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ECONOMIC GROWTH AND THE ROLE OF POLICY FOR SELECTED ASEAN COUNTRIES: MALAYSIA, SINGAPORE AND THAILAND

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List of Abbreviations

ADF	Augmented Dickey Filler
LDC	Less Developing Countries
IR	Impulse Response
ML	Maximum Likelihood
PP	Philips-Perron
VAR	Vector Autoregression
VD	Variance Decomposition

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ABSTRACT

The purpose of this paper is to discuss links between policy settings, institutions and economics growth in selected ASEAN countries: Malaysia, Singapore and Thailand. An Augmented Solow Model to identify the relationship between growth and policy related variables. In addition to the primary influences of capital accumulation and skill embodied in the human capital, the results also confirm the importance of the macroeconomic environment, trade openness and well developed financial markets. Inflation seems to be an important key in policy implementation. Interestingly government consumption seems to have positive impact on growth for certain ASEAN countries instead of positive like most well develop countries.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

The introduction of endogenous growth theory in 1980s has had an unequivocal impact on the empirical literature dealing with single-equation macroeconomic models. The empirics are geared towards determining the significance of institutions, catch-up and convergence, and knowledge accumulation for economic growth differentials. The most intensively studied factors explaining economic growth are the initial level of income, the investment ratio, population growth, political stability, market distortions and the development of financial markets along with dozens of other variables to be considered. The evidence for theoretically plausible correlations is abundant but some of then insignificant and even unexpected correlations show up as well.

The augmented Solow model is uses in this paper to identify the growth relationship because it was believe to better predict growth with reasonable simplicity base on several literatures. This model was base on the model introduced by Robert Solow in 1956 and modified by Mankiv, Romer and Weil in 1992. Solow in his classical 1956 article proposed that we begin the study of economic growth by assuming a standard neoclassical production function with decreasing returns to capital. Taking the rates of saving and population growth as exogenous, he showed that these two variables determine the steady-state level of income per capital. Because saving and population growth rates vary across countries, different countries reach different steady states. However Solow model has its own weaknesses. More detail discussion of Solow Model

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and augmented Solow Model will be given in the literature review in the next section. Three countries were selected because they have more develop market and have a similar technology growth rate.

Many studies have tried to establish the causal link between several macroeconomic and microeconomic variables with economic growth. This contribution is to recognize that structural changes will change the sources of growth. However most of the studies were done in developed countries especially United States and European countries. This paper discusses links between policy settings, institutions and economic growth in selected ASEAN countries on the basis of the available literature, descriptive material times series regression and cross-country time-series regression analysis. In particular, the focus of the paper is on the possible influences of, macroeconomic conditions and financial market conditions on both economic efficiency and the accumulation of physical capital. The first section of the paper briefly introduces the policies and institutional dimensions that are considered in the empirical investigation of the sources of economic growth. It focuses on the transmission mechanisms linking policy to growth as well as on cross-country differences in policy settings and their evolution over time. The second section of the paper presents some of the literature on growth regressions or related issues. This is follow by the methodology, result and conclusions.

1.1 The Role of Policy and Institutions On Growth

The empirical growth literature has developed substantially over the past two decades, drawing on larger and richer databases and exploiting better econometric tools

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to explain cross-country differences in growth performance This renewed interest in the empirics of growth has its counterpart in the political discussion. In particular, evidence has accumulated to suggest that traditional (fully-exogenous) growth models do not tie up with stylized macroeconomic facts. In a model with exogenous saving rates, population growth and technological progress combined with diminishing returns to reproducible factors, there is no role for policy and richer countries grow at a slower rate than poorer countries adjusted for demographic differences. However, evidence of this process of convergence has weakened. Thus, the concept of convergence can only be reconciled with the data if one moves to conditional convergence, that is to say, the relation between growth rate and initial conditions after holding constant other variables. In particular, countries may persistently show differences in living standards and growth rates because of differences in saving rates, framework conditions and technological progress, all of which could be influenced by policy and institutions[1].

Extended versions of the neoclassical model have relaxed the hypothesis of exogenous savings and capital formation, giving room for policy to affect growth in the short and medium-term via an impact on savings and investment. Moreover, some of these models allow the level of efficiency in the economy to be related to policy and institutional settings, reinforcing the notion that policy can change the level of the long-term growth path. On the other hand, the slope of the path remains determined by exogenous (but potentially different across countries) population growth and technical progress. Another class of models relaxes this latter assumption: postulating that

1 Some of these endogenous models imply "conditional" convergence, while others do not, depending on assumptions about the specification of the production function and the evolution of broad capital accumulation (see Barro and Sala-I-Martin, 1995; Durtauf and Quah, 1999).

