Determinants of Japan's ODA Allocation

Temporal trend in the effect of Recipients' Needs and Donor's Interests

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GraSPP Economic Policy

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Abstract

In 2014, Japanese ODA celebrates its 60 year anniversary. ODA has contributed for both supporting developing countries and enhancing confidence of Japan in international community. Determinants of ODA amount and allocation would be affected by diplomatic policy, but it should be based on altruism. In this paper, I would like to investigate the temporal trend of recipients' needs and donor's interests related to ODA amount.

As a result, the trend can be observed that the donor's interests are declining on deciding the amount of ODA. Although the ODA amount to Asia is decreasing, donor's interests matters less than before. Donor's economic interests have less effect than before. Even in recent years, it has some negative effect on ODA. This would be because when the export expands, the size of the country's economy does as well. So they might not need aids from donor countries. Secondly, political interest is also declining. In other words, it used to play a key role when the government decides the amount and allocation of ODA, but now it does not. Third, security interest also shows a declining trend, but it sometimes not significant. As for recipients' needs, the variables do not show much temporal trend. One of the variables, governance index, was not significant at all.

In order for Japan's ODA to keep being appreciated in international community, it should keep its focus on recipients' needs. Currently, Japanese ODA budgets decrease every year. Compared to the amount in 1994, the budgets are almost decreased by half. Within such limited budgets, ODA has to play a role of one of the strongest diplomatic tools. Therefore, strategic approach is essential.

Background

Sister Sueyoshi, who belongs to the Daughters of St. Paul and who helps indigenous peoples in Cameroon, came over to my school to give a lecture on her activities. She has been helping a hunting-gathering people called Pygmies, who were dislocated by the Cameroonian government from the rain forest where they used to live, and forced to live in poverty, detached from their ancestral land and traditional lifestyle. They are treated as barbarians because they do not speak French and, as a result, are not able to receive formal education and find jobs. In order for Pygmies to gain independence and lead a life they deserve, Sister Sueyoshi gives them a wide variety of teachings and instructions on almost all aspects of their life so that they can live a truly human life. The encounter with her gave me a chance to think deeply about the true meaning of development assistance. We often talk about foreign aid in terms of the amount of money paid by each country, but rarely go any further. We do not usually try to think of how the money is being spent. It is true that Japan keeps giving aid to Cameroon. It provides Cameroon with assistance in many forms: the constructions of school buildings to provide the young with education, and wells to secure clean water. But the problem is that many people, including those Sister Sueyoshi is helping, have no access to them. With this background, I got interested in development economics, believing that the aids should be based on altruism.

Recently, however, I came to think that ODA can be one of the powerful diplomatic tools. Ministry of Foreign Affairs of Japan says "[d]uring the 60 year history of Japan's development cooperation, the accumulation of assistance Japan has provided to developing countries has been contributing to enhanced confidence in Japan" in ODA White Paper 2013. Continuous assistance would create smooth atmosphere in multinational negotiation. In other words, recipient countries might show similar voting behaviour to that of Japan. Thus, it is important for Japanese government to provide ODA to those countries which are crucial to Japan's diplomatic policy, in economic, political, and security terms.

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Although aid policy should be conducted with charitable mind and along with what the receiving countries want. However, it is essential to serve national interests at the same time since Japanese ODA is funded mainly by tax revenue. The volume and allocation of ODA must have been decided by keeping the balance of both interests of a donor and recipients. From this respect, I wonder which has the greater effect on allocation of Japanese ODA, recipients' needs or donor interests.

About Japanese ODA

Japanese ODA has contributed to eradicate poverty and peace building in developing countries for sixty years. ODA is an important diplomatic tool for Japan, which depends its resources and food provision on overseas, and has played a great role in enhancing Japan's power and status in international community and in ensuring safety and prosperity in Japan. To this end, ODA could be considered as an investment to the future.

Japanese ODA started when it joined Colombo Plan in 1954, which focuses on economic and social development of Asia-Pacific region. There are three types of ODA; technical cooperation, loans, and grant aid. Each started in 1957, 1958, and 1969. Last year, 2014, marked the 60-year anniversary of Japanese ODA. ODA Charter was regulated in 1992 for the first time, and was once revised in 2003. At that time, more focuses were put on peace building and human security. In 2014, the Charter was once again revised, commemorating the anniversary, and changed the name to Development Cooperation Charter. Background of this revision is that development challenges are more diverse, complex, and widespread. So it is required to extend the scope of cooperation at the same time as to make collaborative actins with private sectors. Also, MOFA publishes priority policy for development cooperation each year, and we can find the currently crucial issues by comparing them. For example, from comparison between the report of FY2015 and FY2014, we can find that FY2014 report mentioned the Arab Spring, but FY2015 report mentioned Ebola instead.

Japanese ODA has good reputation overseas. For instance, Dr. Charles Murigande, Rwanda's Ambassador to Japan, praises Japanese ODA saying as follows. Japanese development assistance is very highly regarded in Rwanda. First and most importantly, Japan runs the projects as promised by the deadline. In addition, JICA start the business from listening to their needs. This is not seen as often as in the conversations with other development assistance agencies. Some institutions start the talk by supply-based suggestions such as "this is what we can offer" and "would you like to try one of our aid menus?" In this sense, Japanese cooperation plays a major contribution conforming to their priorities.

Literatures

In this part, before going into my research questions and the model and variables I used, I would like to summarise what I learned from the past literatures.

Generally, the determinants of ODA allocation is dived into two sections,; Recipients Needs and Donor's Interests. RN might include GDP per capita, saving rates, growth rates, inflation rates, foreign debts, average life expectancy, infant mortality, trade balance, Human Development Index (HDI), and the status of good governance. DI might include net export, exports, imports, trade amount, FDI, former colony, UN friendship, religion, and area dummy such as East Asian dummy. There were already several studies on Japanese ODA. Among the variables, income level, population and the amount of trade are significant. When population is large, aid amount is also large. When GDP per capita increases, the amount of aid decreases. More aid is given to countries with large amounts of export. Some studies also investigates East Asia dummy. It might have positive effect on the aid amount, or is not significant.

According to Akiyama (2008), the characteristics of the three types of ODA are as follows. Grant aid used to be conducted by MOFA, and for this reason, Japan's

national interests are assumed to have greater effect on the aid policy decision than other two types. Ratio of aid to Asia used to be over 60% and to Africa, nearly 0. Recently, however, both stays around above 20%, which could imply that Japanese diplomacy regards Africa more important than before, and as important as Asia. The amount of technical cooperation is decided through the conversation of recipient government and JICA. So it is conducted by bottom-up method. But the ratio of aid to Asia seems quite stable through the time. As for Loans, recipients must pay back the money so the ODA destination would automatically limited to middle income countries or low income countries with good economic conditions such as India. Also, nearly 80% of Loans goes to East Asia, South East Asia, and South Asia, so the target is clearly Asian countries. In addition, the amount of loans changes year by year a lot more than the other two. Thus, it would not be appropriate to use loans as dependent variable

Therefore, in this research, I am going to use only two types of ODA: Grant aid and Technical cooperation, following the previous studies.

Research questions and standard model

My research questions can be divided into two parts. (1) Which matters more, recipients' needs (RN) or donor's interests (DI) in determining ODA amount? (2) Has the tendency changed through decades? To answer these questions, I set the standard model as shown below, based on the past literatures.

$$\text{Aid Amount} = \alpha + \beta_1 * RN + \beta_2 * DI$$

The first question could be answered by comparing the coefficients of RN and DI. I will explain the equations in detail later on. Hypothetic answer for this question is that RN matters more. It includes, indeed, my hope that aid should be conducted with altruistic mind, as Dr Charles Murigande said, Japanese development assistance is appraised in

his country because it is punctual and it starts by hearing their need, while some countries brings only supply-based aid menu. Thus Japan's ODA suits their priority issues. So I suppose RN matters more. However, each variable has different characteristics and simple comparison would not be suitable. Thus, I would like to put more focus on the second one. This could be answered by looking at the interaction terms of independent variables and temporal dummies. I will later explain this in detail. From the fact that the ratio of aid to Asian countries has decreased, the effect of DI is considered to be decreased.

As I mentioned earlier, there are three types of ODA in Japan; grant aid, technical cooperation, and loans. I used the amount of grant aid and of technical cooperation as dependent variables. According to the literatures, the amount of loans changes greatly year by year. Also, it is likely to be given to middle-income countries because they have to return the money. Therefore, loans are considered to be inappropriate for dependent variable of this research and I omitted from the model.

RN variables include GDP per capita and governance indices. DI includes the amount of net export, duration of ODA, and East Asia dummy. Below, I will explain the definition of both the dependent and the independent variable, the reason why it is incorporated in the model, and the way to estimate figures one by one.

Dependent variable (1) LGA: log of the amount of grant aid. Data was taken from the ODA webpage of Japan's MOFA. The amount was shown in million dollars. In order to see how much effect the change in independent variables has in percentage change in the amount of grant aid, I used log of the amount.

Dependent variable (2) LTC: log of the technical amount of technical cooperation. Data was also retrieved from the webpage of Japan's MOFA. The amount was shown in million dollars. I also used log of the amount to observe the percentage change. Both of the dependent variables data used were ranged from 1970 to 2013.

Independent variable (RN-1) LGDP: log of the GDP per capita. The data was taken from World Development Indicators by World Bank. The data ranged from 1960 to 2013, and I used 1970 and afterwards. This variable tries to incorporate recipients' needs in economic terms. In other words, GDP per capita illustrates the size of economy of the receiving countries. So the smaller the GDP per capita is, the bigger their needs for ODA are. In some literatures, both GDP per capita and population were used in the estimation model. However, I omitted population and used only GDP per capita because the two variables seem to be correlated, and also because I thought that GDP "per capita" already includes population size effect to some extent. Counting unit is current US dollars.

Independent variable (RN-2) Governance indices. I used two indices. One is Freedom House Index (FHI). The data was taken from the webpage of Freedom House, which is the American organisation to watch the expansion of freedom around the world. There are two numerical ratings for political rights and civil liberties. For the sake of this research, I took the average of the two ratings ranging from 1 to 7. The lower ratings show the good conditions and the higher ratings mean that the country is less

Freedom in the World 2015

Freedom in the World

■ Free   ▓ Partly Free   ■ Not Free   ▦ Worst of the Worst

free. As   Figure 1: by freedomhouse.org vels of

freedom seem to be poor countries, most of which are located in Africa, Asia, and some parts of South America. Thus I believe the freedom ratings are somewhat related to the

amount of ODA. The next one is World Governance Indicators by World Bank. There are six dimensions of governance: (1) voice and accountability, (2) political stability and absence of violence/terrorism, (3) government effectiveness, (4) regulatory quality, (5) rule of law, (6) control of corruption. All of these six numerical scores range -2.5 to 2.5 and as in Freedom House Index, I took the average of the six field ratings. Negative means weak and positive means strong governance performance. Although most of the variables I used have the range of over 40 years, World Governance Indicators have the figure after 1996. From this reason, I preferred to use Freedom House Index.

Independent variable (DI-1) LNEX: log of the net exports. This variable incorporates donor's interests in economic terms. In other words, it shows how strong the relationship is between Japan and a receiving country. The data downloaded from UN Comtrade.is "SITC Rev. 2 reported by Japan" (as used in 秋山, 2008).

Independent variable (DI-2) DURGA / DURTC: duration of grant aid / of technical cooperation. I incorporated this variable in the model hoping that it could capture the Japan's political interests it can be rephrased as frequency of grant aid / technical cooperation. That is, how many times japan has given aid to that particular country since 1970. So if Japan started to giving aid to country A in 1975, then the value in 1975 would be 1, and in1976 it would be 2 accordingly. If in 1977, aid was not given, in 1978 it would be 3, not 4. I believe aid duration would be similar to the friendship so I put these in the model. The counting was made based on the ODA data taken from MOFA webpage.

Independent (dummy) variable (DI-3) EA: East Asia dummy. If a country is located in East Asia, the value would be 1. If the value is 0, it is not located in the area. Here I set a relatively strong assumption that countries in East Asia are important to

Japan in terms of security issues. Rephrased based on the assumption, the definition of this variable would sound as follows; if a country is important security partner to Japan, the value would be 1, and 0 if not. I understand that non-East Asian countries could also be an important security partner to Japan. However, for the sake of this research, whether the country is an important security partner or not would simply be based on geographical status. In most research on Japanese aid policy, most models use East Asia Dummy, sometimes Asia Dummy. Others could use a distance variable. However, I would like to use this area dummy instead of distance to include geographic status because according to one study, (秋山, 2008) distance between Tokyo and a recipient's capital city is not as significant as East Asia Dummy.

Control variable: Decades dummy. As I explained in the parts of other variables, most of the figures have data from 1970 to 2013. So I created 4 decade dummies; 70s, 80s, 90s, and 00s. For example, if a data is the figure in 1976, then the 70s dummy would be 1, and 0 for the others.

Interaction terms are to be introduced to see the temporal change of the effect of variables. For instance, the interaction term LGDP*70s means LGDP times 70s dummy. Adding the coefficients of LGDP and LGDP*70s indicates the coefficient of LGDP in 70s. It would be useful to look at such interaction terms to answer my second question.

Results

First, I will present the result of standard model of LGA and LTC. Then, I will adjust the model by omitting the variables that are not as significant as other ones or changing the variable to a similar but a different variable, namely FHI to WGI.

LGA standard model

The estimated standard equation for LGA is as shown below.

$$LGA = \alpha + \beta_1 * LGDP + \beta_2 * FHI + \beta_3 * LNEX + \beta_4 * DURGA + \beta_5 * D_{ea} + \beta_6 * D_{70} + \beta_7 * D_{80} + \beta_8 * D_{90} + \beta_9 * D_{00} \quad\quad\quad (1)$$

In equation (1), β_1 is -.642. β_2 is .007. β_3 is .121. β_4 is .070. β_5 is .306. β_6 is -1.052. β_7 is -.076. β_8 is .310. β_9 is -.209. So it looks like

$$LGA = 2.600 - .642 * LGDP + .007 * FHI + .121 * LNEX + .070 * DURGA + .306 * D_{ea}$$

(0.00) (0.00)   (0.80)   (0.00)   (0.00)   (0.35)

$$-1.052 * D_{70} - .076 * D_{80} + .310 * D_{90} - .209 * D_{00}$$

(0.00)   (0.71)   (0.04)   (0.04)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .64 percent of grant aid. One point increase in Freedom house index, (in other words, if a country becomes less free,) it creates .01 percent increase in grant aid. One percent increase in net export increases .12 percent of grant aid. If the duration of the ODA increases by 1 year, then grant aid amount will increase by .07 percent. If a country is located in East Asia and regarded as strong security partner, then the grant aid amount increases by .30 percent.

The p-value of coefficient of FHI is high. The estimated coefficient is below .01, it can be said that FHI does not have that much effect on grant aid amount. East Asia dummy is not significant as well.

Then I introduce interaction terms.

$$LGA = \alpha + \beta_1 * LGDP + \beta_2 * FHI + \beta_3 * LNEX + \beta_4 * DURGA + \beta_5 * D_{ea} + \beta_6 * D_{70} + \beta_7 * D_{80} + \beta_8 * D_{90} + \beta_9 * D_{00} + \beta_{10} * LGDP * D_{70} + \beta_{11} * LGDP * D_{80} + \beta_{12} * LGDP * D_{90} + \beta_{13} * LGDP * D_{00} \quad\quad\quad (2)$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80}$$
$$+ \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*FHI*D_{70} + \beta_{11}*FHI*D_{80} + \beta_{12}*FHI*D_{90} + \beta_{13}*FHI*D_{00}$$
$$\text{.......... (3)}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80}$$
$$+ \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*LNEX*D_{70} + \beta_{11}*LNEX*D_{80} + \beta_{12}*LNEX*D_{90} + \beta_{13}*LNEX$$
$$*D_{00} \text{.......... (4)}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80}$$
$$+ \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*DURGA*D_{70} + \beta_{11}*DURGA*D_{80} + \beta_{12}*DURGA*D_{90} +$$
$$\beta_{13}*DURGA*D_{00} \text{.......... (5)}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80}$$
$$+ \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*D_{ea}*D_{70} + \beta_{11}*D_{ea}*D_{80} + \beta_{12}*D_{ea}*D_{90} + \beta_{13}*D_{ea}*D_{00}$$
$$\text{.......... (6)}$$

Please refer to appendix for the detailed estimated figures. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	FHI	LNEX	DURGA	EA
70s	-0.3153596	0.0820689	0.2640698	0.2070554	1.8518749
80s	-0.9324760	-0.0317251	0.1458969	0.1931814	0.6256713
90s	-0.5828206	-0.0396237	0.1651971	0.0914053	0.2204066
00s	-0.5683507	0.0306253	0.1093608	0.0575091	-0.2920947
10s	-0.9013073	0.1326179	0.0494986	0.0509765	0.0321949

Table 1

From the table, the trend is observed in LNEX and DURGA. Through the decades, both LNEX and DURGA have less and less effect on grant aid amount. In other variables, trend cannot be found. Donor's interests in economic and political terms seem to have less effect than before.

LTC standard model

Next equation is on standard model of LTC.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} \dots\dots (7)$$

$$LTC = -.089 - .270*LGDP - .139*FHI + .075*LNEX + .067*DURTC + 1.761*D_{ea}$$
$$(0.83) \quad (0.00) \qquad (0.00) \qquad (0.00) \qquad (0.00) \qquad (0.00)$$
$$- .475*D_{70} + .0580*D_{80} + .606*D_{90} + .177*D_{00}$$
$$(0.02) \qquad (0.71) \qquad (0.00) \quad (0.01) \qquad\qquad\qquad (p\text{-value})$$

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .27 percent of technical cooperation. One point increase in Freedom house index, (in other words, if a country becomes less free,) it creates .14 percent decrease in technical cooperation. One percent increase in net export increases .08 percent of technical cooperation. If the duration of the ODA increases by 1 year, then technical cooperation amount will increase by .07 percent. If a country is located in East Asia and regarded as strong security partner, then the technical cooperation amount increases by 1.76 percent.

