# AN ECONOMETRIC ANALYSIS OF FLOW OF FUNDS IN MALAYSIA

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## INTRODUCTION

Flow of funds accounts analyse how the savings of a sector is allocated to investment in that sector or made available, directly or through financial institutions, to other sectors. As financial intermediaries, the financial institutions will channel resources from surplus to deficit spending units (sectors). Therefore, flow of funds accounts provide a complete picture of financial transfers between the various sectors in the economy, linking the savings and investment aggregates with their other associated borrowing and lending activities.

Flows of funds accounting constitutes an important segment of a social accounting system, besides the other notable segments (national income accounting, balance of payments accounting and input-output table). An understanding of two issues concerning the data contained in the flow of funds accounts is crucial. These issues are the elements of the flow of funds data and the alternatives of sector-based versus instrument-based approaches of data analysis.

A system of flow of funds accounts has two sections, the capital accumulation account and capital finance account. The capital accumulation account is used to record savings and capital formation of the four sectors in the economy. They constitute the sources and uses of funds respectively. The excess of sources of funds (savings) over the uses of funds (capital formation) of a sector is referred to as the surplus (net) and the net lending of that sector to other sectors. On the other hand, the capital finance account is the breakdown of the net surplus (deficit) of each sector. It shows the details of how the net surplus sector is represented in terms of increased holding of financial assets and decreased stock of liabilities or how the net deficit is financed through

the reduced holding of financial assets and increase in the stock of liabilities. Normally, the activities recorded in the capital finance account involve financial institutions whose role is to act as the intermediary between the deficit and surplus spending units.

The analysis of flow of funds data have often been conducted through two approaches, sectoral and financial instruments types. Each of them has its own merit, depending on the objective of the analysis. The sectoral approach emphasizes the important function of the financial system in channelling resources from surplus to deficit units in the economy in an efficient manner. On the other hand, the financial system is pre-eminently a network of assets and corresponding liabilities. The financial instruments approach is the analysis (or study of the determinants) of each of the instruments through which the transactions recorded in the capital finance account are affected. For example, it studies the factors determining the demand for and supply of treasury bills through which some of the transactions in government debts are affected. In a sectoral approach, the focus is on the factors determining each of the items that are relevant to the sector being studied.

## INTERSECTORAL FLOW OF FUNDS IN MALAYSIA

During the expansionary and high growth period of 1980 - 1984, Gross National Savings (GNS) was relatively high at 28.1 per cent of Gross National Product (GNP). However a resource gap of 8.7 percent of GNP existed due to the high rate of investment, which was at 36.8 percent of GNP. The intersectoral flow of funds in Malaysia shows that for most of the period under study, the public and the corporate sectors were borrowing from the household and the foreign sectors to finance their investment requirements. During this period the public sector was faced with a net financing requirement of 6 percent of GNP. Although for this period the public sector savings reached a peak of 11.2 percent of GNP, arising partly from the surpluses generated by the Non-Financial Public Enterprises (NFPEs), the level of savings was still insufficient to finance the investment requirements of the public sector. This was due to the expansionary fiscal programmes following the 1979/80 boom in the price of oil and the continued implementation of the programmes under the New Economic Policy. The level of savings from the corporate sector was 1.2 percent of GNP compared to the financing require-

ment of 10.1 percent of GNP. The lower savings rate was due to the declining profit margin because of the increase in the cost of doing business. The household sector was still the major saviour of the economy with a savings of 15.8 percent of GNP.

For the 1985 to 1986 period, the level of GNS remained stable at 27.5 percent of GNP while the level of savings-investment gap improved significantly at 3.1 percent. The share of public investment declined to 13.3 percent of GNP due to withdrawals in large scale public investments. The net financing require- ment of the public sector reduced to 3.1 percent of GNP due to fiscal consolidation. A stagnation in economic growth following the sluggishness in domestic demand due to a lower level of income (caused by the decline in the price of major primary commodities) had increased private sector uncer- tainty. It had also reduced profits and the level of private investment. However, despite the decline in private investment spending, the net financing requirement was still large at 13.9 percent. During this period the household sector remained a net lender to the economy with a savings of 22.8 per cent of GNP.

For the period 1987 to 1988, GNS increased to 33.3 percent of GNP due to the higher economic growth of 7.1 percent per annum. A resource surplus of 7.1 percent was recorded due to the decline in public sector investment and the moderate level of private investment. Household savings declined to 17.5 percent of GNP which resulted in a decline in the household net lending share to 14.1 percent of GNP. The net lending requirement by the private sector declined to 2.9 percent of GNP due to an increase in the level of savings by the private sector. This was due to the improvement in economic conditions which in turn increased the level of profits. Public sector savings continued to decline due to the late recovery in revenue and continued fiscal consolidation.

