THE BUDGET DEFICIT:

ITS IMPACT ON MONEY SUPPLY AND OUTPUT IN SELECTED SEACEN COUNTRIES

Dr. Thanisorn Dejthamrong

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By

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The South East Asian Central Banks (SEACEN)
Research and Training Centre
Kuala Lumpur, Malaysia
March, 1993

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Published by The South East Asian Central Banks (SEACEN)
Research and Training Centre
Lorong Universiti A, 59100 Kuala Lumpur, Malaysia.
Tel No: 03-7568622/7568587 Fax No: 603-7574616
Telex: MA 30201 Cable: SEACEN KUALA LUMPUR

ISBN: 983-9553-69-0

Printed in Malaysia by Graphic Stationers Sdn. Bhd.

FOREWORD

When governments spend beyond their means, which is how budget deficits arise, the implications of such decisions on overall resource allocation, the prospects for more economic growth and price stability can be very complex. One of the most frequently analyzed cases is that of the United States of America, where empirical studies of the budget deficit have been performed since the late 1970s. Going by their evidence, however, one could not infer any simple relationship between budget deficits, monetary expansion, inflation and growth.

In the present study undertaken by Dr. Thanisorn Dejthamrong, efforts are applied at identifying the consequences of government budgetary deficits on money supply and output in such SEACEN countries as Korea, Malaysia, the Philippines, Singapore, Sri Lanka and Thailand for the period from 1974 through 1989. Analyzing these consequences within the framework of distributed lags and Granger causality, Dr. Thanisorn has emerged with empirical results which somehow mimic the kind of ambiguity detected in similar research efforts on the United States budgetary deficit earlier adverted to. In the cases of Korea and Thailand, monetary growth could not be explained by fiscal factors. For Malaysia and the Philippines, there is no clear relationship between the budget deficit and money growth. However, in Singapore and Sri Lanka, fiscal factors are evidently behind the growth in money.

While his empirical results do not lead to unambiguous relationships between budget deficits and monetary expansion, Dr. Thanisorn's study is nonetheless an important addition to the growing literature on how the fiscal positions of governments influence monetary growth and output. The SEACEN Centre is very pleased in making available to a larger public the outcomes of his study through this publication. It is also wishes on this occasion to recognize the assistance which Mr. Wong Chee Seng, Research Associate in the Centre, extended to Dr. Thanisorn while implementing this research project.

Dr. Vicente B. Valdepeñas, Jr.
Director
The SEACEN Centre

Kuala Lumpur, Malaysia
March 1993

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Introduction

The impacts of government deficit on monetary expansion and other real economic variables are essential issues of debate for macroeconomists, central governments and central bankers for years. An induced monetary expansion out of the budget deficit implies that the monetary authorities are not independent of central government action. The effects of government debt growth on the money supply and real output have been investigated extensively for the U.S., and the evidence from those relationships is mixed. Studies for other industrialized countries also show little evidence of relationships between money growth, real output and the budget deficit. However, there are much less comparable researches for the developing and SEACEN countries.

It is evident that the central bank in developed economies can conduct independent monetary policy over long periods, notwithstanding chronic government budget deficits.[1] However, deficits in developing countries may influence monetary expansions due to lack of well-developed domestic capital markets or because political pressure from the central government to finance the budget deficit through money creation.[2]

The empirical relationship between the budget deficit and money growth has been investigated extensively in the U.S. For example, Barro (1978), Dwyer (1984), King and Plosser (1985) find no significant relationship between money and government debt growth in the U.S.. However, Hamburger and Zwick (1981), Levy (1981), Allen and Smith (1983), and Laney and Willett (1983) find a systematic and significant covariation between money growth and fiscal deficits. In addition, Glick and Hutchison (1990), who tested for the monetarist's ineffectiveness proposition of the impact of monetary and fiscal policies on real output, also find that a rise in both the anticipated and unanticipated budget

1. Protopapadakis and Siegel, 1987.
2. See De Haan and Zelhorst (1990).

deficit leads to a rise in U.S. money growth,[3] even though the lagged elements of the total (anticipated plus unanticipated) budget deficits are not jointly significant in predicting money.

Protopapadakis and Siegel (1987) presented empirical evidence on the relationship between the government debt growth, monetary expansion and inflation rate for ten industrialized countries over the post-World War Two period. Non-parametric and parametric tests reveal little evidence that government debt growth is either related to money growth or permanently related to inflation rate over periods of a decade or less. However, they find that the level of government debt is significantly associated with subsequent inflation from 1974 to 1983.

De Haan and Zelhorst (1990) used the annual data of the IMF International Financial Statistics during 1961-1985 to investigate the relationship between government deficits and money growth in 17 developing countries which include six of the South East Asian Central Banks (SEACEN) countries, namely Korea, Malaysia, Nepal, the Philippines, Sri Lanka and Thailand. They estimated a single reduced form equation of factors affecting the growth rate of money stock using annual data and vector autoregression (VAR) techniques. They do not find much evidence to support the hypothesis that government deficits affect money growth for the 17 developing countries.[4] Among six SEACEN countries, De Haan and Zelhorst (1990) find a long run influence of government deficit on reserve money growth only in Korea and the Philippines. The Philippines exhibits a positive relationship between the budget deficit as a percentage of GNP and the growth rate of reserve money during 1960-1985. Korea, however, exhibits a negative relationship, which indicates that the budget deficit reduces money growth in Korea instead of increasing it. When M1 is used instead of reserve money, only Malaysia among selected SEACEN countries exhibits a significant and positive effect of budget deficit on money growth when

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3. This is also consistent with the prediction of Sargent and Wallace (1975, 1981) that government fedicits lead to more rapid money growth either contemporaneously or in the future under a general set of circumstances [see Glick and Hutchison 1990].

4. However, they find a positive relationship between budget and inflation during periods of acute inflation, although this seems to be a support for a relationship between deficits and money growth, only during the period of high inflation is the covariation between budget deficit and money growth caused by common shocks of high inflation.

no other explanatory variables, except the income growth rate, are specified in the estimated equation. However, when inflation and the current account are added as explanatory variables, only Thailand, among the 17 developing countries, has a significant government deficit impact on money growth.

Fres-Felix (1992) studies the impact of public sector borrowing to domestic credit expansion and its implication on monetary policy in the six selected SEACEN countries, namely Indonesia, Malaysia, Nepal, the Philippines, Sri Lanka and Thailand. Fres-Felix emphasizes on how public sector deficit[5] is financed, what is the composition of financing, and how each component can affect the domestic credit expansion. Fres-Felix (1992) uses an identity equation of money supply which consists of each component of money supply as well as money multiplier to test the degree to which each component, including the net credit of the central bank to the public sector, contributes to the growth of money and inflation. She finds that while some countries like Nepal, the Philippines and Sri Lanka have some link between deficits, money growth and inflation, but Indonesia, Malaysia, and Thailand show little evidence of those relationships.

This paper examines the relationship between central government (without the public enterprises) budget deficit and monetary growth, and investigates the impacts of the budget deficit on money and real output growth in selected SEACEN countries, namely South Korea, Malaysia, the Philippines, Singapore, Sri Lanka and Thailand, using quarterly data during the period 1974:II-1989:IV.[6] It presents test whether money growth has systematically followed government budget deficit, and the test on the monetarist's ineffectiveness proposition that only unanticipated components of fiscal as well as monetary policy have the real impact on output growth. In other words, this is to test the null hypothesis of the neutrality proposition, given the assumption of rationality in the John Muth sense, that anticipated policy does not have any real effect.

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5. The public sector in Fres-Felix (1992) includes the central government and the public enterprise.

6. The countries have been chosen on the basis of availability of sufficiently long series of data. Indonesia is excluded from this study because the government budget in Indonesia is restricted by law to be balanced, with revenue shortfall offset by foreign borrowing.

Review of Theoretical and Empirical Literature

The model for the study of the impact of government budget deficit on monetary expansion and real output is briefly reviewed as follows. First, the theoretical and empirical literature on the 'monetarist' view of the interaction between monetary and fiscal policies is presented. An initial attempt to trace through the impact of government budget deficit on money supply is achieved by simply estimating the single reduced form equation of the monetary authority reaction function. The estimation of the reduced form of the government reaction function is then added to the model. This is to investigate the effects of monetary policy as well as fiscal policy. Second, the theoretical and empirical literature on the 'policy ineffectiveness' proposition of the new classical macroeconomics theory is presented. The models of the impact of government budget deficit on growth of real output are reviewed. These kinds of models are used to test the 'policy ineffectiveness' proposition that anticipated money as well as fiscal policy should not have any real impact on output in the short run, i.e., only surprise does matter.

Monetarist View and Policy-Reaction Functions

The 'monetarist' view of the relationship between federal deficits and inflation in the U.S. is that the federal deficits increase the pressure on the monetary authorities to expand the money supply through open market operation to mitigate the upward pressure on interest rates which are caused by the government borrowing requirement.[7] In the U.S., the Federal Reserve System is presumed to increase its purchase of federal debt instruments to reduce the impact of the federal borrowing on interest rates.[8] Government budget deficits tend to be inflationary because the Federal Reserve conducts monetary policy so as to smooth or control the interest rate movements rather than the money supply.[9] Barro (1977) hypothesizes that current government expenditure is anticipated to have a positive impact on money growth, based on the assumption that money creation is used along with taxation to mini-

7. Buchanan and Wagner (1977), Niskanen (1978).
8. Niskanen (1978), p. 597.
9. Hamburger and Zwick (1981), p. 141. However, this view is supposed to have changed after November 1979, when the Federal Reserve of the United States changed its stance of monetary policy to control money supply instead of the interest rates.

mize the costs of financing government expenditures.[10] Sargent and Wallace (1975, 1981) argue on theoretical grounds that government deficits lead to more rapid money growth either contemporaneously or in the future under a fairly general set of circumstances.[11]

The test of this 'monetarist' proposition is usually based on a theory of the behavior of the monetary authorities or the theory of the supply of money. Niskanen (1978) is among the very first who introduced the theory of the supply of money to test the relation between the money supply and federal deficits in the U.S. In his model, Niskanen introduces the supply function for money and assumes that the Federal Reserve System of the U.S. changes the money supply in a countercyclical manner in response to the rates of growth of real economic activity and inflation in the prior year and by a constant proportion of the current federal deficit. He, then, derives the equation to test the effect of the federal deficit on the rate of change of the money supply. He finds that the federal deficit in the U.S. has been monetized by about 15-20 percent over the whole period of the analysis. However, this effect mostly disappeared when he controlled for the big change in the U.S. monetary policy in the mid-sixties. In any given year, Niskanen finds that the federal deficit appeared to have no significant impact on the growth of money.

