

# Good Governance Dimensions and Growth in Asia and the Pacific Countries

Paitoon Kraipornsak

**Abstract**—Good governance is expected to help enhance the competitiveness and efficiency of the economy. The worldwide governance index is examined whether the 6 dimensions of the governance are growth stimulus and which dimension is relatively the most substantial effect on growth. The study employs augmented growth model that consists of 4 main input factors; i.e., physical capital, human capital, labour, and foreign investment along with the governance dimensions. The model is estimated for 18 Asia and the Pacific countries during 2000–2017. The result shows impacts of most dimensions of the governance except the voice and accountability are significant in promoting growth. In conclusion, government effectiveness appears to be the most potent factor in promoting growth. It is followed by the regulatory quality, the rule of law, the control of corruption, and the political stability respectively. The voice and accountability is found the insignificant dimension in growth promotion.

**Index Terms**—Asia and the Pacific countries, augmented growth model, governance, foreign direct investment, human capital, physical capital.

## I. INTRODUCTION

Economic growth issue was not in attendance for economists during the Great Depression in the 1930s. The world economy began to grow on its new path of persistent growth in the late 1800s to the early 1900s [1]. The topic of economic growth has become famous as its ability can satisfy human needs and provide people with the highest level of welfare at the most rapid rate. The difference in growth experiences across countries has placed the economic growth issue into attention.

In recent decades, the Noble prize economist named Solow proposed a standard growth model in which it has been widely accepted and used among growth economists [2]. The conventional sources of growth of two main primary input factors; i.e., physical capital and labour was used in the model of the aggregate production function with the residual growth as an exogenous growth factor in explaining the economic growth.

In the modern economic growth theory, few more relevant factors determining growth have been included into the growth model such as human capital, foreign direct investment, technological progress, research and development, and the advance of knowledge. This study examines the role of good governance in promoting growth. Recently, good governance has become one of the development goals in the millennium of the United Nations [3]. Good governance is predictable to enhance economic

competitiveness and efficiency of the economy.

The World Bank does the most completed data series of good governance and widely available under the project of the Worldwide Governance Indicators. It is available on the internet that is produced by [4] and [5]. This governance indicator consists of 6 dimensions; namely, (1) control of corruption, (2) government effectiveness, (3) political stability and absence of violence/terrorism, (4) regulatory quality, (5) the rule of law, and (6) voice and accountability.

Similarly, there is another well-known organization which provides studies and index of corruption of countries worldwide [6]. This organization has been working in the area of corruption in particular. The organization's work covers research, information and knowledge about corruption, anti-corruption, and provision of statistics of corruption index for various countries. Nevertheless, the data is available for only the corruption dimension.

Purpose of this study is to empirically examine whether apart from the typical factors determining growth, good governance is also promoting the growth of countries. Besides, among the six dimensions of the governance index, the study examines what dimension is relatively the most potent factor in promoting the growth of countries in the sample.

## II. LITERATURE REVIEW

Ref. [7] placed his emphasis on aspects of capital accumulation and its role in economic growth. His paper focused on examining aspects of capital accumulation in economic analysis and wanted to isolate capital accumulation role on economic growth. Nevertheless, the paper realized that not only physical capital can determine growth; some other important factors can also affect the productive capacity of the economy. Those factors include technological change and institutional forces such as income distribution, the structure of the industry, relative prices, and preferences of the consumer. Role of investment is essential to maintain full employment as long as investment grows at a constant compound interest rate.

Ref. [8] explained growth as a process that is based on a dynamic approach. Investment acceleration is required and is equal to saving in the long run to achieve growth. Harrod believed in the warranted rate of growth that will make all actors satisfied that the economy will produce the right amount of products for its demand. Fundamental conditions determine the warranted rate of growth, and the conditions are mainly explained by the state of technology and propensity to save.

For recent pioneer growth models, the Solow growth model defined a production function by permitting two major

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factor inputs, namely physical capital and labour, to explain output produced in an economy [9]. In this type of production function, it allows factor inputs to be substituted, and so the Cobb Douglas production function is suited well to be used in the model. This production function can also be modified to include some other essential factor inputs into the model.

Human capital is one among the full acceptance of being a factor contributing to growth. Several studies measured educational attainment to quantify for human capital. Reference [10] emphasized the role of human capital. He used the school enrolment ratio to be the proxy of the human capital in his empirical growth model. Countries with more human capital were found to grow faster than those others [11]. They suggested that more massive stock of human capital makes those countries to absorb new ideas and advanced knowledge faster.