The GNS continued to rise during the period 1989 - 1990, although its share in terms of GNP fell to 30.9 percent due to a strong increase in consumption by both the public and private sectors. As a result, household net lending declined by 10.2 percent in terms of GNP. Public and private investments increased by 33.3 percent to register a savings investment gap of 2.4 percent of GNP because of the strong economic growth and higher profits accrued. Public sector resource requirement continued to decline due to the significant

increase in public savings. A resource gap of 2.4 percent was registered. However, an increase in the share of foreign investment of 6.2 percent in terms of GNP could not be financed by foreign savings (2.4 percent), therefore an increase in capital inflow was needed to finance the foreign investment needs.

Share of GNS in terms of GNP declined to 28.0 per cent for the 1991 period before increasing to 32.3 percent in 1992. The resource gap for the private sector had reduced due to a marked increase in private savings coupled with a moderation in capital outlay. However, the public sector resource gap remain stable due to an improvement in public savings and a moderation in development expenditure.

## LITERATURE REVIEW

Odedokun (1993) used flow of funds data from 15 Less Developed countries (LDCs) from varying periods between the 70s and mid 80s to identify the factors that determined the savings, capital formation and net surpluses of each of the business, household, government and foreign sectors. He used the flow of funds framework in the analysis by pooling cross-sectional and time series data from the above countries. The variables that were identified as having an effect were economic growth, real interest rate, domestic credit availability, real devaluation of exchange rate, openness of the e onomy, population size, per capita income, central government revenue to GDP ratio and world economic growth. The analysis also tried to identify the magnitude and direction of the effects of each of the variables on sectoral savings and investment ratios as well as on intersectoral financial flows.

Odedokun (1987), had also used the flow of funds approach to evaluate the behaviour of the fiscal and monetary authorities in Nigeria and to examine whether one authority was subordinate to the other in the process of policy execution. By using a flow of funds approach, it was possible to postulate that each of the authorities would use each of the instruments in its porttolio to steer the course of the economy. This was accomplished through a two-sector (treasury and central bank) flow of funds model. This approach helps to identify the relevant explanatory variables and imposes discipline in terms of model specification and estimation, especially by recognizing the account-ing interrelationships and the constraints implied in the sources and uses

of funds statement for each sector. Various instrumental variables had been identified. For fiscal policy, the variables were taxation, current or consumption expenditure, borrowing (internal and external borrowings) and capital formation expenditures. As for monetary policy, the variables were credit variables, credit to federal government, credit to the private sector, foreign assets and the monetary base.

Ho (1988) discussed two approaches in analysing the flow of funds data: a disaggregative flow of funds approach and an aggregative approach. He pointed out that the disaggregative approach analyses, on the micro side, the determination of the rates of return of financial assets since it involves the supply and demand of financial instruments. In its basic form, the flow of funds account can be arranged to show the financial flows of every sector in the economy. However, this approach is more widely used in developed countries where the capital and financial markets are well developed, as a wide spectrum of financial instruments are being traded. Therefore, in Malaysia, the Central Bank uses an aggregate approach to analyse the flow of funds data in order to give reliable information on the savings and investment behaviour of the household and business sectors. Detailed flow of funds accounts were constructed by Bank Negara for the period 1971 to 1976 and recently the approach has been used widely in its annual reporting on the performance of the financial system in Malaysia. Based on this, Ho proposed a model for the sources and uses of funds in a financial system. In the model, he uses a partial adjustment equation which takes in to account the total flow of financial resources and total financial resources being mobilised in the economy.

## OBJECTIVE OF THE STUDY

In view of the decline in investible resources and the increasing competition for funds, the inflow of foreign direct investment is expected to slow down in years to come. To sustain a certain level of investment growth in the economy, more concerted efforts should be made to encourage greater domestic investment. These include the strengthening of the domestic capital market to ensure the availability of sufficient funds at reasonable costs to domestic investors and the improvement of domestic infrastructure. Therefore, the objective of this study is to look at the sources and uses of funds of the Malaysian economy in the process of attaining a developed country status by the year 2020.

The flow of funds approach, which links savings and investment aggregates with lending and borrowing activities, shows the financial transactions between the broad sectors of the economy such as households, corporate, government and foreign sectors. Yet, the researchers strongly feel that it is insufficient to observe the pattern of mobilization of those resources only. Therefore, this study intends to highlight the factors that determine the various components of the flow of the funds data, particularly the real section. Besides explaining the behaviour of the flow of funds variables, this paper also tries to demonstrate the feasibility of using an econometric approach to analyze the flow of funds data. Such an analysis is to sharpen our understanding of the flow of funds in Malaysia. Although we do not propose to estimate the structural relationships between the variables in the model, we strongly believe the approach will be useful in identifying the various alternative policy variables that influence the sources and uses of funds.