Barro (1977, 1978 a, b) estimated money growth equation in a test of the rational expectation model.[12] One of Barro's hypotheses concerning the money growth equation is that it is the increase in the deviation of government expenditure from the normal trend and not the level of government budget deficit which induces monetary expansion.[13] Other variables which influence money growth rate in Barro's anticipated money supply equation are lagged unemployment rate which reflects the

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10. Barro (1977), pp. 101-103 and Hamburger and Zwick (1981), p. 143.

11. Glick and Hutchison (1990), p. 289.

12. Barro hypothesizes that only unanticipated movements in money affect real economic variables like the unemployment rate or the level of output. [See also Robert Lucas (1972, 1973), Thomas Sargent and Neil Wallace (1976).]

13. Barro (1976, 1977) describes a theoretical model in which an exogenous level of government expenditure is financed by a combination of taxes and money issue; therefore, the long-run response of money to an increase in the government budget deficit relative to GNP would lead also to an increase in tax-generated capital and there would be no change in the money growth rate.

counter-cyclical response of money growth[14] and two lagged values of money growth which capture the persistence effect that has not been captured by the other explanatory variables.

The annual model of money supply equation estimated by Barro (1977, 1978a), using data for the period during 1941-1976 and 1946-1976 for the U.S. is as follows:

$$DM_t = a_0 + a_1 DM_{t-1} + a_2 DM_{t-2} + a_3 UN_{t-1} + a_4 FEDV + a_5 DEF$$

where,[15]

DM_t = $\log(M_t/M_{t-1})$

M_t = average of stock of M1

UN_{t-1} = $\log[U/(1-U)]_{t-1}$

U = unemployment rate of total labor force

FEDV = the log of current level of real government expenditures minus normal expenditures which are measured as an exponentially declining distributed current and lag of the log of real federal expenditures

DEF = $\text{deficit}/P_t.y_t^*$;

P_t = GNP deflator

y_t^* = trend value of real GNP

y_t^* = $a_0 + a_1 t$

= a linear time trend corrected for serial correlation

14. As shown theoretically in Barro (1976), the optimal response to a decline in income below its normal level would be an increase in the money growth rate, because a decline in real income lowers holdings of real balances, which would reduce the amount of government revenue from money issuing for a given value of the money growth rate. In addition, there could be a counter-cyclical policy response of money to the level of economic activity.

15. For more information about the data, see Barro (1977, p. 103 and 1978b, p. 577).

Hamburger and Zwick (1981), hereafter HZ (1981), examines the interrelationship between monetary and fiscal policy in the U.S.. Specifically, they seek to determine whether government budget deficits influence money growth in the U.S., using the variations of Barro's (1978a) money supply equation for the 1954-1976 period:

$$DM_t = b_0 + b_1 DM_{t-1} + b_2 FED + b_3 DEF$$

where,

$FED = (G_t / P_t . y_t^*)$

G_t = current central government expenditure

P_t = GNP deflator

y_t^* = trend value of real GNP

$y_t^* = a_0 + a_1 t$

= a linear time trend corrected for serial correlation

$DEF = \text{deficit} / P_t . y_t^*$;

HZ (1981) replaced Barro's measurement of government expenditure, FEDV (the deviation of government expenditure from normal trend), with FED (nominal government expenditures divided by the GNP deflator multiplied by trend value of real GNP) in order to have an identical definition of expenditure and deficit variables. The substitution of FED for FEDV does not significantly change Barro's results over the same sample period (1954-1976), and FED is used subsequently in HZ's (1981) estimation.[16] HZ (1981) reestimated the equation over the sample period 1961-1974 which is different from Barro's period (1954-1976). Following Buchanan and Wagner's (1977) assertion that a structural

16. To more closely align the fiscal policy and money growth measures - since Barro measured money growth on an 'annual average' basis - HZ (1981) recalculated Barro's independent variables (FED for expenditures and DEF for deficits) by replacing these variables for the year ending in the fourth quarter with 'annual averages' of these variables, calculated as the averages for the four quarters ending in the first, second, third and fourth quarters of the year.

change in the macroeconomic policy in the U.S. occurred in 1961, they find that Barro's results are reversed so that deficits have a significant and stronger impact than government expenditures on the growth of U.S. money supply throughout most of the period since 1961.[17]

Furthermore, when the change in the outstanding stock of government debt derived from the Flow of Funds Accounts (DEFB, as designated by MB) is substituted by HZ (1981) for deficit from the national income accounts - an accrual basis rather than a cash flow measure - (DEFA, which has the same definition as DEF),[18] they find that the results are even stronger in favor of the deficit-money growth linkage, and the deficit was monetized by roughly 20-25 percent which is approximately the same as Niskanen's (1978) results. In addition, HZ (1981) also find that Barro's lagged unemployment variable is not statistically significant in their estimation.

Protopapadakis and Siegel (1987), hereafter PS, in their test for a monetization relation of government budget deficit in ten industrialized countries also formulated this kind of a single reduced form equation of current annual money growth regressed on its own four lags of annual money growth, four lags of annual debt growth and real GNP growth specifically:

$$m_t = \Sigma_{i=1}^{4} \mu_i m_{t-i} + \Sigma_{i=1}^{4} \delta_i d_{t-i} + \Sigma_{i=1}^{4} \gamma_i y_{t-i} + \varepsilon_t ,$$

where m_t, d_t and y_t are annual money growth, debt growth and real GDP (or GNP) growth, respectively.

17. McMillin and Beard (1982), hereafter MB, re-examine HZ's (1981) conclusion using the revised U.S. data. They find some support for Barro's hypothesis that government expenditures rather than deficits affect money growth for the period 1961-1978, although the results from 1961-74 and 1961-76 do not strongly support either Barro's or HZ's conclusions. However, Hamburger and Zwick (1982), hereafter HZ (1982) shows that MB's results have little to do with the data revisions, and are due to the failure to properly align the money and deficit data.

18. One of the advantages of using the DEFB instead of DEFA is to eliminate the problem of serial correlation as shown by relatively poor Durbin-Waston statistic when the DEFA is used, even after a correction by Hildreth-Lu procedure (see HZ, 1982, p. 282). Allen and Smith (1983, p. 606) also suggest to use total change in the government's debt rather than the deficit as the appropriate variable to test for the total impact of government budget deficit on the monetary expansion because of the substantial growth in off-line budget items.

The four-lag length for all the variables were arbitrarily chosen to capture as long a lag as possible without sacrificing too many degrees of freedom.[19] Maximum lag length is set at four in part as a result of the overall degree of freedom constraint (1952-1983), and in part because lengthening the lag length of one variable at a time while holding the lag length of the other variables fixed did not result in significant chi-square statistics.

De Haan and Zelhorst (1990), in their annual model using vector autoregression (VAR) estimation of a single reduced form equation of factors behind the growth rate of money stock in 17 developing countries during the period 1960-1985, specify a limit of two-year lag length to maintain sufficient degree of freedom for the right-hand-side variables of the equation:

$$\dot{m}_t = \alpha + \Sigma^{1}_{i=1}\beta_i\dot{m}_{t-j} + \Sigma^{m}_{j=1}\gamma_j d_{t-j} + \Sigma^{n}_{k=1}\,\phi_k X_{t-k} + \varepsilon_t$$

where m is the growth rate of some money stock; d denotes the government budget deficit as a percentage of GNP and the vector X contains all other relevant variables like the real GNP growth rate, inflation rate and the current account of the balance of payments expressed as a percentage of GNP. De Haan and Zelhorst also switched the measurement of stock of money between reserve money and M1.[20]

Most of the data used in one preceding review of literature are mainly annual data. However, the use of annual data does not capture short-run variations in monetary policy and economic conditions.[21] Quarterly data are often used to avoid the bias in view of the small sample size.[22] Barro and Rush (1980), hereafter BR, apply Barro's an-

19. Propapadakis and Seigel, 1987, p. 42, f.n. 1, Table 5.

20. The method is to choose combination of 1, m, n that minimizes the Akaike's final prediction error (FPE). The definition of FPE will be described later. Since the FPE criterion is sensitive to the sequence in which the variables are added, they calculated the FPE for all possible combinations of the variables.

21. Levy (1981), p. 357, f.n. 5.

22. To avoid the problem of heteroskedasticity that often arises when estimating equations with time series data that trend upwards [see also Nelson and Plosser (1982)], Landon and Reid (1990) measure all variables, except the interest rates in natural logarithms. Alternatively, the problem of heteroskedasticity could be remedied by deflating all variables in the estimating equation by trend nominal GNP [see Hamburger and Zwick (1981), Allen and Smith (1983), Joines (1981), etc.]. The problem is that it has to assume that the 'amount' of heteroskedasticity is proportional to the square of the variable used for deflation purposes. To determine which choice is appropriate, the equations will also be estimated using data that had been deflated by trend nominal GNP. Landon and Reid find the results of this estimation were similar [see also Landon and Reid (1990), p. 383].

nual money supply equation to the quarterly, seasonally adjusted U.S. data, for the period 1941:I-1978:I as:

$$DM_t = \alpha_0 + \Sigma_{i=1}^{6} \beta_i DM_{t-i} + \Sigma_{i=1}^{3} \delta_i UN_{t-i} + \gamma_1 FEDV$$

Allen and Smith (1983), hereafter AS, estimate BR's quarterly money supply model with the DEBT variable included, and use either quarterly average M1 growth (DM) or quarterly average money base growth (DB) as the dependent variable:

$$DM_t = \alpha_0 + \Sigma_{i=1}^{6} \beta_i DM_{t-i} + \Sigma_{i=1}^{3} \delta_i UN_{t-i} + \gamma_1 FEDV + \gamma_2 DEBT$$

AS (1983) also estimate the equation with the FED (expenditures relative to trend value of nominal GNP) substituted for FEDV and the monetary base substituted for the money stock with the debt variable included, while UN_{t-i} (the unemployment rate) is excluded because of its insignificance, during the period 1954:I-1978:I as follows:[23]

$$DB_t = c_0 + \Sigma_{i=1}^{5} c_i DB_{t-i} + d_1 FED + d_2 DEBT$$

$$DB_t = \log(B_t/B_{t-1})$$

B = quarterly average of monthly monetary base series, adjusted: Jan 50 - Dec 80

$$FED_t = (G_t/P_t . y_t^*)$$

G_t = current central government expenditure

$$DEBT = NFD/(P_t . y_t^*)$$

NFD = change in net central government debt in period t

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23. Allen and Smith (1983) determine the appropriate lag length for the dependent variable by searching over an eight-period lag for the 1961/III-1974/IV period. In each case the coefficients for six, seven and eight-period lags are individually and collectively insignificant for both equations.

