# Governance, Foreign Direct Investment, and Economic Growth

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**Abstract:**

This study focuses mainly on the impacts of governance in attracting Foreign Direct Investment (FDI)[1] and promoting domestic investment and growth performance in three different income groups of countries: low income, middle income, and high income groups. By using intra group regression method, we find that, in general, governance is positively correlated with per capita income growth rate in the middle income and high income groups. However, no correlation can be found in the low income group.

In low income countries, governance is found to have a positive relationship with total investment (domestic investment plus FDI) ratio but not with FDI inflow ratio, suggesting the impacts of governance on domestic investment. However, in the middle income countries, despite differences among governance elements, governance is generally found to have more influence on FDI inflow than on domestic investment. Interestingly, in high income countries, governance shows very limited impact on both domestic investment and FDI, suggesting the independence of investment decisions from governance factors.

## 1. Introduction

So far, two major theories have been established to explain cross-country differences in income level and growth rate. First, the neoclassical theory of economic growth stresses the role of physical and human capital in the production process. This theory was based on Solow (1956) and then extended by many researchers including Lucas (1988) and Romer (1986, 1990). Second, the institutional approach stresses the importance of institutional environment that is generally supporting markets. Studies by North (1990), Barro (1996), Hall and Jones (1999) reflect the role of this institutional perspective.

Many other studies have also investigated the influence of political institutions on growth performance. Kaufmann et al. (1999) constructed six aggregate governance indicators corresponding to six fundamental governance concepts, used in this study for the middle and high income groups. In their cross-country analysis of between 155 and 173 countries based on data for 1997 and 1998, Kaufmann et al. found that one standard deviation improvement in aggregate governance indicators led to a 2.5 percentage point increase in per capita income. In their later study, Kaufmann and Kray (2002, 2003) found a strong causal relationship between better governance and higher per capita income. Gwartney and Lawson (2003) constructed Economic Freedom of the World (EFW) that incorporates 38 components to measure a nation's institution. Using that EFW index, Gwartney et al.

(2006) found that one unit increase in EFW (1980) is associated with a 2.59 percentage point increase in private investment/GDP ratio and each unit increase in private investment/GDP ratio is associated with a 0.47 percentage point increase in per capita GDP growth rate.

However, so far most of the existing studies mainly discussed only the direct relationship between governance and economic growth rate for all income groups at a time. Therefore, they could neither see the different impacts of governance on each income group (low income, middle income, and high income groups) nor the channels through which governance affects growth. In this study the author hypothesizes that governance affects growth rate directly and indirectly through the channels of either domestic investment or FDI depending on the stage of development. To investigate the impacts of governance in each income group, the author classifies the sample countries into three separate income groups: low income, middle income, and high income. The analyses are also divided into three main steps. Step 1 (in equation 1) investigates the impacts of governance on per capita growth performance, where per capita growth rate is taken as dependent variable. Step 2 (in equation 2) investigates the impacts of governance on total investment-GDP ratio, where total investment-GDP ratio is taken as dependent variable. Step 3 (in equation 3) analyses the relationship between governance and FDI inflow, where FDI inflow ratio is taken as dependent variable.

## 2. Analytical Framework

The relationships among governance, FDI and economic growth differ depending on a country's stage of development. Low income economies, in general, have limited resources (both physical and human) and attract only a limited amount of FDI inflow, a large portion of which is resource-seeking FDI. This type of FDI is generally considered location-specific and not a subject of competition with other FDI recipient countries. In a comparison with low income states, middle income economies have better basic infrastructure and supporting domestic industries. With these minimum sufficient conditions in place, market-seeking FDI and efficiency-seeking FDI find it easier to operate in the middle income than in the low income states. And since manufacturing production costs generally shoot up as an economy develops, market-seeking FDI seems to be replaced by strategic asset-seeking FDI in high income economies (Narula and Dunning, 2000).

There are many factors and elements that affect growth performance. Among them, human and physical resources are the major production inputs. Meanwhile, governance also affects growth. It affects growth of a country through the management of those resources. In general, if the governance is good the economy tends to grow faster. On the contrary, if the governance is bad the economy tends to slow down. As such, in the low income counties, where resources are limited, naturally the quality of governance is considered to play a limited role in economic growth. However, in middle and high income countries, since the amounts of both physical and human resources are likely to increase,

**Figure 1: Relation among Governance, FDI, and Economic Growth**
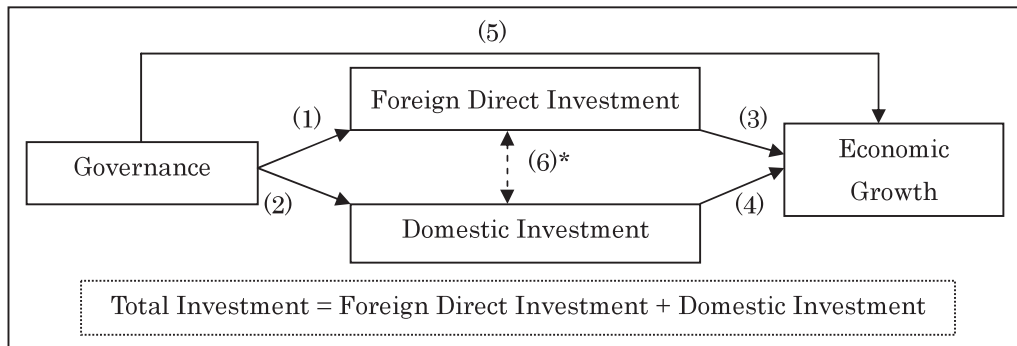


Source: Author
Note: (6)*: There is an important relationship between domestic investment and FDI, this is not the issue discussed in this
paper.

therefore the impact of governance quality on economic performance can also be considered increasingly important.

On the other hand, most economists also accept that a positive connection exists between total investment and economic growth. If governance affects total investment, then it also affects economic growth. In most cases, if not all, FDI is also considered to have a positive relationship with economic growth of a recipient country. By the same logic, if governance quality affects FDI, it also affects economic growth through this FDI channel.

Total investment is the summation of domestic investment and FDI. If governance affects total investment but not through the channel of FDI, we can conclude that governance affects through the channel of domestic investment and vice versa. The relationships among governance, FDI and Economic growth are summarized in figure 1.


## 3. Data, Regression Models, and Methods

### 3.1   Data

The data used in the analyses comes from four different sources. First, variables such as per capita growth rate, initial real per capita GDP, ratio of trade to GDP, inflation rate, general government final consumption expenditure (GGFCE), life expectancy at birth, and education enrollment rate for 1991 are from the World Development Indicators (WDI) 2006. But educational enrollment rate for 1985 is from Barro and Lee (1993). Second, political rights and civil liberties, used as proxies for democracy variables, are from Freedom House 2006, ranging from 1(worst) to 7 (best).

Third, the governance indicator for the low income group is derived from Country Policy and Institutional Assessments (CPIA) 2005, which is the newest available data. However, the limitation of this data is that it covers only cross-country, but not time-series. This data set was established by the

World Bank to assess the quality of a country's policy and institutional framework. CPIA data covers mainly member countries of International Development Association (IDA), with a rating system ranging from 1 (worst) to 6 (best). This data is comprised of 16 criteria and grouped into four clusters:

1. *Economic Management* includes 1) macroeconomic management, 2) fiscal policy, and 3) debt policy;
2. *Structural Policies* include 1) trade, 2) financial sector, and 3) business regulatory environment;
3. *Policies for Social Inclusion/Equity* include 1) gender equality, 2) equity of public resource use, 3) building human resources, 4) social protection and labor, and 5) policies and institutions for environmental sustainability;
4. *Public Sector Management and Institutions* include 1) property rights and rule-based governance, 2) quality of budgetary and financial management, 3) efficiency of revenue mobilization, 4) quality of public administration, and 5) transparency, accountability, and corruption in the public sector.

Fourth, governance indicators for middle income and high income groups are taken from the International Country Risk Guide (ICRG) 2003. The ICRG data set is originally generated from its political risk indicators. Actually, this ICRG political risk rating system itself does not have governance indicators, but given its advantage of broad coverage both across countries (mainly for middle and high income countries) and over time, the World Bank transformed this data set into governance indicators, ranging from 1 (worst) to 12 (best). Although the classification of governance indicators in this ICRG data set is somehow different from the CPIA one, the two data sets mainly cover the same elements of governance. Hence, the interpretation of the impact of governance on growth rate for low income, middle income and high income countries should not be very different.

ICRG governance indicators are classified into 6 groups:

1. *Voice and Accountability* - measuring political, civil, and human rights;
2. *Political Stability* － measuring the likelihood of violent threats to, or change in, government, including terrorism;
3. *Government Effectiveness* － measuring the competence of the bureaucracy and the quality of public service delivery;
4. *Regulatory Quality* － measuring the incidence of market-friendly policies;
5. *Rule of Law* － measuring the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence;
6. *Control of Corruption* － measuring the exercise of public power for private gain, including both petty and grand corruption and state capture.