However, reference [12] found more details of the role of human capital on per capita growth of income per head across countries in the sample. Human capital stock was based on the educational attainment of the labour force. By using a standard Cobb Douglas production function that physical capital, labour, and human capital were separately the three inputs in the production function; the study found that the human capital input has an unusual negative and insignificant effect on per capita income. On the contrary, when the study modelled the growth of the Solow's residual, or the exogenous technological progress term, as a function of the educational level or the human capital in a similar concept of that of endogenous growth approach of [13], this alternative functional model for growth accounting with inclusion of initial income level revealed that human capital was found to be significant and positive on growth. Endogenous growth of [14] is driven by technological change. This technology is considered non-rival. The paper concluded that the stock of human capital determines the rate of growth that arises from international investment.

The type of Solow model can be used to examine empirically contribution to economic growth widely. A contribution to economic growth research was done and known extensively by [15]. This study examined the consistency of Solow's economic growth and international variation in the standard of living. Augmented Solow growth models that both include and exclude human capital into the standard two-factor models are estimated by various estimation methods. Human capital in the study is based on human capital investment in the form of education. The ratio of eligible population aged 12 to 17 who enrolled in secondary school multiply by working-age population is the proxy for the human capital in the study. The steady-state production function is employed to explain output or economic growth under an implicit assumption of saving rate and population growth being exogenous. The study found that all factor inputs significantly determine the output of the economies. The study also found that the inclusion of human capital into the model significantly reduces the size of the coefficient of the physical capital investment.

For the meaning of good governance, different meanings of it were defined. Most definitions are connected with an institution and a well-qualified administration [16]. In particular details, competency of the administration and the institution assure sustainable progress of economic

development.

Good governance can be defined regarding the legal and social institution and structure that support transactions and activities of the economy [17]. The social structure is strengthened by three prerequisites; i.e., property rights protection, contract enforcement, and collective action provision taken. Good governance is obtained for the prerequisites of market economies. Governance is, therefore, vital to economic activities since markets and economic transactions do not function well in the absence of good governance.

Regarding The United Nations, good governance is defined in terms of resource allocation and management that leads to mutual public interest [18], [19]. The government must provide all necessary public goods and services adequately with the optimal allocation and distribution of resources.

Ref. [20] studied the good governance as an essential factor for economic development. Consequently, good governance is set to be one of the development goals in the millennium of The United Nations. The paper examined comparatively level of governance of Thailand and a few other Asian countries. The Worldwide Governance Indicator (WGI) was compared among selected Asian countries. The study found obviously and consistently across countries higher percentile rank of the WGI in advanced economies than of developing Asia. Also, the framework of the production function is used to quantitatively analyze the effect of being good governance on income per head for 16 Asian countries during 1996–2016. The result showed that capital per head, total factor productivity growth, as well as good governance, is a significant factor contributing to the growth of income per head.

The good governance in some studies refers to the quality of governance. Reference [21], for example, found that quality of governance and political stability are two essential factors playing a role in economic growth in Singapore.

Ref. [22] examined the role of good governance on economic growth in East Africa Community countries. Random effect panel data estimation is used in the study to analyze the relationship among 6 dimensions of the World Bank governance and growth. Among the governance dimensions, the study found that political stability, regulatory quality, and control of corruption contribute significantly to economic growth.

### III. METHODOLOGY AND THE MODEL

Let an aggregate production function in an economy be used to explain growth as in the standard Solow growth model. Under constant returns to scale, the Cobb Douglas production function of the output per capita can be written as a function of physical capital per capita and human capital per capita. The model can be written, as shown in (1).

$$y_t = e^{Z_t} k_t^\alpha h_t^\beta \quad (1)$$

where,

$y$  is gross domestic products (GDP) per capita (million dollars, measured in PPP).

$k$  is physical capital per capita (GFCF, Gross Fixed Capital Formation in constant price, million dollars).

$h$  is human capital per capita (index).

$Z$  is any exogenous factor or shifting factor. Here in this study,  $Z$  refers to good governance index (GOVN) and Net Foreign Direct Investment inflow per GDP (NFDIGDP). It can be written, as shown in (2).

$$Z_t = \mu_1 + \theta_1 GOVN_t + \vartheta_1 NFDIGDP_t + \varepsilon_{1t} \quad (2)$$

By taking the natural logarithm of (1), the equation of the model becomes as shown in (3).

$$\ln(y_{it}) = \mu_0 + \alpha \ln(k_{it}) + \beta \ln(h_{it}) + \theta GOVN_{it} + \vartheta NFDIGDP_t + \mu_i + \tau_t + \varepsilon_t \quad (3)$$

where GOVN is the governance index that is composed of 6 dimensions described below.  $\mu_0$  is the average value of fixed effect.  $\mu_i$  and  $\tau_t$  are country fixed effect and time fixed effect, respectively.