AS (1983) find a positive and significant impact of the real trend value of the change in the stock of government debt upon the growth of the monetary base.[24]

The empirical relationship between money and fiscal deficit is also examined in the context of simultaneous equations by Levy (1981), Turnovsky and Wohar (1987), Landon and Reid (1990) and Glick and Hutchison (1990). Levy (1981) tests a reaction function derived from a structural IS-LM model and find a positive impact of an increase in government debt on the expansion of the monetary base.[25] Turnovsky and Wohar (1987) investigate various monetarist propositions in a simple macro model and find that deficits influenced money growth prior to 1961 but not afterward. They proposed a monetary proposition that the Pure Fiscal Policy is Ineffective: "Government expenditures which are not financed through money creation have relatively negligible effects upon the rates of unemployment and inflation". They find that the monetary proposition is quite correct after 1961 (1961-1982). Landon and Reid (1990) use the quarterly data to estimate a system of equations which describe the behavior of the monetary and fiscal authorities simultaneously, and closed the system by equations which are simply derived from equations of a vector autoregressive (VAR) form. The VAR equations provide the instruments needed to estimate the system and provide the cross-equation restrictions associated with the expected inflation variable appearing in the money growth and deficit equations. In addition, Glick and Hutchison (1990) also find that the fiscal policy ineffectiveness proposition and fiscal neutrality cannot be rejected in their tests.

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24. Most of the standard reaction function models normally include income, interest rates, the rate of inflation, the gap between actual and potential output and a balance-of-payments measure as explanatory variables. However, previous studies before AS (1983) using Barro-type money supply and monetary base models have not included a debt variable, with the exception of Froyen (1974) who includes a debt variable [Allen and Smith (1983), p. 613].

25. Levy's reaction function includes income, inflationary expectations, the unemployment rate, the interest rate and a debt measure which is the outstanding publicly-held debt (not seasonally adjusted). Levy's debt variable is not deflated by either a price index or a trend value of real GNP. If the change in nominal debt or the change in real debt is substituted in eq. (4) for the DEBT variable, the significance of the debt coefficient is maintained for the results..... [Allen and Smith (1983), p. 613, f.n. 19].

Policy Ineffectiveness Proposition

The 'Policy Ineffectiveness' proposition of the new classical macroeconomics theory, under the joint hypotheses of rational expectation and flexible prices, states that anticipated money and fiscal policy should not influence real output in the short run, i.e., only surprises of policy matter. The new classical macroeconomics theory, concerning monetary surprises, has its theoretical origin in Friedman (1968), Lucas (1972, 1973) and Sargent and Wallace (1975, 1976). Analogous to monetary surprises, Sargent (1973) and McCallum and Whitaker (1979) showed theoretically that anticipated fiscal policy as well as anticipated monetary policy are ineffective.

Barro (1977, 1978) provide the early empirical support for the proposition that only money surprises matter to affect U.S. real output. However, Mishkin (1982a, b), Gordon (1982) and Makin (1982) have cast some doubt on Barro's findings and their empirical studies suggest that both anticipated and unanticipated changes in money should influence output. McElhattan (1982), and Laumas and McMillin (1984) have analogous tests of the effects of fiscal policy and find that anticipated as well as unanticipated fiscal policy changes affect U.S. real output in the short run.

In general, the results concerning the tests of non-neutrality of anticipated monetary policy on one hand, and of anticipated fiscal policy on the other hand, seem to reject the hypothesis of policy ineffectiveness, i.e., anticipated policy is not neutral and it can affect the real economic variables. However, most of the studies concerning the policy ineffectiveness which rejects the neutrality hypothesis rarely investigate the effects of monetary and fiscal policy simultaneously, with the exception of Glick and Hutchison (1990). Glick and Hutchison (1990) argue that if either anticipated or unanticipated monetary and fiscal policy actions are correlated with each other, tests concerning money neutrality that exclude fiscal variables and tests concerning fiscal neutrality that exclude monetary variables seem to suffer from an omitted variables problem leading to biased coefficient estimates.

Glick and Hutchison (1990) find that fiscal policy is ineffective in stimulating output when the impacts of fiscal policy on output are considered simultaneously with the impact of monetary policy. This is in contrast to Laumas and McMillin who find that both anticipated and unanticipated fiscal policy do have significant impact on real output. The difference is due to the fact that Laumas and McMillin (1984) considered only the effect of fiscal policy without considering simultaneously the effect of monetary policies on output.

Glick and Hutchison (1990), in their studies of the 'policy ineffectiveness' proposition use an atheoretical statistical technique to specify anticipated monetary and fiscal policy equations. They use the quarterly data over the 1960:4-1985:4 period to estimate monetary and fiscal policy equations. The explanatory variables included in the equations are lagged values of money and fiscal variables, the unemployment rate, the percentage change in the GNP deflator, the change in the three-month T-bill rate, as well as a constant, time trend, and seasonal dummies. They use Theil's R-bar squared (minimum standard error) criterion to specify the appropriate lag length of the variables in the two policy equations, and impose a common lag length.The equations with the highest R-bar squared were chosen for the fiscal and monetary prediction equations respectively, in predicting money.

Estimating Methodology

The estimation methodology in this study is based on the two-step procedure used by Barro (1977, 1978), Mishkin (1982a, b), Makin (1982), Laumas and McMillin (1984) and Glick and Hutchison (1990), among others, in their efforts to examine the real output effects of anticipated and unanticipated measures of fiscal and monetary policies. The first step is to specify and estimate anticipated policy equations, i.e., the monetary and fiscal policy reaction functions. The second step is to use the anticipated and unanticipated policy variables, derived from the residuals of the first step, as the explanatory variables in the equation for real output changes.[26]

26. Pagan (1984) has noted that the two-step procedure is biased against acceptance of the policy neutrality null hypothesis. However, Glick and Hutchison (1990) argue that the results which fail to reject the null are then stronger than the two-step procedure suggests. Mishkin (1982a, b) argue that joint estimation of the policy prediction equation and the output equation is preferable, and uses a nonlinear simultaneous estimation procedure for estimating equations. Cecchetti (1986) implements a more robust procedure that applies under more general assumptions that allows for an incomplete information set in the prediction equation and time varying coefficients in the output equation (see Glick and Hutchison (1990), p. 291 and f.n 3, 12).

Specification of anticipated policy equations:

Following Mishkin (1982a, b), Makin (1982), Laumas and McMillin (1984) and Glick and Hutchison (1990), an atheoretical statistical technique is used to specify anticipated policy equations. This is to prevent the exclusion of information available to economic agents at time t-1 and to prevent a search for a specification that yields particular results expected by the researcher. Mishkin employs the technique of multivariate Granger-causality tests to specify the anticipated policy equation, but he arbitrarily chooses the lag length of four periods for the explantory variables. Laumas and McMillin argues that it is preferable to employ a technique that allows the data to determine the lag length rather than imposing an arbitrary lag length. They as well as Glick and Hutchison use the sequential test on Theil's R-bar squared (minimum standard error) criterion to specify the appropriate lag length for each variable considered. However, Glick and Hutchison imposed a common lag length structure, arguing that it has the advantage over sequential procedure designed to exclude lags on particular variables (as in Laumas and McMillin) in that the results of the sequential procedure will in general be dependent on the particular order of variables in the sequence considered. The disadvantage of common lag length, as mentioned by Glick and Hutchison, however, is that sometimes insignificant lags are included in the equations, which gives less efficient estimators.

In this paper, the Final Prediction Error (FPE) criterion is used, instead of Theil's R-bar squared criterion, in specifying the appropriate lag length of the policy equations.[27] As is well known that the FPE criterion is sensitive to the sequence in which the variables are added and to prevent the results from being influenced by this factor, I have

27. De Haan and Zelhorst (1990) also used final prediction error (FPE) criterion to specify the lag length for the right-hand-side variables of the reduced form monetary policy equations with annual data in their investigations of the relationship between government budget deficits and money growth in the developing countries. At this point, I would like to thank Dr. Bambang S. Wahyudi, the Assistant Director (Research) of The SEACEN Centre, who provided me with a version of RATS 2.01 program on the FPE criterion, which he used for his 1986 PhD. dissertation at the University of Colorado. I have adapted his program concerning FPE criterion to be suitable for the purpose of this paper.

calculated sequentially the FPE for all possible combinations of the variables using 16-lag lengths as the limit. Thus, the first step in the specification of the anticipated policy equations is the determination of the own lag length for the policy variables. The determination is made by varying the lag from 1 to 16 periods in the equation that has only the own lag length as explanatory variables. The lag length that yields the minimum FPE is selected. Then, the own lag length is fixed at that level, and the other explantory variables are added one at a time to the equations. Now, we are considering two variables, the own lagged variables are set at the predetermined level and the lags of another explanatory variable are varied one at a time for each of the remaining variables. The search procedure is calculated for the second variable which yields the minimum FPE. The variable with the appropriate lag length which yields the minimum FPE is then selected as the next explanatory variable and is set at that lag length to be considered with the remaining variables in the next round. The search goes on sequentially in an analogous fashion for the rest of the other explanatory variables, by fixing the lag length of the ones that were already determined.

Using this procedure and data from 1974:I-1989:IV led to the following specification for the reduced form equations of monetary and fiscal policy equations as follows:[28]

$$M_t = \alpha_m + \Sigma_{f=1}^{a} \beta_{1,f} M_{t-f} + \Sigma_{g=1}^{b} \beta_{2,g} F_{t-g} + \Sigma_{h=1}^{c} \beta_{3,h} Y_{t-h} + \Sigma_{i=1}^{d} \beta_{4,i} P_{t-i} + \Sigma_{j=1}^{e} \beta_{5,j} R_{t-j} + \varepsilon_m,$$

$$F_t = \alpha_f + \Sigma_{f=1}^{k} \gamma_{1,f} M_{t-f} + \Sigma_{g=1}^{l} \gamma_{2,g} F_{t-g} + \Sigma_{h=1}^{m} \gamma_{3,h} Y_{t-h} + \Sigma_{i=1}^{n} \gamma_{4,i} P_{t-i} + \Sigma_{j=1}^{o} \gamma_{5,j} R_{t-j} + \varepsilon_f$$

where M is the growth rate of some money stock M1; F denotes the government budget deficit as a percentage of GNP, Y represents the deviation of output from trend output, P denotes the inflation rate measured as the rate of change of GNP

28. The total range of sample data are from 1970:I-1989:IV for Korea, Malaysia, Singapore and Thailand. For Sri Lanka, the total sample range is available from 1970:I-1988:III, while for the Philippines, the total sample range is from 1973:II-1989:IV. Since one lost 16 degrees of freedom in seaching for 16 lags, the data range, therefore, starts from 1974:I, with the exception of the Philippines of which the data range starts from 1977:II.

deflator, and R denotes the interest rate variables, and ε_i, i = m, f denote the residuals of money and fiscal equations respectively.