The p-value of coefficient of 80s dummy is high. Also, 70s dummy and 00s dummy are a little less significant than other variables. Additionally, although it is significant, it is interesting that the coefficient of FHI is negative. In theory, the aid should be given to the country with severe conditions, such as lower level of freedom. So it does not seem natural that the sign is negative.

Then, equations with interaction terms are as shown below.

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$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*LGDP*D_{70} + \beta_{11}*LGDP*D_{80} + \beta_{12}*LGDP*D_{90} + \beta_{13}*LGDP*D_{00} \dots\dots (8)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*FHI*D_{70} + \beta_{11}*FHI*D_{80} + \beta_{12}*FHI*D_{90} + \beta_{13}*FHI *D_{00} \dots\dots (9)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*LNEX*D_{70} + \beta_{11}*LNEX*D_{80} + \beta_{12}*LNEX*D_{90} + \beta_{13}*LNEX *D_{00} \dots\dots (10)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}*DURTC*D_{70} + \beta_{11}*DURTC*D_{80} + \beta_{12}*DURTC*D_{90} + \beta_{13}*DURTC *D_{00} \dots\dots (11)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{70} + \beta_7*D_{80} + \beta_8*D_{90} + \beta_9*D_{00} + \beta_{10}* D_{ea} *D_{70} + \beta_{11}* D_{ea} *D_{80} + \beta_{12}* D_{ea} *D_{90} + \beta_{13}* D_{ea} *D_{00} \dots\dots (12)$$

The detailed estimated figures could be found in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	FHI	LNEX	DURTC	EA
70s	-0.0868281	-0.1152554	0.2112757	0.1759999	2.3976537
80s	-0.0530305	-0.1494192	0.2298245	0.1372607	2.2299787
90s	-0.0031974	-0.2387077	0.1768041	0.0750825	2.0163657
00s	-0.2732198	-0.1031536	0.0013370	0.0453589	1.3457417
10s	-0.6762228	0.0601963	-0.0937670	0.0427200	0.1689507

Table 2

Here, the coefficients of DURTC and EA are both declining. The coefficient of LNEX is also decreasing through the decades. It might be because donor's economic interest is no longer related to the aid amount. However, the negative sign in the last decade (10s) seems tricky. The estimation is quite significant. One possible explanation is that since increase in net export means the increase in size of economy in the recipient country. Thus, they no longer need a great amount of aid. In other variables, trend cannot be found. Therefore, donor's interests in political and security terms seem to have less effect on aid amount than before. Additionally, economic interests seem to have smaller effect on aid amount than before.

Within these two standard model estimations, FHI and East Asia dummy is less significant than others, especially in LGA model. From now on, I would like to adjust that part.

LGA model with WGI

First in several adjustments, I would like to switch FHI to WGI. Both of these indices incorporate recipients' need to improve their governance conditions. Since it has the data only after 1996, decades dummies are only for 90s and 00s.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00}$$

$$\text{............(13)}$$

LGA = 3.483 - .731*LGDP + .029*WGI + .120*LNEX + .067*DURGA + .627*D_{ea}
     (0.00) (0.00)   (0.85)   (0.00)   (0.00)   (0.14)
+ .219*D_{90} - .284*D_{00}
(0.26)   (0.01)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .73 percent of grant aid. One point increase in World Governance indicator, (in other words, if a country have stronger

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governance system,) it creates .03 percent increase in grant aid. One percent increase in net export increases .12 percent of grant aid. If the duration of the ODA increases by 1 year, then grant aid amount will increase by .07 percent. If a country is located in East Asia and regarded as strong security partner, then the grant aid amount increases by .63 percent.

The p-value of governance index is still very high. Although it is less significant and it is not useful to look into the coefficient of WGI, it is positive, contrary to theory. The estimation shows that a country with stronger governance receives greater amount of aid. Also, East Asia dummy is less significant as well as decades dummies.

Then, equations with interaction terms are as shown below.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*LGDP*D_{90} + \beta_9*LGDP *D_{00} \quad\quad\quad\quad (14)$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*WGI*D_{90} + \beta_9*WGI *D_{00} \quad\quad\quad\quad (15)$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*LNEX*D_{90} + \beta_9*LNEX *D_{00} \quad\quad\quad\quad (16)$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*DURGA*D_{90} + \beta_9*DURGA *D_{00} \quad\quad\quad\quad (17)$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8* D_{ea} *D_{90} + \beta_9* D_{ea} *D_{00} \quad\quad\quad\quad (18)$$

The detailed estimated figures could be found in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	WGI	LNEX	DURGA	EA
90s	-0.7581962	0.1393182	0.0885862	0.0813711	0.6725866
00s	-0.6396963	3.1764173	0.1437021	0.0683832	0.5041165
10s	-0.9869360	-0.3020297	0.0787784	0.0610157	0.9801444

The trends are difficult to find from the result. The estimations are less significant as well. From these results, WGI seems to be not a suitable variable.

LTC model with WGI

Next, I will talk about LTC model with WGI, instead of FHI.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} \tag{19}$$

LTC = 2.95 - .563*LGDP + .781*WGI + .085*LNEX + .034*DURTC + 1.234*D_{ea}

     (0.00) (0.00)   (0.00)   (0.00)   (0.00)   (0.40)

- .113*D_{90} - .213*D_{00}

(0.00)   (0.00)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .56 percent of technical cooperation. One point increase in World Governance indicator, (in other words, if a country have stronger governance system,) it creates .78 percent increase in technical cooperation. One percent increase in net export increases .09 percent of technical cooperation. If the duration of the ODA increases by 1 year, then technical cooperation amount will increase by .03 percent. If a country is located in East Asia and regarded as strong security partner, then the technical cooperation amount increases by 1.23 percent.

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The p-value East Asia dummy is high but the others are significant. This time WGI is also positive and is significant. Equations with interaction terms are as shown below.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*LGDP*D_{90} + \beta_9*LGDP*D_{00} \dots\dots (20)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*WGI*D_{90} + \beta_9*WGI*D_{00} \dots\dots (21)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*LNEX*D_{90} + \beta_9*LNEX*D_{00} \dots\dots (22)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*DURTC*D_{90} + \beta_9*DURTC*D_{00} \dots\dots (23)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*WGI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{ea} + \beta_6*D_{90} + \beta_7*D_{00} + \beta_8*D_{ea}*D_{90} + \beta_9*D_{ea}*D_{00} \dots\dots (24)$$

The detailed estimated figures could be found in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	WGI	LNEX	DURTC	EA
90s	-0.2663248	1.4142493	0.2382193	0.0506762	1.9618892
00s	-0.5361026	0.9316722	0.0916127	0.0347082	1.2403052
10s	-0.9598859	0.2982663	-0.0113426	0.0308275	0.2213082

Table 4

According to the table 4 above, all of the variables seem to have temporal trend. The coefficients of LGDP are always negative through the decades and the value is increasing, which means that one percent increase in GDP per capita has stronger negative effect on technical cooperation. The coefficient of WGI is declining. In the 90s,

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1 point increase in WGI used to cause 1.4 percent increase in technical aids, but nowadays the effect is below .3 percent. However, it cannot be concluded that RN effect is getting stronger or weaker. Recipients' economic needs are getting stronger, while their needs to improve the governance condition are diminishing. LNEX's coefficient is also decreasing and changed its sign in 10s. It is, however, certain that the absolute value of the coefficient is becoming smaller through decades. Thus, donor's economic interests have now smaller effect on deciding the amount of technical cooperation. Both of the coefficients of DURTC and East Asia dummy are also declining. Considering that the other variables have smaller effect, the increase in effect of LGDP might be bigger than as seen in the table.

LGA model without any Governance Index

Then I will show the LGA model without any Governance Index, because neither FHI nor WGI is sufficiently significant.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} \quad \text{...................(25)}$$

$$LGA = 2.57 - .643*LGDP + .125*LNEX + .069*DURGA + .302*D_{ea}$$
$$\quad\quad (0.00) \quad (0.00) \quad\quad (0.00) \quad\quad\quad (0.00) \quad\quad\quad (0.36)$$
$$- 1.066*D_{70} - .115*D_{80} + .305*D_{90} - .217*D_{00}$$
$$(0.00) \quad\quad (0.57) \quad (0.04) \quad\quad (0.03) \quad\quad\quad\quad\quad\quad\quad (\text{p-value})$$

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .64 percent of grant aid. One percent increase in net export increases .13 percent of grant aid. If the duration of the ODA increases by 1 year, then grant aid amount will increase by .07 percent. If a country is located in East Asia and regarded as strong security partner, then the grant aid amount increases by .30 percent.

These results are quite similar to the ones in LGA standard model. Although the figures look quite the same, some of the p-values are a bit smaller.

Here are the equations with interaction terms.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} + \beta_9*LGDP*D_{70} + \beta_{10}*LGDP*D_{80} + \beta_{11}*LGDP*D_{90} + \beta_{12}*LGDP*D_{00} \tag{26}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} + \beta_9*LNEX*D_{70} + \beta_{10}*LNEX*D_{80} + \beta_{11}*LNEX*D_{90} + \beta_{12}*LNEX*D_{00} \tag{27}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} + \beta_9*DURGA*D_{70} + \beta_{10}*DURGA*D_{80} + \beta_{11}*DURGA*D_{90} + \beta_{12}*DURGA*D_{00} \tag{28}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} + \beta_9*D_{ea}*D_{70} + \beta_{10}*D_{ea}*D_{80} + \beta_{11}*D_{ea}*D_{90} + \beta_{12}*D_{ea}*D_{00} \tag{29}$$

Detailed figures are shown in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	LNEX	DURGA	EA
70s	-0.3145223	0.2640269	0.2081073	1.8351969
80s	-0.9289926	0.1568407	0.1962760	0.6697592
90s	-0.5753982	0.1678159	0.0898900	0.1811125
00s	-0.5647626	0.1130221	0.0566427	-0.3279302
10s	-0.8949403	0.0466640	0.0490650	-0.0151661

Table 5

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From the table 5 above, it can be seen that all of the DI variables' coefficients are getting smaller and smaller. Although the trend cannot be observed in RN, the effect of DI on aid amount is becoming smaller through decades.

LTC model without any Governance Index

Then I will show the LTC model without any Governance Index, as I did in the previous part for LGA.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURTC + \beta_4*D_{ea} + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} \dots\dots\dots (30)$$

$LTC = -.921 - .231*LGDP + .074*LNEX + .067*DURTC + 1.634*D_{ea}$

     (0.00)   (0.00)   (0.00)   (0.00)   (0.00)

$- .505*D_{70} + .009*D_{80} + .615*D_{90} + .194*D_{00}$

(0.01)   (0.95)   (0.00)   (0.02)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .23 percent of technical cooperation. One percent increase in net export increases .07 percent of technical cooperation. If the duration of the ODA increases by 1 year, then technical cooperation amount will increase by .07 percent. If a country is located in East Asia and regarded as strong security partner, then the technical cooperation amount increases by 1.63 percent.

These results are also quite similar to the ones in LTC standard model. To this end, it can be concluded that governance indices are not relevant to aid amount.

Here are the equations with interaction terms.

$$LTC = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURTC + \beta_4 * D_{ea} + \beta_5 * D_{70} + \beta_6 * D_{80} + \beta_7 * D_{90} + \beta_8 * D_{00} + \beta_9 * LGDP * D_{70} + \beta_{10} * LGDP * D_{80} + \beta_{11} * LGDP * D_{90} + \beta_{12} * LGDP * D_{00} \tag{31}$$

$$LTC = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURTC + \beta_4 * D_{ea} + \beta_5 * D_{70} + \beta_6 * D_{80} + \beta_7 * D_{90} + \beta_8 * D_{00} + \beta_9 * LNEX * D_{70} + \beta_{10} * LNEX * D_{80} + \beta_{11} * LNEX * D_{90} + \beta_{12} * LNEX * D_{00} \tag{32}$$

$$LTC = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURTC + \beta_4 * D_{ea} + \beta_5 * D_{70} + \beta_6 * D_{80} + \beta_7 * D_{90} + \beta_8 * D_{00} + \beta_9 * DURTC * D_{70} + \beta_{10} * DURTC * D_{80} + \beta_{11} * DURTC * D_{90} + \beta_{12} * DURTC * D_{00} \tag{33}$$

$$LTC = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURTC + \beta_4 * D_{ea} + \beta_5 * D_{70} + \beta_6 * D_{80} + \beta_7 * D_{90} + \beta_8 * D_{00} + \beta_9 * D_{ea} * D_{70} + \beta_{10} * D_{ea} * D_{80} + \beta_{11} * D_{ea} * D_{90} + \beta_{12} * D_{ea} * D_{00} \tag{34}$$

Detailed figures are shown in appendix. From the results, the coefficients of each decade are calculated as shown in the table.

Variable	LGDP	LNEX	DURTC	EA
70s	-0.0202770	0.2089912	0.1819900	2.2154457
80s	0.0025292	0.2226161	0.1398535	2.1312367
90s	0.0327116	0.1682090	0.0735583	1.8804117
00s	-0.2475473	-0.0065499	0.0438503	1.1918627
10s	-0.6504754	-0.1034912	0.0411986	-0.0090833

Table 6

Starting from the easiest ones, both DURTC and East Asia dummy declines year by year. The coefficient of LNEX is also shows the trend of declining, even along with the sign change from positive to negative. This time, again, LGDP does not show any temporal trend.

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Then I would like to omit East Asia dummy because in some of the models tried, it is often less significant.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} \ \text{.. (35)}$$

$$LGA = 2.516 - .642*LGDP + .008*FHI + .126*LNEX + .070*DURGA$$

(0.00) (0.00)   (0.78)   (0.00)   (0.00)

$$- 1.029*D_{70} - .057*D_{80} + .321*D_{90} - .203*D_{00}$$

(0.00)   (0.78)   (0.03)   (0.04)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .64 percent of grant aid. One point increase in Freedom house index, (in other words, if a country becomes less free,) it creates .01 percent increase in grant aid. One percent increase in net export increases .13 percent of grant aid. If the duration of the ODA increases by 1 year, then grant aid amount will increase by .07 percent.

The p-value of coefficient of FHI is high. The estimated coefficient is below .01, it can be said that FHI does not have that much effect on grant aid amount. Also, since this is quite similar to the standard result, East Asia Dummy could be omitted from the model.

Equation with interaction terms are listed below.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90} + \beta_8*D_{00} + \beta_9*LGDP*D_{70} + \beta_{10}*LGDP*D_{80} + \beta_{11}*LGDP*D_{90} + \beta_{12}*LGDP*D_{00} \ \text{.. (36)}$$

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$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90}$$
$$+ \beta_8*D_{00} + \beta_9*FHI*D_{70} + \beta_{10}*FHI*D_{80} + \beta_{11}*FHI*D_{90} + \beta_{12}*FHI*D_{00}$$
$$\text{... (37)}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90}$$
$$+ \beta_8*D_{00} + \beta_9*LNEX*D_{70} + \beta_{10}*LNEX*D_{80} + \beta_{11}*LNEX*D_{90} + \beta_{12}*LNEX*D_{00}$$
$$\text{... (38)}$$

$$LGA = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURGA + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90}$$
$$+ \beta_8*D_{00} + \beta_9*DURGA*D_{70} + \beta_{10}*DURGA*D_{80} + \beta_{11}*DURGA*D_{90} +$$
$$\beta_{12}*DURGA*D_{00} \text{... (39)}$$

Detailed estimated figures are listed in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	FHI	LNEX	DURGA
70s	-0.3064727	0.0821717	0.2706219	0.2084550
80s	-0.9234823	-0.0306052	0.1516120	0.1937260
90s	-0.5800742	-0.0382882	0.1692109	0.0917430
00s	-0.5702587	0.0320279	0.1119987	0.0577860
10s	-0.9002735	0.1338739	0.0524509	0.0513116

Table 7

Coefficients of both LNEX and DURGA decreased. The other variables do not show much trend. It would be reasonable to say that the effect of DI is diminishing.

LTC model without East Asia Dummy

In a similar way, I would like to omit East Asia dummy from LTC model.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90}$$
$$+ \beta_8*D_{00} \text{... (40)}$$

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LTC = - .134 - .271*LGDP - .136*FHI + .083*LNEX + .067*DURTC

     (0.00) (0.00)   (0.00)   (0.00)   (0.00)

- .437*D_{70} + .091*D_{80} + .628*D_{90} + .189*D_{00}

(0.03)   (0.56)   (0.00)   (0.01)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .27 percent of technical cooperation. One point increase in Freedom house index, (in other words, if a country becomes less free,) it creates .14 percent decrease in technical cooperation. One percent increase in net export increases .08 percent of technical cooperation. If the duration of the ODA increases by 1 year, then technical cooperation amount will increase by .07 percent.

Even without East Asia Dummy, coefficients are quite similar to the standard model of LTC. Although some of the temporal dummies are less significant, most of the independent variables are significant.

