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THE ROLE OF GOVERNMENT IN ECONOMIC GROWTH: EVIDENCE FROM ASIA AND PACIFIC COUNTRIES

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ABSTRAK

Artikel ini menganalisis peran pemerintah dalam pertumbuhan ekonomi jangka panjang di sebagian besar negara Asia Pasifik yang mempunyai kesamaan latar belakang ekonomi, periode 1980-2000. Studi yang menggunakan "unbalanced panel method"ini memberikan hasil bahwa koefisien pangsa pengeluaran pemerintah terhadap GDP adalah negatif signifikan dalam mempengaruhi pertumbuhan ekonomi di kawasan ini. Hubungan negatif ini menunjukkan bahwa komponen konsumsi mendominasi pengeluaran anggaran pemerintah. Hasil ini sejalan dengan kenyataan bahwa sebagian besar negara-negara di kawasan ini menemui masalah dalam manajemen pengeluaran pemerintah. Jadi pengeluaran yang besar untuk konsumsi bagi kepentingan pemerintah sendiri menutupi efek positif investasi publik.

Namun demikian, koefisien penerimaan pajak menunjukkan tanda positif. Hasil yang signifikan menjelaskan adanya hubungan yang kuat antara penerimaan pajak dan pertumbuhan ekonomi di mana meningkatnya penerimaan pajak mendorong pertumbuhan ekonomi jangka panjang. Oleh karena itu, kebijakan pemerintah sebaiknya mendukung akumulasi penerimaan pemerintah yang mempunyai peran potensial dalam mendorong pertumbuhan ekonomi.

Selain itu, studi empiris ini juga menunjukkan bahwa di antara variabel yang mempengaruhi pertumbuhan ekonomi, menurut argumen teori pertumbuhan neoklasik, hanya variabel investasi modal yang mempengaruhi pertumbuhan ekonomi untuk negara di kawasan Asia Pasifik dalam analisis.

Akhirnya, dalam artikel ini juga direkomendasikan studi lebih jauh yaitu analisis peran kebijakan fiskal dalam pertumbuhan ekonomi yang memisahkan antara kebijakan fiskal untuk kepentingan yang produktif, seperti investasi publik, dan kepentingan yang tidak produktif, seperti konsumsi rutin.

Keywords: *economic growth, government expenditure, tax revenue, fiscal policy*

INTRODUCTION

The role of government in economic growth has been considerably debated among many scholars. The question that always comes up is whether the role of government, through the composition of government expenditure or government consumption and taxes, influences the long run economic growth. In basic theory of economic growth, the neoclassical theory from Solow (1956) and Swan (1956), the answer to this question is 'no' (Kneller et al., 1999). In this theory, the model is designed to show how capital stock, labor force and exogenous technology influence economic growth. Even though government can influence the growth of

population, which in turn affects the growth of labor force, this will not affect the long term income percapita growth rate (Kneller et al, 1999:172). In fact, the evidence in most developing countries is difficult to reduce the rate of population growth. This model also says that the level of saving influences the stock of capital and the level of output. This argument leads to the discussion of fiscal policy whether increasing government expenditure would lead to running a budget deficit and increasing taxes will induce a lower rate of domestic saving and investment, then both crowd out the level of national income (Mankiw, 2003:189).

In endogenous growth theory, the role of investment in physical and human capital has a place in determining long-run economic growth. Through this model, there are ways to explain the government role in contributing economic growth through their play in expenditure both for consumption and public investment, and revenue from taxes. Some previous studies such as Barro (1990), King and Rebelo (1990) and Lucas (1990) bring much attention in the particular interest of the role of public policy on economic growth.

Those theories have clear explanations, nevertheless, some empirical results found contrary evidence. This leads considerable debate over the effects of government spending and taxes on economic growth. For example, Ram (1986) found positive significance of the impact of government expenditure on economic growth. However, Engen and Skinners (1991) empirical study found impact of government spending on economic growth is negative significant (Lin, 1994:83). Besides that, there are possible arguments that use tax revenue as an independent variable on economic growth will produce negative effects because the government taxes may induce the misallocation of using this revenue either in allocating the resources or due to unwisely consuming the revenue on government interest.