## 3.2   Regression Models:

In this study, the author follows Barro's (1996) ad hoc growth equation and then extends it by adding governance as explanatory variables. As seen in Barro (1996), in equation form, the model can

be represented as:

$$Dy = f(y, y^*)$$

where $Dy$ is the growth rate of per capita output, $y$ is the current level of per capita output, and $y^*$ is the long-run or steady-state level of per capita output. The growth rate, $Dy$, is diminishing in y for given $y^*$ and rising in $y^*$ for given $y$. In a word, Barro's main hypothesis is the conditional convergence between the poorer states and the richer states in the long run. Other explanatory variables (trade ratio, inflation, education, government size, rule of law, etc) are utilized because they define the long term growth rate.

Specifically, the main purpose of this paper is to examine the impact of governance quality on FDI, domestic investment, and GDP growth rate in different income groups. The author hypothesizes that governance should play a relatively more significant role in bringing about higher GDP growth and in inducing FDI inflow into the middle income economies, where resources are relatively abundant, than in low income economies, where resources are limited.

Representative models of the regressions are as below:

*Per capita growth rate as dependent variable:*

GDP＝f (c, initial level of income, trade openness, macroeconomic management, health condition,
 fertility rate, initial educational attainment, democracy, governance)                    (1)


*Investment ratio as dependent variable:*

INV/GDP＝f (c, initial level of income, trade openness, macroeconomic management, health condition,
 fertility rate, initial educational attainment, democracy, governance)                    (2)


*FDI ratio as dependent variable:*

FDI/GDP＝f (c, initial level of income, trade openness, macroeconomic management, health condition,
 fertility rate, initial educational attainment, democracy, governance)                    (3)


In equation 1, it is noteworthy that total investment is not included as an explanatory variable. However, this total investment is taken as dependent variable in equation 2 by leaving the explanatory variables basically the same as equation 1. This is a two stage regression method because the author wishes to capture marginal effects of explanatory variables on per capita growth rate. Since total investment ratio is a major variable in explaining growth rate, in many cases, it is likely to capture a major effect on growth performance and cause other marginal variables to be statistically insignificant. Similarly, in equation 3 where FDI ratio is taken as dependent variable, controlled variables are also basically held the same as in equation 1. By doing so, we can examine whether those explanatory variables influence growth performance directly or through the channels of total investment or FDI. For robustness check, White Heteroskedasticity consistent coefficient covariance has been employed.

<div align="center">**Table 1: Summary of actual variables used in the regression analysis**</div>

| | |
|---|---|
| Y | : Average per capita GDP growth rate for each period |
| INV/GDP | : Average ratio of total investment ratio to GDP for each period |
| FDI/GDP | : Average ratio of FDI inflow to GDP for each period |
| Ln | : Natural log of real per capita GDP for initial year. |
| Trade | : Average ratio of trade to GDP for each period |
| Inflation | : Average inflation rate (GDP deflator) for each period |
| GGFCE | : Average ratio of general government final consumption expenditure (proxy of government size) for each period. |
| Life | : Average life expectancy at birth for each period. |
| Fertility | : Average total fertility rate for each period. |
| Primary | : Gross primary enrollment rate of initial period. |
| Secondary | : Gross secondary enrollment rate of initial period. |
| Malesec | : Gross male secondary enrollment rate of initial period. |
| Democracy | : PR: Average political rights index for each period. |
| | CL: Average civil liberties index for each period. |
| Governance (low Income): | EM: Economic management index for 2005. |
| | SP: Structural Policies index for 2005. |
| | PSIE: Policies for social inclusion/equity index for 2005. |
| | PSMI: Public sector management and institutions index for 2005 |
| Governance (middle and high income): | |
| | VA: Average voice and accountability index for each period. |
| | PS: Average political stability index for each period. |
| | GE: Average government effectiveness index for each period. |
| | RQ: Average regulatory index for each period. |
| | RL: Average rule of law index for each period. |
| | CC: Average control of corruption index for each period. |

In these analyses, both non-governance and governance variables are incorporated. Non-governance variables include: 1) Initial level of real per capita GDP represents the level of conditional convergence between the poor and the rich states in the long run. Hence, the expected sign of estimated coefficient is negative. 2) Trade openness represents the degree of trade openness of an economy. 3) The macroeconomic management component used here is composed of inflation rate, general government final consumption expenditure (GGFCE). Inflation rate represents the fluctuation of inflation. The effect of inflation differs largely according to its degree. For example, chronic or hyper inflation adversely affects growth rate while stable and low level of inflation tends to contribute to growth. GGFCE represents the size of government. It is predicted to have a negative coefficient with growth rate because relatively bigger government tends to use a large volume of money unproductively. Another reason is that government spending is closely associated with taxation, and thus may reduce growth rate. 4) Life expectancy here is used as a proxy to explain the health condition of the population. Hence, positive estimated correlation with growth rate is expected. 5)

Fertility rate variable represents the population pressure on per capita income growth rate. It is expected to be negatively correlated with growth rate because the fruit of development has to be shared by a larger population. 6) Initial educational enrollment rate represents the initial level of human capital and is divided into gross primary enrollment rate, gross secondary enrollment rate, and male secondary enrollment rate.

Democracy can be treated as part of the governance variables to represent the degree of political rights and civil liberties in an economy. The focused governance variables used in this study are divided into two parts. CPAI governance variables were used for low income countries and ICRG governance variables were used for middle income and high income countries. Details of these variables are explained in section 3.1.

## 3.3   Estimation Methods

As noted earlier, in equations 1, 2, and 3, the average per capita growth rate, investment ratio, and FDI ratio are taken as dependent variables, respectively. All of the regressions employ two-stage least squares method to avoid reverse influences of dependent variables on explanatory variables. In general, the earlier value of each variable is selected and used as instrument. For example, in equation 1 for the low income group, the instrument for average value of 2000–2004 life expectancy is its 1997 value; trade ratio and GGFCE are their 3–year average earlier values; and PR and CL are their 1999 values. The inflation variable is not instrumented here as medium and long term average rate of inflation is considered to be controlled not by growth rate but rather by other elements such as monetary policy and fiscal deficit management. Despite attempts to use instruments for governance variables in the low income group, they cannot be used here based on two reasons: 1) appropriate instruments cannot be found; 2) we assume that there is not much growth-induced change in the governance structure in this 5–year period analysis.

For the middle income and high income groups, the regressions are carried out for two periods (period one: 1986–93, period two: 1994–03). Instruments for the first period for trade ratio, GGFCE, life expectancy, and fertility rate use the 3–year earlier average value and for the second period are their 5–year earlier average values, for example, average value of 1983–85 is instrumented for 1986– 93 equation, and average value of 1989–93 is instrumented for 1994–03 equation. For school enrollment rate no instrument is necessary here because the data used in the analysis is already at its earlier value. And for the same reason as for low income group, no instrument is needed for inflation because growth rate is not considered to affect inflation rate in the medium and long term. For the democracy variable and governance variable, we use earlier average values as instruments, except for regulatory quality for the middle income group. This is because influence of growth rate on regulatory quality is considered very limited. Change of regulatory quality is rather related to systematic/political factors, especially in transition countries, many of which categorized in middle income.

In equation 2, investment ratio as dependent variable, the instrument used for each variable here is also each variable's earlier value, as noted earlier (in equation 1). However, for all governance indicators in the low income group and regulatory quality in the middle income group regressions, instruments are not utilized. Instruments are not used for educational enrollment variables (secondary enrollment, male secondary enrollment) because earlier values are already used. And no instrument is used for inflation variable because it is considered not affected by total investment.

In equation 3, FDI ratio as dependent variable, regression for the low income group uses no instruments for governance indicators for reasons noted earlier. For the middle income group, no instrument for regulatory quality is utilized, and educational enrollment variables and inflation variable are also omitted.

## 4. Results of regression analyses

### 4.1　Governance and Per Capita Growth Performance

#### 4.1.1　Low income Economies

As seen in table 2, variable ln98, which represents initial real per capita income (1998), is negatively associated with growth rate and statistically significant at 10 per cent. A reasonable interpretation is that a relatively lower real per capita state tends to grow faster than a higher one amongst low income states. Thus, we can say that intra group conditional convergence is likely to take place. Although inflation, government size (GGFCE), and secondary enrollment rate shows statistically significant results with expected sign, trade and life expectancy cant not be found significant in here. Democracy indicators, both political rights and civil liberties are found to have negative but statistically insignificant relation with growth. This is probably because democracy in the low income group is still at a low level, namely fledgling democracy. And this fledgling democracy does not necessarily promote  economic growth; instead strong and authoritarian leaders seem to be more able to maintain political stability as can be seen in many countries. However, economic growth here should be carefully distinguished from social development as a whole.

Regarding our governance indicators, $SP_1$ variable has a negative but statistically insignificant relationship with growth (coef$=-1.188$, t$=-0.97$). Other governance variables such as $EM_1$, $PSIE_1$, and $PSMI_1$ have positive but also statistically insignificant relationships with growth. This result justifies the paper's hypothesis. In conclusion, we can say that changes in governance quality in low income countries are not likely to play a crucial role in determining growth performance.