Equation with interaction terms are listed below.

$$LTC = \alpha + \beta_1 *LGDP + \beta_2 *FHI + \beta_3 *LNEX + \beta_4 *DURTC + \beta_5 *D_{70} + \beta_6 *D_{80} + \beta_7 *D_{90}$$
$$+ \beta_8 *D_{00} + \beta_9 *LGDP *D_{70} + \beta_{10} *LGDP *D_{80} + \beta_{11} *LGDP *D_{90} + \beta_{12} *LGDP *D_{00}$$
$$\tag{41}$$

$$LTC = \alpha + \beta_1 *LGDP + \beta_2 *FHI + \beta_3 *LNEX + \beta_4 *DURTC + \beta_5 *D_{70} + \beta_6 *D_{80} + \beta_7 *D_{90}$$
$$+ \beta_8 *D_{00} + \beta_9 *FHI *D_{70} + \beta_{10} *FHI *D_{80} + \beta_{11} *FHI *D_{90} + \beta_{12} *FHI *D_{00}$$
$$\tag{42}$$

$$LTC = \alpha + \beta_1 *LGDP + \beta_2 *FHI + \beta_3 *LNEX + \beta_4 *DURTC + \beta_5 *D_{70} + \beta_6 *D_{80} + \beta_7 *D_{90}$$
$$+ \beta_8 *D_{00} + \beta_9 *LNEX *D_{70} + \beta_{10} *LNEX *D_{80} + \beta_{11} *LNEX *D_{90} + \beta_{12} *LNEX *D_{00}$$
$$\tag{43}$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*FHI + \beta_3*LNEX + \beta_4*DURTC + \beta_5*D_{70} + \beta_6*D_{80} + \beta_7*D_{90}$$
$$+ \beta_8*D_{00} + \beta_9*DURTC*D_{70} + \beta_{10}*DURTC*D_{80} + \beta_{11}*DURTC*D_{90} + \beta_{12}*DURTC*D_{00}$$
$$\text{..} (44)$$

Detailed estimated figures are listed in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	FHI	LNEX	DURTC
70s	-0.0850118	-0.1138204	0.2207999	0.1765310
80s	-0.0512352	-0.1464531	0.2393368	0.1380380
90s	-0.0012980	-0.2353136	0.1855005	0.0759732
00s	-0.2744576	-0.0990597	0.0083120	0.0460277
10s	-0.6752987	0.0634514	-0.0862463	0.0437269

Table 8

As in other adjusted model estimations, both DI variables have smaller effects than before. It is difficult to find the temporal trend in the coefficients of RN.

LGA model without Governance Index and East Asia Dummy

Finally, I would like to omit both East Asia dummy and governance index, since even when one is omitted, the other often remains less significant.

$$LGA = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURGA + \beta_4*D_{70} + \beta_5*D_{80} + \beta_6*D_{90} + \beta_7*D_{00}$$
$$\text{..} (45)$$

LGA = 2.500 - .644*LGDP + .130*LNEX + .070*DURGA

      (0.00) (0.00)   (0.00)   (0.00)

- 1.044*D_{70} - .096*D_{80} + .316*D_{90} - .211*D_{00}

(0.00)   (0.63)   (0.03)   (0.03)   (p-value)

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .64 percent of grant aid. One percent increase in net export increases .13 percent of grant aid. If the duration of the ODA increases by 1 year, then grant aid amount will increase by .07 percent.

This time, the results look very alike with the standard model, and the significance level of the independent variables are quite high.

Equation with interaction terms are listed below.

$$LGA = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURGA + \beta_4 * D_{70} + \beta_5 * D_{80} + \beta_6 * D_{90} + \beta_7 * D_{00} + \beta_8 * LGDP * D_{70} + \beta_9 * LGDP * D_{80} + \beta_{10} * LGDP * D_{90} + \beta_{11} * LGDP * D_{00} \quad (46)$$

$$LGA = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURGA + \beta_4 * D_{70} + \beta_5 * D_{80} + \beta_6 * D_{90} + \beta_7 * D_{00} + \beta_8 * LNEX * D_{70} + \beta_9 * LNEX * D_{80} + \beta_{10} * LNEX * D_{90} + \beta_{11} * LNEX * D_{00} \quad (47)$$

$$LGA = \alpha + \beta_1 * LGDP + \beta_2 * LNEX + \beta_3 * DURGA + \beta_4 * D_{70} + \beta_5 * D_{80} + \beta_6 * D_{90} + \beta_7 * D_{00} + \beta_8 * DURGA * D_{70} + \beta_9 * DURGA * D_{80} + \beta_{10} * DURGA * D_{90} + \beta_{11} * DURGA * D_{00} \quad (48)$$

Detailed estimated figures are listed in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	LNEX	DURGA
70s	-0.3068929	0.2702467	0.2095273
80s	-0.9220271	0.1618304	0.1967838
90s	-0.5734360	0.1716525	0.0902229
00s	-0.5671283	0.1192865	0.0569148
10s	-0.8943935	0.0495715	0.0493917

Table 9

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As stated repeatedly, the coefficients of DI variables decreased and there would be no trend in RN.

Similarly, the estimation results of LTC model without both governance index and area dummy are shown below.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURTC + \beta_4*D_{70} + \beta_5*D_{80} + \beta_6*D_{90} + \beta_7*D_{00} \tag{49}$$

$$LTC = -.944 - .234*LGDP + .082*LNEX + .068*DURTC$$
$$\quad\quad (0.02)\quad (0.00)\quad\quad\quad (0.00)\quad\quad\quad\quad (0.00)$$
$$-.465*D_{70} + .044*D_{80} + .637*D_{90} + .205*D_{00}$$
$$(0.18)\quad\quad\quad (0.78)\quad (0.00)\quad\quad (0.03)\quad\quad\quad\quad\quad\quad\quad\quad\quad (p\text{-value})$$

From the estimated equation, it can be said the following statements. One percent increase in GDP per capita in a country decreases .23 percent of technical cooperation. One percent increase in net export increases .08 percent of technical cooperation. If the duration of the ODA increases by 1 year, then technical cooperation amount will increase by .07 percent.

This time, the results look not as much alike as other adjustments with the standard model. The coefficients are a bit less significant.

Equation with interaction terms are listed below.

$$LTC = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURTC + \beta_4*D_{70} + \beta_5*D_{80} + \beta_6*D_{90} + \beta_7*D_{00} +$$
$$\beta_8*LGDP*D_{70} + \beta_9*LGDP*D_{80} + \beta_{10}*LGDP*D_{90} + \beta_{11}*LGDP*D_{00} \tag{50}$$

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$$LTC = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURTC + \beta_4*D_{70} + \beta_5*D_{80} + \beta_6*D_{90} + \beta_7*D_{00} +$$
$$\beta_8*LNEX*D_{70} + \beta_9*LNEX*D_{80} + \beta_{10}*LNEX*D_{90} + \beta_{11}*LNEX*D_{00} \dots \dots (51)$$

$$LTC = \alpha + \beta_1*LGDP + \beta_2*LNEX + \beta_3*DURTC + \beta_4*D_{70} + \beta_5*D_{80} + \beta_6*D_{90} + \beta_7*D_{00} +$$
$$\beta_8*DURTC*D_{70} + \beta_9*DURTC*D_{80} + \beta_{10}*DURTC*D_{90} + \beta_{11}*DURTC*D_{00} \dots (52)$$

Detailed estimated figures are listed in appendix. From the results, the coefficients of each decade are calculated as shown in the table below.

Variable	LGDP	LNEX	DTC
70s	-0.0215523	0.2174068	0.1824845
80s	0.0012130	0.2308557	0.1406375
90s	0.0327778	0.1763465	0.0745255
00s	-0.2506181	-0.0000498	0.0446670
10s	-0.6513416	-0.0963566	0.0423207

Table 10

The temporal trends are similar to the other models. Both of the DI variables' effects are declining, while there would be no temporal trend in RN variables.

Conclusion and Implications

By looking at these results, one hypothesis is not rejected and is rather accepted in favour of the hypothesis. Since the amount of ODA to Asia is decreasing, I believed that donor's interests matters less than before. In many of the models, there is a trend within most of the DI variables that the effects are diminishing. I introduced three DI variables in terms of economic, political, and security issues. Among these three, the characteristics of the trend slightly differ from each other, so I would here like to touch upon that.

First, recent coefficients of LNEX sometimes changed the sign from positive to negative. In theory, and in the past literatures, the sign of coefficients of net export, export, trade, etc. are positive. At first, I wondered why this has happened but it is reasonable to think that when the export expands, the size of the country's economy does as well. So they might not need aids from donor countries. Secondly, duration of aid is aimed to capture the political relationship between Japan and a receiving country. This variable is significant in most of the cases, and shows the clear trend of declining. In other words, it used to play a key role when the government decides the amount and allocation of ODA, but now it does not. Third, East Asia dummy also shows a declining trend, but it sometimes not as significant as it should be.

On the other hand, the other hypothesis remains unanswered: taking into account of the high reputation of Japanese ODA, RN matters more than DI. Actually, in most of the cases, RN variables do not show much trend. It is sometimes less significant than other variables, and change the negative / positive sign frequently through the decades. Also, one of the RN variables, governance index, was not significant at all.

For future research, RN needs to be investigated more deeply. I seriously doubt that GDP per capita is the only variable that could capture the needs of the aids-receiving countries. Other variables such as saving rates, foreign investment, and infant mortality could be incorporated into the model. Also, I set a strong assumption that East Asian countries are the important partners to Japan in terms of security issues. This was in order to use East Asia Dummy as a variable of donor's security interests, but there should be better ideas to capture the security interests.

As for the implications for future aid policies, if the effect of DI is declining, what is needed is to carefully look at RN. Currently, Japanese ODA budgets decrease every year. Compared to the amount in 1994, the budgets are almost decreased by half. Within such limited budgets, ODA has to play a role of one of the strongest diplomatic tools. In order to keep being appreciated in other countries, Japan should keep conducting aid projects, based on their needs.

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Appendix

Contents start from the next page.

. xtreg LGA LGDP FHI LNEX DURGA EA P Q R S

Random-effects GLS regression   Number of obs   =   2,419
Group variable: Num   Number of groups   =   148

R-sq: Obs per group:
     within = 0.1224   min =   1
     between = 0.5790   avg =   16.3
     overall = 0.4078   max =   37

                                                 Wald chi2(9)   =   527.98
corr(u_i, X)   = 0 (assumed)   Prob > chi2   =   0.0000

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.6424145	.0597022	-10.76	0.000	-.7594287	-.5254002
FHI	.0075043	.0301016	0.25	0.803	-.0514936	.0665023
LNEX	.1206853	.0253442	4.76	0.000	.0710116	.170359
DURGA	.069598	.0069912	9.96	0.000	.0558954	.0833006
EA	.305537	.3267995	0.93	0.350	-.3349782	.9460522
P	-1.052322	.2781985	-3.78	0.000	-1.597581	-.5070625
Q	-.0757934	.2020371	-0.38	0.708	-.4717788	.320192
R	.3095785	.1492754	2.07	0.038	.0170041	.6021529
S	-.2091758	.1005783	-2.08	0.038	-.4063057	-.0120459
_cons	2.599957	.5970921	4.35	0.000	1.429678	3.770236

sigma_u	.92941114					
sigma_e	1.2734773					
rho	.34753081	(fraction of variance due to u_i)				

. xtreg LGA LGDP FHI LNEX DURGA EA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

Random-effects GLS regression   Number of obs   =   2,419
Group variable: Num   Number of groups   =   148

R-sq: Obs per group:
     within = 0.1369   min =   1
     between = 0.5708   avg =   16.3
     overall = 0.4110   max =   37

                                                 Wald chi2(13)   =   574.23
corr(u_i, X)   = 0 (assumed)   Prob > chi2   =   0.0000

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LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.9013073	.0841682	-10.71	0.000	-1.066274	-.7363406
FHI	-.0030861	.0303575	-0.10	0.919	-.0625858	.0564135
LNEX	.1098977	.0252777	4.35	0.000	.0603543	.1594411
DURGA	.0695466	.0069664	9.98	0.000	.0558927	.0832006
EA	.4191269	.3240901	1.29	0.196	-.2160781	1.054332
P	-5.076731	1.362155	-3.73	0.000	-7.746505	-2.406957
Q	-.2225312	.7653551	-0.29	0.771	-1.7226	1.277537
R	-2.093432	.6353411	-3.29	0.001	-3.338677	-.848186
S	-2.751279	.6037554	-4.56	0.000	-3.934617	-1.56794
LGDP70	.5859477	.2090645	2.80	0.005	.1761889	.9957065
LGDP80	-.0311687	.1048096	-0.30	0.766	-.2365919	.1742544
LGDP90	.3184867	.0831125	3.83	0.000	.1555893	.4813842
LGDP00	.3329566	.0780593	4.27	0.000	.1799631	.4859501
_cons	4.821011	.7729258	6.24	0.000	3.306104	6.335917

sigma_u	.91472561					
sigma_e	1.2640295					
rho	.34369487	(fraction of variance due to u_i)				

. xtreg LGA LGDP FHI LNEX DURGA EA P Q R S FHI70 FHI80 FHI90 FHI00

Random-effects GLS regression

Group variable: Num

Number of obs	=	2,419
Number of groups	=	148

R-sq:

within = 0.1276

between = 0.5745

overall = 0.4092

Obs per group:

min =	1
avg =	16.3
max =	37

corr(u_i, X) = 0 (assumed)

Wald chi2(13)	=	537.46
Prob > chi2	=	0.0000

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.6340595	.0614636	-10.32	0.000	-.7545259	-.5135931
FHI	.1326179	.0521219	2.54	0.011	.0304608	.2347749
LNEX	.1240263	.0254192	4.88	0.000	.0742056	.1738469
DURGA	.0694383	.007014	9.90	0.000	.0556912	.0831854
EA	.3111595	.3296533	0.94	0.345	-.334949	.957268
P	-.8955079	.5786516	-1.55	0.122	-2.029644	.2386283
Q	.5684733	.3279957	1.73	0.083	-.0743864	1.211333
R	.9588839	.2500557	3.83	0.000	.4687837	1.448984
S	.1739494	.2125759	0.82	0.413	-.2426918	.5905906
FHI70	-.050549	.1182351	-0.43	0.669	-.2822856	.1811876
FHI80	-.164343	.0609866	-2.69	0.007	-.2838745	-.0448115
FHI90	-.1722416	.0538545	-3.20	0.001	-.2777945	-.0666887
FHI00	-.1019926	.0513089	-1.99	0.047	-.2025562	-.001429
_cons	2.020497	.6364764	3.17	0.002	.7730262	3.267968

sigma_u	.94002584					
sigma_e	1.2702487					
rho	.35385852	(fraction of variance due to u_i)				

. xtreg LGA LGDP FHI LNEX DURGA EA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

Random-effects GLS regression

Group variable: Num

Number of obs	=	2,419
Number of groups	=	148

R-sq:

within = 0.1274

between = 0.5743

Obs per group:

min =	1
avg =	16.3

```
        overall = 0.4090                              max =           37

                                            Wald chi2(13)      =       541.74
corr(u_i, X)    = 0 (assumed)               Prob > chi2        =       0.0000

         LGA        Coef.   Std. Err.        z    P>|z|     [95% Conf. Interval]

        LGDP    -.6391055    .0597029    -10.70    0.000     -.756121   -.5220901
         FHI     .0125578    .0304556      0.41    0.680     -.047134    .0722496
        LNEX     .0494986    .0386383      1.28    0.200     -.026231    .1252283
       DURGA     .0708236     .006996     10.12    0.000     .0571117    .0845355
          EA     .2181497    .3286481      0.66    0.507    -.4259888    .8622882
           P    -4.803074    1.608858     -2.99    0.003    -7.956378    -1.64977
           Q     -1.74195    .8099662     -2.15    0.032    -3.329454    -.154445
           R    -1.705969    .7270935     -2.35    0.019    -3.131046   -.2808917
           S    -1.262169    .6778307     -1.86    0.063    -2.590693    .0663545
      LNEX70     .2145712    .0898295      2.39    0.017     .0385086    .3906338
      LNEX80     .0963983    .0452556      2.13    0.033     .0076988    .1850977
      LNEX90     .1156985      .04064      2.85    0.004     .0360456    .1953514
      LNEX00     .0598622     .037965      1.58    0.115    -.0145478    .1342723
       _cons     3.783536    .7871915      4.81    0.000     2.240669    5.326403

     sigma_u    .92538656
     sigma_e    1.2707181
         rho    .34654708    (fraction of variance due to u_i)
```

1 .
2 . xtreg LGA LGDP FHI LNEX DURGA EA P Q R S DGA70 DGA80 DGA90 DGA00

```
Random-effects GLS regression              Number of obs      =        2,419
Group variable: Num                        Number of groups   =          148

R-sq:                                      Obs per group:
    within  = 0.1536                                   min =            1
    between = 0.6146                                   avg =         16.3
    overall = 0.4357                                   max =           37

                                            Wald chi2(13)      =       633.96
corr(u_i, X)    = 0 (assumed)               Prob > chi2        =       0.0000

         LGA        Coef.   Std. Err.        z    P>|z|     [95% Conf. Interval]

        LGDP    -.6337049    .0589323    -10.75    0.000    -.7492101   -.5181996
         FHI     .0164746    .0297435      0.55    0.580    -.0418215    .0747708
        LNEX     .1176454    .0249783      4.71    0.000     .0686888    .1666019
       DURGA     .0509765    .0096841      5.26    0.000      .031996     .069957
          EA     .1985466     .323632      0.61    0.540    -.4357606    .8328537
           P    -2.08549     .413639      -5.04    0.000    -2.896207   -1.274772
           Q    -1.567245     .308254      -5.08    0.000    -2.171412   -.9630785
           R    -.5151036    .2803957     -1.84    0.066    -1.064669    .0344618
           S    -.4664245    .2608257     -1.79    0.074    -.9776335    .0447845
       DGA70     .1560789    .0548276      2.85    0.004     .0486188     .263539
       DGA80     .1422049    .0166997      8.52    0.000     .1094741    .1749357
       DGA90     .0404288     .011022      3.67    0.000      .018826    .0620315
       DGA00     .0065326    .0092783      0.70    0.481    -.0116524    .0247177
       _cons     3.071421    .6252672      4.91    0.000      1.84592    4.296922

     sigma_u    .92161533
     sigma_e    1.2511612
         rho    .35174015    (fraction of variance due to u_i)
```