The other variables which are included in the policy equations are those which have macroeconomic relevance and are easily available to the public in their attempt to predict the future policy stances of the monetary and fiscal authorities. These other variables are the growth rate of real output, deviation of real output from trend and the interest rates. The deviation of output from trend is the variable which serves as a proxy for unemployment rate, since the data on unemployment rate are not available on quarterly basis for the SEACEN countries. All variables are subjected to the test for the unit root and cointegration, using MicroTSP Version 7.0.[29] Then, the equations are estimated using RATS 386 Version 4.0.[30]

The final prediction error (FPE) criterion is defined as:[31]

$$FPE(min) = \frac{\text{(No. of Observation + No. of Regressor)}}{\text{(No. of Observation - No. of Regressor)}} * \frac{\text{Residual Sum of Squares}}{\text{No. of Observation}}$$

After estimating the money and fiscal policy equations, the residuals of each equation are then taken as the unanticipated policy variables, i.e., the unanticipated money (UM) and unanticipated fiscal deficit (UF). The predicted values of each equation are the anticipated money (AM) and anticipated fiscal deficit (AF) respectively.

In the second step, those anticipated and unanticipated policy variables are then used in estimating the reduced-form relation between real output growth (RY) and the lagged values of anticipated fiscal (AF), unanticipated fiscal (UF), anticipated (AM), and unanticipated monetary (UM) policy with an error term (ε):

$$RY_t = \beta_0 + \Sigma_{i=0}^{n} \lambda_{1,i} AF_{t-i} + \Sigma_{i=0}^{n} \lambda_{2,i} UF_{t-i} + \Sigma_{i=0}^{n} \mu_{1,i} AM_{t-i} + \Sigma_{i=0}^{n} \mu_{2,i} UM_{t-i} + \varepsilon_t,$$

29. See TSP Manual Version 7.0

30. See RATS 386 Version 4.0.

31. See Judge, et.al. (1985), p. 243.

where RY = rate of growth in real output (measured as log real GNP in t minus log real GNP in t-1, AF = anticipated fiscal, UF = unanticipated fiscal, AM = anticipated monetary, UM = unanticipated monetary, and ε_t = the error term.

All variables in the preceding equation are then tested against one unit root test criterion to see whether such series are invertible or not. If there is a violation of the unit root test, then they must pass one cointegration test before they are applied for estimation.

Following Makin (1982), and Lauma and McMillin (1984) a first-difference stationary process for real output, i.e., the growth rate of real output, is employed. The equation is estimated using the polynomial distributed lags (PDLs) estimation method. The appropriated degree of polynomial and the lag length for each country are determined by Theil's R-bar squared(minimum standard error) criterion, using the search loop which vary the degree of polynomial with each lag length ranging from 5 to 16 lags. The optimal combination of the degree of polynomial and the number of lag length that maximize the Theil's R-bar squared are then chosen for the different countries.[32]

32. In estimating this equation, the sample range chosen is between 1982:II and 1989:IV, with the exception of Sri Lanka for which the data series are available only up to 1988:III. This is partly to avoid the degree of freedom problem for the search of 16 lags. Even the lag length is 16 (or 4 years). The method of polynomial distributed lags or Almon lags help mitigate the degree of freedom problem for this sample data range of 31 observations. The alternative method is to use the Akaike Information Criterion (AIC) or Schwarz Criterion to determine the number of lag length, then use the nested likelihood ratio test to determine the number of degree of the polynomial.

ESTIMATION RESULTS OF THE ANTICIPATED POLICY EQUATIONS

The data on monetary aggregates, income, prices and interest rates, used for the estimation are obtained from the quarterly data in the occasional papers no. 84 of the Internationl Monetary Fund, by Tseng, W. and Corker, R. (1991), *Financial Liberalization, Money Demand, and Monetary Policy in Asian Countries*.[33] The fiscal data are taken from the bulletins of the respective SEACEN's central banks.

Korea

The estimated coefficients and summary statistics for the policy equations, in the case of Korea, are reported in Table I.A. F-statistics for the null hypothesis that the coefficients of each lagged set of explanatory variables are not significantly different from zero are presented in Table I.B. Both money and fiscal equations in Table I.A do generate the white noise residuals, because the Q-statistics in both equations are lower than the critical value for chi-square. This implies that there is no serial correlation in the residuals of both equations.

The policy equations for Korea are estimated using quarterly data over the period 1974:2 to 1989:4. The FPE criterion indicated that the appropriate lag specification in the anticipated money equation for Korea are 12 lags for money, 1 lag for fiscal deficit relative to trend output, 3 lags for the interest rates, 12 lags of output deviation from trend and 8 lags for the inflation rate; and in the anticipated fiscal equation, 11 lags for fiscal variables, 14 lags for output deviation, 2 lags for money growth, 4 lags for interest rates and 4 lags for inflation rate.

Using the FPE criterion, the fiscal deficit relative to the trend output enters the money equation with only 1 lag and its coefficient is not significantly different from zero. Therefore, in the case of Korea, during the period 1974:2 to 1989:4, fiscal deficit does not have much influence on the growth of money supply. The lagged interest rates, output deviation from trend and inflation have more impact on money growth. Money supply responds more quickly to the rise in interest rates after two quarters, and they induce a negative impact on money supply.

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33. The author would like to thank Wanda Tseng in providing the data for this study.

However, the negative impact of interest rates on money supply is reversed after three quarters. Money supply in Korea responds more slowly to the deviation of output from trend. An excessive rise in output from its normal level will cause the authorities to slow down money growth only after one-and-a-half year. Money supply responds to the inflation rate in Korea only after two years during the period of analysis.

In the fiscal policy equation (column 2 of Table I.A), the rises in money supply will influence the fiscal deficit relative to trend output. The common factor which influences both money and fiscal variables in the case of Korea is the rate of interest.

The F-statistics in Table I.B confirms the result from Table I.A that the fiscal deficit relative to trend output is not a significant factor in influencing the money growth. Lagged interest rates are important factors for the co-movement of money and fiscal variables.

Malaysia

The estimated coefficients and summary statistics for the policy equations, in the case of Malaysia, are reported in Table II.A. F-statistics for the null hypothesis that the coefficients of each lagged set of explanatory variables are not significantly different from zero are presented in Table II B. The money equation does not pass the test that the residuals of the equation are white noise, since the Q-statistic with 15 degrees of freedom is 28.42 which is greater than the chi-square statistics of 25.0 with 15 degree of freedom at the 5-percent significant level. However, the fiscal equation passes the test of the null hypothesis that the residuals have no serial correlation.

Since the money equation has to be corrected for the existence of serial correlation in the residuals, no conclusion could be reached at this stage for the influence of the fiscal variables on the money growth. However, it looks like the fiscal deficit (surplus) has a significant influence in predicting the behavior of the money growth in Malaysia as can be seen from the t-statistics in Table II.A and the F-statistics in Table II.B

Philippines

The estimated coefficients and summary statistics for the policy equations, in the case of the Philippines, are reported in Table III.A. F-statistics for the null hypothesis that the coefficients of each lagged set of explanatory variables are not significantly different from zero are presented in Table III.B. Similar to the Malaysian case, the money equation has to be reestimated since the Q-statistic rejects the null hypothesis that there are no serial correlations in the residuals. However, there is no serial correlation in the residuals of the fiscal equation. Money growth in the first quarter has some influence in predicting the fiscal policy. From the F-statistics in Table III.B, the coefficients of the fiscal variables over the long run seem to influence the money supply in the Philippines. The significant influence of the fiscal variables on money supply in the Philippines cannot be confirmed with confidence at the 5-percent level of significance, due to the problem of serial correlation in the residual of the money equation.

Singapore

In the case of Singapore, both money and fiscal equations do not have a problem of autocorrelation in the residuals. One can say with confidence at the 5-percent level of significance that the fiscal deficit (surplus) does influence the money supply growth in Singapore during the period 1974:2 to 1989:4. The F-statistics in Table IV.B also confirmed that fiscal variables have a long-run impact on money growth and are the significant explanatory variables of money growth in Singapore.

Sri Lanka

In the case of Sri Lanka, fiscal variables also influence the money growth and there are no serial correlations in residuals in both money and fiscal policy equations. F-statistics in Table V.B also confirmed that over a long period the fiscal variables influence money growth in Sri Lanka.

Thailand

In Thailand, the fiscal variables are not a factor in influencing the money growth, as the coefficients of the fiscal variable lagged one quarter which enter the money equation are not significantly different from zero. Exclusion of the fiscal variable from the money equation does not improve R-bar squared statistic much, therefore, it is retained.

In addition, in the test for neutrality of both the anticipated fiscal as well as monetary policy on output using the two-step procedure, one has to rely on the assumption of rationality in the Muth sense. It is uncertain that this assumption of rationality holds for the SEACEN countries.

There is also the problem of insufficient degrees of freedom for the output equation analysis which has only 31 observations for five out of six countries. The author did try to avoid the degrees of freedom problem by using the restrictive assumptions for the polynomial distributed lag (PDL). However, the outcome is not very encouraging. Therefore, the study of the impact of fiscal policy on output growth requires further analysis in the future.

Summary of Empirical Results

The following points are the general observations on the estimated results:

(1) Two out of six countries do not have a satisfactory linear estimation of the money equations. These two countries are Malaysia and the Philippines. The money equations for these two countries have to be reestimated to correct the serial correlations in the residuals.

(2) The fiscal factors in Thailand and Korea do not have much influence on the money supply growth in these countries. In the case of Thailand, it may be due to the alignment of the Thai baht to a basket of currencies with the U.S. dollar as the major currency. In addition, during the period of analysis, Thailand experienced a budget surplus for more than three years. Although the government budget was in the surplus, the monetary expansion is not slowed down or influenced by the budget surplus.

(3) Singapore and Sri Lanka money growth are influenced very much by the fiscal factors. Lack of capital market in Sri Lanka explains the influential factors of fiscal variables on the money growth. In the

case of Singapore, the increase in budget deficit may influence the foreign capital inflows which in turn raise the money growth.