#### 4.1.2　Middle income economies

Regression results for middle income countries for 1986–1993 and 1994–2003, as shown in Table 3, show strong negative and statistically significant correlation between initial GDP and per capita

**Table 2: Regressions for Low Income Economies' Per Capita Growth Rate (2000–2004)**

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| No. of Ob. | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| C | 22.555*** | 22.663*** | 12.997 | 27.733*** | 15.781 | 20.618** | 17.237 |
|  | (3.47) | (3.23) | (1.44) | (2.88) | (1.66) | (2.41) | (1.63) |
| LN98 | −2.446** | −2.450** | −1.676 | −2.521** | −2.144** | −2.328** | −2.140** |
|  | (−2.49) | (−2.37) | (−1.70) | (−2.61) | (−2.35) | (−2.47) | (−2.22) |
| $TRADE_1$ | 0.014 | 0.013 | 0.016 | 0.013 | 0.015 | 0.013 | 0.014 |
|  | (1.02) | (1.03) | (1.30) | (1.00) | (1.21) | (1.09) | (1.17) |
| $INFLATION_1$ | −0.036*** | −0.036*** | −0.026** | −0.043*** | −0.028** | −0.034** | −0.030** |
|  | (−3.88) | (−3.90) | (−2.24) | (−3.07) | (−2.06) | (−2.62) | (−2.02) |
| $GGFCE_1$ | −0.140*** | −0.140*** | −0.115* | −0.174** | −0.143*** | −0.140*** | −0.130** |
|  | (−3.24) | (−3.11) | (−1.89) | (−2.48) | (−2.99) | (−2.90) | (−2.10) |
| $LIFE_1$ | −0.050 | −0.052 | −0.055 | −0.071 | −0.054 | −0.056 | −0.054 |
|  | (−0.76) | (−0.74) | (−0.86) | (−0.90) | (−0.80) | (−0.79) | (−0.75) |
| $SECONDARY_1$ | 0.066** | 0.066** | 0.055** | 0.079*** | 0.060** | 0.067** | 0.062** |
|  | (2.47) | (2.43) | (2.01) | (2.73) | (2.04) | (2.42) | (2.08) |
| $PR_1$ | −0.175 |  |  |  |  |  |  |
|  | (−0.81) |  |  |  |  |  |  |
| $CL_1$ |  | −0.158 |  |  |  |  |  |
|  |  | (−0.57) |  |  |  |  |  |
| $EM_1$ |  |  | 0.985 |  |  |  |  |
|  |  |  | (1.46) |  |  |  |  |
| $SP_1$ |  |  |  | −1.188 |  |  |  |
|  |  |  |  | (−0.97) |  |  |  |
| $PSIE_1$ |  |  |  |  | 1.298 |  |  |
|  |  |  |  |  | (0.95) |  |  |
| $PSMI_1$ |  |  |  |  |  | 0.252 |  |
|  |  |  |  |  |  | (0.20) |  |
| R2 | 0.491 | 0.491 | 0.531 | 0.495 | 0.513 | 0.484 | 0.496 |

Note: number in parentheses (　) is the value of t-statistics.

*: significant at 10%;　**: significant at 5%;　***: significant at 1% (two-tailed).

growth. This result is similar to the low income group, suggesting possible intra group conditional convergence of per capita GDP. Other non-governance variables, in the first period, show the expected sign but are statistically insignificant. However, in the second period, trade ratio measuring the level of trade openness, was found to have a negative but statistically insignificant correlation with GDP growth rate. GGFCE, measuring government size, shows positive relationship. One possible explanation for this result can be evidenced from the empirical facts that many Latin American middle income countries were forced to cut down government expenditure when receiving loan from IMF or WB. The reduction in government spending has led to the reduction in many sectors which were also deemed necessary for economic growth. The reduction in those sectors had probably caused negative

**Table 3: Regressions for Middle Income Economies' Per Capita Income Growth**

1986–1993

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| No. of Ob. | 42 | 42 | 38 | 38 | 38 | 38 | 38 | 38 |
| LN84 | −3.13*** | −3.31*** | −2.71** | −2.91** | −3.08*** | −3.21*** | −3.09*** | −2.82*** |
| | (−3.05) | (−3.16) | (−2.65) | (−2.62) | (−3.42) | (−3.89) | (−2.80) | (−2.85) |
| $TRADE_2$ | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 |
| | (1.01) | (0.65) | (0.57) | (0.74) | (0.95) | (0.37) | (0.55) | (0.52) |
| $INFLATION_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | (−1.20) | (−1.17) | (−1.36) | (−0.95) | (−1.18) | (−0.58) | (−1.26) | (−1.79) |
| $GGFCE_2$ | −0.02 | −0.02 | 0.01 | −0.02 | −0.09 | −0.06 | −0.03 | −0.01 |
| | (−0.19) | (−0.15) | (0.10) | (−0.14) | (−0.60) | (−0.57) | (−0.22) | (−0.07) |
| $LIFE_2$ | 0.10 | 0.09 | 0.08 | 0.08 | 0.10 | 0.14 | 0.07 | 0.06 |
| | (0.76) | (0.71) | (0.64) | (0.69) | (0.96) | (1.27) | (0.64) | (0.53) |
| $PRIMARY_2$ | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 | 0.01 | 0.02 | 0.03 |
| | (0.88) | (0.81) | (0.97) | (0.59) | (0.79) | (0.45) | (0.58) | (0.93) |
| $PR_2$ | 0.44 | | | | | | | |
| | (1.20) | | | | | | | |
| $CL_2$ | | 0.56 | | | | | | |
| | | (1.14) | | | | | | |
| $VA_2$ | | | 0.10 | | | | | |
| | | | (0.45) | | | | | |
| $PS_2$ | | | | 0.19 | | | | |
| | | | | (0.87) | | | | |
| $GE_2$ | | | | | 0.85*** | | | |
| | | | | | (3.16) | | | |
| $RQ_2$ | | | | | | 1.27*** | | |
| | | | | | | (4.44) | | |
| $RL_2$ | | | | | | | 0.59 | |
| | | | | | | | (1.50) | |
| $CC_2$ | | | | | | | | 0.64 |
| | | | | | | | | (1.66) |
| R2 | 0.34 | 0.34 | 0.31 | 0.31 | 0.44 | 0.55 | 0.38 | 0.33 |

1994–2003

| | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|---|---|---|---|---|---|---|---|---|
| No. of Ob. | 51 | 51 | 37 | 37 | 37 | 41 | 37 | 37 |
| LN92 | −1.58** | −1.83* | −2.22** | −2.33*** | −2.33** | −2.48** | −2.16** | −2.54** |
| | (−2.03) | (−1.90) | (−2.35) | (−3.03) | (−2.51) | (−2.60) | (−2.64) | (−2.27) |
| $TRADE_3$ | 0.00 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 | −0.01 |
| | (−0.35) | (−0.62) | (−0.72) | (−1.50) | (−1.06) | (−0.93) | (−1.33) | (−1.36) |
| $INFLATION_3$ | −0.02** | −0.02* | −0.03** | −0.03*** | −0.03** | −0.02** | −0.03*** | −0.03*** |
| | (−2.38) | (−1.96) | (−2.70) | (−3.20) | (−2.72) | (−2.46) | (−2.90) | (−2.90) |
| $GGFCE_3$ | 0.09 | 0.08 | 0.19** | 0.12* | 0.18** | 0.14** | 0.08* | 0.13 |
| | (1.56) | (1.36) | (2.19) | (1.91) | (2.15) | (2.18) | (1.71) | (1.67) |
| $FERTILITY_3$ | −1.27*** | −0.98** | −1.53*** | −1.34*** | −1.46*** | −1.20*** | −1.31*** | −1.39*** |
| | (−2.98) | (−2.17) | (−3.48) | (−3.60) | (−3.51) | (−2.98) | (−3.43) | (−2.71) |
| $MALESEC_3$ | 0.03*** | 0.04*** | 0.02* | 0.03** | 0.02* | 0.03** | 0.03* | 0.02 |
| | (2.45) | (2.89) | (1.68) | (2.23) | (1.74) | (2.11) | (1.85) | (1.35) |
| $PR_3$ | −0.21 | | | | | | | |
| | (−1.11) | | | | | | | |
| $CL_3$ | | 0.05 | | | | | | |
| | | (0.18) | | | | | | |
| $VA_3$ | | | −0.08 | | | | | |
| | | | (−0.30) | | | | | |
| $PS_3$ | | | | 0.33* | | | | |
| | | | | (1.89) | | | | |
| $GE_3$ | | | | | 0.11 | | | |
| | | | | | (0.22) | | | |
| $RQ_3$ | | | | | | 0.54** | | |
| | | | | | | (2.49) | | |
| $RL_3$ | | | | | | | 0.73*** | |
| | | | | | | | (2.83) | |
| $CC_3$ | | | | | | | | 0.95 |
| | | | | | | | | (1.31) |
| R2 | 0.50 | 0.48 | 0.50 | 0.59 | 0.51 | 0.63 | 0.60 | 0.48 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

impact on growth performance in these middle income countries.