## METHODOLOGY

Seemingly Unrelated Regression (SUR) is used to analyse the equations in the model simultaneously since each endogenous variable is conceptually related to other endogenous variables. This has also to do with the way the model is formulated, i.e. from national income identities. The technique is preferred to equation by equation estimation because it allows the residuals of each equation to be correlated to other equations. The procedures of SUR are as follows: first, each equation is estimated by Ordinary Least Squares (OLS) then the residuals will be calculated and the covariance matrix will be constructed through the first iteration. Finally, the correlation coefficients will be revised through the second iteration. Therefore, SUR assumes no autocorrelation problem. Another constraint faced by the researchers is that Micro TSP only allows up to 41 coefficients in the whole system to be run at a time. Therefore, the number of equations is also limited.

Time series data is used and it is obtained from the various issues of International Financial Statistics Economic Report, Bank Negara Annual Report and Key Indicators of Developing Asian and Pacific Countries. Hence, the model's success relies on the characteristics of the data used, namely its consistency, reliability and accuracy. In some circumstances, appropriate data is not

directly available and therefore proxies are used. Thus, the model and empirical results are subject to measurement errors.

In some cases, the required data is not available from the listed publication. Another problem is that although the data is available, it is not published as it is classified as confidential. Consequently, the variable and the equation involved have to be dropped from the model. Finally, some data has been found to be inconsistent throughout the study period due to factors such as improved coverage, different methods of collection, different weightage, concepts and terminologies. The above problems are some of the limitations of our study as they affect the empirical results.

## MODEL

The FOF model is developed based on the National Income identities such that:

$$Y_i + T_i = \quad C_i + I_i + NFA_i \qquad\qquad \text{........ (1)}$$

where $i$ is the type of sectors in the economy

The inclusion of NFA is to consider the fact that not all the funds available are consumed and invested in physical assets. Some are kept in the form of net financial instruments such as deposits, shares and bonds. The value of NFA can also be negative which implies that the sector may also borrow funds from other sectors in the form of long term and short term loans such as equity capital and foreign borrowing (Jansen, 1989).

Equation (1) can also be written as:

$$Y_i + T_i - C_i = S_i$$

Therefore, $\qquad S_i - J_i = NFA_i \qquad\qquad \text{........ (2)}$

and $\qquad NFA_i = FA_i - FL_i \qquad\qquad \text{........ (3)}$

Hence, by analyzing on sectoral basis;

$$S_h + FA_{fh} = I_h + EQ_{hc} + FA_{hf} + EQ_{hf} \qquad \dots\dots (4)$$

$$S_c + EQ_{hc} + FORA_{wc} + FA_{fc} = I_c + FORA_{cw} + FA_{cf} \qquad \dots\dots (5)$$

$$S_g + EQ_{gs} + FORA_{ws} = I_s \qquad \dots\dots (6)$$

$$S_g + FA_{hg} + FORA_{ws} = I_g + EQ_{gs} \qquad \dots\dots (7)$$

$$S_f + EQ_{hf} + FA_{hf} + FORA_{wf} = I_f + FA_{fh} + FA_{fc} + FA_{fg} + FORA_{fw} \qquad \dots\dots (8)$$

$$(S_h + S_c + S_s + S_g + S_f) + FORA_{wc} + FORA_{ws} + FORA_{wg} + FORA_{wf}$$

$$= (I_h + I_c + I_s + I_g + I_f) + FORA_{cw} + FORA_{fw} \qquad \dots\dots (9)$$

where

| | | |
|---|---|---|
| h | = | household, unincorporated sector |
| s | = | non-financial state enterprises |
| c | = | incorporated sector |
| f | = | financial sector |
| w | = | foreign sector |
| FA | = | financial assets |
| EQ | = | equity shares |
| FORA= | | foreign debt and assets· |
| NFA | = | net foreign assets |
| FL | = | financial liability |

Equation (4) shows that the household sector obtains its sources of funds from its own savings and/or financial institutions and then uses the funds to invest in its own sector, or to buy equity shares from incorporated and financial sectors, or keeps them in the form of financial assets. Similar interpretations can be applied to other sectors. However, due to interdependencies among the four sectors such that the liabilities of one sector are the assets of another, and assuming that the statistical errors are insignificant, some of the terms in equations (4) to (9) will be cancelled out. In the end, only investments and savings of the four sectors including the foreign savings remain to be studied in the flow of funds model as simplified in equation (10). The foreign savings consist of external debt, current account and foreign aid.

$$I - S = S_w \qquad \dots\dots (10)$$

In addition, the researchers strongly feel that the model will be potentially more useful if the behaviours and the determining factors are examined in detail in relation to key macroeconomic determinants, instead of just looking at the

pattern of mobilization of resources from one sector to another. The household and business sectors were lumped together as the private sector due to the unavailability of data. Foreign aid was also considered marginal due to its confidentiality and therefore excluded from the model.