(4) One cannot evaluate with confidence the outcomes for Malaysia and the Philippines insofar as the influence of fiscal deficit on the money supply is concerned. It is possible that in both countries, money growth is influenced by fiscal deficits. In the case of the Philippines, the debt problem could be the cause for Philippine authorities to expand money supply to catch up with the increase in the budget deficit. This appears like a form of taxing the Philippines through inflation.

(5) The attempt to examine the impact of fiscal policies on the output growth, reported in the subindex C and D of tables I through VI, is plagued with the problem of serial correlations in the residuals. Without correcting for these serial correlations in residuals, there exists the danger of spurious regressions. There is no guarantee that the degree of serial correlations will not be higher than order one or two. It is most likely that the serial correlation can be of the fourth order given the nature of the quarterly data. In order to correct for the serial correlations, one has to rely on the method of non-linear least square or the maximum likelihood estimation. Given the time and resource constraints, this correction cannot be done in this particular study.

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TABLE: I.A

Anticipated Fiscal and Monetary Policy Equations for Korea, 1974:2 - 1989:4

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.10	(1.41)	Constant	0.03	(1.63)
M_{t-1}	-0.26	(-1.36)	F_{t-1}	-0.49	(-2.91)**
M_{t-2}	-0.39	(-2.31)*	F_{t-2}	-0.40	(-2.16)*
M_{t-3}	-0.37	(-2.05)*	F_{t-3}	-0.61	(-2.92)**
M_{t-4}	0.07	(0.36)	F_{t-4}	-0.01	(-0.03)
M_{t-5}	0.02	(0.10)	F_{t-5}	-0.72	(-3.35)**
M_{t-6}	-0.19	(-1.23)	F_{t-6}	-0.60	(-2.64)**
M_{t-7}	-0.10	(-0.68)	F_{t-7}	-0.39	(-1.60)
M_{t-8}	-0.02	(-0.15)	F_{t-8}	-0.28	(-1.27)
M_{t-9}	-0.29	(-1.86)♦	F_{t-9}	-0.01	(-0.03)
M_{t-10}	-0.36	(-2.04)*	F_{t-10}	-0.09	(-0.53)
M_{t-11}	-0.13	(-0.69)	F_{t-11}	-0.54	(-3.30)**
M_{t-12}	0.17	(1.02)	Y_{t-1}	-0.09	(-0.63)
F_{t-1}	-0.58	(-1.22)	Y_{t-2}	-0.09	(-0.55)
R_{t-1}	0.01	(0.60)	Y_{t-3}	0.07	(0.47)
R_{t-2}	-0.04	(-2.91)**	Y_{t-4}	-0.33	(2.25)*
R_{t-3}	0.03	(2.19)*	Y_{t-5}	-0.12	(-0.65)
Y_{t-1}	0.16	(0.39)	Y_{t-6}	-0.10	(-0.63)
Y_{t-2}	-0.60	(-1.26)	Y_{t-7}	0.51	(3.08)**
Y_{t-3}	0.87	(1.60)	Y_{t-8}	-0.27	(-1.65)♦
Y_{t-4}	0.21	(0.43)	Y_{t-9}	-0.19	(-1.09)
Y_{t-5}	0.34	(0.69)	Y_{t-10}	0.17	(1.06)
Y_{t-6}	-0.94	(-1.87)♦	Y_{t-11}	0.08	(0.46)
Y_{t-7}	0.20	(0.37)	Y_{t-12}	-0.33	(-1.69)♦
Y_{t-8}	1.15	(1.98)*	Y_{t-13}	0.85	(0.43)
Y_{t-9}	-0.94	(-1.40)	Y_{t-14}	0.33	(2.45)**
Y_{t-10}	-1.77	(-2.66)**	M_{t-1}	0.04	(0.88)
Y_{t-11}	0.99	(1.35)	M_{t-2}	-0.14	(-2.87)**
Y_{t-12}	0.43	(0.70)	R_{t-1}	-0.42	(-0.94)
P_{t-1}	-0.31	(-0.45)	R_{t-2}	-0.56	(-1.21)
P_{t-2}	1.06	(1.54)	R_{t-3}	0.008	(2.00)*
P_{t-3}	-0.03	(-0.04)	R_{t-4}	-0.007	(-2.02)*
P_{t-4}	0.92	(1.45)	P_{t-1}	0.20	(0.90)
P_{t-5}	0.53	(1.01)	P_{t-2}	0.30	(1.34)
P_{t-6}	0.27	(0.54)	P_{t-3}	0.60	(0.24)
P_{t-7}	0.22	(0.44)	P_{t-4}	0.46	(2.25)*
P_{t-8}	1.18	(2.45)**			
$R/\bar{R}^2$	0.86/0.67			0.91/0.80	
SEE	0.054			0.016	
Q(15)	9.05	(0.86)		17.19	(0.31)

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the cofficient estimates, and SEE is the Standard Error of the Estimates. The marginal significance level of the Q-statistic is also in parentheses. Coefficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE I.B

F-Statistics for Excluding a set of Explanatory Variables in Policy Equations for Korea, 1974:2 to 1989:4

Explantory Variable	M_t				F_t		
M	F(12,26)	4.22	(0.00)**	M	F(2,27)	4.80	(0.02)**
F	F(1,26)	1.46	(0.23)	F	F(11,27)	8.98	(0.00)**
Y	F(12,26)	2.16	(0.05)*	Y	F(14,27)	3.22	(0.04)**
P	F(8,26)	1.70	(0.15)	P	F(4,27)	1.97	(0.13)*
R	F(3,26)	3.50	(0.03)**	R	F(4,27)	2.81	(0.05)**

Note: See Table I.A for variable definitions. Each variable is entered with the appropriate lags shown in Table I.A. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE I.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:II-1989:IV, the case of Korea

Coefficient	(1)		(2)		(3)	
Constant	0.02	(10.25) **	0.03	(10.38) **	0.86	(2.45) **
$f_{1,0}$	0.20	(0.93)			-0.41	(-2.17) *
$f_{1,1}$	0.05	(0.22)			-0.89	(-1.45)
$f_{1,2}$	-0.18	(-0.74)			-0.48	(-0.58)
$f_{1,3}$	-0.32	(-1.16)			0.20	(0.19)
$f_{1,4}$	-0.30	(-1.03)			0.76	(0.74)
$f_{1,5}$	-0.13	(-0.53)			1.03	(1.33)
$f_{1,6}$	0.13	(0.56)			1.01	(1.52)
$f_{1,7}$	0.38	(1.16)			0.76	(0.69)
$f_{1,8}$	0.53	(1.31)			0.47	(0.28)
$f_{1,9}$	0.50	(1.34)			0.28	(0.14)
$f_{1,10}$	0.29	(1.13)			0.34	(0.18)
$f_{1,11}$	-0.04	(-0.17)			0.71	(0.45)
$f_{1,12}$	-0.35	(-0.94)			1.30	(1.33)
$f_{1,13}$	-0.33	(-0.90)			1.86	(3.09) **
$\Sigma_{i=0}^{13} f_{1,i}$	0.45	(1.75) ◆			6.92	(1.14)
$f_{2,0}$	-0.37	(-0.94)			2.50	(1.84) *
$f_{2,1}$	-0.72	(-1.39)			7.09	(2.54) **
$f_{2,2}$	-0.92	(-1.51)			9.32	(2.56) **
$f_{2,3}$	-0.92	(-1.50)			10.77	(2.22) *
$f_{2,4}$	-0.74	(-1.47)			12.29	(2.09) *
$f_{2,5}$	-0.46	(-1.36)			14.21	(2.17) *
$f_{2,6}$	-0.17	(-0.70)			16.41	(2.32) *
$f_{2,7}$	0.01	(0.04)			18.51	(2.41) **
$f_{2,8}$	0.03	(0.10)			19.98	(2.44) **
$f_{2,9}$	-0.14	(-0.68)			20.29	(2.49) **
$f_{2,10}$	-0.46	(-1.85) ◆			19.02	(2.65) **
$f_{2,11}$	-0.78	(-1.51)			16.04	(2.98) **
$f_{2,12}$	-0.80	(-1.28)			11.61	(3.44) **
$f_{2,13}$	-0.11	(-0.19)			6.56	(3.39) **
$\Sigma_{i=0}^{13} f_{2,i}$	-6.57	(-2.05) *			184.57	(2.69) **
$m_{1,0}$			-0.08	(-2.16) *	-0.14	(-0.86)
$m_{1,1}$			-0.01	(-0.31)	-0.29	(-1.00)
$m_{1,2}$			0.03	(1.96) *	-0.68	(-1.34)
$m_{1,3}$			0.04	(2.80) **	-1.28	(-1.63)
$m_{1,4}$			0.02	(1.68) ◆	-1.97	(-1.89) ◆
$m_{1,5}$			-0.01	(-0.49)	-2.64	(-2.14) *
$m_{1,6}$			-0.04	(-2.67) **	-3.18	(-2.36) **
$m_{1,7}$			-0.06	(-4.30) **	-3.47	(-2.53) **
$m_{1,8}$			-0.07	(-4.75) **	-3.44	(-2.63) **
$m_{1,9}$			-0.06	(-4.24) **	-3.07	(-2.62) **
$m_{1,10}$			-0.04	(-2.57) **	-2.40	(-2.47) **
$m_{1,11}$			-0.00	(-0.03)	-1.55	(-2.11) *
$m_{1,12}$			0.04	(2.18) *	-0.75	(-1.54)
$m_{1,13}$			0.06	(2.23) *	-0.35	(-1.32)
$\Sigma_{i=0}^{13} m_{1,i}$			-0.17	(-1.73) ◆	-25.22	(-2.29) **

TABLE I.C (Continued)

Coefficient	(1)	(2)		(3)	
$m_{2,0}$		0.04	(0.48)	-0.64	(-1.40)
$m_{2,1}$		-0.05	(-0.73)	-1.16	(-1.24)
$m_{2,2}$		-0.04	(-0.68)	-0.92	(-0.88)
$m_{2,3}$		-0.01	(-0.24)	-0.39	(-0.39)
$m_{2,4}$		0.01	(0.28)	0.09	(0.10)
$m_{2,5}$		0.01	(0.32)	0.31	(0.39)
$m_{2,6}$		-0.01	(-0.13)	0.19	(0.24)
$m_{2,7}$		-0.04	(-0.71)	-0.26	(-0.31)
$m_{2,8}$		-0.08	(-1.18)	-0.96	(-0.98)
$m_{2,9}$		-0.10	(-1.59)	-1.73	(-1.57)
$m_{2,10}$		-0.10	(-1.94) ◆	-2.37	(-2.02) *
$m_{2,11}$		-0.09	(-1.90) ◆	-2.64	(-2.38) **
$m_{2,12}$		-0.08	(-1.69) ◆	-2.27	(-2.68) **
$m_{2,13}$		-0.12	(-1.15)	-1.01	(-2.88) **
$\Sigma_{i=0}^{13} m_{2,i}$		-0.66	(-0.89)	-13.75	(-1.26)
$\bar{AR}(1)$	-0.96(-4.07)	-1.15(-5.21)			
AR(2)	-0.74(-2.47)	-1.03(-3.94)			
AR(3)	-0.45(-1.85)	-0.56(-2.61)			
R/R^2	0.48/(-0.05)	0.76/0.52		0.86/0.29	
SEE	0.019	0.013		0.015	
Q(12)	6.40 (0.8946)	16.19 (0.1827)		29.26 (0.0036)	
DW	2.02	2.37		3.00	

Note: $f_{1,i}$, $f_{2,i}$, $m_{1,i}$, $m_{2,i}$ refer to the coefficients on AF_{t-i}, UF_{t-i}, AM_{t-i}, UM_{t-i}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significant at the .10, .05, and .02 (two-tail) levels are indicated by ◆, *, and **, respectively. The equations in columns (1), (2) and (3) are estimated using the fifth degree polynomial for 13 lags and the current explanatory variables in the same period as the dependent variable.