Data of the human capital index is from the Penn World Table 9.1. Data set of the others are from The World Bank. Sample of the study includes 18 Asia and the Pacific countries during 2000 – 2017. However, imputation of some missing values of series in the sample is needed for some years as discussed below.

- Good Governance Index of the World Bank consists of six composite dimensions of the governance: control of corruption (CRT), government effectiveness (GVEFF), political stability and absence of violence (POLST), regulatory quality (RGQUAL), the rule of law (ROL), and voice and accountability (VOIAC). Unit of these dimensions is measured in percentile rank (0 to 100). Nevertheless, information of all these dimensions is not available for 2001; the study takes the average values of each dimension in the year 2000 and the year 2002 for itself in the year 2001.
- Gross Fixed Capital Formation (GFCF, in constant prices) is used for capital input in this study. Nevertheless, for China, the GFCF in constant prices is not available; the available GFCF in current prices was divided by its GDP deflator and used for the GFCF in constant prices.

#### IV. DISCUSSION OF THE RESULT

Panel data of the model in (3) is estimated using the fixed-effect estimation method and found, as shown in (4).  $F$  test for the common intercept,  $F(17, 275)$  and for time trend,  $F(17, 275)$ , indicate the differences of the intercept and the trend. Hausman test for random effect ( $\chi^2_8$ ) is estimated and indicates the fixed effect model.

As expected, the estimated coefficients of physical capital ( $k$ ) and human capital ( $h$ ) are found positive and significant at a level of less than 5 per cent. Nevertheless, net foreign direct investment (NFDIGDP) is not significant. Regarding the governance factor, there are only 3 dimensions found significant; i.e., the government effectiveness (GVEFF) at 9.6 per cent, the political stability (POLST) at 6.4 per cent, and the regulatory quality (RGQUAL) at 5.9 per cent, respectively. The other coefficients of governance are found

insignificant.

Out of total 18 countries, Australia, India, Japan, Korea, Malaysia, New Zealand, Singapore, Thailand and The USA are those whose country fixed effect is above the average while the other half of the countries in the sample have the country fixed effect below the average (Table I). Time fixed effect is found to become positive after 2008 onwards (Table II).

$$\ln(\widehat{y_{it}}) = 7.6837 + 0.1676 \ln(k_{it}) + 0.8070 \ln(h_{it})$$

(SE) (0.1566) (0.0139) (0.1355)

$$+0.0026 NFDIGDP_{it} + 0.00043 CRT_{it} + 0.0023 GVEFF_{it}$$

(0.0025) (0.0012) (0.0014)

$$+0.0014 POLST_{it} + 0.0027 RGQUAL_{it} + 0.0006 ROL_{it}$$

(0.0007) (0.0014) (0.0017)

$$-0.0018 VOIAC_{it} \quad (4)$$

(0.0012)

$$F(17, 275) = 94.3525, \text{ Prob} = 0.0000$$

$$F(17, 275) = 9.7938, \text{ Prob} = 0.0000$$

$$\chi^2_8 = 26.2245, \text{ Prob} = 0.0019$$

TABLE I: COUNTRY FIXED EFFECT

AUS	0.5126	MYS	0.3688
BGD	-0.6873	NPL	-0.7369
KHM	-0.6690	PAK	-0.0896
CHN	-0.0719	PHL	-0.4095
IND	-0.4317	NZL	0.4165
IDN	0.0016	SGP	0.9967
JPN	0.4600	THA	0.2172
KOR	0.3858	USA	0.7686
LAO	-0.3332	VNM	-0.6320

TABLE II: TIME FIXED EFFECT

2000	-0.1828	2009	0.0088
2001	-0.1634	2010	0.0528
2002	-0.1538	2011	0.0718
2003	-0.1123	2012	0.0766
2004	-0.0674	2013	0.0897
2005	-0.0514	2014	0.08687
2006	-0.0412	2015	0.0853
2007	-0.0104	2016	0.1230
2008	0.0087	2017	0.1791

SOURCE: AUTHOR'S ESTIMATION

Where, AUS = Australia, BGD = Bangladesh, KHM = Cambodia, CHN = China, IND = India, IDN = Indonesia, JPN = Japan, KOR = Korea, LAO = Lao PDR., MYS = Malaysia, NPL = Nepal, PAK = Pakistan, PHL = Philippines, NZL = New Zealand, SGP = Singapore, THA = Thailand, USA = The United States of America, and VNM = Vietnam.