Among governance indicators, voice and accountability shows a positive correlation in the first period and negative correlation in the second one, but for either period the correlation is statistically insignificant. Political stability is found to have a positive relationship in both periods but is significant only in the second period (coef＝0.333, t＝1.89). Government effectiveness shows a positive relationship but significant only in the first period (coef＝0.854, t＝3.16. Regulatory quality has a positive and statistically significant relationship in both periods (first period: coef＝1.272, t＝4.44; second period: coef＝0.536, t＝2.49). This result implies the direct and positive relationship of market-friendly policies on growth performance as empirically evidenced in many economies, especially in transition economies. Rule of law shows positive signs but is statistically significant only in the second period (coef＝0.728, t＝2.83). Control of corruption shows a positive relationship, but is not significant in both periods.

In conclusion, we can say that in general governance factors have positive impacts on growth performance in the middle income countries although they differ in degrees among indicators and over time.

### 4.1.3　High Income Economies

Table 4 shows the results of regressions for the high income group for 1986–1993 and 1994–2003 analyses. Initial per capita GDP, ln84 for first period and ln92 for second period, has a strong negative and significant relationship, suggesting conditional convergence of per capita GDP among high income states. Other non-governance variables could not be found statistically significant except life expectancy in the first period and secondary enrollment rate in the second period.

Political rights and civil liberties, proxies of democracy, have a positive correlation with GDP growth rate but are statistically significant only in the second period. This implies that voice and participation of the people is essential in economic management/performance in high income countries. As for governance indicators, they show positive correlation with per capita growth in both periods, despite differences in significance level. In the first period, although positive, voice and accountability, political stability, and rule of law are not statistically significant. It suggests that the above variables do not seem to play a crucial role in growth performance. However, government effectiveness, regulatory quality, and control of corruption are observed to be more significant with coefficient of 0.647 (t＝2.01), 0.882 (t＝2.74), and 0.566 (t＝1.70), respectively. Among them, regulatory quality, which measures the incidence of market-friendly policies, is likely to play the most important role in growth performance. It suggests that countries pursuing a higher level of market-friendly approaches tend to achieve higher growth.

In the second period, voice and accountability (coef＝0.90, t＝2.19), political stability (coef＝0.75, t＝2.15), effectiveness of government (coef＝1.99, t＝1.96), and rule of law (coef＝2.47, t＝2.27)

## Table 4: Regressions for High Income Economies' Per Capita Income Growth

### 1986–1993

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| No. of Ob. | 31 | 31 | 29 | 29 | 29 | 29 | 29 | 29 |
| Ln84 | −4.45*** | −4.45*** | −6.00*** | −5.95*** | −6.12*** | −6.10*** | −6.13*** | −6.08*** |
|  | (−4.03) | (−4.03) | (−5.74) | (−6.02) | (−7.41) | (−7.69) | (−6.11) | (−6.52) |
| TRADE₄ | 0.01 | 0.01 | 0.02* | 0.02* | 0.02** | 0.02** | 0.02* | 0.02* |
|  | (1.26) | (1.26) | (1.87) | (2.00) | (2.52) | (2.27) | (1.88) | (2.03) |
| INFLATION₄ | −0.07 | −0.07 | −0.07 | −0.06 | −0.06 | 0.03 | −0.06 | −0.10 |
|  | (−1.01) | (−1.01) | (−1.25) | (−0.99) | (−1.19) | (0.64) | (−1.03) | (−1.34) |
| GGFCE₄ | −0.03 | −0.03 | −0.05 | −0.03 | −0.05 | −0.01 | −0.04 | −0.07 |
|  | (−0.47) | (−0.47) | (−0.97) | (−0.68) | (−1.09) | (−0.14) | (−0.92) | (−1.43) |
| LIFE₄ | 0.20 | 0.20 | 0.40*** | 0.42*** | 0.39*** | 0.42*** | 0.41*** | 0.25 |
|  | (1.06) | (1.06) | (2.80) | (3.00) | (3.02) | (3.03) | (2.85) | (1.30) |
| SECONDARY₄ | 0.00 | 0.00 | −0.01 | −0.01 | −0.02 | −0.01 | −0.01 | −0.01 |
|  | (0.03) | (0.03) | (−0.57) | (−0.66) | (−1.20) | (−0.99) | (−0.58) | (−0.90) |
| PR₄ | 0.25 |  |  |  |  |  |  |  |
|  | (0.86) |  |  |  |  |  |  |  |
| CL₄ |  | 0.25 |  |  |  |  |  |  |
|  |  | (0.86) |  |  |  |  |  |  |
| VA₄ |  |  | 0.13 |  |  |  |  |  |
|  |  |  | (0.75) |  |  |  |  |  |
| PS₄ |  |  |  | 0.18 |  |  |  |  |
|  |  |  |  | (1.29) |  |  |  |  |
| GE₄ |  |  |  |  | 0.65** |  |  |  |
|  |  |  |  |  | (2.01) |  |  |  |
| RQ₄ |  |  |  |  |  | 0.88*** |  |  |
|  |  |  |  |  |  | (2.74) |  |  |
| RL₄ |  |  |  |  |  |  | 0.33 |  |
|  |  |  |  |  |  |  | (1.13) |  |
| CC₄ |  |  |  |  |  |  |  | 0.57* |
|  |  |  |  |  |  |  |  | (1.70) |
| R2 | 0.67 | 0.67 | 0.70 | 0.70 | 0.76 | 0.74 | 0.70 | 0.70 |

### 1994–2003

|  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| No. of Ob. | 30 | 30 | 25 | 25 | 25 | 25 | 25 | 25 |
| LOG92 | −2.99*** | −3.06*** | −3.81* | −1.94 | −3.95** | −2.26** | −3.59** | −1.71 |
|  | (−3.42) | (−3.84) | (−1.90) | (−1.64) | (−2.03) | (−2.30) | (−2.10) | (−1.41) |
| TRADE₅ | 0.00 | 0.00 | 0.00 | −0.01 | −0.01 | 0.00 | 0.00 | 0.00 |
|  | (0.17) | (−0.81) | (0.25) | (−1.10) | (−0.06) | (−0.59) | (−0.55) | (0.40) |
| INFLATION₅ | 0.06 | 0.12* | 0.12 | 0.55** | 0.28 | 0.12 | 0.50*** | 0.24 |
|  | (0.56) | (1.72) | (0.70) | (2.01) | (1.40) | (1.18) | (2.83) | (1.41) |
| GGFCE₅ | −0.09 | −0.07 | −0.06 | 0.00 | 0.00 | −0.03 | −0.07 | −0.05 |
|  | (−1.07) | (−1.04) | (−0.77) | (0.05) | (−0.06) | (−0.35) | (−0.94) | (−0.47) |
| FERTILITY₅ | 0.90 | 0.73 | 1.33 | −0.02 | −0.34 | −0.35 | −0.28 | −0.25 |
|  | (1.13) | (1.22) | (1.39) | (−0.04) | (−0.83) | (−0.72) | (−0.86) | (−0.56) |
| SECONDARY₅ | 0.04*** | 0.04*** | 0.05*** | 0.06** | 0.02 | 0.05** | 0.05*** | 0.03 |
|  | (3.07) | (3.15) | (2.11) | (2.26) | (1.57) | (2.39) | (2.75) | (1.64) |
| PR₅ | 0.63** |  |  |  |  |  |  |  |
|  | (2.32) |  |  |  |  |  |  |  |
| CL₅ |  | 0.62*** |  |  |  |  |  |  |
|  |  | (2.96) |  |  |  |  |  |  |
| VA₅ |  |  | 0.90** |  |  |  |  |  |
|  |  |  | (2.19) |  |  |  |  |  |
| PS₅ |  |  |  | 0.75** |  |  |  |  |
|  |  |  |  | (2.15) |  |  |  |  |
| GE₅ |  |  |  |  | 1.99* |  |  |  |
|  |  |  |  |  | (1.96) |  |  |  |
| RQ₅ |  |  |  |  |  | 0.17 |  |  |
|  |  |  |  |  |  | (0.53) |  |  |
| RL₅ |  |  |  |  |  |  | 2.47** |  |
|  |  |  |  |  |  |  | (2.27) |  |
| CC₅ |  |  |  |  |  |  |  | 0.43 |
|  |  |  |  |  |  |  |  | (1.50) |
| R2 | 0.61 | 0.67 | 0.52 | 0.41 | 0.60 | 0.44 | 0.56 | 0.43 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

show statistically significant results while regulatory quality and control of corruption are insignificant. The reason why regulatory quality and control of corruption show little influence on growth rate is probably due to the already-high level of market-friendly policies and relatively low level of corruption across countries in this high income group.

### 4.1.4  Summary

There have been many studies explaining conditional convergence between developed and developing nations. In this study, intra group conditional convergence is also confirmed. Factors influencing growth performance may be different among income groups. For instance, in the low income group, control of inflation, which is part of macroeconomic policies, keeping the size of government small, and educational enrollment seem to be important in promoting growth. Governance factors do not seem to play a significant role and a reasonable explanation is probably because of the limited resources in this income group.