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production requires more than just direct investment in physical capital and basic labor but also investment in knowledge and human capital, research and development (R&D) and in infrastructure. With this extended concept of capital it is possible to relax the assumption of diminishing returns to capital. With constant (or increasing) returns to "broad" capital, the long-term rate of growth becomes endogenous, in the sense that it depends on investment decisions, which in turn, could be influenced by policy and institutions.

1.2 Investment and Growth

The rate of accumulation of physical capital (typically proxied by the share of investment in GDP) is one of the main factors determining the level of real output per capita. In a neo-classical model, a one-time increase in the investment rate leads only to a transitional period of increased output growth. When growth reverts back to the steady state rate; the capital stock and output have risen to levels at which the new rate of gross investment is only sufficient to maintain a constant capital/labor ratio plus an amount to cover physical depreciation. Endogenous growth models allow for more permanent effects of increases in investment on the steady state growth rate of output per capita. First, technological progress could, to some extent, be embodied in the process of investment. Second, Arrow (1962) and Romer (1986) introduce externalities to capital whereby private returns to scale may be diminishing, but social returns-reflecting spillovers of knowledge or other externalities - can be constant or increasing[2].

[2] For example, the introduction of new capital may lead to better organization and efficiency even if no new technology is incorporated in the capital equipment (Arrow 1962). It could also be assumed that the

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Government can influence the rate of investment in physical capital either directly (housing, urban infrastructure, transport and communication) or indirectly by affecting incentives to invest in the private sector. The fact that various policies can affect both the level of investment as well as influencing growth through other mechanisms creates some difficulties in evaluating their role. If policy variables are included along with investment as explanatory variables in growth regressions, the estimated coefficients pick up only part of the overall impact on growth. Public sector investment share is also considered in extended regression equations to assess its independent impact on output, as suggested by Aschauer (1989), as well as its potential effect on the estimated coefficient of the business-sector investment rate[3].

1.3 Human Capital and Growth

One of the key extensions of the neo-classical growth model is to include human capital together with physical capital. This generally improves the fit of the model with real-world data and increases its plausibility. In these augmented models, the role of human capital is analogous to that of physical capital, insofar as its accumulation implies capital deepening with an associated period of accelerated growth towards a new steady

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growth rate of labor productivity of workers operating on new machines could be related to investment in new technologies (Kaldor, 1957).

[3] Specifying public capital as a separate factor input in the aggregate production function, Aschauer (1989) found the marginal productivity of public infrastructure spending to be two to four times higher than that of private investment spending. However, these results have been questioned by several researchers (*e.g.* Aaron, 1990; Schultze, 1990; Tatom, 1991) on the ground that they were implausibly high and affected by possible problems of misspecification and reverse causality. More recently, Duggal *et al.* (1999) found results consistent with the original predictions of Aschauer by specifying infrastructure as part of the technology index, as opposed to including infrastructure as a factor input in the production function.

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state. However, investment in human capital (*e.g.* higher expenditures on education and training) might play a more persistent role in the growth process. Advances in technological progress often have strong links with education, especially at the higher level. Thus, education may not only make a contribution to 'embodied' improvements via increases in the skills of the workforce but also a contribution via innovation. Indeed, new-growth models that incorporate a knowledge-producing sector can be interpreted as incorporating the role that, for example, research universities may play in growth[4].

In this study, human capital is measured by estimates of the average number of years of education among the working-age population, based on figures on educational attainment and assumptions about how many years of education a particular level of education represents. This variable is, of course, only proxy for human capital, insofar as it does not consider on-the-job training, experience and other factors that could potentially influence human capital.

1.4 Inflation and Growth

In the context of the growth literature, two inflation-related factors have generally been considered, namely its level and its variability. Direct effect of inflation on investment: It has been argued that inflation can be considered as a tax on investment and, thus, high levels of inflation would increase the profitability required to undertake an investment project with an overall negative impact on the accumulation of physical capital (see *e.g.* Stockman, 1981; De Gregorio, 1993; Jones and Manuelli, 1993).

[4] An early example of this type of model was by Uzawa (1965), later examples by Lucas (1988), Romer(1990), Grossman and Helpman (1991) and Aghion and Howitt (1998).