The researchers also acknowledge the fact that some authors such as Odedokun employ the same set of explanatory variables for all endogenous variables in the flow of funds model since the total sources of funds must equal the total uses of funds. However, the researchers segregated the direct and the indirect influences of any change when determining the factors affecting the flow of funds equations in this study. In order to achieve this objective, the individual estimated equations of investment and savings of each of the three sectors used in this regression are as follows:

$$NNPI = C(1) + C(2)*RRL + C(3)*RGDPP + C(4)*INFLAT + C(5)*$$
$$NPUBI + C(6)* EXTDEB(-1) + C(7)*RMBSKL + \mu_1$$

$$NPUBI = C(8) + C(9)*RGDEF + C(10)*REXDEB + C(11)*CS +$$
$$C(12)*INFLAT + C(13)*GRGDP + \mu_2$$

$$NFDI = C(14) + C(15)*RCOTAX + C(16)*E + C(17)*RNEXP +$$
$$C(18)*RGDPP + C(19)*REMA80 = C(20)DIFNR + \mu_3$$

$$EXTDEB = C(21) + C(22)*TSPC + C(23)*RGDI + C(24)*RGDEF +$$
$$C(25)*E + C(26)*INFLAT + \mu_4$$

$$NPSAV = C(27) + C(28)*GRGDP + C(29)*TOT70 + C(30)*DEPEND$$
$$+ C(31)**RRD + C(32)*CS + \mu_5$$

$$NPUBS = C(33) + C(34)*RGDP + C(35)*CS + C(36)*RGDEF + \mu_6$$

$$CA = C(37) + C(38)*INFLAT + C(39)*LTCAP + C(40)*TOT70 +$$
$$C(41)*RGDEF + \mu_7$$

* *(Note: Refer to the list of variables)*

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The effects of the regressors on the regressee in each equation are considered the direct effects. However, total change in the endogenous source of funds must be equal to total change in the endogenous use of funds such that $dS/dZ + dI/dZ$ ($Z$= total effect). Thus, each endogenous variable is somehow related to other variables indirectly.

# OPERATIONAL DEFINITIONS

Private sector savings in our model represent savings from the household and corporate sectors. However a separate analysis on savings for both sectors is needed to explain their savings behaviours. Due to the unavailability of data, the analysis cannot be carried out in such a way. Household savings can be determined by using the disposable income approach, i.e. the difference between disposable personal income of households and private personal consumption expenditure. The figure also includes savings of unincorporated small family-owned businesses.

Corporate savings shows the level of retained profits and the depreciation allowances of the profit-seeking private enterprises excluding non-financial public enterprises. Government or public savings represents the difference between the current income and current expenditure of various levels of government operations comprising the federal government, 13 state governments, statutory bodies and local governments. It also includes transfers to the private sector. In addition, the estimate also includes the operational surplus of the Non-Financial Public Enterprises (NFPEs).

Data on other flow of funds variables are taken directly from secondary sources. Proxies are used for those variables which are not readily available. These proxies are described next.

*List of variables*

| | | |
|---|---|---|
| EXTDEB | = | External Debt |
| REXDEB | = | Ratio of external debt to GDP. The (-1) is to denote the lag of one year |
| TSPC | = | Savings per capita measured by total savings |

|          |   | (public and private) per capita |
|----------|---|---------------------------------|
| CA       | = | current account balance |
| E        | = | exchange rate (RM/$US). Although the real effective exchange rate which takes into account the inflation rate differentials is preferred, it is not readily available for the entire study period |
| RRL      | = | real lending rate, i.e. the nominal lending rate minus the rate of inflation |
| LTCAP    | = | long term capital inflows |
| RGDEF    | = | ratio of nominal government deficit to GDP |
| NPUBI    | = | nominal public investment |
| CS       | = | government compulsory savings proxied by ratio of the collection of EPF to total savings. |
| INFLAT   | = | inflation, measured by the growth of CPI. |
| RCOTAX   | = | ratio of corporate tax to GDP |
| NNPI     | = | net nominal private investment |
| REMA80   | = | average earnings measured by the average earnings in manufacturing sector. Average earnings in manufacturing sector is used as a proxy of average wages because most of the FDIs are concentrated in this particular sector. |
| DEPEND   | = | dependency ratio measured by the ratio of the number of children below age 15 and the number of persons aged 65 and over to the number of persons aged 15-64. |
| NFDI     | = | nominal foreign direct investment |
| NPSAV    | = | nominal private savings |
| NPUBS    | = | nominal public savings |
| RGDPP    | = | income per capita, measured by real GDP per capita, also measures internal market size. |
| RNEXP    | = | external market size measures the external market size. |