However, in middle income and high income economies, this governance factor is observed to play a crucial role although it differs in degrees among indicators. So, we can conclude that governance does not necessarily contribute to growth in low income states but once the country starts to develop with accumulation of productive factors it will become an important factor to promote growth.

## 4.2   Governance and Investment Ratio

So far, equation 1 has explained the factors affecting growth performance in each income group, but total investment was not included as explanatory variable. Now in equation 2, we examine factors affecting total investment by taking investment ratio as dependent variable and using explanatory variables basically the same as those in equation 1. This two stage regression is based on the assumption that total investment positively affects growth performance.

To quantitatively prove the positive relation between total investment and GDP growth rate, the regressions have been expanded to include period-average of investment ratio as explanatory variable in equation 1. For example, in the expanded regression in column 1 of table 2 of low income countries, the estimated coefficient of investment ratio is found to have a strong positive and statistically significant correlation with growth rate (coef＝0.20, t＝3.16). For middle income countries, in columns 1 and 9 of table 3, the estimated coefficient on investment ratio is found to be positive but not statistically significant (column 1: coef＝0.14, t＝1.65; column 9: coef＝ 0.07, t＝1.34). And for high income countries, in columns 1 and 9 of table 4, the estimated coefficient on investment ratio is positive but not statistically significant (column 1: coef＝0.14, t＝1.15; column 9: coef＝0.002; t＝ 0.03). [2] These results were not shown in the tables. The insignificant result in this high income group probably derives from the small variation in their investment ratio; it does not necessarily mean that investment does not contribute to growth rate.

### *4.2.1   Low income economies*

Regression results for the low income group, Table 5, shows that initial real per capita income has a positive relationship (though not significant with total investment), implying too low level of per capita income is not likely to induce more investment. Governance variables, positive and significant results can only be seen for economic management $(EM_1)$ while other variables such as $SP_1$, $PSIE_1$, $PSMI_1$ are statistically insignificant. This result is intuitive because better economic management, in general, leads to more investment activities.

**Table 5: Regressions for Low Income Economies' Investment Ratio (2000–2004)**

|  | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
|  | 38 | 38 | 38 | 38 | 38 | 38 |
| C | −4.468 | −8.140 | −33.619 | 2.921 | −14.489 | −25.222 |
|  | (−0.22) | (−0.37) | (−1.23) | (0.09) | (−0.51) | (−0.75) |
| LN98 | 4.170 | 4.465 | 6.354** | 3.554 | 3.951 | 4.887 |
|  | (1.59) | (1.62) | (2.25) | (1.11) | (1.49) | (1.68) |
| TRADE$_1$ | 0.059 | 0.060 | 0.072* | 0.062 | 0.066* | 0.068* |
|  | (1.67) | (1.64) | (1.96) | (1.44) | (1.74) | (1.76) |
| INFLATION$_1$ | −0.065*** | −0.066*** | −0.030 | −0.071* | −0.047 | −0.037 |
|  | (−2.84) | (−2.81) | (−0.97) | (−1.79) | (−1.37) | (−0.95) |
| GGFCE$_1$ | 0.051 | 0.049 | 0.145 | 0.038 | 0.034 | 0.104 |
|  | (0.32) | (0.31) | (0.93) | (0.17) | (0.26) | (0.63) |
| LIFE$_1$ | −0.232 | −0.234 | −0.191 | −0.198 | −0.194 | −0.177 |
|  | (−1.12) | (−1.11) | (−1.06) | (−0.84) | (−0.99) | (−0.90) |
| SECONDARY$_1$ | 0.003 | 0.008 | −0.056 | −0.002 | −0.007 | −0.040 |
|  | (0.04) | (0.10) | (−0.68) | (−0.02) | (−0.10) | (−0.51) |
| PR$_1$ | 1.039 |  |  |  |  |  |
|  | (1.45) |  |  |  |  |  |
| CL$_1$ |  | 1.369* |  |  |  |  |
|  |  | (1.78) |  |  |  |  |
| EM$_1$ |  |  | 4.032** |  |  |  |
|  |  |  | (2.31) |  |  |  |
| SP$_1$ |  |  |  | −0.285 |  |  |
|  |  |  |  | (−0.07) |  |  |
| PSIE$_1$ |  |  |  |  | 4.264 |  |
|  |  |  |  |  | (1.13) |  |
| PSMI$_1$ |  |  |  |  |  | 4.830 |
|  |  |  |  |  |  | (1.31) |
| R2 | 0.325 | 0.325 | 0.409 | 0.297 | 0.354 | 0.358 |

Note: number in parentheses（ ）is the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

### 4.2.2　Middle income economies

Regression results for the middle income group (see Table 6) observe that initial per capita GDP has a negative and significant relationship in both periods as expected. Positive correlation between trade and investment ratio is also found. Inflation shows slightly positive result in the first period but negative significant result in the second one. The result in the first period is probably because of the centrally-planned economic structure of transitional economies where investment is carried out without taking into consideration the inflation rate. In the second period when the transformation is complete, inflation does play a role in the determination of investment activities.

Governance indicators, in general, do not seem to have any correlation with investment ratio. Among all the variables, only political stability is found to have a positive relationship, but is statistically significant only in the first period (first period: coef＝0.762, t＝1.89; second period: coef＝0.545, t＝1.14). This result makes sense because investors tend to invest more in a nation where political stability is guaranteed. As mentioned earlier, total investment is comprised of both domestic and foreign investment. And although we know that, in general, domestic investment makes up the majority of total investment, the above investigation has not clarified the separate impacts of governance on each of them. We will examine the separate impacts of governance on domestic and foreign investment in detail in section 4.3.

### 4.2.3　High income economies

Among non-governance variables in this high income group, only government size is found to be statistically significant with the expected negative sign with investment ratio. This result implies that a relatively big government tends to have more waste/inefficiency than small government. And the spending of the government is closely associated with taxation, a portion of which comes from private sectors. The more taxed on private sectors, the lesser money can be used for investment activities.

Governance factors do not seem to have a crucial impact on investment in the high income group. Most of the variables are statistically insignificant. Although the impact of governance on investment ratio also depends on each element, the result suggests that, in general, decision-making regarding investment in high income countries is relatively independent from the governance structure.

### 4.2.4　Summary

Total investment is found to have been affected by many factors across countries in each income group and over time. In the low income group, better inflation control and elements of governance related to sound economic management seem to influence investments in general and then lead to higher growth. Since the share of domestic investment dominates total investment, in general, we can say that improvement in economic governance is more likely to influence domestic investors when they, in most cases, are capable of investing in their own countries. In the middle income and high

## Table 6: Regressions for Middle Income Economies' Total Investment-GDP Ratio

### 1986–1993

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| No. of Ob | 42 | 42 | 38 | 38 | 38 | 38 | 38 | 38 |
| LN84 | −4.47** | −3.59* | −4.84*** | −5.67*** | −5.32*** | −4.84*** | −5.21*** | −4.81*** |
| | (−2.51) | (−1.84) | (−2.91) | (−3.87) | (−3.91) | (−2.84) | (−3.14) | (−3.33) |
| TRADE$_2$ | 0.04 | 0.06 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 |
| | (1.13) | (1.49) | (0.57) | (0.81) | (0.99) | (0.87) | (0.82) | (0.80) |
| INFLATION$_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.86) | (0.95) | (0.39) | (1.41) | (0.98) | (0.80) | (0.80) | (0.14) |
| GGFCE$_2$ | −0.02 | −0.09 | 0.09 | −0.04 | −0.13 | −0.01 | −0.02 | 0.02 |
| | (−0.08) | (−0.32) | (0.34) | (−0.16) | (−0.44) | (−0.04) | (−0.07) | (0.07) |
| LIFE$_2$ | 0.20 | 0.27 | 0.12 | 0.14 | 0.19 | 0.19 | 0.13 | 0.11 |
| | (0.90) | (1.22) | (0.47) | (0.56) | (0.74) | (0.79) | (0.51) | (0.42) |
| PRIMARY$_2$ | 0.00 | 0.00 | 0.04 | −0.01 | 0.02 | 0.02 | 0.01 | 0.03 |
| | (−0.05) | (−0.01) | (0.48) | (−0.09) | (0.37) | (0.28) | (0.19) | (0.46) |
| PR$_2$ | −0.49 | | | | | | | |
| | (−0.80) | | | | | | | |
| CL$_2$ | | −1.43* | | | | | | |
| | | (−1.89) | | | | | | |
| VA$_2$ | | | 0.36 | | | | | |
| | | | (0.85) | | | | | |
| PS$_2$ | | | | 0.76* | | | | |
| | | | | (1.89) | | | | |
| GE$_2$ | | | | | 1.56 | | | |
| | | | | | (1.41) | | | |
| RQ$_2$ | | | | | | 0.79 | | |
| | | | | | | (0.83) | | |
| RL$_2$ | | | | | | | 0.93 | |
| | | | | | | | (1.02) | |
| CC$_2$ | | | | | | | | 1.01 |
| | | | | | | | | (0.84) |
| R2 | 0.21 | 0.16 | 0.24 | 0.29 | 0.35 | 0.25 | 0.27 | 0.26 |