It seems that the debate is still unfinished. Thus another empirical study is needed, especially for the role of government on economic growth in Asia Pacific countries where the roles of central governments are dominated in this region for the last twenty years. Therefore, this study itself will examine the role of government through the share of government expenditure on growth of income per capita and tax revenues for 20 countries in Asia Pacific region. The hypothesis predicts that the share of total government expenditure in GDP has negative significance and share of government tax revenues in GDP has significantly positive role on economic growth for the region between 1980-2000. The predictions are based on the evidence of the most countries' experiences on the role of their government in using the budget ineffectively and facing deficits in their government budgets. This paper also tries to examine the role of independent variables in the neoclassical and endogenous growth models, such as physical capital investment, human capital investment, and role of government control on price of goods and services.

In examining this issue, this empirical writing is organized as follows. Firstly, it will review the theories of economic growth. The second part of the paper will briefly describe arguments and evidence of previous cross-country empirical studies of the role of government in economic growth. Thirdly, it will present the empirical model based on the theory following Kneller, et al. (1999) and data description. The model includes some variables based on the endogenous growth model. The next part will show the methodology and diagnostic analysis. The fourth part will show the empirical results and analysis from unbalanced panel data for 20 countries in Asia Pacific region for the years 1980 to 2000. Finally, in a belief that the discussion should not only come up with the debate, however, it will be important then, to present some conclusion as well as the recommendations.

THEORETICAL POINT OF VIEW

The neoclassical growth model as its well known presents the role of public policy in determining the level of output rather than long run economic growth (Kneller et al 1999:173). In the neoclassical models, such as the Solow-Swan model, technological progress and population growth rates are the variables that drive steady-state economic growth. Technological progress can offset the diminishing returns of marginal product of capital to decrease and, in the long run countries, at the rate of technical progress, exhibit per capita growth.

Even though it is difficult to find any explanations about the role of fiscal policy on economic growth in the neoclassical models, the endogenous growth model of Barro (1990), and Barro and Sala-I-Martin (1992, 1995) provide systems where the fiscal policy has spaces in influencing the steady state growth of the economy. In Barro (1990:s120), the implications of the theory are the relation between the size of government and the rate of growth and saving. Barro divided the model into the effect of productive government expenditure and non-productive government expenditure. He suggested that the variations in share of productive government expenditure positively impact on growth and saving. However the unproductive government expenditure brings negative effects on economic growth, then increasing non-productive expenditure leads to lower economic growth (Barro 1990:s120-121). The prediction of this negative sign comes from the reason that non-productive government expenditure does not has direct effect on private productivity. As, there will be no incentives to invest in such a way, therefore the economy tends to grow more slowly due to lack of investment.

Besides that, another variable of fiscal policy that also has been risen much attention on the study of economic growth is government taxation. King and Rebelo (1990) show that national taxation has substantial effects on economic growth. Their work is based on a two sectors endogenous growth model. This public policy can influence economic growth since imposing the policy influences private incentives in accumulating physical and human capital. Their model suggests that public policy has significant effects especially in small open economy countries with free capital mobility and also countries with growth miracle experience. In these countries, taxes cause the economy leads to "a development trap" in which countries stagnate for long periods of time (King and Rebelo, 1990:s127).

The basic neoclassical model of Solow (1956), Swan (1964), Cass (1965), and Koopmans (1965) itself has properties related with the study of government taxation and economic growth: "(i). The existence of a constant asymptotic growth rate and (ii) the coincidence of competitive and optimal allocations in the absence of public interventions" (King and Rebelo:1990:s127). In this model, initial consumption increases during the transition period as an effect of the increasing of tax, thus the economy offsets the capital stock through lowering investment and immediate high levels of consumption.

In summary of the theoretical point of view, there will be new promises for the Schultz hypothesis. The hypothesis says that the incentives effect of policy can influence economic activity, for example decision to reduce government expenditure from consumption side to investment expenditure will encourage the growth of production from investment side. And, in the next turn, it will impact on economic growth (King and Rebelo, 1990:s148).