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| | | |
|---|---|---|
| TOT70 | = | terms of trade measured by the average unit value of exports to average unit value of imports. |
| RGDI | = | ratio of domestic investment to GDP |
| DIFNR | = | interest rate differential measured by the difference between the domestic and US interest rates. |
| RRD | = | real deposit rate measured by nominal deposit rate less the rate of inflation. |
| RGDP | = | real GDP |
| RMBSKL | = | nominal value of shares being traded at the KLSE, i.e. as a proxy for political and social stability. |

# EMPIRICAL RESULTS

As mentioned above, the intersectoral flow of funds in Malaysia shows that the public and the corporate sectors are the major investors in the economy whilst the household and the foreign sectors are the net lenders to these investors. In other words, the public and corporate sectors are borrowing from the households and the rest of the world to finance their investment require-ments. This explains why domestic savings and investment need not be tightly linked, since part of domestic investment can be financed through foreign savings; that is to say the availability of foreign savings allows domestic investment to exceed domestic savings. Having acknowledged the simple framework of interrelationships between the flow of funds variables, the determination of factors influencing each of the identified variables will be discussed next.

*(Please refer to Table 1 for the following discussion)*

*Private Investment*

The auto-free regression indicates that the most significant determinants of private investment are real interest rate, inflation, income, public investment and political and social stability. A higher level of interest rate means higher cost of capital which therefore dampens private investment. The negative sign between real interest rate and private investment also justifies that Malaysian

does not totally rely on domestic savings to finance its domestic private investment.

Higher income as measured by real GDP per capita means more resources available for savings and also a greater demand for domestic products or a greater market size in terms of consumers' purchasing power. It is also an indicator of macroeconomics stability and the government's ability to control macroeconomic policy. Such a situation stimulates private investment. On the other hand, inflation means a greater risk for long term investment projects. It also reflects the macroeconomic instability and inability of the government to control its economic policies. Any counter-measures to curb inflation is expected to have an adverse effects on private investment. Therefore it is essential to control the anticipated inflation.

External debt and public investment are also added to the equation. Theoretically, a higher external debt implies fewer resources available for domestic use. It may also imply a higher future tax burden. Although the coefficient has the expected sign (i.e. - ve), it turns out to be insignificant. The one year lagged value is to consider the lag in the government's policy implementation, especially with regard to tax issues. Public investment undoubtedly stimulates private investment. This positive and significant relationship is consistent with many other findings.

Public investment, particularly in capital infrastructures such as highways, water systems, airports, and sewers are normally complementary with private investment. At least such components of government expenditures are able to assist the production and distribution of private goods and services (Aschauer, 1989). Such government efforts to reduce the infrastructure bottlenecks is in line with the strategy to maintain price stability. It has been found to be also a significant determinant of private investment.

The value of shares in the KLSE reflect the general political and social stability in the country as the share prices and trading volume are normally very sensitive to such influences. This probably explains the competition for funds between financial and real investments. If people are more keen to invest in financial assets (capital market), less will be available for investment in the real sector.

# Table 1
## Empirical Results

| DEPENDENT VARIABLES<br><br>INDEPENDENT & INTERVENING VARIABLES | NNPI | NPUBI | NFDI | EXTDEB | NPSAV | NPUBS | CA |
|---|---|---|---|---|---|---|---|
| C | -6009.80<br>(-2.7985) | 4406.11<br>(-6.1997) | -3669.76<br>(-4834014.4) | -64696.66<br>(-7.7620) | 23910.78<br>(4.1038) | -5753.63<br>(-7.9539) | -1566.32<br>(3631197.0) |
| RRL | -1083.27<br>(7.7017) | | | | | | |
| RGDP | 1028.092<br>(7.7017) | | 111.19<br>(4080909.8) | | | | |
| INFLAT | -1099.38<br>(-6.8647) | -29.41<br>(-0.8078) | | -28.7422<br>(-0.2046) | | . | -158.12<br>(-13984655.0) |
| NPUBI | 1.1916<br>(9.3936) | | | | | | |
| EXTDEB | -0.0020<br>(-0.0915) | | | | | | |
| RMBSKL | (0.2426)<br>(-5.3580) | | | . | | | |
| R6DEF | | -42304.41<br>(-13.2153) | | 113136.32<br>(7.7156) | | -28841.32<br>(-8.7422) | 0.0038<br>(3.1125) |
| REXDEB | | -2918.37<br>(-3.1381) | | | | | |
| CS | | 8028.80<br>(8.9586) | | | 17340.17<br>(13.3368) | 7150.48<br>(8.1220) | |
| GRGDP | | 131.7878<br>(3.6798) | | | 469.69<br>(9.0011) | | |
| RCOTAX | | | 6 5575<br>(12316301.0) | | | | |
| E | | | -1209.9289<br>(-3974689.6) | 17491.60<br>(5.5953) | | | |