From the above estimation result, it is noted that not all dimensions of the governance in the estimated model are found statistically significant. The result of the insignificance of some governance dimensions can be caused by the fact that when a dimension of the governance index such as the control of corruption for countries in the sample is relatively high, another dimension of the governance dimension of those countries such as the regulatory quality can be relatively high as well.

Statistically, one can estimate a correlation coefficient between pairs of two variables to see if they have a high correlation. Therefore, the study estimates the correlation coefficients between pairs of those 6 dimensions of the governance. The estimation matrix of the correlation coefficients can be found, as shown in Table III. The correlation coefficients of each pair of the governance dimensions are as high as 0.8-0.9, except for the relatively lower correlation of the voice and accountability dimension (VOIAC) with the others.

TABLE III: THE CORRELATION COEFFICIENTS MATRIX

	CRT	GVEFF	POLST	RGQUAL	ROL	VOIAC
CRT	1.00					
GVEFF	0.95	1.00				
POLST	0.82	0.77	1.00			
RGQUAL	0.96	0.95	0.78	1.00		
ROL	0.98	0.96	0.80	0.95	1.00	
VOIAC	0.78	0.72	0.55	0.78	0.82	1.00

SOURCE: AUTHOR'S ESTIMATION

Consequently, the study includes only one dimension of the good governance at a time of estimation, instead of inclusion of all dimensions in the model as done in (4). Detail of each estimation result is in Table IV.

TABLE IV: SIX RE-ESTIMATED EQUATIONS WITH ONE DIMENSION OF THE GOVERNANCE IN EACH EQUATION

	ln(k)	ln(h)	NFDIGDP	CRT
(1). Coefficients	0.1703	0.7621	0.0053	0.0023
(SE)	0.01377	0.13686	0.0025	0.0011
	ln(k)	ln(h)	NFDIGDP	GVEFF
(2). Coefficients	0.1632	0.7634	0.0041	0.0045
(SE)	0.0136	0.1329	0.0024	0.0011
	ln(k)	ln(h)	NFDIGDP	POLST
(3). Coefficients	0.1762	0.7453	0.0037	0.0016
(SE)	0.0134	0.1352	0.0026	0.0006
	ln(k)	ln(h)	NFDIGDP	RGQUAL
(4). Coefficients	0.1771	0.7885	0.0048	0.0038
(SE)	0.0133	0.1352	0.0025	0.0011
	ln(k)	ln(h)	NFDIGDP	ROL
(5). Coefficients	0.1734	0.7335	0.0046	0.0038
(SE)	0.0134	0.1341	0.0025	0.0013
	ln(k)	ln(h)	NFDIGDP	VOIAC
(6). Coefficients	0.1764	0.7089	0.0056	-0.0002
(SE)	0.0136	0.1368	0.0025	0.0010

Source: Author's Estimation

It is important to note that standard errors of all coefficients of the six dimensions in Table IV are now smaller than those in the estimated model in (4). This notice indicates a consequence of the high multicollinearity among the governance dimensions problem shown in Table III, causing many insignificant estimates as evidenced in (4).

The six estimated models shown in Table IV are now consistent with the hypothesis as expected. Both the physical capital (k) and the human capital (h) are found significant at less than 5 per cent for all the 6 sub-equations reported in Table IV. Foreign direct investment (NFDIGDP) now is found significant at less than 5 per cent when the augmented model is estimated along with either the control of corruption (CRT), the regularity quality (RGQUAL), or the voice and

accountability (VOIAC), respectively. It is found significant at more than 5 per cent but less than 10 per cent when the augmented model is estimated along with either the government effectiveness (GVEFF) or the rule of law (ROL). Most importantly, in the sub re-estimated 3 in Table IV, coefficient of the foreign direct investment (NFDIGDP) is found insignificant when the augmented model is estimated with the political stability and absence of violence (POLST). This statistical insignificance can indicate that foreign direct investment can have less effect on income per capita when jointly explaining with the political stability and absence of violence in the host country.

In overall finding, the re-estimated model, with either one dimension of the governance index, now become significant with the correct signs. An exception is for the voice and accountability dimension (VOIAC) that the coefficient is still found insignificant.

Further investigation is essential for the astonishing finding of the insignificant impact of the voice and accountability on growth. Singapore, one of the high-income countries in the sample, has much a lower score of the voice and accountability dimension than the others'. The dimension of the voice and accountability of Singapore is given only 40-50 percentile rank over time, which is a relatively low score among the high-income countries. The other four dimensions of the governance of Singapore are given a very high score of 90 to 100 percentile rank. The inconsistent level of scores of this dimension among Singapore and the other high-income countries in the sample may be a cause of the statistically insignificant in the estimation.