REVIEW OF PREVIOUS EMPIRICAL EVIDENCE

There have been widely many results in studying the relationship between fiscal policy and economic growth. Among those who

argued that there is positive relationship between government size and economic growth are Rubinson (1977), Kormendi and Meguire (1985), and Barro (1990), focusing on productive expenditure, and Kneller et.al (1999). Rubinson (1977) study's using the ratio of government revenue to GNP found that this ratio has positive relationship with economic growth. He argued that this particularly happened in developing countries when government spending offset their dependence on other countries (Lin, 1994:84).

Moreover, Kormendi and Meguire (1985) also found positive effects of government size on economic growth. They used the average growth rates of government share of consumption spending in GDP for 47 countries in post World War-II (Yin, 1994:84). This finding is followed by Barro (1990) but he found a significant positive impact only for productive government expenditure initially and had been declined subsequently. Furthermore, Kneller et al (1999) also observed the government role in economic growth into two different perspectives, i.e. productive and unproductive government services. Productive government fiscal policies reflect both expenditure and taxes contributing positively to economic growth but not for unproductive fiscal policies.

However, many other scholars have found reverse results, such as Landau (1983), Grier and Tullock (1987), Bart and Brady (1987), and Engen and Skinner (1991). Landau (1983) observed that increasing government size, measured by the share of government consumption in GDP for 104 cross countries observations, reduces the rate of economic growth of per capita GDP (Yin, 1994:84). Besides that, Grier and Tullock who used the growth of real GDP also found significant negatives impact of government size on economic growth for the case of 24 OECD countries for a 5 years average time period (Yin, 1994:84). Similarly for Bart and Brady (1987) who were using 16 OECD countries for 1971-1983 (Yin, 1994:84). Engen and Skinner (1991), who were considering the endogeneity problem using two stage instrumental variable, also found a significantly negative relationship between the average rate of change in the ratio of government spending to GDP.

Besides considering one side of government size through the role of government expenditure or government consumption, many studies are concerned about the role of government taxation. Some evidence shows that this parameter has a potential role in explaining the relationship between fiscal policy and economic growth. As Stokey and Rebelo (1995) state, the impact of tax reform ranges between zero to eight percentage points (Kneller et.al, 1999:172). Kneller et.al who themselves divided government taxes into undistortionary taxes and distortionary taxes for a panel of 22 OECD countries, 1970-1995, found that an increase in distortionary tax reduces economic growth significantly (Kneller et.al, 1999:188). However, Mendoza et al. (1997) found that the tax mix bring no significant impact on economic growth.

EMPIRICAL MODEL AND DATA DESCRIPTION

Empirical Model

The model in this paper predicts the role of government size on economic growth for 20 countries in Asia Pacific region for the time period 1980-2000 using an unbalanced panel method. This method is used because there are some lacks of data availability for some countries or some years in the study. Most previous empirical studies were studying for OECD countries particularly and a mix of countries in the world. The model in this empirical study follows Kneller, Bleaney and Gemmel (1999:174). The model in this paper predicts that the coefficients estimated have negative sign for the government expenditure and positive sign for government tax revenues. Formally, the model is formulated as follows:

$$g_{it} = \alpha + \sum_{i=1}^{k} \beta_i Y_{it} + \sum_{j=1}^{m} \gamma_j X_{jt} + u_{it} \qquad (1)$$

k = 2,3,4, ……., 20 (countries in the study)

m = 2,3,4, ……, 20 (countries in the study)

In this model, suppose that economic growth, g_{it}, in country i and time t is a function of fiscal variables, X_{jt}, and a vector of non-fiscal variables, Y_{it}, that capture the neoclassical and endogenous growth model, i.e. human capital investment, physical capital investment, and inflation as the proxy of government price control.

Since a variable government budget is included in the model and as we know government expenditure and government tax revenues are elements of the budget, then to avoid multicollinearity, one element of X must be omitted in the estimation of equation 1. In this model, the omitted variable is either the budget, the government expenditure, or government tax revenues variable. Then if we rewrite equation 1 as:

$$g_{it} = \alpha + \sum_{i=1}^{k} \beta_i Y_{it} + \sum_{j=1}^{m-1} \gamma_j X_{jt} + \gamma_m X_{mt} + u_{it} \qquad \ldots\ldots(2)$$

and omit X_{mt} to avoid perfect multicollinearity, the identity:

$$\sum_{j=1}^{m} X_{jt} = 0$$

Implies that the equation actually being estimated is:

$$g_{it} = \alpha + \sum_{i=1}^{k} \beta_i Y_{it} + \sum_{j=1}^{m-1} (\gamma_j - \gamma_m) X_{jt} + u_{it} \qquad \ldots.(3)$$

Thus the interpretation that follows this specification is as the impact of a unit change in the corresponding fiscal variable offset by a unit change in the omitted variable on economic growth (Kneller et.al, 1999:174-75).