36

```
3 .
4 . xtreg LGA LGDP FHI LNEX DURGA EA P Q R S EA70 EA80 EA90 EA00

Random-effects GLS regression              Number of obs      =      2,419
Group variable: Num                        Number of groups   =        148

R-sq:                                      Obs per group:
     within  = 0.1331                                    min =          1
     between = 0.5520                                    avg =       16.3
     overall = 0.4030                                    max =         37

                                           Wald chi2(13)      =     549.10
corr(u_i, X)    = 0 (assumed)              Prob > chi2        =     0.0000
```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.6406761	.0597414	-10.72	0.000	-.757767	-.5235852
FHI	.0039011	.0301314	0.13	0.897	-.0551554	.0629575
LNEX	.1229449	.0253112	4.86	0.000	.0733359	.1725539
DURGA	.0702945	.0069897	10.06	0.000	.0565949	.0839942
EA	.0321949	.4788656	0.07	0.946	-.9063644	.9707542
P	-1.229787	.2822833	-4.36	0.000	-1.783052	-.6765216
Q	-.0843615	.2023377	-0.42	0.677	-.4809361	.3122131
R	.3171933	.1496585	2.12	0.034	.023868	.6105186
S	-.1844217	.1015735	-1.82	0.069	-.3835021	.0146587
EA70	1.81968	.5780746	3.15	0.002	.686675	2.952686
EA80	.5934764	.4403537	1.35	0.178	-.269601	1.456554
EA90	.1882117	.4104458	0.46	0.647	-.6162473	.9926708
EA00	-.3242896	.3940787	-0.82	0.411	-1.09667	.4480905
_cons	2.546574	.5969848	4.27	0.000	1.376505	3.716643

```
     sigma_u   .93009382
     sigma_e   1.2654258
         rho   .35074708   (fraction of variance due to u_i)


5 .
6 .
7 .
8 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S

Random-effects GLS regression              Number of obs      =      3,233
Group variable: Num                        Number of groups   =        159

R-sq:                                      Obs per group:
     within  = 0.3717                                    min =          1
     between = 0.3471                                    avg =       20.3
     overall = 0.3792                                    max =         38

                                           Wald chi2(9)       =    1895.86
corr(u_i, X)    = 0 (assumed)              Prob > chi2        =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2698852	.0447333	-6.03	0.000	-.3575608	-.1822096
FHI	-.1386698	.0204198	-6.79	0.000	-.1786918	-.0986477
LNEX	.074776	.017746	4.21	0.000	.0399945	.1095575
DURTC	.0665667	.0056168	11.85	0.000	.0555579	.0775754
EA	1.761017	.3634521	4.85	0.000	1.048664	2.47337
P	-.4748236	.1964363	-2.42	0.016	-.8598317	-.0898155
Q	.0579838	.1532852	0.38	0.705	-.2424496	.3584172
R	.6057509	.1079893	5.61	0.000	.3940958	.8174061
S	.1774993	.0681335	2.61	0.009	.0439601	.3110386
_cons	-.0889838	.4207437	-0.21	0.833	-.9136262	.7356586

```
     sigma_u   1.1961778
     sigma_e   .92769869
         rho   .62442174   (fraction of variance due to u_i)
```

```
9  .
10 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

   Random-effects GLS regression                Number of obs      =      3,233
   Group variable: Num                          Number of groups   =        159

   R-sq:                                         Obs per group:
        within  = 0.4204                                    min =          1
        between = 0.3238                                    avg =       20.3
        overall = 0.3712                                    max =         38

                                                 Wald chi2(13)      =    2285.34
   corr(u_i, X)    = 0 (assumed)                 Prob > chi2        =     0.0000

           LTC         Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]

          LGDP     -.6762228    .0557769   -12.12    0.000    -.7855434    -.5669021
           FHI     -.1096535    .0200283    -5.47    0.000    -.1489082    -.0703988
          LNEX      .0780968    .0172307     4.53    0.000     .0443253     .1118683
         DURTC      .0642239    .0054749    11.73    0.000     .0534934     .0749545
            EA      1.731008    .3622627     4.78    0.000     1.020986      2.44103
             P     -5.007428    .5645296    -8.87    0.000    -6.113886     -3.90097
             Q     -4.729222    .4199271   -11.26    0.000    -5.552264     -3.90618
             R     -4.573344    .3630237   -12.60    0.000    -5.284857     -3.86183
             S      -3.05358     .347817    -8.78    0.000    -3.735289    -2.371872
        LGDP70      .5893947    .0758816     7.77    0.000     .4406696     .7381199
        LGDP80      .6231923    .0529147    11.78    0.000     .5194814     .7269033
        LGDP90      .6730254    .0447219    15.05    0.000     .5853722     .7606787
        LGDP00       .403003    .0429701     9.38    0.000     .3187832     .4872228
         _cons      3.063597    .5065921     6.05    0.000     2.070695       4.0565

       sigma_u      1.193088
       sigma_e     .89125849
           rho     .64183358    (fraction of variance due to u_i)


11 .
12 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S FHI70 FHI80 FHI90 FHI00

   Random-effects GLS regression                Number of obs      =      3,233
   Group variable: Num                          Number of groups   =        159

   R-sq:                                         Obs per group:
        within  = 0.3892                                    min =          1
        between = 0.3464                                    avg =       20.3
        overall = 0.3879                                    max =         38

                                                 Wald chi2(13)      =    2031.61
   corr(u_i, X)    = 0 (assumed)                 Prob > chi2        =     0.0000

           LTC         Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]

          LGDP     -.2809535    .0461438    -6.09    0.000    -.3713937    -.1905133
           FHI      .0601963    .0338812     1.78    0.076    -.0062097     .1266023
          LNEX      .0827619    .0175828     4.71    0.000     .0483002     .1172236
         DURTC      .0657416    .0055848    11.77    0.000     .0547955     .0766876
            EA      1.762451    .3637783     4.84    0.000     1.049458     2.475443
             P      .0850537    .2763047     0.31    0.758    -.4564935      .626601
             Q      .7698895    .2030395     3.79    0.000     .3719394      1.16784
             R      1.651818      .15646    10.56    0.000     1.345162     1.958474
             S      .7385489    .1277928     5.78    0.000     .4880797     .9890181
         FHI70     -.1754517    .0483582    -3.63    0.000    -.2702321    -.0806713
         FHI80     -.2096155    .0359976    -5.82    0.000    -.2801695    -.1390615
         FHI90      -.298904    .0328545    -9.10    0.000    -.3632977    -.2345103
         FHI00     -.1633499    .0316876    -5.16    0.000    -.2254564    -.1012435
         _cons     -.7998397    .4439937    -1.80    0.072    -1.670051      .070372

       sigma_u     1.1987797
       sigma_e     .91538696
           rho     .63167866    (fraction of variance due to u_i)
```

```
13 .
14 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

    Random-effects GLS regression               Number of obs      =      3,233
    Group variable: Num                          Number of groups   =        159

    R-sq:                                        Obs per group:
        within  = 0.4182                                        min =          1
        between = 0.3670                                        avg =       20.3
        overall = 0.4013                                        max =         38

                                                 Wald chi2(13)      =    2284.59
    corr(u_i, X)   = 0 (assumed)                 Prob > chi2        =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2390715	.0434577	-5.50	0.000	-.3242471	-.1538959
FHI	-.1096571	.0199188	-5.51	0.000	-.1486973	-.0706169
LNEX	-.093767	.0246915	-3.80	0.000	-.1421615	-.0453725
DURTC	.0689107	.0054351	12.68	0.000	.0582581	.0795633
EA	1.600722	.3531062	4.53	0.000	.9086462	2.292797
P	-5.795757	.7081433	-8.18	0.000	-7.183693	-4.407822
Q	-5.575472	.479828	-11.62	0.000	-6.515918	-4.635027
R	-4.152825	.442967	-9.38	0.000	-5.021025	-3.284626
S	-1.509136	.4134748	-3.65	0.000	-2.319532	-.6987407
LNEX70	.3050427	.0382667	7.97	0.000	.2300414	.3800439
LNEX80	.3235915	.025931	12.48	0.000	.2727677	.3744154
LNEX90	.2705711	.0241232	11.22	0.000	.2232906	.3178517
LNEX00	.095104	.022798	4.17	0.000	.0504208	.1397872
_cons	2.484758	.5186583	4.79	0.000	1.468206	3.501309

```
    sigma_u    1.1607906
    sigma_e    .89322659
       rho     .62809026   (fraction of variance due to u_i)


15 .
16 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S DTC70 DTC80 DTC90 DTC00

    Random-effects GLS regression               Number of obs      =      3,233
    Group variable: Num                          Number of groups   =        159

    R-sq:                                        Obs per group:
        within  = 0.3976                                        min =          1
        between = 0.3825                                        avg =       20.3
        overall = 0.4169                                        max =         38

                                                 Wald chi2(13)      =    2114.26
    corr(u_i, X)   = 0 (assumed)                 Prob > chi2        =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2723642	.043649	-6.24	0.000	-.3579146	-.1868138
FHI	-.1084816	.0202127	-5.37	0.000	-.1480978	-.0688655
LNEX	.0689062	.0174169	3.96	0.000	.0347697	.1030426
DURTC	.04272	.0073126	5.84	0.000	.0283876	.0570524
EA	1.743128	.3492166	4.99	0.000	1.058676	2.42758
P	-2.138322	.3238898	-6.60	0.000	-2.773134	-1.50351
Q	-1.752173	.2650336	-6.61	0.000	-2.27163	-1.232717
R	-.4359857	.2275961	-1.92	0.055	-.8820659	.0100944
S	-.0623055	.2068277	-0.30	0.763	-.4676804	.3430693
DTC70	.1332799	.0271141	4.92	0.000	.0801372	.1864226
DTC80	.0945407	.0096939	9.75	0.000	.075541	.1135405
DTC90	.0323625	.0066945	4.83	0.000	.0192414	.0454835
DTC00	.0026389	.0058628	0.45	0.653	-.008852	.0141299
_cons	.7540031	.4530575	1.66	0.096	-.1339733	1.641979

```
    sigma_u    1.1454238
    sigma_e    .90853374
       rho     .61381948   (fraction of variance due to u_i)
```

```
17 .
18 . xtreg LTC LGDP FHI LNEX DURTC EA P Q R S EA70 EA80 EA90 EA00

    Random-effects GLS regression              Number of obs     =      3,233
    Group variable: Num                        Number of groups  =        159

    R-sq:                                      Obs per group:
         within  = 0.3914                                   min =          1
         between = 0.3401                                   avg =       20.3
         overall = 0.3769                                   max =         38

                                               Wald chi2(13)     =    2046.42
    corr(u_i, X)   = 0 (assumed)               Prob > chi2       =     0.0000

─────────────┼────────────────────────────────────────────────────────────────
         LTC │     Coef.   Std. Err.      z     P>|z|     [95% Conf. Interval]
─────────────┼────────────────────────────────────────────────────────────────
        LGDP │ -.2231173   .0450592    -4.95   0.000    -.3114317   -.1348028
         FHI │ -.1321465   .0201949    -6.54   0.000    -.1717277   -.0925652
        LNEX │  .0798147   .0175528     4.55   0.000     .0454119    .1142175
       DURTC │  .0656139   .0055818    11.75   0.000     .0546737    .076554
          EA │  .1689507   .4163611     0.41   0.685    -.6471021    .9850035
           P │ -.5990814   .1954712    -3.06   0.002    -.9821979   -.2159649
           Q │ -.048563    .1523754    -0.32   0.750    -.3472132    .2500872
           R │  .5179633   .1078641     4.80   0.000     .3065535    .7293731
           S │  .1291075   .0686758     1.88   0.060    -.0054945    .2637096
        EA70 │  2.228703   .2959517     7.53   0.000     1.648648    2.808758
        EA80 │  2.061028   .2448349     8.42   0.000     1.581161    2.540896
        EA90 │  1.847415   .2317573     7.97   0.000     1.393179    2.301651
        EA00 │  1.176791   .2251248     5.23   0.000     .7355542    1.618027
       _cons │ -.4571709   .4228399    -1.08   0.280    -1.285922    .37158
─────────────┼────────────────────────────────────────────────────────────────
     sigma_u │  1.2131396
     sigma_e │   .913411
         rho │  .63820046   (fraction of variance due to u_i)
```

```
19 .
20 .
21 .
22 . xtreg LGA LGDP WGI LNEX DURGA EA R S

    Random-effects GLS regression              Number of obs     =      1,245
    Group variable: Num                        Number of groups  =        136

    R-sq:                                      Obs per group:
         within  = 0.0163                                  min =          1
         between = 0.6102                                  avg =        9.2
         overall = 0.3923                                  max =         15

                                               Wald chi2(7)      =     237.06
    corr(u_i, X)   = 0 (assumed)               Prob > chi2       =     0.0000

─────────────┼────────────────────────────────────────────────────────────────
         LGA │     Coef.   Std. Err.      z     P>|z|     [95% Conf. Interval]
─────────────┼────────────────────────────────────────────────────────────────
        LGDP │ -.7308131   .0851067    -8.59   0.000    -.8976191    -.564007
         WGI │  .0293889   .1522761     0.19   0.847    -.2690668    .3278446
        LNEX │  .1199187   .0334479     3.59   0.000     .0543621    .1854753
       DURGA │  .0669134   .0089083     7.51   0.000     .0494534    .0843735
          EA │  .6270724   .4204815     1.49   0.136    -.1970562    1.451201
           R │  .2187579   .1958545     1.12   0.264    -.1651099    .6026256
           S │ -.2839529   .1102151    -2.58   0.010    -.4999706   -.0679352
       _cons │  3.482619   .7911701     4.40   0.000     1.931954    5.033284
─────────────┼────────────────────────────────────────────────────────────────
     sigma_u │  .91578064
     sigma_e │  1.253588
         rho │  .3479695    (fraction of variance due to u_i)
```

```
23 .
24 . xtreg LGA LGDP WGI LNEX DURGA EA R S LGDP90 LGDP00

Random-effects GLS regression              Number of obs      =      1,245
Group variable: Num                        Number of groups   =        136

R-sq:                                      Obs per group:
     within  = 0.0347                                   min =          1
     between = 0.5921                                   avg =        9.2
     overall = 0.3986                                   max =         15

                                           Wald chi2(9)       =     259.81
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

        LGA │      Coef.    Std. Err.       z     P>|z|     [95% Conf. Interval]
────────────┼────────────────────────────────────────────────────────────────
       LGDP │   -.986936    .1035821     -9.53    0.000    -1.189953    -.7839189
        WGI │   .0253176    .1515052      0.17    0.867    -.2716272     .3222623
       LNEX │    .106079    .0333565      3.18    0.001     .0407015     .1714566
      DURGA │   .0650386    .0088522      7.35    0.000     .0476886     .0823886
         EA │    .706491    .4175729      1.69    0.091    -.1119367     1.524919
          R │  -1.599363    .8909613     -1.80    0.073    -3.345615     .1468889
          S │  -2.941448    .6214044     -4.73    0.000    -4.159379    -1.723518
     LGDP90 │   .2287398    .1217377      1.88    0.060    -.0098616     .4673412
     LGDP00 │   .3472397    .0799089      4.35    0.000     .1906212     .5038582
      _cons │   5.741916    .9446287      6.08    0.000     3.890478     7.593354
────────────┼────────────────────────────────────────────────────────────────
    sigma_u │  .90624804
    sigma_e │  1.2427402
        rho │  .34716549   (fraction of variance due to u_i)


25 .
26 . xtreg LGA LGDP WGI LNEX DURGA EA R S WGI90 WGI00

Random-effects GLS regression              Number of obs      =      1,245
Group variable: Num                        Number of groups   =        136

R-sq:                                      Obs per group:
     within  = 0.0263                                   min =          1
     between = 0.6020                                   avg =        9.2
     overall = 0.3950                                   max =         15

                                           Wald chi2(9)       =     247.74
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

        LGA │      Coef.    Std. Err.       z     P>|z|     [95% Conf. Interval]
────────────┼────────────────────────────────────────────────────────────────
       LGDP │  -.7440945    .0850661     -8.75    0.000     -.910821    -.5773681
        WGI │  -.3020297    .1834893     -1.65    0.100    -.6616621     .0576027
       LNEX │    .116265    .0334252      3.48    0.001     .0507528     .1817772
      DURGA │   .0677777    .0089164      7.60    0.000     .0503019     .0852534
         EA │   .6183086     .420843      1.47    0.142    -.2065285     1.443146
          R │   .4716972    .2147938      2.20    0.028     .0507092     .8926853
          S │  -.0950648    .1269548     -0.75    0.454    -.3438916      .153762
      WGI90 │   .6012748    .2274536      2.64    0.008     .155474     1.047076
      WGI00 │   .4413479    .1490959      2.96    0.003     .1491252     .7335705
      _cons │   3.478447    .7898036      4.40    0.000      1.93046     5.026433
────────────┼────────────────────────────────────────────────────────────────
    sigma_u │  .91784431
    sigma_e │  1.2491611
        rho │  .35060077   (fraction of variance due to u_i)
```

41

```
27 .
28 . xtreg LGA LGDP WGI LNEX DURGA EA R S LNEX90 LNEX00

Random-effects GLS regression                    Number of obs      =      1,245
Group variable: Num                              Number of groups   =        136

R-sq:                                            Obs per group:
     within  = 0.0187                                        min =          1
     between = 0.6125                                        avg =        9.2
     overall = 0.3938                                        max =         15

                                                 Wald chi2(9)       =     239.36
corr(u_i, X)   = 0 (assumed)                     Prob > chi2        =     0.0000