*(Table 1 - continued)*

| DEPENDENT VARIABLES / INDEPENDENT & INTERVENING VARIABLES | NNPI | NPUBI | NFDI | EXTDEB | NPSAV | NPUBS | CA |
|---|---|---|---|---|---|---|---|
| RNEXP | | | 14246.62 (48644940.0) | | | | |
| REMA80 | | | -40.05 (-12788252.0) | | | | |
| DIFNR | | | $-2.023 \times 10^{-5}$ | | | | |
| TSPC | | | | 37690.45 (18.2099) | | | |
| R6DI | | | | 40056.49 (4.3562) | | | |
| TOT70 | | | | | -43.1474 (-1.7470) | | 49.33 (10572789.0) |
| DEPEND | | | | | -355.20 (-7.4299) | | |
| RRD | | | | | -57.89 (0.9742) | | |
| RGDP | | | | | | 8.67 (2.4762) | |
| LTCAP | | | | | | | 2.2541939 ( -75071756.0) |
| ADJUSTED R² | 0.850087 | 0.925310 | 1.0000 | 0.974052 | 0.967415 | 0.896966 | 1.0000 |
| S.E OF REGRESSION | | | 0.000249 | | | | 0.000244 |
| F-STATISTIC | 18.95674 | 48.07668 | $2.06 \times 10^{14}$ | 143.6476 | 113.8182 | 56.1349 | $9.69 \times 10^{14}$ |

*Public Investment*

The public investment equation is formulated based on common public policymakers' objectives and these are constrained by the availability of internal and external financing and the economic growth. Strong growth performance as proxied by growth of real GDP leads to sustained revenue performance. Tight control of operating expenditures, especially on non-productive consumption and transfers together with privatization strategies, help the government in financing the increasing needs of public sector investment, particularly on the priority projects.

The EPF contribution has proven to be significant. EPF is the largest component of provident and pension funds in Malaysia. Therefore it is also the largest non-inflationary financier for the public sector. The role is expected to be more trivial in the coming years after some policy changes recently. For instance, the requirement that funds are to be held in the form of long and medium term assets was reduced to 70% in 1993. Besides, the total contribution has been raised to 22% effective on Jan 1, 1993. This means that more funds will be available in the form of fixed assets, cash, deposit placements and short term market instruments. The result also indicates that if more funds are used for government expenditures on consumption (i.e. greater government deficit), less will be available for investment. Similarly if more funds have to be put aside to pay the principals or to service the external debt, less will be available for investment activities (other than current and other development expenditures).

Foreign aid is another source of financing. Grants, technical assistance or concessional loans (either multilateral or bilateral) are important to public investment and economic growth. Foreign aid is dropped from this model due to data unavailability. However it can be considered marginal in the coming years since Malaysia is in the process of becoming a Newly Industrialized Country and soon will be disqualified from foreign aid.

*Foreign Direct Investment*

Foreign direct investment is another flow of funds variable discussed. FDI is preferred to external debt because it is not a burden to the recipient country.

All coefficients have the expected signs except for the ratio of corporate tax to GDP. Tax incentives in the forms of tax holidays, investment tax allowance, accelerated depreciation and reinvestment allowances and export incentives are not the main attractions to foreign investors. They are actually a kind of compensations for other types of disincentives such as stringent and tedious bureaucratic procedures (Mohamed Ariff & Yokoyama, 1992). It seems that more tax-free incentives will further increase the revenue forgone. The one stop agency is in line with this finding

Market size, either domestic or external, measures real GDP per capital and the ratio of exports to GDP respectively, and is obviously successful in attracting FDI. The establishment of AFTA is compatible with this objective. Exchange rate and FDI have negative relationships. This means that the higher the exchange rate, the lower the value of profits to be repatriated to the home countries. Besides, it reduces earnings, creates uncertainty and thus discourages FDI. Labour cost is also another factor influencing FDI. As the real earnings decline, FDI will increase because of the lower cost of production and higher level of competitiveness. This implies that in times of rising labour costs, less stringent foreign labour policies should be considered. Moreover, if FDI is more capital intensive, high skilled and technology oriented, only a selective type of skills are relevant to FDI. Interest rate differential turns out to be significant. A higher interest rate implies a higher capital cost and perhaps investors will become more interested in portfolios or financial investments.