Besides that, a vector Zit, non-fiscal variables, follows the prediction of neoclassical and endogenous growth models. Firstly, the coefficient of school enrolment is expected to be negative, which implies that the result of current investment in this human capital can not reflect current economic growth. Furthermore, the physical capital investment is estimated by the variable gross capital formation. The positive and significant estimator of this variable as neoclassical growth theory suggests, that the increasing of capital investment will contribute significantly to long term economic growth (Mankiw, 2003:181). Lastly, the coefficient of inflation variable is expected to be positive since increasing role of government on price control will lead to increase economic growth as increasing inflation increases value of total output.

Data Description

The data set includes 20 countries for Asia Pacific region (i.e. Bangladesh, Bhutan, China, Fiji, India, Indonesia, Korea Republic, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, PNG, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, and Vietnam) that have almost similar economy background (not including countries such as Australia, Japan, Hong Kong, Vanuatu, Chile, Kiribati, French Polynesia, and China Macao for reason of different economic background). The estimation uses unbalanced panel method due to some unavailable values in the data set for period 1980-2000. The source of data is the World Development Indicators, 2002, published by the World Bank. Table 1 describes some descriptive statistics for the data set.

It can be seen from Table 1 that the GDP per capita countries grew about 3.15 percent per annum on average. Data are in current international dollars (World Bank 2002).

Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
GDP per capita growth (% p.a)	3.15	4.53	-16.9	16
Government expenditure (% of GDP)	22.63	8.56	6.43	47.3
Gross capital formation (% of GDP)	27.37	10.18	9.23	70.2
Overall budget (% of GDP)	-3.26	4.96	-23.8	16.3
Secondary school enrollment (% of gross)	48.12	23.13	4.13	102
Tax revenue (% of GDP)	13.79	5.25	2.55	27.4
Inflation (% p.a)	9.62	17.18	-100	268

Moreover, fiscal policy variables used in this study are the share of total expenditure to GDP that is on average 22.63 percentage of GDP and the share of government tax revenue to GDP that is on average 13.79 percentage of GDP. Total expenditure of the central government here includes both current and capital (development) expenditures and excludes lending minus repayments. Tax revenue is defined as compulsory, unrequited, nonrepayable receipts for public purposes collected by central governments. Another fiscal variable is the share of overall government budget to GDP which in the observed countries is about –3.26 percent on average. The overall budget deficit (minus sign) is current and capital revenue and official grants received less total expenditure and lending minus repayments (World Bank, 2002).

Besides fiscal policy variables, Table 1 also shows the general statistics for non-fiscal policy variables. Gross capital formation as a variable for physical capital investment consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. The investment ratio (share of gross capital formation to GDP) averages more than 27 percent.

The variable gross secondary school enrollment ratio is used as a proxy for human capital investment in this paper. Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development (World Development Indicators 2002). The ratio of this variable is very high, around 48 percent of gross enrollment. It can be indicated that the human capital investment in some Asia Pacific countries, especially for secondary school investment, grow rapidly during a period between 1980 to 2000.

Finally, inflation is chosen as variable proxy of government price control. Inflation is measured using Consumer Price Index (CPI) and is calculated yearly. From table 1 above, it can be shown that the inflation in Asia Pacific region is less moderate, averages around 17 percent yearly. It can be indicated that the government in this region has role in controlling the price of main goods and services.

METHODOLOGY AND DIAGNOSTIC ANALYSIS

Methodology

The estimation method in this study uses the unbalanced panel method. The equation being estimated is equation 3. The panel method itself consists of three methodologies, pooled OLS estimation, fixed effect estimation, and random effect estimation.