         LGA  |     Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        LGDP  |  -.7320337   .0852249    -8.59   0.000    -.8990714   -.564996
         WGI  |   .0288732   .1534227     0.19   0.851    -.2718298    .3295762
        LNEX  |   .0787784   .043557      1.81   0.071    -.0065918    .1641485
       DURGA  |   .0666022   .0089207     7.47   0.000     .0491179    .0840865
          EA  |   .6575986   .4221268     1.56   0.119    -.1697547   1.484952
           R  |   .0318323   1.100363     0.03   0.977    -2.124839   2.188504
           S  |  -1.411766   .6869097    -2.06   0.040    -2.758084   -.0654475
      LNEX90  |   .0098078   .0622568     0.16   0.875    -.1122133    .1318288
      LNEX00  |   .0639237   .0384404     1.66   0.096    -.0114181    .1392655
       _cons  |   4.22458    .9269701     4.56   0.000     2.407752   6.041408
-------------+----------------------------------------------------------------
     sigma_u  |  .91850656
     sigma_e  |  1.2527947
         rho  |  .34960725   (fraction of variance due to u_i)
```

```
29 .
30 . xtreg LGA LGDP WGI LNEX DURGA EA R S DGA90 DGA00

Random-effects GLS regression                    Number of obs      =      1,245
Group variable: Num                              Number of groups   =        136

R-sq:                                            Obs per group:
     within  = 0.0166                                        min =          1
     between = 0.6143                                        avg =        9.2
     overall = 0.3934                                        max =         15

                                                 Wald chi2(9)       =     242.58
corr(u_i, X)   = 0 (assumed)                     Prob > chi2        =     0.0000

         LGA  |     Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        LGDP  |  -.7339101   .0849696    -8.64   0.000    -.9004475   -.5673728
         WGI  |   .0254565   .1518583     0.17   0.867    -.2721802    .3230933
        LNEX  |   .1191025   .0333651     3.57   0.000     .053708     .184497
       DURGA  |   .0610157   .0110396     5.53   0.000     .0393786    .0826529
          EA  |   .6208109   .416801      1.49   0.136    -.1961041   1.437726
           R  |   -.17202    .3749568    -0.46   0.646    -.9069219    .5628818
           S  |  -.4822386   .2714637    -1.78   0.076    -1.014298    .0498205
       DGA90  |   .0203554   .017431      1.17   0.243    -.0138087    .0545195
       DGA00  |   .0073675   .0095358     0.77   0.440    -.0113224    .0260574
       _cons  |   3.684956   .8156515     4.52   0.000     2.086308   5.283603
-------------+----------------------------------------------------------------
     sigma_u  |  .90426693
     sigma_e  |  1.2546781
         rho  |  .34185929   (fraction of variance due to u_i)
```

```
31 .
32 . xtreg LGA LGDP WGI LNEX DURGA EA R S EA90 EA00

    Random-effects GLS regression              Number of obs     =      1,245
    Group variable: Num                        Number of groups  =        136

    R-sq:                                      Obs per group:
         within  = 0.0173                                    min =          1
         between = 0.6095                                    avg =        9.2
         overall = 0.3930                                    max =         15

                                               Wald chi2(9)      =     240.89
    corr(u_i, X)  = 0 (assumed)                Prob > chi2       =     0.0000

    ─────────────────────────────────────────────────────────────────────────
           LGA |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ───────────┼─────────────────────────────────────────────────────────────
          LGDP |   -.739518   .0852624    -8.67   0.000    -.9066292   -.5724067
           WGI |    .035488   .1525946     0.23   0.816    -.2635919    .334568
          LNEX |   .1191888   .0334059     3.57   0.000     .0537145   .1846632
         DURGA |   .0665519   .0088847     7.49   0.000     .0491383   .0839655
            EA |   .9801444   .5303512     1.85   0.065    -.0593249   2.019614
             R |   .2194206   .1972734     1.11   0.266    -.1672281   .6060693
             S |  -.2678915   .1111082    -2.41   0.016    -.4856595   -.0501234
          EA90 |  -.3075578   .6095012    -0.50   0.614    -1.502158   .8870426
          EA00 |  -.4760279   .3997076    -1.19   0.234     -1.25944   .3073846
         _cons |   3.560299   .7915166     4.50   0.000     2.008955   5.111643
    ───────────┼─────────────────────────────────────────────────────────────
       sigma_u |  .90865929
       sigma_e |  1.2541044
           rho |  .34424953   (fraction of variance due to u_i)
    ─────────────────────────────────────────────────────────────────────────


33 .
34 .
35 .
36 . xtreg LTC LGDP WGI LNEX DURTC EA R S

    Random-effects GLS regression              Number of obs     =      1,505
    Group variable: Num                        Number of groups  =        147

    R-sq:                                      Obs per group:
         within  = 0.0337                                    min =          1
         between = 0.2823                                    avg =       10.2
         overall = 0.2234                                    max =         15

                                               Wald chi2(7)      =     104.80
    corr(u_i, X)  = 0 (assumed)                Prob > chi2       =     0.0000

    ─────────────────────────────────────────────────────────────────────────
           LTC |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ───────────┼─────────────────────────────────────────────────────────────
          LGDP |  -.5629578   .0724754    -7.77   0.000    -.7050069   -.4209087
           WGI |   .7807145   .1245836     6.27   0.000     .5365352   1.024894
          LNEX |   .0848087   .0249805     3.39   0.001     .0358478   .1337695
         DURTC |   .0342276   .0084832     4.03   0.000     .0176008   .0508543
            EA |   1.233746     .46274     2.67   0.008     .3267921     2.1407
             R |  -.1125073   .1346232    -0.84   0.403     -.376364   .1513494
             S |  -.2128856   .0716961    -2.97   0.003    -.3534074   -.0723637
         _cons |   2.946372   .6105344     4.83   0.000     1.749747   4.142998
    ───────────┼─────────────────────────────────────────────────────────────
       sigma_u |  1.3777793
       sigma_e |  .81415976
           rho |  .74118628   (fraction of variance due to u_i)
    ─────────────────────────────────────────────────────────────────────────
```

```
37 .
38 . xtreg LTC LGDP WGI LNEX DURTC EA R S LGDP90 LGDP00

    Random-effects GLS regression              Number of obs      =      1,505
    Group variable: Num                        Number of groups   =        147

    R-sq:                                      Obs per group:
        within  = 0.1509                                       min =          1
        between = 0.2401                                       avg =       10.2
        overall = 0.2154                                       max =         15

                                               Wald chi2(9)       =     288.20
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

           LTC  |     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -----------+----------------------------------------------------------------
          LGDP  |  -.9598859    .077902   -12.32   0.000    -1.112571   -.8072008
           WGI  |   .8307555   .1190285     6.98   0.000     .5974639    1.064047
          LNEX  |   .0620134   .0238326     2.60   0.009     .0153024    .1087244
         DURTC  |    .032927    .008236     4.00   0.000     .0167848    .0490693
            EA  |   1.297503   .4603976     2.82   0.005     .3951404    2.199866
             R  |  -5.463499   .4472505   -12.22   0.000    -6.340094   -4.586904
             S  |  -3.612139   .3198842   -11.29   0.000      -4.2391   -2.985177
        LGDP90  |   .6935611   .0570123    12.17   0.000      .581819    .8053032
        LGDP00  |   .4237833   .0390649    10.85   0.000     .3472175    .5003491
         _cons  |   6.576831   .6634041     9.91   0.000     5.276583     7.87708
    -----------+----------------------------------------------------------------
       sigma_u  |  1.3750044
       sigma_e  |   .76542077
           rho  |   .76342923   (fraction of variance due to u_i)


39 .
40 . xtreg LTC LGDP WGI LNEX DURTC EA R S WGI90 WGI00

    Random-effects GLS regression              Number of obs      =      1,505
    Group variable: Num                        Number of groups   =        147

    R-sq:                                      Obs per group:
        within  = 0.1208                                       min =          1
        between = 0.2891                                       avg =       10.2
        overall = 0.2489                                       max =         15

                                               Wald chi2(9)       =     246.31
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

           LTC  |     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -----------+----------------------------------------------------------------
          LGDP  |  -.6453918   .0708237    -9.11   0.000    -.7842037   -.5065799
           WGI  |   .2982663   .1284889     2.32   0.020     .0464326       .5501
          LNEX  |   .0760702   .0240397     3.16   0.002     .0289532    .1231872
         DURTC  |   .0383767   .0082848     4.63   0.000     .0221387    .0546147
            EA  |   1.242503   .4578782     2.71   0.007     .3450782    2.139928
             R  |   .1680809   .1320596     1.27   0.203    -.0907511     .426913
             S  |  -.0547824   .0711121    -0.77   0.441    -.1941595    .0845946
         WGI90  |   1.115983   .1038493    10.75   0.000     .9124422    1.319524
         WGI00  |   .6334059   .0694599     9.12   0.000      .497267    .7695448
         _cons  |   3.494554   .5909246     5.91   0.000     2.336363    4.652745
    -----------+----------------------------------------------------------------
       sigma_u  |  1.3755654
       sigma_e  |   .78195448
           rho  |   .75577378   (fraction of variance due to u_i)
```

```
41 .
42 . xtreg LTC LGDP WGI LNEX DURTC EA R S LNEX90 LNEX00

Random-effects GLS regression              Number of obs       =       1,505
Group variable: Num                        Number of groups    =         147

R-sq:                                      Obs per group:
     within  = 0.0740                                     min =           1
     between = 0.2883                                     avg =        10.2
     overall = 0.2371                                     max =          15

                                           Wald chi2(9)        =      165.71
corr(u_i, X)   = 0 (assumed)               Prob > chi2         =      0.0000

        LTC |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP | -.5517422    .071797    -7.68   0.000    -.6924618   -.4110226
        WGI |  .7189485   .1232027     5.84   0.000     .4774757    .9604213
       LNEX | -.0113426   .0291381    -0.39   0.697    -.0684522    .0457671
      DURTC |  .0322361   .0084358     3.82   0.000     .0157022      .04877
         EA |  1.218794   .4649842     2.62   0.009     .3074413    2.130146
          R | -4.549222   .5994923    -7.59   0.000    -5.724205   -3.374239
          S | -2.061449   .3856536    -5.35   0.000    -2.817317   -1.305582
     LNEX90 |  .2495619   .0330082     7.56   0.000     .1848671    .3142567
     LNEX00 |  .1029553   .0211544     4.87   0.000     .0614935    .1444172
      _cons |    4.6228   .6630308     6.97   0.000     3.323283    5.922316
------------+----------------------------------------------------------------
    sigma_u |  1.3897735
    sigma_e |    .79828
        rho |  .75191901   (fraction of variance due to u_i)


43 .
44 . xtreg LTC LGDP WGI LNEX DURTC EA R S DTC90 DTC00

Random-effects GLS regression              Number of obs       =       1,505
Group variable: Num                        Number of groups    =         147

R-sq:                                      Obs per group:
     within  = 0.0361                                     min =           1
     between = 0.2867                                     avg =        10.2
     overall = 0.2278                                     max =          15

                                           Wald chi2(9)        =      109.05
corr(u_i, X)   = 0 (assumed)               Prob > chi2         =      0.0000

        LTC |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP | -.5717001   .0727298    -7.86   0.000    -.7142479   -.4291523
        WGI |  .7771287    .124628     6.24   0.000     .5328623    1.021395
       LNEX |  .0806487   .0250327     3.22   0.001     .0315855    .1297119
      DURTC |  .0308275    .009385     3.28   0.001     .0124331    .0492218
         EA |   1.23876   .4645687     2.67   0.008      .328222    2.149298
          R | -.6036197   .2739425    -2.20   0.028    -1.140537   -.0667022
          S | -.3501383   .1934833    -1.81   0.070    -.7293585     .029082
      DTC90 |  .0198487   .0093136     2.13   0.033     .0015943    .0381031
      DTC00 |  .0038807   .0053955     0.72   0.472    -.0066943    .0144557
      _cons |  3.208165   .6363604     5.04   0.000     1.960922    4.455409
------------+----------------------------------------------------------------
    sigma_u |  1.3864334
    sigma_e |   .81461553
        rho |  .74336783   (fraction of variance due to u_i)
```

```
45 .
46 . xtreg LTC LGDP WGI LNEX DURTC EA R S EA90 EA00

Random-effects GLS regression          Number of obs     =      1,505
Group variable: Num                    Number of groups  =        147

R-sq:                                  Obs per group:
     within  = 0.0610                        min =          1
     between = 0.2830                        avg =       10.2
     overall = 0.2247                        max =         15

                                       Wald chi2(9)      =     144.63
corr(u_i, X)   = 0 (assumed)           Prob > chi2       =     0.0000

        LTC │     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
────────────┼────────────────────────────────────────────────────────────────
       LGDP │ -.5453565   .0722473    -7.55   0.000    -.6869585   -.4037544
        WGI │  .7683194    .123581     6.22   0.000     .5261051    1.010534
       LNEX │  .0839406    .024694     3.40   0.001     .0355413    .1323399
      DURTC │   .033715   .0084533     3.99   0.000     .0171468    .0502832
         EA │  .2213082   .4952343     0.45   0.655    -.7493332     1.19195
          R │ -.2278609    .135006    -1.69   0.091    -.4924678    .0367459
          S │ -.2711155   .0718527    -3.77   0.000    -.4119441   -.1302868
       EA90 │  1.740581   .2956326     5.89   0.000     1.161151     2.32001
       EA00 │  1.018997   .2061068     4.94   0.000     .6150352    1.422959
      _cons │  2.886347   .6055014     4.77   0.000     1.699586    4.073108
────────────┼────────────────────────────────────────────────────────────────
    sigma_u │  1.3858458
    sigma_e │  .80272677
        rho │  .74877754   (fraction of variance due to u_i)

47 .
48 .
49 .
50 . xtreg LGA LGDP LNEX DURGA EA P Q R S

Random-effects GLS regression          Number of obs     =      2,465
Group variable: Num                    Number of groups  =        148

R-sq:                                  Obs per group:
     within  = 0.1306                        min =          1
     between = 0.5765                        avg =       16.7
     overall = 0.4061                        max =         38

                                       Wald chi2(8)      =     556.44
corr(u_i, X)   = 0 (assumed)           Prob > chi2       =     0.0000

        LGA │     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
────────────┼────────────────────────────────────────────────────────────────
       LGDP │ -.6432178   .0579912   -11.09   0.000    -.7568784   -.5295572
       LNEX │  .1251005   .0250194     5.00   0.000     .0760633    .1741376
      DURGA │   .069366   .0069473     9.98   0.000     .0557496    .0829824
         EA │  .3016089   .3270956     0.92   0.356    -.3394867    .9427044
          P │ -1.065818   .2765771    -3.85   0.000    -1.607899   -.5237369
          Q │ -.1149467    .201136    -0.57   0.568     -.509166    .2792726
          R │  .3048443   .1481346     2.06   0.040     .0145057    .5951828
          S │ -.2171757   .0994835    -2.18   0.029    -.4121597   -.0221917
      _cons │  2.572781   .5511399     4.67   0.000     1.492566    3.652995
────────────┼────────────────────────────────────────────────────────────────
    sigma_u │  .93380896
    sigma_e │  1.2715576
        rho │  .35036117   (fraction of variance due to u_i)
```

```
51 .
52 . xtreg LGA LGDP LNEX DURGA EA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

    Random-effects GLS regression              Number of obs      =       2,465
    Group variable: Num                        Number of groups   =         148

    R-sq:                                       Obs per group:
         within  = 0.1449                                        min =           1
         between = 0.5688                                        avg =        16.7
         overall = 0.4099                                        max =          38

                                               Wald chi2(12)      =      603.57
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =      0.0000

    ─────────────────────────────────────────────────────────────────────────────
            LGA  │     Coef.   Std. Err.       z    P>|z|    [95% Conf. Interval]
    ─────────────┼───────────────────────────────────────────────────────────────
           LGDP  │  -.8949403   .0833511   -10.74   0.000   -1.058305   -.7315751
           LNEX  │   .1145112   .0249578     4.59   0.000    .0655948    .1634275
          DURGA  │   .0695893   .0069303    10.04   0.000    .0560063    .0831724
             EA  │   .4083024   .3244287     1.26   0.208   -.2275662    1.044171
              P  │  -5.044691   1.357328    -3.72   0.000   -7.705004   -2.384378
              Q  │  -.2378398   .7460481    -0.32   0.750   -1.700067    1.224388
              R  │  -2.097701   .6330367    -3.31   0.001    -3.33843   -.8569716
              S  │   -2.73386   .6025297    -4.54   0.000   -3.914797   -1.552924
         LGDP70  │    .580418   .2084158     2.78   0.005    .1719306    .9889054
         LGDP80  │  -.0340523   .1016801    -0.33   0.738   -.2333416    .1652371
         LGDP90  │   .3195421   .0827673     3.86   0.000    .1573212    .4817629
         LGDP00  │   .3301777   .0778888     4.24   0.000    .1775184    .4828369
          _cons  │   4.689893   .7442393     6.30   0.000    3.231211    6.148575
    ─────────────┼───────────────────────────────────────────────────────────────
        sigma_u  │  .92057537
        sigma_e  │  1.2622446
            rho  │  .34721676   (fraction of variance due to u_i)
    ─────────────────────────────────────────────────────────────────────────────

53 .
54 . xtreg LGA LGDP LNEX DURGA EA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

    Random-effects GLS regression              Number of obs      =       2,465
    Group variable: Num                        Number of groups   =         148

    R-sq:                                       Obs per group:
         within  = 0.1359                                        min =           1
         between = 0.5724                                        avg =        16.7
         overall = 0.4080                                        max =          38

                                               Wald chi2(12)      =      570.85
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =      0.0000