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However, others have pointed out that an increase in the rate of inflation results in a higher cost of holding money and a portfolio shift from money to capital, leading to an increase in investment and growth and a decline in the real interest rate (Mundell, 1963;Tobin, 1965). Inflation could also have an impact on investment, the returns to investment and hence on growth via its impact on uncertainty. Uncertainty about inflation is likely to rise with the level of inflation (see *e.g.* Ball and Cecchetti, 1990). Moreover, inflation increases the amount of 'noise' in price signals (Barro, 1976, 1980).

Evidence on the relationship between inflation and growth is somewhat mixed: while the link is strong in cases of high inflation, it is less so in cases of moderate or low inflation (see *e.g.* Edey, 1994; Bruno and Eastely, 1998). Moreover, a link between uncertainty, investment, efficiency in resource allocation and growth would suggest a relation between variation in inflation and growth even though, given the correlation between level and variability of inflation, this effect could be difficult to identify. Bearing this caveat in mind, bivariate correlations indeed suggest a negative relationship between the change in the variability of inflation and the change in output growth. Countries with a significant reduction in the variability of inflation have not experienced the decline in growth that other countries have. From the above discussion, two indicators of inflation are considered in the empirical analysis: the level of inflation and the variability of inflation. These indicators are included in the growth equation that includes the investment share, whereby the estimated impact on growth is via the effect of these variables on resource allocation and the ex-post return on investment. They are also included in the investment equation, which permits testing for an effect of both variables on the level of investment.

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1.5 Fiscal Policy and Growth

Government activities clearly play a major role in setting the economic framework in which economic growth takes place. Some of these activities are geared towards redistributive and wider social policy objectives that, at least in the short-run, are not primarily intended to lead to higher economic growth. In addition, demand for some government services (health, education, defense, etc.) could depend on the level of output per capita, so that the associated government spending would rise with living standards. Bearing these considerations in mind, fiscal policy settings can affect output and growth in the medium term as well as over the business cycle. In particular, where government deficits finance consumption or transfers, a traditional argument for prudent policy is to reduce the crowding out effects on the private sector. Also, if fiscal policy is seen as being at odds with monetary policy, the credibility of the latter could be undermined leading to risk premium in interest rates and pressures on exchange rates.

Supply side theories have also hypothesized that the taxes necessary to support government spending could distort incentives, reduce the efficient allocation of resources and hence reduce the level or growth of output[5]. In the neo-classical framework, these distortions imply an efficiency loss with a negative level effect on output.19 In contrast, endogenous growth model emphasize the potentially long-lasting effect of tax distortion and certain kinds of public consumption on growth (see amongst others, Barro, 1990; Barro and Sala-i-Martin, 1995; and Mendoza *et al.*, 1997). These studies often classify

[5] Jorgenson and Yun (1986, 1990) report simulations of the neo-classical model which imply that a shift from direct to indirect taxation could lead to significant gains in economic welfare in the United States.

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elements of the government budget into different categories: distortionary and not distortionary taxation, and productive and non-productive expenditures. Broadly speaking, distortionary taxes (e.g. taxation on income and profit, taxation on payroll and manpower etc.) could affect the investment decision of economic agents (with respect to the level and composition of physical capital, and human capital), by creating tax wedges and hence distorting the steady-state level (and growth) of output. Non-distortionary taxes (e.g. taxation on domestic goods and services) do not affect the preference function of economic agents and thus are neutral with respect to output growth. In a similar vein, government expenditures are sometimes differentiated according to whether they are included as arguments of the production function or not. In the first case they are classified as "productive", and thus have a direct effect on growth; otherwise they are classified as non-productive. In the first group are policy interventions that try to overcome market failures and directly add to productive capital (e.g. infrastructure investment).

The main conclusion from the literature is that there may be both a "size" effect of government intervention as well as specific effects stemming from the financing and composition of public expenditure. At a low level, the productive effects of public expenditure are likely to exceed the social costs of raising funds. However, government expenditure and the required taxes may reach levels where the negative effects on efficiency and hence growth starts dominating. This may reflect an extension of government activities into areas that might be more efficiently carried out in the private sector; or perhaps misguided or inefficient systems of transfers and subsidies. These negative effects may be more evident where the financing relies more on so-called

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"distortionary" taxes and where public expenditure focuses on so-called "unproductive" activities.

1.6 Export and Growth

The hypothesis of export-led growth suggests that exports are a key factor in explaining economic growth. Beckerman (1965) indicates that the growth of exports has a favorable impact on economic growth because resource allocation and production efficiency can be improved by export expansion to foreign markets. In contrast to the export led growth hypothesis, Vernon (1966) suggests the growth-driven exports in which the internal growth of domestic economies leads to export expansion. In this case, internally generated economic growth, perhaps due to an increase in domestic investment or technological improvement, enhances the international competitiveness of tradeable goods, and hence exports are promoted.