1. Pooled OLS

In very general form, the model can be specified as:

$$g_{it} = x'_{it}\beta_{it} + \varepsilon_{it} \quad \text{where } \varepsilon_{it} \sim IID(0, \sigma^2_{\varepsilon})$$

where βit measures the partial effect of xit in period t (t = 1, …., T) for individual i (i = 1, …, N).

The standard assumption is that β_{it} is constant for all i and t, then the general equation above can be written:

$$g_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it}$$

It implies that the impacts of a change in x are the same for all individuals and all periods (Verbeek, 2000:310). Estimation of this equation results from the simple OLS estimators. When E ($\alpha i \mid X$) is not equal to zero then the estimators from this OLS estimation will be biased and inconsistent. This problem comes from a relationship between x_{it} and ε_{it}. In this case, the estimation using simple OLS is incorrect.

2. The Fixed Effect Models

The fixed effects model is actually the simple regression model where the intercepts vary between individuals i, (Verbeek, 200:313) i.e

$$g_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it} \text{ where } \varepsilon it \sim IID(0, \sigma^2_{\varepsilon})$$

In this case, the individual effects αi will be eliminated by transforming the data first.

$g_i = \alpha_i + x'_i\beta + \varepsilon_i$ where $g_i = T^{-1}\sum_t g_{it}$ and similarly for another variables. Then we can write the model as $g_{it} - g_i = (x_{it} - x_i)' \beta + (\varepsilon_{it} - \varepsilon_i)$ that does not include the individual effect α_i. The estimator for β from this transformed model is called within estimator or fixed effects estimators (Verbeek, 2000:313).

3. The Random Effects Model

In the regression analysis, all factors that give impacts on dependent variable but not are included in regressors variables, can be called as a random error term. In this panel method estimation case, αi are random factors. Therefore, we can write the random effect model as

$$g_i = \mu + x'_i\beta + \alpha_i + \varepsilon_i$$

where $\varepsilon_{it} \sim IID(0, \sigma^2_{\varepsilon})$; $\alpha_{it} \sim IID(0, \sigma^2_{\varepsilon})$

where αi + εi is treated as an error tem including two parts: and individual specific part, that is constant over time, and a remainder part, that is assumed to be uncorrelated over time (Verbeek, 2000:315). The error components structure implies that the error term $\alpha_i + \varepsilon_i$ exhibits a particular form of autocorrelation (unless $\sigma^2_{\alpha}=0$). Consequently, standard errors produced from simple OLS estimation are incorrect then it is needed to construct the transformed model, called GLS estimation method (Verbeek, 2000:317), i.e.:

$$(g_{it} - \nu g_{it}) = \mu(1 - \nu) + (x_{it} - \nu x_i) + u_{it}$$

where $\nu = 1 - \psi^{1/2}$, with $\psi = \sigma^2_{\varepsilon}/(\sigma^2_{\varepsilon} + T\sigma^2_{\alpha})$.

When ψ=0 corresponds to the fixed effect estimator (ν=1). The estimator from the transformed model (GLS) is called the random effects estimators for β (and μ).

The Diagnostic Tests

The panel method estimation in this study consists of the cross-sectional part and time series part. As explained in the fixed effect model above, since this study includes cross sectional component then it implies that the intercepts vary between individual countries. Therefore, testing for heteroskedasticity problem due to heterogeneity between individuals is important.

In this paper, the Breusch-Pagan test is used to examine the problem of heteros-kedasticity which is associated with a Lagrange Multiplier test for the null hypothesis, that there are no individual specific

effects ($\sigma^2_\alpha = 0$). The rejection of the null hypothesis of this test in this study suggests that the individual specific effect matters in this case. Hence the Pooled OLS model can not be used in the model of this study. Then it is needed to transform the data to overcome the problem. However, estimation on transformed model needs to consider what model should be used, either the fixed effect or the random effect model.

Fixed Effects or Random Effects?