    ─────────────────────────────────────────────────────────────────────────────
            LGA  │     Coef.   Std. Err.       z    P>|z|    [95% Conf. Interval]
    ─────────────┼───────────────────────────────────────────────────────────────
           LGDP  │  -.6411579   .0579595   -11.06   0.000   -.7547563   -.5275594
           LNEX  │    .046664   .0383565     1.22   0.224   -.0285133    .1218413
          DURGA  │   .0706249   .0069535    10.16   0.000    .0569963    .0842535
             EA  │   .2113453   .3289401     0.64   0.521   -.4333655    .856056
              P  │  -4.861815   1.603321    -3.03   0.002   -8.004266   -1.719364
              Q  │   -2.01635   .7772869    -2.59   0.009   -3.539804   -.4928952
              R  │  -1.806504   .7226148    -2.50   0.012   -3.222803   -.3902048
              S  │  -1.384392   .6699205    -2.07   0.039   -2.697412   -.0713715
         LNEX70  │   .2173629   .0895489     2.43   0.015    .0418504    .3928755
         LNEX80  │   .1101767   .0433734     2.54   0.011    .0251664    .1951871
         LNEX90  │   .1211519   .0404258     3.00   0.003    .0419187    .2003851
         LNEX00  │   .0663581    .037581     1.77   0.077   -.0072992    .1400154
          _cons  │   3.909923   .7554383     5.18   0.000    2.429291    5.390555
    ─────────────┼───────────────────────────────────────────────────────────────
        sigma_u  │  .93221064
        sigma_e  │  1.2684672
            rho  │  .35068912   (fraction of variance due to u_i)
    ─────────────────────────────────────────────────────────────────────────────
```

```
55 .
56 . xtreg LGA LGDP LNEX DURGA EA P Q R S DGA70 DGA80 DGA90 DGA00

Random-effects GLS regression              Number of obs      =       2,465
Group variable: Num                        Number of groups   =         148

R-sq:                                      Obs per group:
     within  = 0.1651                                    min =           1
     between = 0.6115                                    avg =        16.7
     overall = 0.4367                                    max =          38

                                           Wald chi2(12)      =      675.34
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =      0.0000

        LGA |      Coef.   Std. Err.       z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP | -.6348113   .0572404    -11.09   0.000    -.7470005   -.5226221
       LNEX |  .1202137   .0246322      4.88   0.000     .0719355    .1684919
      DURGA |   .049065   .0096051      5.11   0.000     .0302394    .0678907
         EA |  .1952713   .3246791      0.60   0.548     -.441088    .8316305
          P | -2.141036   .4101623     -5.22   0.000    -2.944939   -1.337132
          Q | -1.644873   .3029143     -5.43   0.000    -2.238574   -1.051172
          R | -.5473562   .2777517     -1.97   0.049     -1.09174   -.0029729
          S | -.5068623   .2576728     -1.97   0.049    -1.011892    -.001833
      DGA70 |  .1590423   .0545089      2.92   0.004     .0522069    .2658777
      DGA80 |   .147211   .0161161      9.13   0.000      .115624    .1787979
      DGA90 |   .040825   .0109603      3.72   0.000     .0193432    .0623068
      DGA00 |  .0075777   .0092076      0.82   0.411    -.0104689    .0256243
      _cons |  3.155335   .5795583      5.44   0.000     2.019422    4.291249
------------+----------------------------------------------------------------
    sigma_u |  .92893892
    sigma_e |  1.2462099
        rho |  .35717692   (fraction of variance due to u_i)

57 .
58 . xtreg LGA LGDP LNEX DURGA EA P Q R S EA70 EA80 EA90 EA00

Random-effects GLS regression              Number of obs      =       2,465
Group variable: Num                        Number of groups   =         148

R-sq:                                      Obs per group:
     within  = 0.1417                                    min =           1
     between = 0.5473                                    avg =        16.7
     overall = 0.4010                                    max =          38

                                           Wald chi2(12)      =      579.22
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =      0.0000

        LGA |      Coef.   Std. Err.       z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP | -.6392434   .0580558    -11.01   0.000    -.7530307   -.5254561
       LNEX |  .1275248   .0249823      5.10   0.000     .0785605    .1764892
      DURGA |   .070123   .0069452     10.10   0.000     .0565106    .0837355
         EA | -.0151661   .4778811     -0.03   0.975    -.9517958    .9214636
          P | -1.240476   .2805826     -4.42   0.000    -1.790407   -.6905437
          Q | -.1271129   .2013081     -0.63   0.528    -.5216695    .2674438
          R |  .3145899   .1485244      2.12   0.034     .0234873    .6056924
          S | -.1910401   .1004796     -1.90   0.057    -.3879766    .0058964
       EA70 |  1.850363     .57696      3.21   0.001     .7195423    2.981184
       EA80 |  .6849253    .432927      1.58   0.114    -.1635961    1.533447
       EA90 |  .1962786    .409637      0.48   0.632    -.6065952    .9991524
       EA00 | -.3127641   .3933213     -0.80   0.427     -1.08366    .4581316
      _cons |  2.485521   .5515203      4.51   0.000     1.404561    3.566481
------------+----------------------------------------------------------------
    sigma_u |  .93483569
    sigma_e |   1.263135
        rho |  .35389486   (fraction of variance due to u_i)
```

48

```
59 .
60 .
61 .
62 . xtreg LTC LGDP LNEX DURTC EA P Q R S

Random-effects GLS regression                Number of obs     =       3,332
Group variable: Num                          Number of groups  =         161

R-sq:                                         Obs per group:
     within  = 0.3667                                   min =           1
     between = 0.3736                                   avg =        20.7
     overall = 0.3747                                   max =          38

                                              Wald chi2(8)      =     1923.70
corr(u_i, X)    = 0 (assumed)                 Prob > chi2       =      0.0000

        LTC |     Coef.    Std. Err.      z     P>|z|    [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP |  -.231242    .0436197    -5.30   0.000    -.316735   -.1457489
       LNEX |   .0744335   .0175249     4.25   0.000     .0400853   .1087817
      DURTC |   .0672271   .0055689    12.07   0.000     .0563123   .0781419
         EA |   1.634389   .3620589     4.51   0.000     .9247664   2.344011
          P |  -.5053079   .1952502    -2.59   0.010    -.8879911  -.1226246
          Q |   .0093438   .1532469     0.06   0.951    -.2910146   .3097022
          R |   .6147099   .1076073     5.71   0.000     .4038035   .8256163
          S |   .1939306   .0680025     2.85   0.004     .0606482   .3272131
      _cons |  -.9210933   .3987186    -2.31   0.021    -1.702567  -.1396191
------------+----------------------------------------------------------------
    sigma_u |  1.1968554
    sigma_e |   .93316841
        rho |   .62192676   (fraction of variance due to u_i)


63 .
64 . xtreg LTC LGDP LNEX DURTC EA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

Random-effects GLS regression                Number of obs     =       3,332
Group variable: Num                          Number of groups  =         161

R-sq:                                         Obs per group:
     within  = 0.4186                                   min =           1
     between = 0.3332                                   avg =        20.7
     overall = 0.3619                                   max =          38

                                              Wald chi2(12)     =     2340.13
corr(u_i, X)    = 0 (assumed)                 Prob > chi2       =      0.0000

        LTC |     Coef.    Std. Err.      z     P>|z|    [95% Conf. Interval]
------------+----------------------------------------------------------------
       LGDP |  -.6504754   .0550145   -11.82   0.000    -.7583018  -.5426489
       LNEX |   .077904    .0169884     4.59   0.000     .0446073   .1112007
      DURTC |   .0651258   .0054243    12.01   0.000     .0544944   .0757571
         EA |   1.617426   .3623806     4.46   0.000     .9071733   2.327679
          P |  -5.294545   .562131     -9.42   0.000    -6.396301  -4.192788
          Q |  -4.969541   .4105719   -12.10   0.000    -5.774248  -4.164835
          R |  -4.637683   .3631744   -12.77   0.000    -5.349492  -3.925875
          S |  -3.036292   .3486491    -8.71   0.000    -3.719631  -2.352952
     LGDP70 |   .6301984   .0756317     8.33   0.000     .481963    .7784337
     LGDP80 |   .6530046   .0514939    12.68   0.000     .5520784   .7539308
     LGDP90 |   .683187    .0447297    15.27   0.000     .5955185   .7708556
     LGDP00 |   .4029281   .0430807     9.35   0.000     .3184915   .4873646
      _cons |   2.416373   .4895923     4.94   0.000     1.45679    3.375956
------------+----------------------------------------------------------------
    sigma_u |  1.1978252
    sigma_e |   .89406128
        rho |   .64221184   (fraction of variance due to u_i)
```

```
65 .
66 . xtreg LTC LGDP LNEX DURTC EA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

Random-effects GLS regression              Number of obs      =      3,332
Group variable: Num                        Number of groups   =        161

R-sq:                                      Obs per group:
     within  = 0.4145                                  min =          1
     between = 0.3867                                  avg =       20.7
     overall = 0.3924                                  max =         38

                                           Wald chi2(12)      =    2327.79
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

         LTC       Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]

        LGDP   -.2016701    .0425641    -4.74   0.000    -.2850942   -.1182461
        LNEX   -.1034912     .024645    -4.20   0.000    -.1517945   -.0551879
       DURTC    .0695373    .0054161    12.84   0.000     .0589219    .0801527
          EA    1.506536     .359271     4.19   0.000     .8023775    2.210694
           P   -5.93969     .698586    -8.50   0.000    -7.308893   -4.570487
           Q   -5.651072    .4675577   -12.09   0.000    -6.567468   -4.734676
           R   -4.160981     .442906    -9.39   0.000    -5.029061   -3.292901
           S   -1.526075    .4114987    -3.71   0.000    -2.332598   -.7195525
      LNEX70    .3124824    .0378186     8.26   0.000     .2383593    .3866055
      LNEX80    .3261073     .025238    12.92   0.000     .2766416    .375573
      LNEX90    .2717002    .0241514    11.25   0.000     .2243644    .319036
      LNEX00    .0969413    .0227231     4.27   0.000     .0524048    .1414777
       _cons    1.929646    .5047534     3.82   0.000     .9403478    2.918945

     sigma_u    1.1895803
     sigma_e     .89776398
         rho     .63712263   (fraction of variance due to u_i)


67 .
68 . xtreg LTC LGDP LNEX DURTC EA P Q R S DTC70 DTC80 DTC90 DTC00

Random-effects GLS regression              Number of obs      =      3,332
Group variable: Num                        Number of groups   =        161

R-sq:                                      Obs per group:
     within  = 0.3955                                  min =          1
     between = 0.4169                                  avg =       20.7
     overall = 0.4080                                  max =         38

                                           Wald chi2(12)      =    2174.12
corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

         LTC       Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]

        LGDP    -.233805    .0425801    -5.49   0.000    -.3172606   -.1503495
        LNEX    .0658938    .0171694     3.84   0.000     .0322425    .0995451
       DURTC    .0411986    .0072636     5.67   0.000     .0269622    .0554349
          EA    1.636878    .3515525     4.66   0.000     .9478474    2.325908
           P   -2.262445    .3191526    -7.09   0.000    -2.887973   -1.636918
           Q   -1.868403    .2604548    -7.17   0.000    -2.378885   -1.357921
           R   -.4541323    .2259973    -2.01   0.044    -.8970788   -.0111858
           S   -.0598959    .2042339    -0.29   0.769     -.460187    .3403952
       DTC70    .1407914    .0266596     5.28   0.000     .0885396    .1930431
       DTC80    .0986549     .009364    10.54   0.000     .0803018    .117008
       DTC90    .0323597    .0066732     4.85   0.000     .0192805    .045439
       DTC00    .0026517    .0058094     0.46   0.648    -.0087345    .0140378
       _cons    .1577724    .4334621     0.36   0.716    -.6917977    1.007343

     sigma_u    1.1608229
     sigma_e     .91188601
         rho     .61839443   (fraction of variance due to u_i)
```

```
69 .
70 . xtreg LTC LGDP LNEX DURTC EA P Q R S EA70 EA80 EA90 EA00

    Random-effects GLS regression              Number of obs      =      3,332
    Group variable: Num                        Number of groups   =        161

    R-sq:                                       Obs per group:
        within  = 0.3874                                     min =          1
        between = 0.3647                                     avg =       20.7
        overall = 0.3741                                     max =         38

                                                Wald chi2(12)      =    2083.42
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.1870305	.0439367	-4.26	0.000	-.273145	-.1009161
LNEX	.07958	.0173213	4.59	0.000	.0456309	.113529
DURTC	.0663675	.0055292	12.00	0.000	.0555305	.0772045
EA	-.0090833	.4151001	-0.02	0.983	-.8226644	.8044979
P	-.6223111	.194151	-3.21	0.001	-1.00284	-.2417822
Q	-.097578	.1521794	-0.64	0.521	-.395844	.2006881
R	.5231114	.1074364	4.87	0.000	.3125399	.7336829
S	.1465922	.0685293	2.14	0.032	.0122773	.2809072
EA70	2.224529	.2973337	7.48	0.000	1.641766	2.807292
EA80	2.14032	.2427762	8.82	0.000	1.664487	2.616153
EA90	1.889495	.2313155	8.17	0.000	1.436125	2.342866
EA00	1.200946	.2252965	5.33	0.000	.7593732	1.642519
_cons	-1.249897	.4009379	-3.12	0.002	-2.03572	-.4640727

sigma_u	1.2120104					
sigma_e	.91817475					
rho	.63536344	(fraction of variance due to u_i)				

```
71 .
72 .
73 .
74 . xtreg LGA LGDP FHI LNEX DURGA P Q R S

    Random-effects GLS regression              Number of obs      =      2,419
    Group variable: Num                        Number of groups   =        148

    R-sq:                                       Obs per group:
        within  = 0.1225                                     min =          1
        between = 0.5783                                     avg =       16.3
        overall = 0.4044                                     max =         37

                                                Wald chi2(8)       =     523.32
    corr(u_i, X)   = 0 (assumed)               Prob > chi2        =     0.0000

```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.642175	.0598956	-10.72	0.000	-.7595683	-.5247817
FHI	.0086078	.0301301	0.29	0.775	-.0504461	.0676617
LNEX	.125618	.0248836	5.05	0.000	.0768471	.1743889
DURGA	.0700723	.0069875	10.03	0.000	.0563771	.0837676
P	-1.029777	.2776139	-3.71	0.000	-1.57389	-.4856637
Q	-.056782	.2015015	-0.28	0.778	-.4517178	.3381537
R	.3216104	.1490092	2.16	0.031	.0295578	.613663
S	-.2028992	.1004218	-2.02	0.043	-.3997224	-.006076
_cons	2.516097	.5945977	4.23	0.000	1.350707	3.681487

sigma_u	.94136833					
sigma_e	1.2734773					
rho	.35335048	(fraction of variance due to u_i)				

76 . xtreg LGA LGDP FHI LNEX DURGA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

Random-effects GLS regression   Number of obs   =   2,419
Group variable: **Num**   Number of groups   =   148

R-sq: Obs per group:
     within = 0.1370   min =   1
     between = 0.5682   avg =   16.3
     overall = 0.4061   max =   37

                                              Wald chi2(12)   =   566.97
corr(u_i, X)   = 0 (assumed)   Prob > chi2   =   0.0000

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LGDP	-.9002735	.0843636	-10.67	0.000	-1.065623	-.734924
FHI	-.0010786	.0303998	-0.04	0.972	-.0606612	.058504
LNEX	.1168084	.0248177	4.71	0.000	.0681666	.1654503
DURGA	.0701214	.0069803	10.05	0.000	.0564403	.0838025
P	-5.094901	1.361829	-3.74	0.000	-7.764036	-2.425766
Q	-.2481962	.7655381	-0.32	0.746	-1.748623	1.252231
R	-2.088815	.6351194	-3.29	0.001	-3.333626	-.8440042
S	-2.721127	.6029314	-4.51	0.000	-3.902851	-1.539404
LGDP70	.5938008	.2089482	2.84	0.004	.1842698	1.003332
LGDP80	-.0232088	.1046958	-0.22	0.825	-.2284088	.1819912
LGDP90	.3201993	.0830834	3.85	0.000	.1573589	.4830398
LGDP00	.3300148	.0779778	4.23	0.000	.1771812	.4828484
_cons	4.697768	.7703045	6.10	0.000	3.187999	6.207537
sigma_u	.93174222					
sigma_e	1.2640295					
rho	.3520575	(fraction of variance due to u_i)				

78 . xtreg LGA LGDP FHI LNEX DURGA P Q R S FHI70 FHI80 FHI90 FHI00

Random-effects GLS regression   Number of obs   =   2,419
Group variable: **Num**   Number of groups   =   148

R-sq: Obs per group:
     within = 0.1277   min =   1
     between = 0.5736   avg =   16.3
     overall = 0.4059   max =   37

                                              Wald chi2(12)   =   533.59
corr(u_i, X)   = 0 (assumed)   Prob > chi2   =   0.0000