TABLE I.D

Granger Causality Tests of Policy Measures for Korea, 1982:2-1989:4

Casual Variable		AM_t		AF_t	
AF_{t-i}	F	**2.00**	**(0.19)**	**7.31**	**(0.01)** **
	Σ	-1.40	(0.88)	1.09	(2.62) **
UF_{t-i}	F	**1.42**	**0.33**	**1.82**	**(0.23)**
	Σ	1.36	(0.27)	0.06	(0.05)
AM_{t-i}	F	**0.99**	**(0.49)**	**0.77**	**(0.62)**
	Σ	0.85	(1.64) ◆	-0.03	(-0.24)
UM_{t-i}	F	**1.13**	**(0.43)**	**0.91**	**(0.54)**
	Σ	1.85	(1.05)	-0.74	(-1.61)

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(6,7) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ◆, *, **, respectively.

TABLE: II.A

Anticipated Fiscal and Monetary Policy Equations for Malaysia, 1974:2 - 1989:4

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.08	1.05	Constant	0.03	(0.70)
M_{t-1}	-1.78	(-2.84) **	F_{t-1}	-0.04	(-0.30)
M_{t-2}	-1.61	(-4.21) **	F_{t-2}	0.21	(1.40)
M_{t-3}	-0.14	(-0.60)	F_{t-3}	0.14	(1.10)
M_{t-4}	0.70	(1.59)	F_{t-4}	0.82	(9.60) **
F_{t-1}	0.32	(1.75) *	F_{t-5}	-0.06	(-0.38)
F_{t-2}	0.63	(2.39) **	F_{t-6}	-0.34	(-2.40) **
F_{t-3}	0.53	(2.31) *	F_{t-7}	-0.22	(-1.62)
F_{t-4}	0.09	(1.01)	R_{t-1}	0.00	(0.41)
F_{t-5}	-0.05	(-0.53)	P_{t-1}	0.16	(0.50)
F_{t-6}	-0.10	(-1.29)	P_{t-2}	0.10	(0.33)
F_{t-7}	-0.17	(-2.57) **	P_{t-3}	0.11	(0.33)
F_{t-8}	0.10	(1.21)	P_{t-4}	-0.50	(-1.65) *
F_{t-9}	0.49	(2.66) **	P_{t-5}	0.28	(0.87)
F_{t-10}	0.15	(0.90)	P_{t-6}	0.62	(1.99) *
F_{t-11}	0.09	(0.98)	Y_{t-1}	-0.52	(-1.50)
F_{t-12}	0.41	(2.69) **	Y_{t-2}	0.56	(1.44)
F_{t-13}	0.30	(1.60)	M_{t-1}	-0.26	(-0.56)
F_{t-14}	0.33	(4.44) **			
F_{t-15}	0.12	(1.49)			
Y_{t-1}	0.35	(2.04) *			
Y_{t-2}	-0.69	(-3.39) **			
Y_{t-3}	0.02	(0.04)			
Y_{t-4}	-1.03	(-3.37) **			
Y_{t-5}	0.20	(0.40)			
Y_{t-6}	-0.08	(-0.18)			
Y_{t-7}	0.82	(0.22)			
Y_{t-8}	-0.61	(-2.21) *			
Y_{t-9}	-0.10	(-0.33)			
Y_{t-10}	0.38	(1.40)			
Y_{t-11}	-0.04	(-0.17)			
R_{t-1}	-0.09	(-2.74) **			
R_{t-2}	0.02	(0.80)			
R_{t-3}	0.09	(2.52) **			
R_{t-4}	0.03	(1.38)			
R_{t-5}	-0.14	(-3.16) **			
R_{t-6}	0.05	(0.18) *			

TABLE: II.A (Continued)

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
R_{t-7}	0.05	(1.40)			
R_{t-8}	0.03	(1.61)			
R_{t-9}	-0.10	(-3.84) **			
R_{t-10}	0.17	(0.60)			
R_{t-11}	0.01	(0.23)			
R_{t-12}	0.03	(1.46)			
R_{t-13}	-0.04	(-1.91) ◆			
R_{t-14}	-0.03	(-1.55)			
R_{t-15}	-0.01	(-0.59)			
R_{t-16}	0.05	(2.81) **			
P_{t-1}	-0.13	(-1.04)			
P_{t-2}	0.30	(2.19) *			
P_{t-3}	0.20	(0.83)			
P_{t-4}	0.18	(0.82)			
P_{t-5}	0.63	(2.32) *			
P_{t-6}	0.64	(1.94) ◆			
P_{t-7}	0.13	(0.93)			
P_{t-8}	-0.79	(-3.44) **			
P_{t-9}	-0.74	(-2.70) **			
P_{t-10}	0.13	(0.70)			
P_{t-11}	0.44	(1.84) ◆			
P_{t-12}	-0.30	(-2.26) *			
P_{t-13}	-0.27	(-1.02)			
R/R^2	0.99/0.87			0.82/0.75	
SEE	0.01			0.000	
Q(15)	28.42	(0.02)		11.45	(0.72)

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the coefficient estimates and SEE is the Standard Error of the Estimates. The marginal significance level of the Q-statistic is also in parentheses. Coefficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ◆, *, and **, respectively.

TABLE II.B

F-Statistics for Excluding a set of Explanatory Variables in Policy Equations for Malaysia, 1974:2 - 1989:4

Explantory Variable	M_t				F_t			
M	F(4,3)	5.10	(0.11)	M	F(1,45)	0.31	(0.58)	
F	F(15,3)	3.45	(0.17)	F	F(7,45)	23.59	(0.00)	**
Y	F(11,3)	4.87	(0.11)	Y	F(2,45)	1.33	(0.27)	
P	F(13,3)	2.57	(0.24)	P	F(6,45)	1.62	(0.16)	
R	F(16,3)	3.61	(0.16)	R	F(1,45)	0.17	(0.68)	

Note: See Table II.A for variable definitions. Each variable is entered with the appropriate lags shown in Table II.A. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE II.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:2-1989:4, the Case of Malaysia

Coefficient	**(1)**		**(2)**		**(3)**	
Constant	0.04	(1.69) ◆	-0.00	(-0.37)	0.04	(1.35)
$f_{1,0}$	0.02	(0.14)			0.36	(1.64) ◆
$f_{1,1}$	-0.09	(-0.39)			0.30	(1.09)
$f_{1,2}$	0.03	(0.22)			0.16	(0.76)
$f_{1,3}$	-0.05	(-0.77)			-0.06	(-0.99)
$f_{1,4}$	-0.11	(-0.73)			-0.30	(-1.47)
$f_{1,5}$	0.07	(0.32)			-0.43	(-1.64) ◆
$f_{1,6}$	-0.01	(-0.16)			-0.28	(-1.15)
$\Sigma_{i=0}^{7} \mathbf{f}_{1,i}$	-0.15	(-0.91)			-0.16	(-1.01)
$f_{2,0}$	-0.07	(-0.44)			-0.01	(-0.09)
$f_{2,1}$	0.38	(2.35) **			0.40	(3.09) **
$f_{2,2}$	0.12	(0.71)			0.36	(2.10) *
$f_{2,3}$	-0.15	(-1.03)			0.01	(0.05)
$f_{2,4}$	-0.05	(-0.29)			-0.24	(-1.54)
$f_{2,5}$	0.32	(1.17)			-0.13	(-0.47)
$f_{2,6}$	0.13	(0.82)			-0.02	(-0.18)
$\Sigma_{i=0}^{7} \mathbf{f}_{2,i}$	0.67	(1.50)			0.36	(0.69)
$m_{1,0}$			0.16	(0.70)	-0.48	(-1.13)
$m_{1,1}$			0.07	(0.27)	-0.22	(-0.68)
$m_{1,2}$			0.38	(1.55)	0.38	(1.69) ◆
$m_{1,3}$			0.15	(0.66)	-0.00	(-0.01)
$m_{1,4}$			-0.03	(-0.14)	0.02	(0.08)
$m_{1,5}$			0.29	(1.15)	1.22	(2.95) **
$m_{1,6}$			-0.16	(-0.81)	0.38	(0.74)
$\Sigma_{i=0}^{7} \mathbf{m}_{1,i}$			0.87	(2.44) **	1.30	(2.07) *
$m_{2,0}$			3.40	(0.69)	2.97	(0.58)
$m_{2,1}$			5.04	(0.82)	0.93	(0.14)
$m_{2,2}$			-7.42	(-1.35)	-16.75	(-2.36) **
$m_{2,3}$			-4.15	(-0.94)	-21.88	(-2.61) **
$m_{2,4}$			5.30	(0.92)	-14.56	(-1.57)
$m_{2,5}$			4.58	(0.80)	-5.59	(-0.61)
$m_{2,6}$			3.02	(0.63)	1.11	(0.19)

TABLE II.C (Continued)

Coefficient	(1)		(2)		(3)	
$\Sigma_{i=0}^{7}$ $\mathbf{m}_{2,i}$			9.79	(0.47)	-53.76	(-1.32)
R/$\bar{R}^2$	0.48/0.08		0.62/0.34		0.95/0.71	
AR(2)	-0.40(-1.64)		-0.55(-2.86)		-0.31(-0.60)	
S.E.E.	0.035		0.030		0.020	
D.W.	2.06		2.03		2.13	
Q(12)	10.11	(0.61)	8.99	(0.70)	9.29	(0.68)

Note: $f_{1,j}$, $f_{2,j}$, $m_{1,j}$, $m_{2,j}$ refer to the coefficients on AF_{t-i}, UF_{t-i}, AM_{t-i}, UM_{t-i}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significance at the .10, .05, and .02 (two-tail) levels are indicated by $^{\blacklozenge}$, *, and **, respectively. The equations in columns (1), (2) and (3) are estimated using the fifth degree polynomial for 6 lags and the current explanatory variables in the same period as the dependent variable.