As explained in the methodology section above , it can be concluded that the random effects model states that $E\{g_{it}|x_{it}\} = x_{it}'\beta$, while the estimation of the fixed effects model is $E\{g_it|x_{it}\} = x_{it}'\beta + \alpha$ (Verbeek, 2000:318). The β coefficient in these model are the same only if $E\{\alpha_i|x_{it}\} = 0$. The Hausman test covered a test for the uncorrelated between x_{it} and α_i as a null hypothesis. The rejection of the null hypothesis implies that there is a significant difference between the two estimators. It shows that the model must use fixed effect model. The Hausman test then a test whether the fixed effects and the random effects estimators are systematically different (Verbeek, 2000:319). The result of this test for the case in this study shows that the null hypothesis is rejected. It can be seen from the probability of χ^2 that less than 5 percent. Thus the model which is appropriate for this case is the fixed effects model, except for second and third model specifications.

THE EMPIRICAL RESULT AND ANALYSIS

Table 2 summarizes the empirical results. The empirical results come from the estimation of equation 3 that in this study results are obtained from any combinations of model specification. As explained before, to avoid perfect collinearity it is necessary to do with any combination from fiscal policy variables, either expenditure, tax revenue or government budget.

Table 2. Regression Result

Method	FE	RE	RE	FE	FE	FE	FE
GCF	0.11 (4.48)	0.09 (4.19)	0.10 (4.48)			0.08 (3.35)	0.10 (3.93)
Expenditure	-0.16 (-3.54)		0.02 (0.97)		-0.15 (-3.25)		0.04 (1.27)
Tax revenue	0.30 (4.12)	0.09 (2.40)		0.18 (4.42)	0.34 (0.07)	0.14 (3.24)	
Budget		0.15 (2.61)	0.14 (2.15)	0.23 (3.69)		0.17 (2.64)	0.16 (2.13)
School	-0.012 (-1.64)	-0.01 (-1.39)	-0.007 (-1.00)	-0.014 (-1.90)	-0.013 (-1.71)	-0.011 (-1.50)	-0.008 (-1.05)
Inflation						-0.02 (-1.44)	-0.01 (-0.85)
R^2	0.099	0.0902	0.0960	0.0613	0.0544	0.0960	0.0758

Number in parentheses are t-statistics
FE = Fixed Effect; RE = Random Effect

The study find that with the first model specification, including only the government expenditure variable and tax revenue as fiscal independent variables, the coefficient of government expenditure has a negative significant sign on affecting economic growth. The negative sign in this coefficient implies that increasing in expenditure will lead to decreasing economic growth. It could be said that the expenditure in the countries in this study is not spent in productive ways. The point estimate shows that a decrease by one percentage point of expenditure increases the growth by 0.16 percentage points. Most of the expenditure is for consumption components, not productive investment. However, when the model consists of government expenditure and overall budget variables, the sign is turn to be positive. Since most Asia Pacific countries experiences deficit government budget, it can be said that increasing expenditure has correlated with increasing the deficit.

Besides that, the coefficient of tax revenue variable has positive sign. This significant and positive sign show that there is strong relationship between tax revenue and economic growth where increasing government tax revenue will encourage economic growth. In the first model specification, increasing one percentage point of share of tax revenue to GDP will increase economic growth by 30 percentage point. This significant result is consistent for all model specification.

Furthermore, in first model specification, the coefficient for the gross capital investment as the proxy of physical investment is positively significant at the level $\alpha = 5$ percent. The model then predicts that if the share of gross capital formation to GDP is increased by one percentage point it will raise economic growth by 0.11 percentage points. The result is also consistent for all other model specification and follows the prediction of the neoclassical growth model that suggests increasing capital investment will increase long term economic growth.

When another combination of fiscal policy is included in the model such as expenditure and overall budget variables, the coefficient of expenditure variable become positive but not significant. This result is consistent with the first model specification that most countries in this region use the expenditure in unproductive way, small share of productive expenditure does not influence economic growth. The resulting positive sign in the coefficient of the budget is quite strange because it is expected to have negative sign since most countries in this study experience government's budget deficit. Then the study follows the first model specification.

As the theory suggest that human capital investment and inflation have role in influencing economic growth. The negative and insignificant result on coefficient of school enrollment variable suggests that current investment of school does not effect current economic growth as predicted. The result of negative and insignificant coefficient of inflation shows that the role of government on price control does not influence long term economic growth in Asia Pacific region. It can be said that this variable policy does not effective in influencing long term economic growth for countries in this study or the inflation variable might not be appropriate proxy for analyzing the impact of government price control on long term economic growth for this region.