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LGDP	-.634124	.0616294	-10.29	0.000	-.7549153	-.5133326
FHI	.1338739	.0521478	2.57	0.010	.031666	.2360818
LNEX	.1289961	.0249534	5.17	0.000	.0800883	.177904
DURGA	.0699316	.0070057	9.98	0.000	.0562008	.0836625
P	-.8678754	.5780887	-1.50	0.133	-2.000908	.2651577
Q	.587999	.3276599	1.79	0.073	-.0542025	1.230201
R	.9705267	.2498726	3.88	0.000	.4807853	1.460268
S	.1796635	.2124738	0.85	0.398	-.2367775	.5961045
FHI70	-.0517022	.1181979	-0.44	0.662	-.2833658	.1799614
FHI80	-.1644791	.0609848	-2.70	0.007	-.2840071	-.0449511
FHI90	-.1721621	.05384	-3.20	0.001	-.2776865	-.0666376
FHI00	-.101846	.0512917	-1.99	0.047	-.2023759	-.0013161
_cons	1.937921	.6342487	3.06	0.002	.6948169	3.181026
sigma_u	.94980942					
sigma_e	1.2702487					
rho	.35860745	(fraction of variance due to u_i)				

```
79 .
80 . xtreg LGA LGDP FHI LNEX DURGA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

Random-effects GLS regression                      Number of obs      =       2,419
Group variable: Num                                Number of groups   =         148

R-sq:                                              Obs per group:
     within  = 0.1275                                           min =           1
     between = 0.5742                                           avg =        16.3
     overall = 0.4067                                           max =          37

                                                   Wald chi2(12)      =      537.75
corr(u_i, X)    = 0 (assumed)                       Prob > chi2       =      0.0000
```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LGDP	-.6379441	.0598992	-10.65	0.000	-.7553443	-.5205438
FHI	.0136762	.0304531	0.45	0.653	-.0460108	.0733632
LNEX	.0524509	.0384212	1.37	0.172	-.0228533	.127755
DURGA	.0711682	.0069859	10.19	0.000	.0574761	.0848602
P	-4.848955	1.607019	-3.02	0.003	-7.998654	-1.699257
Q	-1.775095	.8082513	-2.20	0.028	-3.359239	-.1909516
R	-1.715117	.7266477	-2.36	0.018	-3.13932	-.2909138
S	-1.25175	.6772466	-1.85	0.065	-2.579129	.0756292
LNEX70	.218171	.0896547	2.43	0.015	.042451	.3938909
LNEX80	.0991611	.0450544	2.20	0.028	.0108562	.187466
LNEX90	.11676	.0405942	2.88	0.004	.0371968	.1963232
LNEX00	.0595478	.0379382	1.57	0.117	-.0148097	.1339054
_cons	3.724129	.7855295	4.74	0.000	2.18452	5.263739

```
     sigma_u    .93690291
     sigma_e    1.2707181
         rho    .3521697    (fraction of variance due to u_i)
```

```
81 .
82 . xtreg LGA LGDP FHI LNEX DURGA P Q R S DGA70 DGA80 DGA90 DGA00

Random-effects GLS regression                      Number of obs      =       2,419
Group variable: Num                                Number of groups   =         148

R-sq:                                              Obs per group:
     within  = 0.1536                                           min =           1
     between = 0.6152                                           avg =        16.3
     overall = 0.4343                                           max =          37

                                                   Wald chi2(12)      =      631.83
corr(u_i, X)    = 0 (assumed)                       Prob > chi2       =      0.0000
```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LGDP	-.6338773	.0589982	-10.74	0.000	-.7495117	-.5182429
FHI	.0172397	.0297375	0.58	0.562	-.0410447	.0755241
LNEX	.1207897	.0244989	4.93	0.000	.0727729	.1688066
DURGA	.0513116	.0096708	5.31	0.000	.0323572	.0702661
P	-2.075238	.4133857	-5.02	0.000	-2.885459	-1.265017
Q	-1.556634	.3079314	-5.06	0.000	-2.160168	-.9530993
R	-.5074235	.2802085	-1.81	0.070	-1.056622	.0417751
S	-.4611665	.2606928	-1.77	0.077	-.972115	.0497819
DGA70	.1571434	.0547807	2.87	0.004	.0497751	.2645117
DGA80	.1424144	.016691	8.53	0.000	.1097005	.1751282
DGA90	.0404314	.0110199	3.67	0.000	.0188329	.0620299
DGA00	.0064744	.009276	0.70	0.485	-.0117063	.0246551
_cons	3.0198	.6221538	4.85	0.000	1.800401	4.239199

```
     sigma_u    .9273328
     sigma_e    1.2511612
         rho    .3545657    (fraction of variance due to u_i)
```

```
83 .
84 .
85 .
86 . xtreg LTC LGDP FHI LNEX DURTC P Q R S

Random-effects GLS regression               Number of obs      =      3,233
Group variable: Num                         Number of groups   =        159

R-sq:                                       Obs per group:
     within  = 0.3714                                     min =          1
     between = 0.2868                                     avg =       20.3
     overall = 0.3271                                     max =         38

                                            Wald chi2(8)       =    1861.86
corr(u_i, X)   = 0 (assumed)                Prob > chi2        =     0.0000

------------------------------------------------------------------------------
         LTC |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        LGDP |  -.2709888   .0451743    -6.00   0.000    -.3595289   -.1824488
         FHI |  -.1356097    .020498    -6.62   0.000     -.175785   -.0954344
        LNEX |   .0832974   .0176928     4.71   0.000     .0486201    .1179748
       DURTC |   .0674998   .0056736    11.90   0.000     .0563799    .0786198
           P |  -.4367394   .1977963    -2.21   0.027     -.824413   -.0490659
           Q |   .0906639    .154315     0.59   0.557     -.211788    .3931158
           R |    .627864   .1085812     5.78   0.000     .4150487    .8406793
           S |   .1893743    .068327     2.77   0.006     .0554559    .3232927
       _cons |  -.1335222   .4239641    -0.31   0.753    -.9644765    .6974322
-------------+----------------------------------------------------------------
     sigma_u |  1.2356212
     sigma_e |  .92769869
         rho |  .63951145   (fraction of variance due to u_i)
------------------------------------------------------------------------------

87 .
88 . xtreg LTC LGDP FHI LNEX DURTC P Q R S LGDP70 LGDP80 LGDP90 LGDP00

Random-effects GLS regression               Number of obs      =      3,233
Group variable: Num                         Number of groups   =        159

R-sq:                                       Obs per group:
     within  = 0.4201                                     min =          1
     between = 0.2635                                     avg =       20.3
     overall = 0.3238                                     max =         38

                                            Wald chi2(12)      =    2252.03
corr(u_i, X)   = 0 (assumed)                Prob > chi2        =     0.0000

------------------------------------------------------------------------------
         LTC |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        LGDP |  -.6752987   .0561567   -12.03   0.000    -.7853639   -.5652335
         FHI |  -.1065599   .0200982    -5.30   0.000    -.1459516   -.0671683
        LNEX |   .0861251   .0171786     5.01   0.000     .0524556    .1197946
       DURTC |   .0650869   .0055279    11.77   0.000     .0542524    .0759215
           P |  -4.974887   .5660467    -8.79   0.000    -6.084318   -3.865455
           Q |  -4.702372   .4208907   -11.17   0.000    -5.527302   -3.877441
           R |  -4.557789   .3636354   -12.53   0.000    -5.270501   -3.845077
           S |  -3.025103   .3482863    -8.69   0.000    -3.707731   -2.342474
      LGDP70 |   .5902869   .0760604     7.76   0.000     .4412114    .7393625
      LGDP80 |   .6240635   .0530136    11.77   0.000     .5201589    .7279682
      LGDP90 |   .6740007    .044785    15.05   0.000     .5862238    .7617776
      LGDP00 |   .4008411   .0430268     9.32   0.000     .3165102     .485172
       _cons |   3.011201   .5095164     5.91   0.000     2.012567    4.009835
-------------+----------------------------------------------------------------
     sigma_u |    1.23259
     sigma_e |  .89125849
         rho |  .65666713   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
89 .
90 . xtreg LTC LGDP FHI LNEX DURTC P Q R S FHI70 FHI80 FHI90 FHI00

   Random-effects GLS regression                Number of obs    =      3,233
   Group variable: Num                          Number of groups =        159

   R-sq:                                        Obs per group:
        within  = 0.3889                                    min =          1
        between = 0.2846                                    avg =       20.3
        overall = 0.3369                                    max =         38

                                                Wald chi2(12)    =    1996.93
   corr(u_i, X)  = 0 (assumed)                  Prob > chi2      =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2821453	.0465937	-6.06	0.000	-.3734673	-.1908234
FHI	.0634514	.0339785	1.87	0.062	-.0031452	.130048
LNEX	.0913783	.0175302	5.21	0.000	.0570198	.1257368
DURTC	.0666836	.0056374	11.83	0.000	.0556344	.0777327
P	.1311949	.2774117	0.47	0.636	-.412522	.6749119
Q	.8037333	.2039132	3.94	0.000	.4040708	1.203396
R	1.673401	.1570039	10.66	0.000	1.365679	1.981123
S	.7474685	.1280587	5.84	0.000	.496478	.9984591
FHI70	-.1772718	.0484571	-3.66	0.000	-.272246	-.0822976
FHI80	-.2099045	.0360767	-5.82	0.000	-.2806136	-.1391954
FHI90	-.298765	.0329157	-9.08	0.000	-.3632786	-.2342515
FHI00	-.1625111	.0317443	-5.12	0.000	-.2247289	-.1002933
_cons	-.8461188	.4472495	-1.89	0.059	-1.722712	.0304741

```
   sigma_u    1.2345612
   sigma_e    .91538696
       rho    .64525538   (fraction of variance due to u_i)


91 .
92 . xtreg LTC LGDP FHI LNEX DURTC P Q R S LNEX70 LNEX80 LNEX90 LNEX00

   Random-effects GLS regression                Number of obs    =      3,233
   Group variable: Num                          Number of groups =        159

   R-sq:                                        Obs per group:
        within  = 0.4179                                    min =          1
        between = 0.3248                                    avg =       20.3
        overall = 0.3611                                    max =         38

                                                Wald chi2(12)    =    2253.06
   corr(u_i, X)  = 0 (assumed)                  Prob > chi2      =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2401513	.0438037	-5.48	0.000	-.326005	-.1542976
FHI	-.1064171	.0199791	-5.33	0.000	-.1455755	-.0672586
LNEX	-.0862463	.0246758	-3.50	0.000	-.13461	-.0378826
DURTC	.0698287	.0054782	12.75	0.000	.0590916	.0805657
P	-5.794504	.709545	-8.17	0.000	-7.185187	-4.403822
Q	-5.579159	.480789	-11.60	0.000	-6.521488	-4.63683
R	-4.152639	.4437211	-9.36	0.000	-5.022317	-3.282962
S	-1.488372	.4140923	-3.59	0.000	-2.299978	-.676766
LNEX70	.3070462	.0383242	8.01	0.000	.231932	.3821603
LNEX80	.3255831	.0259683	12.54	0.000	.2746863	.37648
LNEX90	.2717468	.0241584	11.25	0.000	.2243973	.3190964
LNEX00	.0945583	.0228316	4.14	0.000	.0498091	.1393074
_cons	2.444632	.5209325	4.69	0.000	1.423623	3.465641

```
   sigma_u    1.1908217
   sigma_e    .89322659
       rho    .63994307   (fraction of variance due to u_i)
```

```
93 .
94 . xtreg LTC LGDP FHI LNEX DURTC P Q R S DTC70 DTC80 DTC90 DTC00

Random-effects GLS regression            Number of obs      =       3,233
Group variable: Num                      Number of groups   =         159

R-sq:                                    Obs per group:
     within  = 0.3972                         min =             1
     between = 0.3373                         avg =          20.3
     overall = 0.3682                         max =            38

                                         Wald chi2(12)      =     2076.32
corr(u_i, X)   = 0 (assumed)             Prob > chi2        =      0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2734381	.0440782	-6.20	0.000	-.3598298	-.1870465
FHI	-.1051657	.0202952	-5.18	0.000	-.1449436	-.0653878
LNEX	.0776649	.0173647	4.47	0.000	.0436307	.1116991
DURTC	.0437269	.0073651	5.94	0.000	.0292916	.0581622
P	-2.095576	.3253076	-6.44	0.000	-2.733167	-1.457985
Q	-1.71546	.2662806	-6.44	0.000	-2.237361	-1.19356
R	-.4106079	.2283748	-1.80	0.072	-.8582143	.0369985
S	-.0402161	.2072696	-0.19	0.846	-.4464571	.3660249
DTC70	.1328041	.0271688	4.89	0.000	.0795542	.186054
DTC80	.0943111	.0097172	9.71	0.000	.0752657	.1133565
DTC90	.0322463	.0067093	4.81	0.000	.0190962	.0453964
DTC00	.0023008	.0058742	0.39	0.695	-.0092125	.013814
_cons	.6997269	.4561571	1.53	0.125	-.1943245	1.593778

```
     sigma_u   1.1810457
     sigma_e    .90853374
         rho    .62823373   (fraction of variance due to u_i)


95 .
96 .
97 .
98 . xtreg LGA LGDP LNEX DURGA P Q R S

Random-effects GLS regression            Number of obs      =       2,465
Group variable: Num                      Number of groups   =         148

R-sq:                                    Obs per group:
     within  = 0.1308                         min =             1
     between = 0.5758                         avg =          16.7
     overall = 0.4027                         max =            38

                                         Wald chi2(7)       =      552.27
corr(u_i, X)   = 0 (assumed)             Prob > chi2        =      0.0000
```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.6435704	.058157	-11.07	0.000	-.7575561	-.5295847
LNEX	.1298457	.0245695	5.28	0.000	.0816905	.178001
DURGA	.0698337	.0069413	10.06	0.000	.0562289	.0834384
P	-1.043643	.2759552	-3.78	0.000	-1.584505	-.5027804
Q	-.0960205	.2005318	-0.48	0.632	-.4890556	.2970146
R	.3164872	.1478752	2.14	0.032	.0266571	.6063172
S	-.2112333	.0993511	-2.13	0.033	-.4059578	-.0165087
_cons	2.500737	.5497889	4.55	0.000	1.42317	3.578303

```
     sigma_u    .94459739
     sigma_e   1.2715576
         rho    .35560801   (fraction of variance due to u_i)
```

```
 99 .
100 . xtreg LGA LGDP LNEX DURGA P Q R S LGDP70 LGDP80 LGDP90 LGDP00

      Random-effects GLS regression              Number of obs     =      2,465
      Group variable: Num                        Number of groups  =        148

      R-sq:                                       Obs per group:
           within  = 0.1451                                 min =          1
           between = 0.5663                                 avg =       16.7
           overall = 0.4049                                 max =         38

                                                  Wald chi2(11)     =     596.39
      corr(u_i, X)  = 0 (assumed)                 Prob > chi2       =     0.0000

  ------------------------------------------------------------------------------
          LGA  |     Coef.    Std. Err.      z    P>|z|    [95% Conf. Interval]
  -------------+----------------------------------------------------------------
         LGDP  | -.8943935    .083551    -10.70   0.000   -1.05815    -.7306366
         LNEX  |  .1211039   .0245177      4.94   0.000   .0730501     .1691576
        DURGA  |  .0701304   .0069447     10.10   0.000   .0565191     .0837418
            P  | -5.058671   1.356908     -3.73   0.000  -7.718161    -2.399181
            Q  | -.2535787   .7462322     -0.34   0.734  -1.716167     1.20901
            R  | -2.091528    .632744     -3.31   0.001  -3.331684    -.8513727
            S  | -2.704394   .6016735     -4.49   0.000  -3.883652    -1.525135
       LGDP70  |  .5875006   .2083009      2.82   0.005   .1792384     .9957629
       LGDP80  | -.0276336   .1016093     -0.27   0.786  -.2267842      .171517
       LGDP90  |  .3209575   .0827356      3.88   0.000   .1587986     .4831163
       LGDP00  |  .3272652   .0778013      4.21   0.000   .1747773      .479753
        _cons  |  4.583331    .742985      6.17   0.000   3.127107     6.039555
  -------------+----------------------------------------------------------------
      sigma_u  |  .93819579
      sigma_e  |  1.2622446
          rho  |  .35586055   (fraction of variance due to u_i)
  ------------------------------------------------------------------------------

101 .
102 . xtreg LGA LGDP LNEX DURGA P Q R S LNEX70 LNEX80 LNEX90 LNEX00

      Random-effects GLS regression              Number of obs     =      2,465
      Group variable: Num                        Number of groups  =        148

      R-sq:                                       Obs per group:
           within  = 0.1360                                 min =          1
           between = 0.5723                                 avg =       16.7
           overall = 0.4057                                 max =         38

                                                  Wald chi2(11)     =     566.76
      corr(u_i, X)  = 0 (assumed)                 Prob > chi2       =     0.0000

  ------------------------------------------------------------------------------
          LGA  |     Coef.    Std. Err.      z    P>|z|    [95% Conf. Interval]
  -------------+----------------------------------------------------------------
         LGDP  | -.6401332   .0581669    -11.01   0.000   -.7541381    -.5261282
         LNEX  |  .0495715   .0381411      1.30   0.194   -.0251837     .1243268
        DURGA  |  .0709325   .0069464     10.21   0.000    .0573179     .0845472
            P  | -4.903267   1.601551     -3.06   0.002   -8.042249    -1.764285
            Q  | -2.037882   .7762749     -2.63   0.009   -3.559353     -.516411
            R  | -1.813679   .7221632     -2.51   0.012   -3.229093    -.3982651
            S  | -1.372968   .6692969     -2.05   0.040   -2.684765    -.0611698
       LNEX70  |  .2206752   .0893836      2.47   0.014    .0454866     .3958638
       LNEX80  |  .1122589   .0432352      2.60   0.009    .0275194     .1969984
       LNEX90  |   .122081   .0403819      3.02   0.003     .042934     .2012281
       LNEX00  |  .0659715   .0375514      1.76   0.079   -.0076278     .1395709
        _cons  |  3.856798   .7549723      5.11   0.000    2.377079     5.336516
  -------------+----------------------------------------------------------------
      sigma_u  |  .94459355
      sigma_e  |  1.2684672
          rho  |  .35672214   (fraction of variance due to u_i)
  ------------------------------------------------------------------------------
```

```
103 .
104 . xtreg LGA LGDP LNEX DURGA P Q R S DGA70 DGA80 DGA90 DGA00

    Random-effects GLS regression              Number of obs      =      2,465
    Group variable: Num                        Number of groups   =        148

    R-sq:                                      Obs per group:
        within  = 0.1652                                      min =          1
        between = 0.6122                                      avg =       16.7
        overall = 0.4354                                      max =         38