TABLE II.D

Granger Causality Tests of Policy Measures, Malaysia, 1982:2-1989:4

Casual Variable		AM_t		AF_t	
AF_{t-i}	F	**1.20**	**(0.48)**	**444.35**	**(0.0002)****
	Σ	-0.13	(-0.96)	0.83	(25.24)**
UF_{t-i}	F	**0.65**	**(0.71)**	**77.50**	**(0.002)****
	Σ	-0.93	(-1.37)	-0.86	(-5.36)**
AM_{t-i}	F	**1.49**	**(0.40)**	**10.57**	**(0.04)***
	Σ	2.38	(2.24)*	1.00	(3.92)**
UM_{t-i}	F	**0.45**	**(0.83)**	**9.67**	**(0.04)***
	Σ	-15.04	(-0.21)	11.79	(0.68)

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(7,3) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ♦, *, **, respectively.

TABLE: III.A

Anticipated Fiscal and Monetary Policy Equations for the Philippines, 1977:2 - 1989:4

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.24	(2.69) **	Constant	0.10	(2.89) **
M_{t-1}	-0.41	(-2.60) **	F_{t-1}	0.06	(0.39)
M_{t-2}	0.06	(0.45)	F_{t-2}	-0.03	(-0.13)
M_{t-3}	-0.29	(-2.14) *	F_{t-3}	0.51	(2.64) **
M_{t-4}	0.41	(3.12) **	F_{t-4}	0.16	(0.86)
M_{t-5}	-0.52	(-3.37) **	F_{t-5}	-0.04	(-0.23)
M_{t-6}	-0.95	(-4.61) **	F_{t-6}	-0.81	(-4.53) **
M_{t-7}	-0.43	(-3.16) **	M_{t-1}	0.08	(1.64) ◆
M_{t-8}	-0.04	(-0.29)	M_{t-2}	0.02	(0.40)
R_{t-1}	-0.00	(-0.66)	M_{t-3}	-0.02	(-0.38)
R_{t-2}	0.00	(0.30)	P_{t-1}	-0.13	(-1.01)
R_{t-3}	0.03	(3.67) **	P_{t-2}	-0.18	(-1.38)
R_{t-4}	-0.02	(-1.77) ◆	Y_{t-1}	-0.23	(-1.53)
R_{t-5}	0.05	(5.27) **	Y_{t-2}	0.37	(2.43) **
R_{t-6}	-0.04	(-3.64) **	R_{t-1}	-0.000	(-0.15)
R_{t-7}	-0.02	(-1.91) ◆	R_{t-2}	0.003	(0.88)
R_{t-8}	0.03	(5.02) **	R_{t-3}	0.000	(0.27)
F_{t-1}	1.63	(4.25) **	R_{t-4}	-0.005	(-1.00)
F_{t-2}	-2.43	(-6.10) **	R_{t-5}	0.004	(0.99)
F_{t-3}	-0.90	(-1.75) **	R_{t-6}	-0.000	(-0.19)
F_{t-4}	-2.79	(-5.83) **	R_{t-7}	-0.003	(-0.92)
F_{t-5}	0.34	(1.17)	R_{t-8}	0.005	(1.64) ◆
F_{t-6}	-1.38	(-5.39) **	R_{t-9}	-0.003	(-1.10)
F_{t-7}	0.27	(0.84)	R_{t-10}	0.003	(0.87)
F_{t-8}	-0.57	(-1.99) *	R_{t-11}	0.002	(0.65)
F_{t-9}	0.26	(0.77)	R_{t-12}	-0.007	(-2.16) *
P_{t-1}	-1.32	(-4.57) **	R_{t-13}	0.002	(0.66)
P_{t-2}	0.93	(2.95) **	R_{t-14}	0.004	(1.15)
P_{t-3}	-1.30	(-4.66) **	R_{t-15}	0.004	(1.16)
P_{t-4}	-2.89	(-6.01) **	R_{t-16}	-0.004	(-2.17) *
P_{t-5}	0.68	(1.87) ◆			
P_{t-6}	0.04	(0.14)			
P_{t-7}	-2.37	(-8.74) **			
P_{t-8}	-2.88	(-7.57) **			
Y_{t-1}	0.33	(0.87)			
Y_{t-2}	-0.67	(-2.00) *			
Y_{t-3}	-1.13	(-3.69) **			

TABLE: III.A (Continued)

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Y_{t-4}	-0.70	(-2.57) **			
Y_{t-5}	0.53	(1.75) ♦			
Y_{t-6}	1.58	(5.32) **			
Y_{t-7}	-0.10	(-0.36)			
Y_{t-8}	0.93	(2.55) **			
Y_{t-9}	-1.41	(-5.90) **			
Y_{t-10}	0.75	(3.24) **			
Y_{t-11}	0.66	(2.38) **			
Y_{t-12}	0.36	(1.31)			
Y_{t-13}	-0.36	(-1.50)			
Y_{t-14}	-1.28	(-5.25) **			
$R/\bar{R}^2$	0.99/0.98		0.80/0.52		
SEE	0.01		0.02		
Q(21)	71.13	(0.00)	16.04	(0.77)	

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the coefficient estimates. The marginal significance level of the Q-statistic is also in parentheses. Coefficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE III.B

F-Statistics for Explanatory Power in Anticipated Policy Equations for the Philippines, 1974:2-1988:3

Explantory Variable	M_t				F_t		
M	F(8,3)	43.18	(0.005)**	M	F(4,14)	2.75	(0.07)
F	F(9,3)	15.83	(0.002)**	F	F(8,14)	9.60	(0.00)**
Y	F(14,3)	6.13	(0.008)**	Y6	F(16,14)	4.82	(0.00)**
P	F(8,3)	20.39	(0.02)**	P	F(9,14)	3.71	(0.01)*
R	F(8,3)	24.34	(0.01)**	R	F(6,14)	7.40	(0.00)**

Note: See Table III.A for variable definitions. Each variable is entered with the appropriate lags shown in Table III.A. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE III.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:2-1989:4, the case of The Philippines

Coefficient	(1)		(2)		(3)	
Constant	0.15	(1.91)	0.01	(0.29)	-1.27	(-0.87)**
$f_{1,0}$	-0.38	(-1.11)			0.85	(0.54)
$f_{1,1}$	-0.23	(-0.75)			2.74	(0.81)
$f_{1,2}$	-0.26	(-0.95)			3.85	(0.86)
$f_{1,3}$	-0.35	(-1.38)			4.31	(0.86)
$f_{1,4}$	-0.43	(-1.53)			4.28	(0.85)
$f_{1,5}$	-0.46	(-1.61)			3.90	(0.82)
$f_{1,6}$	-0.43	(-1.79)◆			3.33	(0.80)
$f_{1,7}$	-0.35	(-1.99)*			2.71	(0.78)
$f_{1,8}$	-0.25	(-1.54)			2.13	(0.76)
$f_{1,9}$	-0.16	(-0.89)			1.69	(0.74)
$f_{1,10}$	-0.13	(-0.72)			1.44	(0.71)
$f_{1,11}$	-0.16	(-1.12)			1.37	(0.65)
$f_{1,12}$	-0.26	(-1.22)			1.43	(0.57)
$f_{1,13}$	-0.43	(-1.23)			1.51	(0.52)
$f_{1,14}$	-0.60	(-1.54)			1.44	(0.50)
$f_{1,15}$	-0.70	(-1.36)			0.96	(0.53)
$\Sigma_{i=0}^{15} \mathbf{f}_{1,i}$	-5.56	(-1.80)			37.94	(0.79)
$f_{2,0}$	-0.66	(-1.00)			-0.02	(-0.01)
$f_{2,1}$	0.03	(0.03)			-1.10	(-0.18)
$f_{2,2}$	0.27	(0.33)			-4.95	(-0.41)
$f_{2,3}$	0.28	(0.31)			-9.64	(-0.51)
$f_{2,4}$	0.20	(0.21)			-13.78	(-0.56)
$f_{2,5}$	0.11	(0.11)			-16.51	(-0.58)
$f_{2,6}$	0.04	(0.05)			-17.41	(-0.58)
$f_{2,7}$	0.02	(0.02)			-16.41	(-0.57)
$f_{2,8}$	0.03	(0.03)			-13.74	(-0.53)
$f_{2,9}$	0.03	(0.04)			-9.86	(-0.46)
$f_{2,10}$	0.01	(0.02)			-5.38	(-0.34)
$f_{2,11}$	-0.04	(-0.09)			-0.99	(-0.09)
$f_{2,12}$	-0.14	(-0.34)			2.59	(0.39)
$f_{2,13}$	-0.23	(-0.69)			4.72	(1.02)
$f_{2,14}$	-0.25	(-0.82)			4.87	(1.29)
$f_{2,15}$	-0.06	(-0.15)			2.70	(1.31)
$\Sigma_{i=0}^{15} \mathbf{f}_{2,i}$	-0.37	(-0.04)			-94.90	(-0.43)

TABLE III.C (Continued)