Hence in the first model specification, the result shows that they are jointly significant in influencing the economic growth for some Asia Pacific countries. The F statistics shows that $F^4_{396} = 10.99$ is greater than F critical value = 2.37 so that the null hypothesis is rejected thus they are jointly significant. In analyzing the goodness of fit, it is somewhat uncommon in panel data method. Verbeek (2002:321) stresses that it is not adequate to use R^2 in choosing between estimators (random effect, fixed effect, or OLS estimators) but it is possible to use R^2 in

choosing between alternative model specifications. Therefore, based on the results in table 2, it can be seen that first model specification has largest R^2 among other model specifications.

CONCLUSION

Theory predicts that fiscal policy variables have a place in explaining long run economic growth. Regarding this theory prediction, it is interesting to study the role of government on economic growth for countries in Asia and Pacific region which have almost similar economic background using panel data set for a period 1980-2000.

This study found that the coefficient share of government expenditure is significantly negative in influencing economic growth in this region. The negative sign shows that the consumption component takes a dominant role in spending in the government budget. This result concerns the fact that most countries in this region face misallocation problems in government expenditure management. Thus high spending on consumption for own government purposes offsets the impact on public investment.

Besides that, the positive and significant of coefficient of share of tax revenue on GDP follows the prediction of the theory that productive revenue will increase long term economic growth. Policy that encourages the accumulation of revenue has potential role in driving long term economic growth.

Furthermore, the study shows that the coefficient for the gross capital investment as a proxy of physical investment is positively significant. This result follows the prediction of neoclassical growth models that suggest increasing capital investment will increase long-term economic growth.

The critical points of the study role of government in economic growth recommend that countries should improve the management of spending by increasing the share of government expenditure in public investment. This improvement has the potential to increase the productivity of the expenditure. The next turn will induce the economic growth in most Asia and Pacific countries. Besides that, it is important to improve the policies that encourage increasing government revenue, especially from domestic resources that will encourage long term economic growth. This recommendation is in line with the new tax policy in most developing countries in Asia and Pacific region, such as Indonesia, in which the government try to impose new tax policy in increasing tax revenue.

For future study, it might be important to distinguish the role of government into productive or non-distortionary and unproductive or distortionary fiscal policy variables in affecting economic growth. This suggestion should be considered for predicting the precise growth effects of fiscal policy changes.

REFERENCES

Barro, R. J., 1990, "Government Spending in a Simple Model of Endogeneous Growth", *Journal of Political Economy*, 98 (1), s103-s125.

Barro, R. and X. Sala-i-Martin, 1992, "Public Finance in Models of Economic Growth", *Review of Economics Studies*, 59 (4), 645-661.

King, R. and S. Rebelo, 1990, "Public Policy and Economic Growth: Developing Neoclassical Implications", *Journal of Political Economy*, 98 (1), s126-151.

Kneller, R, M. Bleaney and N. Gemmell, 1999, "Fiscal Policy and Growth: Evidence from OECD Countries", *Journal of Public Economics*, 74, 171-190.

Kormendi, R.C. and P.G. Meguire, 1985, "Macroeconomic Determinants of Growth: Cross Country Evidence", *Journal of Monetary Economics*, 16, 141-63.

Landau, D., 1983, "Government Expenditure and Economic Growth: a cross-country study", *Southern Economic Journal*, 49, 783-92.

Lin, S.,1994, "Government Spending and Economic Growth", *Applied Economics*, 26, 83-94.

Lucas, R., 1990, "Supply Side Economics: an Analysis Review", *Oxford Economic Papers*, 42 (2), 379-401

Mankiw, Gregory, 2003. *Macroeconomics*, 5th ed., New York: Worth Publishers.

Ram, R., 1989, "Government Size and Economic Growth: a New Framework and Some Evidence from Cross-section and Time series Data: Reply", *American Economic Review*, 79 (1), 281-84.

Rubinson, R., 1977, "Dependency, Government Revenue, and Economic Growth", *Studies in Comparative International Development*, 12, 3-28.

Verbeek, M., 2000. *A Guide to Modern Econometrics*, John Wiley & Sons, Inc., New York.

World Bank, *World Development Indicators 2002*, CD-ROM.