### 1994–2003

| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| No. of Ob. | 51 | 51 | 37 | 37 | 37 | 41 | 37 | 37 |
| LN92 | −2.40 | −1.59 | −2.90* | −3.23* | −3.52** | −3.08* | −3.03* | −3.12* |
| | (−1.12) | (−0.76) | (−1.76) | (−1.98) | (−2.23) | (−1.98) | (−2.01) | (−1.96) |
| TRADE$_3$ | 0.05** | 0.06** | 0.04* | 0.03* | 0.03 | 0.04** | 0.04** | 0.04** |
| | (2.20) | (2.60) | (1.96) | (1.73) | (1.53) | (2.45) | (2.24) | (2.17) |
| INFLATION$_3$ | −0.04* | −0.05** | −0.07*** | −0.07** | −0.06* | −0.04** | −0.07*** | −0.07*** |
| | (−1.76) | (−2.05) | (−2.86) | (−2.63) | (−1.91) | (−2.27) | (−2.76) | (−2.84) |
| GGFCE$_3$ | −0.08 | −0.07 | 0.03 | −0.11 | −0.07 | −0.03 | −0.08 | 0.02 |
| | (−0.42) | (−0.36) | (0.13) | (−0.54) | (−0.35) | (−0.15) | (−0.41) | (0.09) |
| FERTILITY$_3$ | −1.63 | −2.25** | −2.56*** | −2.22** | −2.35** | −1.84** | −2.24** | −2.45*** |
| | (−1.42) | (−2.09) | (−2.71) | (−2.32) | (−2.54) | (−2.33) | (−2.47) | (−2.75) |
| MALESEC$_3$ | 0.00 | −0.02 | −0.03 | −0.03 | −0.03 | −0.02 | −0.03 | −0.03 |
| | (0.02) | (−0.35) | (−0.75) | (−0.60) | (−0.81) | (−0.40) | (−0.70) | (−0.78) |
| PR$_3$ | 0.20 | | | | | | | |
| | (0.35) | | | | | | | |
| CL$_3$ | | −0.66 | | | | | | |
| | | (−1.06) | | | | | | |
| VA$_3$ | | | −0.23 | | | | | |
| | | | (−0.37) | | | | | |
| PS$_3$ | | | | 0.55 | | | | |
| | | | | (1.14) | | | | |
| GE$_3$ | | | | | 1.57 | | | |
| | | | | | (0.96) | | | |
| RQ$_3$ | | | | | | −0.50 | | |
| | | | | | | (−0.87) | | |
| RL$_3$ | | | | | | | 0.53 | |
| | | | | | | | (0.66) | |
| CC$_3$ | | | | | | | | −0.24 |
| | | | | | | | | (−0.18) |
| R2 | 0.21 | 0.23 | 0.49 | 0.39 | 0.44 | 0.41 | 0.47 | 0.47 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **; significant at 5%; ***; significant at 1% (two-tailed).

**Table 7: Regressions for High Income Economies' Total Investment Ratio**

**1986-1993**

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| No. of Ob. | 31 | 29 | 29 | 29 | 29 | 29 | 29 |
| $Ln84$ | -4.78** | -1.81 | -3.74 | -4.08 | -4.99 | -3.57 | -4.52 |
|  | (-2.41) | (-0.63) | (-1.17) | (-1.18) | (-1.49) | (-1.20) | (-1.29) |
| $TRADE_4$ | 0.00 | 0.00 | -0.01 | 0.00 | -0.01 | 0.00 | -0.01 |
|  | (-0.18) | (-0.28) | (-0.37) | (-0.28) | (-0.45) | (-0.30) | (-0.37) |
| $INFLATION_4$ | -0.02 | -0.19 | -0.17 | -0.15 | 0.03 | -0.17 | -0.16 |
|  | (-0.13) | (-1.49) | (-1.65) | (-1.27) | (0.19) | (-1.55) | (-1.17) |
| $GGFCE_4$ | -0.41*** | -0.33*** | -0.33*** | -0.31** | -0.23* | -0.31*** | -0.32*** |
|  | (-3.43) | (-3.13) | (-2.75) | (-2.54) | (-1.94) | (-2.72) | (-2.76) |
| $LIFE_4$ | 0.86** | 0.70 | 0.35 | 0.31 | 0.22 | 0.36 | 0.13 |
|  | (2.44) | (1.63) | (0.80) | (0.72) | (0.51) | (0.84) | (0.27) |
| $SECONDARY_4$ | 0.01 | 0.00 | -0.02 | -0.03 | -0.05 | -0.03 | -0.04 |
|  | (0.15) | (0.11) | (-0.59) | (-0.70) | (-1.11) | (-0.66) | (-1.01) |
| $PR_4$ | -1.54** |  |  |  |  |  |  |
|  | (-2.09) |  |  |  |  |  |  |
| $VA_4$ |  | -0.99* |  |  |  |  |  |
|  |  | (-2.00) |  |  |  |  |  |
| $PS_4$ |  |  | -0.30 |  |  |  |  |
|  |  |  | (-1.07) |  |  |  |  |
| $GE_4$ |  |  |  | -0.20 |  |  |  |
|  |  |  |  | (-0.24) |  |  |  |
| $RQ_4$ |  |  |  |  | 1.57 |  |  |
|  |  |  |  |  | (1.52) |  |  |
| $RL_4$ |  |  |  |  |  | -0.47 |  |
|  |  |  |  |  |  | (-0.87) |  |
| $CC_4$ |  |  |  |  |  |  | 0.42 |
|  |  |  |  |  |  |  | (0.44) |
| R2 | 0.48 | 0.40 | 0.35 | 0.34 | 0.29 | 0.36 | 0.34 |

**1994-2003**

|  | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|
| No. of Ob. | 30 | 27 | 27 | 27 | 27 | 27 | 27 |
| $Ln92$ | -2.41 | -6.74 | -5.00 | -6.55 | -4.67* | -3.80 | -5.13 |
|  | (-0.58) | (-1.62) | (-1.22) | (-1.50) | (-1.90) | (-1.11) | (-1.29) |
| $TRADE_5$ | -0.01 | -0.01 | -0.02 | -0.02 | -0.01 | -0.01 | -0.02 |
|  | (-0.49) | (-0.84) | (-0.65) | (-0.89) | (-0.42) | (-0.64) | (-0.80) |
| $INFLATION_5$ | 0.28 | 0.09 | 0.05 | 0.05 | 0.27 | 0.01 | 0.08 |
|  | (0.76) | (0.27) | (0.15) | (0.13) | (0.89) | (0.02) | (0.22) |
| $GGFCE_5$ | -0.49** | -0.43** | -0.40** | -0.38** | -0.34** | -0.36** | -0.39** |
|  | (-2.36) | (-2.58) | (-2.49) | (-2.25) | (-2.05) | (-2.23) | (-2.08) |
| $FERTILITY_5$ | -0.76 | -0.15 | -1.81 | -1.59 | -2.79 | -1.80 | -1.70 |
|  | (-0.36) | (-0.13) | (-1.48) | (-1.51) | (-1.99) | (-1.49) | (-1.30) |
| $SECONDARY_5$ | -0.01 | -0.02 | -0.03 | -0.04 | -0.05 | -0.04 | -0.03 |
|  | (-0.19) | (-0.51) | (-0.57) | (-0.73) | (-0.81) | (-0.65) | (-0.53) |
| $PR_5$ | -0.11 |  |  |  |  |  |  |
|  | (-0.11) |  |  |  |  |  |  |
| $VA_5$ |  | 0.80 |  |  |  |  |  |
|  |  | (1.57) |  |  |  |  |  |
| $PS_5$ |  |  | -0.16 |  |  |  |  |
|  |  |  | (-0.18) |  |  |  |  |
| $GE_5$ |  |  |  | 1.14 |  |  |  |
|  |  |  |  | (0.70) |  |  |  |
| $RQ_5$ |  |  |  |  | -2.39*** |  |  |
|  |  |  |  |  | (-2.98) |  |  |
| $RL_5$ |  |  |  |  |  | -1.16 |  |
|  |  |  |  |  |  | (-0.72) |  |
| $CC_5$ |  |  |  |  |  |  | 0.00 |
|  |  |  |  |  |  |  | (-0.00) |
| R2 | 0.29 | 0.49 | 0.41 | 0.44 | 0.58 | 0.44 | 0.41 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

income groups, as a general tendency, governance indicators do not seem to have any significant relationships with investment. For example, investors in high income states are, in general, relatively strong and independent and are not influenced by the changes of governance structure.