The other relevant non-economic factors are political stability and tax and regulatory environment. The latter includes rules and regulations governing joint ventures, income tax and foreign-owned enterprise laws. The lack of a proper business information network/system, especially in the major foreign languages, together with poor management, inefficiency, excessive bureaucracy, complicated legislation and an inefficient market system have an important influence on FDI in developing countries (Chen, 1993). However, these variables are difficult to quantify accurately. In any case, if the value of shares is included as a proxy for political stability, it is expected to be significant as in the private investment equation.

## *External Debt*

External borrowing is an alternative source of financing for domestic activities. Many factors have been identified as influencing factors of external debt. Public savings as influenced by income have in some years been insufficient to finance public investment. Consequently, the gap has to be bridged partly by foreign borrowings.

The relationship between savings per capita turns out to be otherwise. Perhaps most of the domestic savings are used to finance domestic investments, which in turn yield slow returns. The rest of the variables have the expected signs.

Macroeconomic strategies such as massive privatization programmes together with continued restraint on consumption are able to ease government deficit and hence, diminish the need for external financing. The impact of government deficit can also be seen through its impact on inflation. Actually, the impact depends on how the deficit is financed. Financing through money creation can be inflationary.

The inclusion of gross domestic investment is to justify the view that if funds are effectively invested in productive uses, they should be able to generate income and consumption over time and reduce the need to reschedule the external debt. Rescheduling or refinancing is one of the methods used to reduce the burden of debt servicing. Postponing and spreading the obligations due will provide opportunities to the country to implement corrective measures to improve its economic performance and thus its ability to pay its debt. Yet, both are only temporary solutions. Moreover, there is no guarantee the debt crisis will end as supported by the positive relationship in this study.

According to Jomo (1988), most of the loans went into non-performing projects which are not expected to yield sufficient returns. Some of the examples given are Kuantan Port, East-West Highway, Perwaja Steel Mill, Penang Bridge and Daya Bumi Building. Yet, those infrastructures are now obviously contributive. They are more appropriately classified as indirect and slow-return projects. The effect of GDI on external debt is mostly long term in nature.

Increase in the exchange rate or currency depreciation normally increases the size of external debt denominated in Malaysian Ringgit. The relationship is

significant as expected. Inflation causes export to fall and import to rise leading to debt servicing difficulties and thus a greater debt burden. The impact of inflation on external debt can also be analyzed through the current account. Inflation will reduce the competitiveness of our products and consequently deteriorate the current account. Thus, either inflation or CA can be used as the regressor. Similarly, the inflationary condition in the creditor's countries raises the real interest rate through their contractionary policies and therefore, increases the debt service burden.

## Current Account

The inclusion of exchange rate and government deficits is to underscore the point that most of the current account deficit is due to domestic policy mismanagement. The coefficients are proven significant which means that a large fiscal deficit pumps up demand and therefore increase imports and trade deficits. However, it should be acknowledged that the effect of budget deficits depends on how the deficits are being financed; either through domestic sources or through foreign borrowings. When the former are unable to offset the deficits, the government can recourse to increasing foreign indebtness. Yet, the higher the foreign indebtness, the higher the interest payments to be paid out, meaning the higher the deficit in the services account. Therefore, it is vital to control the budget balance. Anyway, a more diversified taxation base, revised incentives given to investors, privatization policies and many other measures are able to lessen the deficit problem.

TOT (terms of trade) is measured by the ratio of unit value of exports to the unit value of imports. The unit value is calculated by dividing the nominal value by the volume of imports and exports. Exchange rate is related to TOT because more Malaysian currency for a unit foreign currency means export will be cheaper or price of exports will be lower. The impact of TOT on trade balance is explained by the J-curve effect, i.e. the trade balance will respond to exchange rate changes with a certain time lag. The depreciation normally worsens the trade balance first before improving it.

Inflation is obviously a significant determinant of the current account. A higher inflation rate means a lower level of competitiveness of domestic products, which therefore discourages exports. An increase in the inflation rate will

also decrease the real interest rate which will then stimulate investment and consumption and aggregate demand. As a result growth and the incentive to import will also increase. Consequently, the current account will deteriorate again.