By the above consideration, the study re-estimates the model by excluding Singapore from the sample. The re-estimation of the model along with the voice and accountability (VOIAC) dimension (without Singapore) provides a similar result of the insignificant coefficient of the voice and accountability (VOIAC) (Table V).

TABLE V: RE-ESTIMATED MODELS WITH THE VOIAC DIMENSION OF THE GOVERNANCE (EXCLUDING SINGAPORE)

	ln(k)	ln(h)	NFDIGDP	VOIAC
Coefficient	0.1631	1.2767	0.0095	-0.0003
(SE)	0.0133	0.1646	0.0031	0.0010

Source: Author's Estimation

The study merges two tables: Table IV and Table V by replacing the case of the voice and accountability dimension (VOIAC) in Table V into Table IV. Finally, Table VI summarizes the findings. It can indicate that government effectiveness (GVEFF) is the most powerful dimension of good governance in promoting growth. It is followed by the regulatory quality (RGQUAL) and the rule of law (ROL) in which both are the two less powerful effects than the effect of government effectiveness (GVEFF). The control of corruption (CRT) and political stability (POLST) are the fourth and the fifth influential factors, respectively. Finally, the voice and accountability (VOIAC) is still found to be an insignificant dimension of the governance affecting growth. Perhaps, the voice and accountability dimension may represent a different aspect from the other 5 dimensions of the governance. Voice and accountability, in general, is about

individual action that may not be able to have a significant impact on the aggregate economy.

TABLE VI: COMPARISON AMONG THOSE DIMENSIONS OF THE GOOD GOVERNANCE

	Coefficient <sup>1/</sup>	Std Error <sup>1</sup>	Coefficient <sup>2/</sup>	Std Error <sup>2</sup>
CRT	0.0004	0.0012	0.0023	0.0011
GVEFF	0.0023	0.0014	0.0045	0.0011
POLST	0.0014	0.0007	0.0016	0.0006
RGQUAL	0.0027	0.0014	0.0038	0.0011
ROL	0.0006	0.0017	0.0038	0.0013
VOIAC	-0.0018	0.0012	-0.0002	0.0010

Source: Author's Estimation

1/ All Dimensions are Included in the Estimated Model.

2/ Each Dimension is Included in the Estimated Model.

## V. CONCLUSION

In recent economic growth analysis, additional factors determining growth such as human capital, foreign direct investment, technological progress, research and development, and the advance of knowledge have been included in the standard two factors of sources of growth modelling. Good governance has become one of the sustainable development goals in the millennium of the United Nations. This study pays attention to examine the role of good governance in promoting growth. The study investigates whether good governance has any supportive role in the growth of the economy besides the contribution to growth from the other standard sources of growth.

World governance index of the World Bank is used for an empirical estimation in the augmented growth model. The world governance index consists of 6 dimensions: (1) control of corruption, (2) government effectiveness, (3) political stability and absence of violence/terrorism, (4) regulatory quality, (5) rule of law, and (6) voice and accountability. Moreover, it is interesting to see what dimension of good governance has the most considerable effect on growth relatively. The augmented growth model of 4 main input factors (physical capital, human capital, labour, and foreign investment) incorporated with the six dimensions of the governance is estimated for 18 Asia and the Pacific countries between 2000 and 2017.

The result shows impacts of most dimensions of good governance except the voice and accountability are all positive and significant factors in promoting growth. Among all the dimensions of good governance, government effectiveness appears to be the most potent factor in promoting growth. Only the voice and accountability dimension is found statistically insignificant.

Regarding the insignificant impact of the voice and accountability, Singapore, among one of those prosperous countries, has received a low score of the voice and accountability. The other five dimensions of the governance of Singapore are given very high percentile score of 90 to 100 from 2000 to 2017 as usually be the case for the developed countries. On the contrary, the score of the voice and accountability of Singapore is as low as 40-50 percentile rank. The inconsistent scores of the voice and accountability dimension among the high-income countries can be a cause

of the insignificant statistics.

Furthermore, by omitting Singapore from the sample, the estimation still shows the insignificant impact of the voice and accountability dimension on growth. The study concludes that perhaps the voice and accountability may be a somewhat different aspect from the other 5 governance dimensions in the study.

## CONFLICT OF INTEREST

The author declared that the submitted work was carried out without any conflict of interest.

## AUTHOR CONTRIBUTIONS

The paper is solely worked and written by the author.

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