### 4.3 Governance and FDI ratio

#### 4.3.1 Low income economies

Table 8 explains the regression results for low income economies where ratio of FDI to GDP is taken as dependent variable. The result shows that most of the non-governance variables are not statistically significant except that trade ratio reveals its strong and positive correlation with FDI

**Table 8: Regressions for Low Income Economies' FDI-GDP Ratio (2000–2004)**

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
|  | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| C | 7.023 | 5.324 | 10.489 | 15.748 | 10.381 | 13.216 | 14.542 |
|  | (0.59) | (0.44) | (0.62) | (0.75) | (0.58) | (0.77) | (0.70) |
| LN98 | 0.221 | 0.382 | −0.030 | 0.058 | 0.173 | 0.169 | −0.087 |
|  | (0.17) | (0.31) | (−0.02) | (0.04) | (0.12) | (0.12) | (−0.06) |
| TRADE$_1$ | 0.071*** | 0.070*** | 0.069*** | 0.070*** | 0.069*** | 0.069*** | 0.068*** |
|  | (3.28) | (3.44) | (3.49) | (3.25) | (3.39) | (3.24) | (3.39) |
| INFLATION$_1$ | −0.017 | −0.016 | −0.021 | −0.028 | −0.022 | −0.026 | −0.027 |
|  | (−1.24) | (−1.25) | (−1.03) | (−1.20) | (−1.03) | (−1.28) | (−1.08) |
| GGFCE$_1$ | −0.081 | −0.080 | −0.093 | −0.135 | −0.078 | −0.075 | −0.099 |
|  | (−1.11) | (−1.10) | (−1.00) | (−0.98) | (−1.15) | (−1.13) | (−1.03) |
| LIFE$_1$ | −0.135 | −0.144 | −0.143 | −0.165 | −0.144 | −0.142 | −0.148 |
|  | (−1.35) | (−1.49) | (−1.34) | (−1.40) | (−1.37) | (−1.35) | (−1.33) |
| SECONDARY$_1$ | −0.025 | −0.023 | −0.017 | −0.004 | −0.017 | −0.022 | −0.012 |
|  | (−0.58) | (−0.55) | (−0.39) | (−0.09) | (−0.40) | (−0.52) | (−0.27) |
| PR$_1$ | −0.203 |  |  |  |  |  |  |
|  | (−0.51) |  |  |  |  |  |  |
| CL$_1$ |  | 0.078 |  |  |  |  |  |
|  |  | (0.16) |  |  |  |  |  |
| EM$_1$ |  |  | −0.531 |  |  |  |  |
|  |  |  | (−0.48) |  |  |  |  |
| SP$_1$ |  |  |  | −1.901 |  |  |  |
|  |  |  |  | (−0.76) |  |  |  |
| PSIE$_1$ |  |  |  |  | −1.013 |  |  |
|  |  |  |  |  | (−0.47) |  |  |
| PSMI$_1$ |  |  |  |  |  | −1.966 |  |
|  |  |  |  |  |  | (−0.85) |  |
| R2 | 0.302 | 0.300 | 0.305 | 0.318 | 0.308 | 0.334 | 0.316 |

Note: number in parentheses（ ）is the value of t-statistics.

*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

inflow. This result supports the empirical fact that FDI firms generally regard low income economies as production bases because production costs, especially labor costs are low. They come to low income countries simply to produce and then export those products to foreign markets. Regarding the governance variables, none of them have a significant relationship with FDI inflow. This is probably because FDI firms do not regard governance factors as a very crucial criterion when selecting a destination among low income economies.

### 4.3.2  Middle income economies

Table 9 explains the regression results for the middle income group. For non-governance variables, most of them show statistically insignificant results, except trade ratio. The positive relation between trade ratio and FDI inflow is very intuitive because in most cases, if not all, trade complements rather than substitute FDI inflow. This can be explained by the fact that a country with a relatively open trade policy also has relatively open capital movement. Open capital movement makes it easier for FDI firms to advance their operation in other countries, thus leading to more trade volume.

As for governance variables, most of them show positive but statistically insignificant correlation with FDI inflow. Among them, only regulatory quality is found to have a positive and significant relationship in both periods. This result also supports many empirical studies, including Ishihara (2001, pp. 20). It shows a clear picture that regulatory quality which represents market-friendly environment is the most important elements in attracting FDI inflow, among other governance elements.

### 4.3.3  High income economies

Table 10 explains the regression results of the high income group. Initial real per capita GDP is found to have no significant correlation with FDI inflow. This result suggests that initial per capita income has nothing to do with FDI inflow in the high income economies. Trade and inflation variables show positive correlation but are statistically significant only in the second period. The major cause of FDI inflow in the first period probably derived from other factors including, for example, the significant depreciation of the US Dollar against other major currencies after the Plaza accord. This dollar depreciation forced many FDI firms to invest in the United States, including Japanese investors, instead of simply exporting products. Government size, life expectancy at birth, and gross secondary enrollment also found to have no significant results.

As for governance indicators, in the first period, they all show positive relationship, but only rule of law is statistically significant. In the second period, no significant correlation is found for all the governance variables. This result implies that governance factors do not play important roles in promoting FDI inflow amongst high income nations. This is probably because FDI firms coming to

**Table 9: Regressions for Middle Income Economies' FDI Ratio**

1986–1993

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | 42 | 42 | 38 | 38 | 38 | 38 | 38 | 38 |
| LN84 | −1.029* | −0.823 | −0.782 | −0.657 | −0.618 | −0.627 | −0.857* | −0.672 |
| | (−1.73) | (−1.40) | (−1.52) | (−1.44) | (−1.56) | (−1.42) | (−1.84) | (−1.53) |
| $TRADE_2$ | 0.013 | 0.015 | 0.016 | 0.025 | 0.027** | 0.021* | 0.024* | 0.023 |
| | (0.65) | (0.78) | (1.14) | (1.50) | (2.02) | (1.71) | (1.75) | (1.62) |
| $INFLATION_2$ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | (−0.54) | (−0.28) | (0.02) | (0.51) | (0.56) | (1.04) | (0.74) | (−0.32) |
| $GGFCE_2$ | 0.162 | 0.148 | −0.006 | −0.050 | −0.084 | −0.052 | −0.076 | −0.046 |
| | (1.30) | (1.08) | (−0.07) | (−0.48) | (−0.72) | (−0.60) | (−0.69) | (−0.47) |
| $FERTILITY_2$ | 0.011 | −0.072 | 0.038 | −0.051 | −0.038 | −0.122 | 0.033 | −0.044 |
| | (0.04) | (−0.29) | (0.13) | (−0.18) | (−0.15) | (−0.61) | (0.10) | (−0.16) |
| $PRIMARY_2$ | 0.022 | 0.019 | −0.001 | −0.009 | −0.003 | −0.010 | −0.012 | −0.003 |
| | (0.96) | (0.80) | (−0.07) | (−0.53) | (−0.16) | (−0.68) | (−0.69) | (−0.22) |
| $PR_2$ | 0.359 | | | | | | | |
| | (1.40) | | | | | | | |
| $CL_2$ | | 0.103 | | | | | | |
| | | (0.36) | | | | | | |
| $VA_2$ | | | 0.287 | | | | | |
| | | | (1.45) | | | | | |
| $PS_2$ | | | | 0.145 | | | | |
| | | | | (0.76) | | | | |
| $GE_2$ | | | | | 0.471 | | | |
| | | | | | (1.18) | | | |
| $RQ_2$ | | | | | | 0.631* | | |
| | | | | | | (1.92) | | |
| $RL_2$ | | | | | | | 0.525 | |
| | | | | | | | (1.19) | |
| $CC_2$ | | | | | | | | 0.510 |
| | | | | | | | | (1.07) |
| R2 | 0.340 | 0.344 | 0.438 | 0.404 | 0.490 | 0.504 | 0.432 | 0.423 |

1994–2003

| | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|---|---|---|---|---|---|---|---|---|
| | 50 | 50 | 36 | 36 | 36 | 40 | 36 | 36 |
| LN92 | −1.630 | −2.516* | 0.871 | 0.817 | 0.770 | 0.515 | 0.897 | 0.875 |
| | (−1.27) | (−1.71) | (0.91) | (0.96) | (0.89) | (0.63) | (1.01) | (0.98) |
| $TRADE_3$ | 0.036** | 0.015 | 0.039*** | 0.037*** | 0.036*** | 0.037*** | 0.037*** | 0.039*** |
| | (2.43) | (0.86) | (2.99) | (3.82) | (3.58) | (3.89) | (3.76) | (3.88) |
| $INFLATION_3$ | 0.010 | 0.017 | −0.017 | −0.017 | −0.015 | 0.001 | −0.016 | −0.018 |
| | (0.68) | (0.99) | (−1.17) | (−1.19) | (−0.90) | (0.10) | (−1.05) | (−1.25) |
| $GGFCE_3$ | 0.099 | 0.101 | −0.158 | −0.170 | −0.171 | −0.169 | −0.203 | −0.138 |
| | (0.83) | (0.78) | (−1.25) | (−1.42) | (−1.25) | (−1.56) | (−1.64) | (−1.14) |
| $FERTILITY_3$ | −0.274 | 0.391 | −0.916* | −0.876* | −0.880* | −0.782* | −0.779 | −0.915* |
| | (−0.39) | (0.49) | (−1.71) | (−1.79) | (−1.78) | (−1.93) | (−1.48) | (−1.87) |
| $MALESEC_3$ | 0.014 | 0.030 | 0.018 | 0.018 | 0.018 | 0.016 | 0.020 | 0.018 |
| | (0.51) | (0.98) | (0.83) | (0.85) | (0.82) | (0.80) | (0.87) | (0.84) |
| $PR_3$ | 0.934** | | | | | | | |
| | (2.68) | | | | | | | |
| $CL_3$ | | 2.256*** | | | | | | |
| | | (3.57) | | | | | | |
| $VA_3$ | | | −0.041 | | | | | |
| | | | (−0.12) | | | | | |
| $PS_3$ | | | | 0.042 | | | | |
| | | | | (0.17) | | | | |
| $GE_3$ | | | | | 0.223 | | | |
| | | | | | (0.25) | | | |
| $RQ_3$ | | | | | | 0.520* | | |
| | | | | | | (1.78) | | |
| $RL_3$ | | | | | | | 0.303 | |
| | | | | | | | (0.65) | |
| $CC_3$ | | | | | | | | −0.293 |
| | | | | | | | | (−0.39) |
| R2 | 0.341 | 0.216 | 0.428 | 0.436 | 0.433 | 0.511 | 0.372 | 0.433 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