LTCAP consists of mainly direct investment, portfolio investment, and short and long term loans. The significant and negative relationship of LTCAP is able to explain the impact of FDI on the current account. As FDI become s increasingly important in the Malaysian economy, more profits and remittances will be paid out through payments of royalties, contract and professional charges to the parent companies, especially if the imports from the parent company are overpriced whereas the exports are underpriced. The result also indicates that overreliance on them will not be conducive for long term and sustainable industrialization and development. Therefore, there is always a need for a balanced participation of domestic investment and FDI in the long run. Domestic industries must be eventually owned and controlled by Malaysians in order to achieve the objectives of Vision 2020.

During the period when the export-oriented manufacturing sector has come to play an increasingly important role, concerted efforts should be considered to increase value added exports and decrease the export bias towards import intensive products. Local content policy which has been implemented since January 1, 1992 is able to encourage the use of local inputs and strengthen the linkages between the foreign based and local industries. Besides, reinvestment incentive which has been extended to 1995 to attract greater non-resident controlled investment is able to lessen the negative impact of FDI on the current account.

## Private Savings

The results indicate that income has a significant positive effect on private savings. The study shows that the level of income influences the level of savings through its impact on consumption. The close relationship between income and savings is supported by other studies in Malaysia.

The real deposit rate (rrd) and private savings have a negative and insignificant relationship. Obviously, the structural and institutional factors play a

much more significant role in influencing savings rather than the interest rate. Another possible explanation is the presence of contractual and compulsory savings. The Employees Provident Fund (EPF) plays an important role here as a source of savings for the medium and low income classes of the Malaysian working population. If other types of contractual savings are added, such as the contributions to life insurance, the influence is expected to be more prominent.

The dependency ratio shows a negative significant relationship with private savings. This means that the savings rate decreases with an increase in the dependency ratio and decreases with a decrease in the labour participation rate. More specifically, the dependency ratio was 68.8 percent in 1988, 67.2 percent in 1990 and 66.9 percent in 1991. The declining dependency ratio indicates that a greater proportion of the population is in the productive age group compared to those in the non-productive age group. The younger the age of the population, the higher will be the labour absorption capacity of the economy. Therefore, the lower the population dependency ratio, the lower the unemployment rate, allowing households to save more.

Changes in the terms of trade can influence private savings in Malaysia as shown by Lahiri (1989). An increase in the terms of trade will increase our price of exports, erode our competitiveness in the world market and thus, depress our export earnings and private savings. Our findings support the negative relationship between the two variables.

## Public Savings

The public savings equation is not the only function that can be utilised to study public sector behaviour. This is because the determinants of public sector savings are wholly different from those affecting the private sector. Maximization of profits or the rate of return is not the prime consideration in the case of public savings. Budgeting policies in response to perceived roles and targets of the government are the more important determinants. From our findings, real economic growth, EPF collection and government deficit play important roles in influencing public savings. The subsequent rapid economic growth will result in significant revenue collections for the Federal government especially from income tax on corporations and individuals. The

increase in go-vernment revenue collection will ease government financial constraints and reduce government deficit, therefore increasing public savings. The adjustment measures adopted by the government to downsize the public sector, privatize government agencies and improve revenue performance will also lessen government deficit, which will then lead to an improvement in the performance of the public sector.

The financing of public sector deficits can have an inflationary impact on prices, depending on the sources of financing. Financing of the public sector deficit can be divided into monetary and non-monetary financing. Non-monetary financing comprises mainly social security surpluses (such as surpluses of the EPF and other pension or provident funds). The social security institutions are important financiers of public sector deficits. As a group, the institutions on the average, contributed more than 50 per cent of the financing to the overall Federal government deficits between 1970 and 1992. Social security contributions thus finance a large part of the budget deficit, leaving a residual deficit to be financed from the foreign and domestic financial sectors. Therefore, our findings support the significant positive relationship between EPF and public sector savings.

## CONCLUSION

Our study recognizes that the central feature of the process of economic development is not only the mobilization of resources for investment and growth but also changing the balance between the productive sectors of the economy, in which the need for investment financing of one sector depends on the surplus generated by the other sectors. A flow of funds analysis provides a better understanding of the underlying economic forces which shape the growth of sources and uses of funds in the economy. It also gives a better understanding of the competition among available resources between private and public sectors. Therefore, it is of both theoretical and policy interest to know the factors that influence savings and capital formation decisions of the business, household, government and foreign sectors.

However, given the limitations posed by the quality of data employed in the study as well as the pioneering status of this study, our findings should be regarded as tentative rather than being definitive and incontrovertible. All

the same, we hope that the methodology adopted and the empirical findings obtained should provide a springboard for subsequent research.

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