                                               Wald chi2(11)      =     673.63
    corr(u_i, X)  = 0 (assumed)                Prob > chi2        =     0.0000
```

LGA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.6354178	.0572698	-11.10	0.000	-.7476646	-.523171
LNEX	.1231946	.0241693	5.10	0.000	.0758237	.1705656
DURGA	.0493917	.0095912	5.15	0.000	.0305932	.0681901
P	-2.131418	.409924	-5.20	0.000	-2.934855	-1.327982
Q	-1.634234	.302534	-5.40	0.000	-2.22719	-1.041279
R	-.5401354	.2775776	-1.95	0.052	-1.084177	.0039066
S	-.502005	.2575588	-1.95	0.051	-1.006811	.0028009
DGA70	.1601356	.0544606	2.94	0.003	.0533948	.2668763
DGA80	.1473921	.0161089	9.15	0.000	.1158193	.1789649
DGA90	.0408312	.0109582	3.73	0.000	.0193535	.062309
DGA00	.0075231	.0092056	0.82	0.414	-.0105195	.0255657
_cons	3.112797	.5775011	5.39	0.000	1.980916	4.244679

```
    sigma_u | .93367817
    sigma_e | 1.2462099
        rho | .3595171    (fraction of variance due to u_i)


105 .
106 .
107 .
108 . xtreg LTC LGDP LNEX DURTC P Q R S

    Random-effects GLS regression              Number of obs      =      3,332
    Group variable: Num                        Number of groups   =        161

    R-sq:                                      Obs per group:
        within  = 0.3664                                      min =          1
        between = 0.3291                                      avg =       20.7
        overall = 0.3379                                      max =         38

                                               Wald chi2(7)       =    1893.61
    corr(u_i, X)  = 0 (assumed)                Prob > chi2        =     0.0000
```

LTC	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LGDP	-.2341813	.0439741	-5.33	0.000	-.320369	-.1479936
LNEX	.0824399	.0174625	4.72	0.000	.048214	.1166657
DURTC	.0682408	.0056113	12.16	0.000	.0572428	.0792388
P	-.4652458	.1962674	-2.37	0.018	-.8499229	-.0805687
Q	.0436605	.1540235	0.28	0.777	-.25822	.345541
R	.6372023	.1080508	5.90	0.000	.4254267	.8489779
S	.2050275	.0681583	3.01	0.003	.0714397	.3386154
_cons	-.9444993	.4014635	-2.35	0.019	-1.731353	-.1576453

```
    sigma_u | 1.2272876
    sigma_e | .93316841
        rho | .63366037   (fraction of variance due to u_i)
```

```
109 .
110 . xtreg LTC LGDP LNEX DURTC P Q R S LGDP70 LGDP80 LGDP90 LGDP00

     Random-effects GLS regression              Number of obs    =      3,332
     Group variable: Num                        Number of groups =        161

     R-sq:                                       Obs per group:
          within  = 0.4184                               min =          1
          between = 0.2872                               avg =       20.7
          overall = 0.3300                               max =         38

                                                 Wald chi2(11)    =    2310.58
     corr(u_i, X)   = 0 (assumed)                Prob > chi2      =     0.0000

          LTC  |     Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]
    ----------+--------------------------------------------------------------------
         LGDP  |  -.6513416   .0553132   -11.78    0.000    -.7597535    -.5429298
         LNEX  |   .0854004    .016929     5.04    0.000     .0522203     .1185806
        DURTC  |   .0660598   .0054634    12.09    0.000     .0553516     .0767679
            P  |  -5.251799   .5633415    -9.32    0.000    -6.355929    -4.14767
            Q  |  -4.932271   .4113509   -11.99    0.000    -5.738504    -4.126038
            R  |  -4.621709    .363719   -12.71    0.000    -5.334585    -3.908833
            S  |  -3.008332   .3490713    -8.62    0.000    -3.692499    -2.324164
       LGDP70  |   .6297893   .0757817     8.31    0.000     .4812598     .7783188
       LGDP80  |   .6525546   .0515831    12.65    0.000     .5514537     .7536556
       LGDP90  |   .6841194   .0447882    15.27    0.000     .5963362     .7719026
       LGDP00  |   .4007235   .0431329     9.29    0.000     .3161846     .4852624
        _cons  |   2.386547   .4919986     4.85    0.000     1.422248     3.350847
    ----------+--------------------------------------------------------------------
      sigma_u  |   1.228263
      sigma_e  |  .89406128
          rho  |  .65365944   (fraction of variance due to u_i)

111 .
112 . xtreg LTC LGDP LNEX DURTC P Q R S LNEX70 LNEX80 LNEX90 LNEX00

     Random-effects GLS regression              Number of obs    =      3,332
     Group variable: Num                        Number of groups =        161

     R-sq:                                       Obs per group:
          within  = 0.4142                               min =          1
          between = 0.3551                               avg =       20.7
          overall = 0.3637                               max =         38

                                                 Wald chi2(11)    =    2300.21
     corr(u_i, X)   = 0 (assumed)                Prob > chi2      =     0.0000

          LTC  |     Coef.    Std. Err.      z     P>|z|     [95% Conf. Interval]
    ----------+--------------------------------------------------------------------
         LGDP  |  -.2047889    .042811    -4.78    0.000    -.2886968     -.120881
         LNEX  |  -.0963566   .0246242    -3.91    0.000    -.1446191    -.0480942
        DURTC  |   .0704896   .0054444    12.95    0.000     .0598187     .0811605
            P  |  -5.925533   .6998624    -8.47    0.000    -7.297238    -4.553828
            Q  |  -5.639149    .468422   -12.04    0.000     -6.55724    -4.721059
            R  |  -4.158418    .443631    -9.37    0.000    -5.027919    -3.288917
            S  |  -1.505015   .4120983    -3.65    0.000    -2.312712    -.6973166
       LNEX70  |   .3137634   .0378761     8.28    0.000     .2395277     .3879991
       LNEX80  |   .3272123   .0252756    12.95    0.000      .277673     .3767515
       LNEX90  |   .2727021   .0241867    11.27    0.000      .225297     .3201072
       LNEX00  |   .0963068   .0227564     4.23    0.000     .0517052     .1409085
        _cons  |   1.915152   .5065842     3.78    0.000      .922265     2.908039
    ----------+--------------------------------------------------------------------
      sigma_u  |  1.2101406
      sigma_e  |  .89776398
          rho  |  .64500841   (fraction of variance due to u_i)
```

```
113 .
114 . xtreg LTC LGDP LNEX DURTC P Q R S DTC70 DTC80 DTC90 DTC00

      Random-effects GLS regression              Number of obs      =      3,332
      Group variable: Num                         Number of groups   =        161

      R-sq:                                        Obs per group:
           within  = 0.3952                               min =          1
           between = 0.3836                               avg =       20.7
           overall = 0.3732                               max =         38

                                                   Wald chi2(11)      =    2140.28
      corr(u_i, X)   = 0 (assumed)                Prob > chi2        =     0.0000

      ─────────────────────────────────────────────────────────────────────────
            LTC  │     Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
      ───────────┼─────────────────────────────────────────────────────────────
           LGDP  │ -.2369442   .0429075    -5.52   0.000    -.3210415   -.152847
           LNEX  │  .0741372   .0171094     4.33   0.000     .0406034    .1076709
          DURTC  │  .0423207   .0073023     5.80   0.000     .0280086    .0566329
              P  │ -2.215739   .3202493    -6.92   0.000    -2.843416   -1.588062
              Q  │ -1.828078   .2614285    -6.99   0.000    -2.340468   -1.315687
              R  │ -.4272451   .2266356    -1.89   0.059    -.8714428    .0169526
              S  │ -.0395073   .2046328    -0.19   0.847    -.4405803    .3615657
          DTC70  │  .1401638   .0267104     5.25   0.000     .0878123    .1925152
          DTC80  │  .0983168   .0093854    10.48   0.000     .0799218    .1167119
          DTC90  │  .0322048   .006687      4.82   0.000     .0190984    .0453111
          DTC00  │  .0023463   .0058201     0.40   0.687    -.0090609    .0137534
          _cons  │  .1280866   .4360481     0.29   0.769    -.7265519    .9827251
      ───────────┼─────────────────────────────────────────────────────────────
        sigma_u  │ 1.1868226
        sigma_e  │  .91188601
            rho  │  .62879246   (fraction of variance due to u_i)
      ─────────────────────────────────────────────────────────────────────────

115 .
116 .
117 .
118 . corr LGA LTC LGDP FHI WGI LNEX DURGA DURTC EA P Q R S LGDP70 LGDP80 LGDP90 LGD
    > P00 FHI70 FHI80 FHI90 FHI00 WGI70 WGI80 WGI90 WGI00 LNEX70 LNEX80 LNEX90 LNEX0
    > 0 DGA70 DGA80 DGA90 DGA00 DTC70 DTC80 DTC90 DTC00 EA70 EA80 EA90 EA00
    (obs=1,240)
```

	LGA	LTC	LGDP	FHI	WGI	LNEX	DURGA
LGA	1.0000						
LTC	0.4607	1.0000					
LGDP	-0.5128	-0.1436	1.0000				
FHI	0.2518	0.0930	-0.4436	1.0000			
WGI	-0.3653	-0.0990	0.6148	-0.7660	1.0000		
LNEX	0.0370	0.4496	0.3199	-0.0861	0.0776	1.0000	
DURGA	0.4422	0.5079	-0.2180	0.0374	-0.1642	0.2366	1.0000
DURTC	0.2522	0.3945	0.0257	0.0932	-0.1180	0.3425	0.7881
EA	0.1682	0.3408	-0.0357	0.0259	-0.0031	0.2102	0.1777
P	.	.	.	.	.	.	.
Q	.	.	.	.	.	.	.
R	0.0527	0.0352	-0.1574	0.0541	0.0080	-0.0142	-0.2570
S	-0.1091	-0.0842	-0.0704	-0.0567	0.0292	-0.0470	-0.1435
LGDP70	.	.	.	.	.	.	.
LGDP80	.	.	.	.	.	.	.
LGDP90	0.0217	0.0419	-0.0998	0.0259	0.0495	0.0096	-0.2677
LGDP00	-0.2009	-0.1134	0.1243	-0.1487	0.1541	0.0212	-0.1980
FHI70	.	.	.	.	.	.	.
FHI80	.	.	.	.	.	.	.
FHI90	0.0722	0.0229	-0.2093	0.1803	-0.0884	-0.0292	-0.2341
FHI00	0.0419	-0.0081	-0.2859	0.4343	-0.3468	-0.0827	-0.0717
WGI70	.	.	.	.	.	.	.
WGI80	.	.	.	.	.	.	.
WGI90	-0.1030	0.0528	0.2794	-0.2203	0.2911	0.0882	0.1081
WGI00	-0.2320	-0.0745	0.5005	-0.5489	0.7198	0.0813	-0.0923
LNEX70	.	.	.	.	.	.	.
LNEX80	.	.	.	.	.	.	.
LNEX90	0.0490	0.0607	-0.1378	0.0484	0.0210	0.0282	-0.2468
LNEX00	-0.1004	-0.0162	-0.0139	-0.0707	0.0426	0.1154	-0.1059

	DURTC	EA	P	Q	R	S	LGDP70
DGA70	.	.	.	.	.	.	.
DGA80	.	.	.	.	.	.	.
DGA90	0.1176	0.1051	-0.1886	0.0491	-0.0079	0.0223	-0.1082
DGA00	0.1189	0.1568	-0.2035	-0.0044	-0.0703	0.0645	0.2898
DTC70	.	.	.	.	.	.	.
DTC80	.	.	.	.	.	.	.
DTC90	0.0718	0.0867	-0.1473	0.0516	0.0108	0.0316	-0.1681
DTC00	0.0038	0.0745	-0.0861	0.0096	-0.0388	0.0991	0.1327
EA70	.	.	.	.	.	.	.
EA80	.	.	.	.	.	.	.
EA90	0.0543	0.1445	-0.0262	0.0338	0.0376	0.1028	0.0017
EA00	0.1166	0.2506	-0.0661	0.0142	-0.0178	0.1246	0.1149

	DURTC	EA	P	Q	R	S	LGDP70
DURTC	1.0000						
EA	0.0367	1.0000					
P	.	.	.				
Q	.	.	.	.			
R	-0.2653	0.0197	.	.	1.0000		
S	-0.1408	0.0094	.	.	-0.4456	1.0000	
LGDP70	.	.	.	.	.	.	.
LGDP80	.	.	.	.	.	.	.
LGDP90	-0.2617	0.0217	.	.	0.9853	-0.4390	.
LGDP00	-0.1483	-0.0049	.	.	-0.4319	0.9693	.
FHI70	.	.	.	.	.	.	.
FHI80	.	.	.	.	.	.	.
FHI90	-0.2413	0.0279	.	.	0.9142	-0.4074	.
FHI00	-0.0400	0.0214	.	.	-0.3538	0.7940	.
WGI70	.	.	.	.	.	.	.
WGI80	.	.	.	.	.	.	.
WGI90	0.1397	0.0244	.	.	-0.5034	0.2243	.
WGI00	-0.0685	-0.0245	.	.	0.1624	-0.3646	.
LNEX70	.	.	.	.	.	.	.
LNEX80	.	.	.	.	.	.	.
LNEX90	-0.2495	0.0359	.	.	0.9914	-0.4417	.
LNEX00	-0.0809	0.0365	.	.	-0.4362	0.9789	.
DGA70	.	.	.	.	.	.	.
DGA80	.	.	.	.	.	.	.
DGA90	-0.1412	0.0605	.	.	0.8870	-0.3952	.
DGA00	0.1977	0.0924	.	.	-0.3683	0.8266	.
DTC70	.	.	.	.	.	.	.
DTC80	.	.	.	.	.	.	.
DTC90	-0.1473	0.0389	.	.	0.9306	-0.4147	.
DTC00	0.2228	0.0182	.	.	-0.3930	0.8820	.
EA70	.	.	.	.	.	.	.
EA80	.	.	.	.	.	.	.
EA90	-0.0235	0.3635	.	.	0.2406	-0.1072	.
EA00	-0.0015	0.7862	.	.	-0.0657	0.1475	.

	LGDP80	LGDP90	LGDP00	FHI70	FHI80	FHI90	FHI00
LGDP80	.						
LGDP90	.	1.0000					
LGDP00	.	-0.4256	1.0000				
FHI70	.	.	.	.			
FHI80	.	.	.	.	.		
FHI90	.	0.8664	-0.3948	.	.	1.0000	
FHI00	.	-0.3486	0.6973	.	.	-0.3234	1.0000
WGI70	.	.	.	.	.	.	.
WGI80	.	.	.	.	.	.	.
WGI90	.	-0.3908	0.2174	.	.	-0.7025	0.1781
WGI00	.	0.1601	-0.2041	.	.	0.1485	-0.7287
LNEX70	.	.	.	.	.	.	.
LNEX80	.	.	.	.	.	.	.
LNEX90	.	0.9864	-0.4282	.	.	0.8998	-0.3507
LNEX00	.	-0.4298	0.9661	.	.	-0.3988	0.7654
DGA70	.	.	.	.	.	.	.
DGA80	.	.	.	.	.	.	.
DGA90	.	0.8482	-0.3831	.	.	0.8123	-0.3138
DGA00	.	-0.3629	0.7556	.	.	-0.3367	0.6891
DTC70	.	.	.	.	.	.	.
DTC80	.	.	.	.	.	.	.
DTC90	.	0.9165	-0.4019	.	.	0.8524	-0.3292

DTC00	.	-0.3872	0.8474	.	.	-0.3593	0.7462
EA70	.	.	.	.	.	.	.
EA80	.	.	.	.	.	.	.
EA90	.	0.2433	-0.1039	.	.	0.2461	-0.0851
EA00	.	-0.0647	0.1254	.	.	-0.0601	0.1345

	WGI70	WGI80	WGI90	WGI00	LNEX70	LNEX80	LNEX90
WGI70	.						
WGI80	.	.					
WGI90	.	.	1.0000				
WGI00	.	.	-0.0818	1.0000			
LNEX70	.	.	.	.	.		
LNEX80	.	.	.	.	.	.	
LNEX90	.	.	-0.4662	0.1610	.	.	1.0000
LNEX00	.	.	0.2196	-0.3402	.	.	-0.4324
DGA70	.	.	.	.	.	.	.
DGA80	.	.	.	.	.	.	.
DGA90	.	.	-0.4845	0.1441	.	.	0.8935
DGA00	.	.	0.1854	-0.4135	.	.	-0.3652
DTC70	.	.	.	.	.	.	.
DTC80	.	.	.	.	.	.	.
DTC90	.	.	-0.4601	0.1512	.	.	0.9408
DTC00	.	.	0.1978	-0.3982	.	.	-0.3896
EA70	.	.	.	.	.	.	.
EA80	.	.	.	.	.	.	.
EA90	.	.	-0.0310	0.0391	.	.	0.2817
EA00	.	.	0.0331	-0.0800	.	.	-0.0651

	LNEX00	DGA70	DGA80	DGA90	DGA00	DTC70	DTC80
LNEX00	1.0000						
DGA70	.	.					
DGA80	.	.	.				
DGA90	-0.3869	.	.	1.0000			
DGA00	0.8360	.	.	-0.3267	1.0000		
DTC70	.	.	.	.	.	.	
DTC80	.	.	.	.	.	.	.
DTC90	-0.4059	.	.	0.9520	-0.3428	.	.
DTC00	0.8998	.	.	-0.3486	0.9301	.	.
EA70	.	.	.	.	.	.	.
EA80	.	.	.	.	.	.	.
EA90	-0.1050	.	.	0.3266	-0.0886	.	.
EA00	0.1784	.	.	-0.0583	0.2274	.	.

	DTC90	DTC00	EA70	EA80	EA90	EA00
DTC90	1.0000					
DTC00	-0.3657	1.0000				
EA70	.	.	.			
EA80	.	.	.	.		
EA90	0.2782	-0.0946	.	.	1.0000	
EA00	-0.0611	0.1424	.	.	-0.0158	1.0000

119 .
120 .
121 .
122 .
123 .