**Table 10: Regressions for High Income Economies' FDI Ratio**

**1984–93**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| No. of Ob. | 26 | 25 | 25 | 25 | 25 | 25 | 25 |
| Ln84 | −0.95 | −1.42 | −1.04 | −1.17 | −0.50 | −2.25** | −0.83 |
| | (−1.43) | (−1.12) | (−1.36) | (−1.25) | (−0.80) | (−2.71) | (−1.09) |
| $TRADE_4$ | 0.01 | 0.01 | 0.01 | 0.02* | 0.01 | 0.01 | 0.02 |
| | (1.26) | (1.37) | (1.33) | (1.69) | (1.22) | (1.53) | (1.45) |
| $INFLATION_4$ | −0.05 | 0.00 | 0.00 | −0.01 | 0.02 | 0.02 | −0.05 |
| | (−1.49) | (−0.04) | (0.07) | (−0.32) | (0.17) | (0.43) | (−1.23) |
| $GGFCE_4$ | 0.03 | 0.00 | 0.01 | −0.01 | 0.00 | 0.01 | −0.03 |
| | (0.92) | (−0.11) | (0.22) | (−0.15) | (0.04) | (0.37) | (−0.79) |
| $LIFE_4$ | 0.12 | 0.19 | 0.24* | 0.22 | 0.24* | 0.17 | 0.04 |
| | (1.08) | (1.33) | (1.75) | (1.52) | (1.84) | (1.35) | (0.18) |
| $SECONDARY_4$ | −0.02 | −0.02 | −0.02 | −0.04 | −0.03 | −0.02 | −0.03 |
| | (−1.33) | (−1.34) | (−1.33) | (−1.54) | (−1.07) | (−1.25) | (−1.64) |
| $PR_4$ | 0.71** | | | | | | |
| | (2.66) | | | | | | |
| $VA_4$ | | 0.25 | | | | | |
| | | (1.05) | | | | | |
| $PS_4$ | | | 0.22 | | | | |
| | | | (0.97) | | | | |
| $GE_4$ | | | | 0.73 | | | |
| | | | | (1.42) | | | |
| $RQ_4$ | | | | | 0.29 | | |
| | | | | | (0.53) | | |
| $RL_4$ | | | | | | 0.77** | |
| | | | | | | (2.39) | |
| $CC_4$ | | | | | | | 0.54 |
| | | | | | | | (1.48) |
| R2 | 0.28 | 0.26 | 0.16 | 0.16 | 0.09 | 0.30 | 0.28 |

**1994–03**

| | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|
| No. of Ob. | 26 | 22 | 22 | 22 | 24 | 22 | 22 |
| LOG92 | −0.06 | −0.13 | 0.18 | 0.94 | 0.44 | 0.59 | −0.67 |
| | (−0.01) | (−0.03) | (0.04) | (0.18) | (0.16) | (0.14) | (−0.17) |
| $TRADE_5$ | 0.13*** | 0.15*** | 0.15*** | 0.16*** | 0.13*** | 0.14*** | 0.13*** |
| | (2.83) | (2.81) | (2.91) | (2.82) | (2.79) | (2.93) | (3.15) |
| $INFLATION_5$ | −0.86*** | −1.05** | −1.28** | −2.46 | −0.93*** | −0.85* | −0.92** |
| | (−4.166) | (−2.12) | (−2.56) | (−1.41) | (−3.18) | (−1.71) | (−2.12) |
| $GGFCE_5$ | 0.08 | 0.04 | 0.02 | −0.23 | 0.08 | 0.09 | 0.15 |
| | (0.51) | (0.27) | (0.12) | (−0.68) | (0.61) | (0.52) | (0.86) |
| $FERTILITY_5$ | −0.58 | −0.29 | −1.46 | 8.23 | −0.02 | −0.54 | −0.35 |
| | (−0.27) | (−0.14) | (−0.59) | (0.97) | (−0.01) | (−0.30) | (−0.14) |
| $SECONDARY_5$ | −0.05 | −0.04 | −0.06 | 0.06 | −0.04 | −0.05 | −0.01 |
| | (−0.75) | (−0.77) | (−1.05) | (0.46) | (−0.80) | (−0.83) | (−0.21) |
| $PR_5$ | 1.54 | | | | | | |
| | (0.33) | | | | | | |
| $VA_5$ | | −1.28 | | | | | |
| | | (−0.84) | | | | | |
| $PS_5$ | | | −1.22 | | | | |
| | | | (−1.45) | | | | |
| $GE_5$ | | | | −9.13 | | | |
| | | | | (−1.05) | | | |
| $RQ_5$ | | | | | 0.77 | | |
| | | | | | (1.21) | | |
| $RL_5$ | | | | | | −0.83 | |
| | | | | | | (−0.46) | |
| $CC_5$ | | | | | | | −1.32 |
| | | | | | | | (−1.33) |
| R2 | 0.73 | 0.74 | 0.74 | 0.63 | 0.75 | 0.75 | 0.74 |

Note: numbers in parentheses ( ) are the value of t-statistics.
*: significant at 10%; **: significant at 5%; ***: significant at 1% (two-tailed).

invest in the high income states are generally strong and independent from the influence of the host economies' governance structures.

### 4.3.4   Summary

The analysis reveals that most of the explanatory variables used here do not have any correlation with FDI inflow. However trade is positively correlated with FDI inflow in all income groups. This is due to the complementary effects of trade and FDI. It is also clear that governance factors are not generally crucial in attracting FDI in all income groups. In the low income group, where basic economic components are not yet in place, governance factors matter more to domestic investments than to FDI. Improvement in governance structure is not directly linked to more inflow of FDI. Inflow of FDI starts when minimum sufficient conditions are met. For the reasons noted, policy to promote domestic investment is needed before attracting FDI.

As for the middle income states, where basic economic components are in place, differences in governance quality across countries start to matter. Particularly, regulatory quality matters even more when FDI and trade start to play an important role in growth performance. However, in the high income states, the impact of governance fades down because FDI firms get stronger and more independent.

## 5. Conclusion

This study investigated the impacts of governance on FDI inflow ratio, domestic investment and growth performance in different income groups: low income, middle income, and high income.

In low income group, none of the governance variables have statistically significant correlations with per capita GDP growth rate and FDI inflow ratio. Among the four elements of governance variables, only economic management is found to have a statistically significant positive correlation with total investment ratio. This result implies that governance factors play a limited role in promoting growth performance, and domestic investment is likely to be more sensitive than foreign investment to governance structure. This is supported by the fact that in low income economies, domestic investors tend to invest only in their own country while FDI investors have more choices and tend to invest in countries where basic economic conditions are in place, many of which are middle income countries.

For middle income countries, most governance elements have positive correlation with per capita GDP growth. Regulatory quality, among other governance variables, shows a positive significant relationship with FDI ratio, while none of the governance variables has a significant relationship with investment ratio. This result implies that governance plays a crucial role in promoting growth performance. This is partly because middle income economies possess the minimum sufficient

economic conditions such as basic infrastructure, human resources, etc. Further implication is that FDI inflow ratio is generally more sensitive than domestic investment to governance indicators, despite difference in degree among the governance indicators.

For the high income economies, governance factors show a positive relationship with growth performance but with neither investment ratio nor FDI ratio. This result reconfirms the direct impacts of governance on growth performance. However, its indirect impact through either domestic or foreign investment can not be clearly seen. The limited indirect impacts of governance suggest that difference of governance structure among high income countries is not a decisive determinant of investment.

In conclusion, we can say that governance does not have a clear positive relationship with growth performance in the low income economies. Sound development governance is essentially a good management of accumulation and efficient allocation of the accumulated productive resources. Once the country starts to develop with accumulation of productive factors it will become an essential element to promote growth.

## Notes

1　World Bank defines FDI as "*investment made to acquire a lasting management interest (usually at least 10 per cent of voting stock) in an enterprise operating in a country other than that of the investor*".

2　GGFCE is excluded from the equation to avoid multicollinearity issue. GGFCE is highly correlated with investment ratio (0.402).

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