Helpman and Krugman (1985) further suggest that an increase in exports has a feedback relationship with economic growth. They argue that the growth of exports promotes economic growth due to a better resource allocation and production efficiency; the economic growth then enhances its competitiveness in international markets, which in turn promotes the growth of exports. Under these circumstances, export promotion and economic growth are reinforcing each other in the process of economic development. No consensus has emerged on the theoretical appropriateness of the export-led growth hypothesis. Theoretical disagreement on the role of exports is matched by mixed empirical evidence. Surveys of the empirical evidence are found in Edwards (1993) and Giles and Williams (2000). Most studies of the role of exports have focused upon

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developing economies. For 37 developing countries, Jung and Marshall (1985) employ the Granger test to examine the causal relationships, but strong evidence supporting the hypothesis is difficult to find. Using the White specification test, Ram (1985) however provides evidence supporting the export-led growth hypothesis for LDCs. Chow (1987) uses the Sims test and finds a feedback relationship between export growth and industrial development for eight 'newly industrialized' countries. Jin (1995) further examines the hypothesis, employing a vector autoregressive model as a small macro model for the 'four little dragons' in Asia. For Hong Kong, Singapore, South Korea, and Taiwan, a feedback relationship between exports and growth appears to fit the data better than the export-led growth hypothesis. Levin and Raut (1997) employ a panel data for 30 'semi-industrialized' countries and find that export expansion policies play a significant role in economic growth with a strong interaction effect with human capital. Islam (1998) further estimates the role of exports for 15 Asian economies, using a multivariate error-correction model, but most Asian countries are supported either by export-led growth or by a feedback relationship between exports and growth. Shan and Sun (1998a) also find a feedback relationship for China.

The export-led growth hypothesis has also been investigated for industrialized economies. Sharma *et al.* (1991) provide empirical support for the growth-driven exports in which the causal link appears backward from output to exports, whereas Marin (1992) provides strong evidence supporting the export-led growth hypothesis even for industrialized economies. Both studies estimate a four variables vector autoregressive (VAR) model, with somewhat incomplete sets of variables. The resulting imbalance of the strength of the effects on exports and output may reveal different causal impacts.

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Thus, employing an extended six-variable VAR model that balances various possible offsetting impacts on exports and output, Jin and Yu (1996) find little relationship between exports and output growth for the US economy; this finding is however not surprising since the sources of US economic growth are essentially domestic. Henriques and Sadorsky (1996) further examine the exports and growth relationship for Canada and find the results in favor of the proposition that economic growth causes exports. Shan and Sun (1998b) also find the growth-driven exports for Australia, with somewhat sensitive results to lag lengths of the variables used.

1.7 Problem Statement

1. In developing country in general, a great deal of attention was given to the role of trade in the process of economic growth. The central question in the formation of economic policy was the degree to which the strategy of action should emphasize export expansion and the extend to which a commitment should be made to policies of import substitution in attempting to raise the rate of economic growth.
2. The economic performance that South Korea has achieved over the past quarter century is often likened to a "miracle". Especially their ability to bounce back quickly from Economy crisis. The success of the Korean has been praised as paradigm for economic development and been the focus of academic investigation and public curiosity. Recently a considerable amount of interest has been expressed in the driving forces behind the Korean miracle. More specifically, attention focuses on what account for the rapid growth of Korean economy in the last several decades and

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how does ASEAN country differ? Do ASEAN country share the same pattern? Do they recover as quickly?

3. There are several possible reasons for the economy crises. These include,
    - Lack of productive investments of savings and sufficient savings to support investments.
    - Currency value appreciation in the last decade undermining export competitiveness
    - Over dependence on flight capital for economic growth.
    - Weak corporate strategies of bid financial firm

Questions are which affecting or influence growth the most?

4. There are several arguments on the sources of growth in ASEAN countries among researchers and the debate is still on going. The first group lead by Young and Krugman argue that growth in ASEAN are merely the accumulation of capital while the second group lead by Romer and Nelson argued that it was the mastery and acquisition of foreign technology that was the main source of growth. Further study on growth patterns and sources is still required.

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1.8 Objectives

1.8.1 General Objectives

- To identify the growth pattern of selected ASEAN country.

1.8.2 Specific Objectives

- To identify the influences of policy influence on economy for selected ASEAN countries.
- To investigate possible effect of policy changes of selected ASEAN countries toward the economy growth.

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