East (UAE, Yemen, Israel, Iraq, Iran, Oman, Qatar, Kuwait, Saudi Arabia, Jordan, Syria, Bahrain, Lebanon), North Sahara Africa (Algeria, Egypt, Tunisia, Morocco, Libya), Sub-Sahara Africa (Angola, Uganda, Ethiopia, Eritrea, Ghana, Gabon, Cape Verde, Cameroon, Gambia, Guinea, Guinea-Bissau, Kenya, Comoros, Congo Rep., Congo Dem. Rep., Sao tome & Principe, Zambia, Sierra Leone, Djibouti, Zimbabwe, Sudan, Swaziland, Seychelles, Equatorial Guinea, Senegal, Cote d’Ivoire, Somalia, Tanzania, Chad, Central Africa, Togo, Nigeria, Namibia, Niger, Burkina Faso, Burundi, Benin, Botswana, Madagascar, Malawi, Mali, South Africa, Mauritius, Mauritania, Mozambique, Liberia, Rwanda, Lesotho), Central America (Anguilla, Antigua & Barbuda, El Salvador, Cuba, Guatemala, Grenada, Cayman Islands, Costa Rica, Jamaica, St. Vincent & Grenadines, St. Kitts & Nevis, St. Lucia, Dominican Republic, Dominica, Trinidad & Tobago, Nicaragua, Haiti, Panama, Bahamas, Bermuda, Barbados, Puerto Rico, Belize, Honduras, Mexico), South America (Argentina, Venezuela, Uruguay, Ecuador, Guyana, Colombia, Suriname, Chile, Paraguay, Brazil, Peru, Bolivia), Oceania (Vanuatu, Kiribati, Cook Islands, Solomon Islands, Tuvalu, Tonga, Nauru, Western Samoa, New Caledonia, Papua New Guinea, Palau, Fiji, Polynesia, Marshall Islands, Micronesia), Europe (Albania, Ukraine, Greece, Cyprus, Slovenia, Czech, Turkey, Hungary, Bulgaria, Bosnia and Herzegovina, Poland, Portugal, Marta, Moldova, Latvia, Romania, Yugoslavia). Pacific Islands in Oceania having been controlled by US no longer exist as a country after their independences.

<sup>iv</sup> We decided to include Water Supply, Sanitation and Sewerage in F (CD of Firms) not in B (BHN). This is because we found that most projects classified in this purpose are large scaled, investing

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infrastructures for dams and irrigation facilities, after we checked the details of Japanese ODA. Nevertheless, we must admit that it might be too rough for any single sub sector (i.e. Water Supply, Sanitation and Sewerage) not to belong to multiple variables (i.e. F and B) in this research. One possible solution is to pile up the data from each project base or even more specified expenses. Another is to pretest causalities between each CD variable (I, F, or G) and sub-sector expenses by inventing econometric models. Both would be legitimate but difficult extensions from this study.

<sup>v</sup> Per capita distribution of total Japanese ODA (1988-2003), grants (1970-2003), loans (1970-2003) and TA (1988-2003) is also analyzed in this research. Here, per capita means division by the population of each recipient country. Main source of population data is the World Development Indicators by the World Bank. Since most results are similar to the total, we decided to skip the results of this case in this paper.

<sup>vi</sup> Shares of A, M, and C of capital loans (1970-2003) are also analyzed in this research. Since only 16 years of capital loans are given to Sub-Sahara Africa, we decided to skip the results of this case in this paper.