Coefficient	(1)	(2)		(3)	
$m_{1,0}$		0.02	(0.32)	-0.06	(-0.17)
$m_{1,1}$		0.09	(1.31)	-0.39	(-0.76)
$m_{1,2}$		0.05	(0.70)	-0.58	(-0.77)
$m_{1,3}$		-0.02	(-0.22)	-0.55	(-0.65)
$m_{1,4}$		-0.08	(-0.85)	-0.30	(-0.42)
$m_{1,5}$		-0.11	(-1.09)	0.13	(0.23)
$m_{1,6}$		-0.10	(-1.07)	0.65	(1.09)
$m_{1,7}$		-0.06	(-0.80)	1.17	(1.12)
$m_{1,8}$		-0.01	(-0.18)	1.64	(1.05)
$m_{1,9}$		0.04	(0.74)	1.92	(0.99)
$m_{1,10}$		0.07	(1.49)	1.00	(0.94)
$m_{1,11}$		0.08	(1.60)	1.80	(0.89)
$m_{1,12}$		0.05	(0.92)	1.39	(0.81)
$m_{1,13}$		-0.00	(-0.04)	0.83	(0.66)
$m_{1,14}$		-0.05	(-0.73)	0.28	(0.34)
$m_{1,15}$		-0.03	(-0.55)	-0.01	(-0.03)
$\Sigma_{i=0}^{15}\ \mathbf{m}_{1,i}$		-0.07	(-0.08)	9.89	(0.92)
$m_{2,0}$		-2.89	(-1.11)	4.27	(0.36)
$m_{2,1}$		-3.22	(-1.09)	19.48	(0.54)
$m_{2,2}$		-3.98	(-1.07)	38.15	(0.59)
$m_{2,3}$		-4.99	(-1.16)	57.05	(0.62)
$m_{2,4}$		-5.00	(-1.31)	73.61	(0.64)
$m_{2,5}$		-6.77	(-1.50)	85.88	(0.67)
$m_{2,6}$		-7.08	(-1.72)◆	92.56	(0.69)
$m_{2,7}$		-6.76	(-1.94)◆	92.96	(0.72)
$m_{2,8}$		-5.72	(-2.00)*	87.05	(0.73)
$m_{2,9}$		-3.94	(-1.63)	75.40	(0.73)
$m_{2,10}$		-1.56	(-0.66)	59.23	(0.70)
$m_{2,11}$		1.14	(0.44)	40.38	(0.61)
$m_{2,12}$		3.72	(1.24)	21.33	(0.45)
$m_{2,13}$		5.50	(1.70)	5.16	(0.16)
$m_{2,14}$		5.60	(1.93)◆	-4.40	(-0.23)
$m_{2,15}$		2.87	(1.34)	-3.02	(-0.41)
$\Sigma_{i=0}^{15}\ \mathbf{m}_{2,i}$		-34.06	(-1.25)	745.07	(0.67)

TABLE III.C (Continued)

Coefficient	(1)		(2)		(3)	
AR(1)	0.46/0.05		-0.55(-2.45)			
R/R^2	0.46/0.05		0.40/-0.05		0.56/-1.19	
SEE	0.03		0.03		0.04	
DW	2.14		2.29		3.5	
Q(12)	6.80	(0.87)	7.93	(0.79)	29.01	(0.004)

Note: $f_{1,j}$, $f_{2,j}$, $m_{1,j}$, $m_{2,j}$ refer to the coefficients on AF_{t-i}, UF_{t-i}, AM_{t-i}, UM_{t-i}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significance at the .10, .05, and .02 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE III.D

Granger Causality Tests of Policy Measures, the Philippines, 1982:2-1989:4

Casual Variable		AM$_t$		AF$_t$	
AF$_{t-i}$	F	6.81	(0.01) *	2.26	(0.15)
	Σ	0.87	(1.23)	0.66	(2.01) *
UF$_{t-i}$	F	3.13	(0.08)	0.59	(0.73)
	Σ	-9.46	(-1.27)	0.81	(0.24)
AM$_{t-i}$	F	6.79	(0.01) *	0.53	(0.77)
	Σ	0.41	(0.80)	0.19	(0.80)
UM$_{t-i}$	F	3.03	(0.09)	0.72	(0.64)
	Σ	-77.19	(-1.89) ♦	-12.55	(-0.67)

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(7,3) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ♦, *, **, respectively.

TABLE: IV.A

Anticipated Fiscal and Monetary Policy Equations for Singapore, 1974:2 - 1989:4

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.14	(3.96) **	Constant	-0.09	(-2.92) **
M_{t-1}	-0.52	(-3.34) **	F_{t-1}	-0.29	(-1.98) *
M_{t-2}	0.16	(1.10)	F_{t-2}	-0.58	(-3.60) **
M_{t-3}	-0.53	(-2.63) **	F_{t-3}	-0.56	(-3.71) **
M_{t-4}	-0.52	(-2.61) **	F_{t-4}	0.17	(1.05)
M_{t-5}	-0.07	(-0.48)	F_{t-5}	-0.57	(-3.51) **
M_{t-6}	-0.41	(-2.56) **	F_{t-6}	-0.27	(-1.82) ◆
M_{t-7}	-0.42	(-2.64) **	F_{t-7}	0.19	(1.07)
M_{t-8}	0.29	(2.08) *	F_{t-8}	-0.16	(-0.83)
F_{t-1}	0.41	(3.72) **	F_{t-9}	0.64	(3.46) **
F_{t-2}	-0.03	(-0.31)	F_{t-10}	0.39	(1.88) ◆
F_{t-3}	0.01	(0.15)	F_{t-11}	-0.65	(-3.01) **
F_{t-4}	0.53	(4.26) **	F_{t-12}	-0.11	(-0.49)
F_{t-5}	-0.11	(-1.08)	F_{t-13}	-0.79	(-3.90) **
F_{t-6}	0.30	(2.87) **	F_{t-14}	-0.77	(-3.44) **
F_{t-7}	0.62	(4.65) **	F_{t-15}	-0.01	(-0.52)
R_{t-1}	0.02	(2.61) **	F_{t-16}	0.05	(0.25)
R_{t-2}	-0.03	(-1.88) ◆	Y_{t-1}	-0.47	(-1.26)
R_{t-3}	-0.02	(-1.21)	Y_{t-2}	0.24	(0.41)
R_{t-4}	0.02	(0.69)	Y_{t-3}	-0.55	(-0.94)
R_{t-5}	0.04	(1.47)	Y_{t-4}	0.41	(0.80)
R_{t-6}	-0.06	(-1.93) ◆	Y_{t-5}	-0.28	(-0.56)
R_{t-7}	0.03	(1.15)	Y_{t-6}	-0.89	(-1.73) ◆
R_{t-8}	0.00	(0.09)	Y_{t-7}	0.84	(2.40) **
R_{t-9}	0.01	(0.49)	M_{t-1}	-0.25	(-1.12)
R_{t-10}	-0.03	(-1.63)	M_{t-2}	0.49	(2.18) *
R_{t-11}	0.02	(1.61)	P_{t-1}	-0.01	(-0.01)
R_{t-12}	-0.00	(-0.30)	P_{t-2}	2.11	(2.77) **
R_{t-13}	-0.01	(-1.46)	P_{t-3}	-1.86	(-2.43) **
R_{t-14}	0.00	(0.30)	P_{t-4}	1.60	(2.59) **
R_{t-15}	0.02	(2.48)	R_{t-1}	-0.02	(-1.50)
R_{t-16}	-0.03	(-4.14)	R_{t-2}	0.03	(2.48) **
P_{t-1}	0.78	(1.66) ◆	R_{t-3}	-0.02	(-2.52) **
P_{t-2}	-0.59	(-1.14)			
P_{t-3}	-1.81	(-3.25) **			

TABLE: IV.A (Continued)

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
P_{t-4}	1.44	(2.23) *			
P_{t-5}	0.28	(0.49)			
P_{t-6}	-1.84	(-2.82) **			
P_{t-7}	0.58	(1.17)			
P_{t-8}	0.95	(2.21) *			
P_{t-9}	-0.11	(-0.27)			
P_{t-10}	-0.98	(-2.14) *			
P_{t-11}	0.84	(2.14) *			
P_{t-12}	0.90	(2.31) *			
P_{t-13}	-0.34	(-0.98)			
P_{t-14}	-0.20	(-0.50)			
P_{t-15}	0.56	(1.34)			
P_{t-16}	-0.55	(-1.51)			
Y_{t-1}	0.09	(0.65)			
$R/\bar{R}^2$	0.96/0.84			0.91/0.81	
SEE	0.02			0.03	
Q(15)	23.59	(0.07)		20.79	(0.14)

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the coefficients estimated and SEE is the Standard Error of the Estimates. The marginal significance level of the Q-statistic is also in parentheses. Coe fficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE IV.B

F-Statistics for Excluding a set of Individual Explanatory Variables for Singapore, 1974:2 - 1989:4

Explantory Variable		**M_t**		**F_t**			
M_{t-8}	F(8,14)	6.14	(0.002)**	M_{t-2}	F(2,30)	4.61	(0.02)*
F_{t-7}	F(7,14)	5.79	(0.003)**	F_{t-16}	F(16,30)	16.64	(0.00)**
Y_{t-1}	F(1,14)	0.42	(0.53)	Y_{t-7}	F(7,30)	4.09	(0.003)**
P_{t-16}	F(16,14)	2.37	(0.06)	P_{t-4}	F(4,30)	3.54	(0.02)*
R_{t-16}	F(16,14)	4.45	(0.003)**	R_{t-3}	F(3,30)	2.69	(0.06)

Note: See Table IV.A for variable definitions. Each variable is entered with the appropriate lags shown in Table IV.A. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE IV.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:1-1989:4, the case of Singapore

Coefficient	(1)		(2)		(3)	
Constant	0.01	(3.56)**	-0.22	(-1.61)◆	-0.04	(-0.70)*
$f_{1,0}$	0.01	(0.60)			0.01	(0.09)
$f_{1,1}$	0.04	(1.15)			-0.08	(-0.96)
$f_{1,2}$	0.01	(0.49)			-0.14	(-2.47)**
$f_{1,3}$	-0.03	(-0.90)			-0.17	(-1.93)◆
$f_{1,4}$	-0.06	(-1.95)*			-0.18	(-1.99)*
$f_{1,5}$	-0.06	(-2.33)*			-0.17	(-2.29)*
$f_{1,6}$	-0.04	(-1.13)			-0.14	(-1.73)◆
$f_{1,7}$	0.01	(0.32)			-0.09	(-1.04)
$f_{1,8}$	0.06	(2.23)**			-0.03	(-0.35)
$f_{1,9}$	0.08	(1.89)◆			0.01	(0.08)
$f_{1,10}$	0.01	(0.36)			-0.03	(-0.29)
$\Sigma_{i=0}^{10}$ $\mathbf{f}_{1,i}$	0.04	(0.26)			-1.02	(-1.86)◆
$f_{2,0}$	0.32	(4.28)**			0.14	(0.54)
$f_{2,1}$	0.28	(3.81)**			0.11	(0.26)
$f_{2,2}$	0.35	(5.71)**			0.22	(0.54)
$f_{2,3}$	0.37	(6.12)**			0.30	(0.93)
$f_{2,4}$	0.30	(4.85)**			0.28	(1.29)
$f_{2,5}$	0.15	(2.78)**			0.17	(1.32)
$f_{2,6}$	-0.00	(-0.08)			0.02	(0.25)
$f_{2,7}$	-0.11	(-2.11)**			-0.11	(-1.25)
$f_{2,8}$	-0.12	(-2.43)**			-0.17	(-1.98)*
$f_{2,9}$	-0.09	(-1.55)			-0.17	(-1.52)
$f_{2,10}$	-0.16	(-1.98)*			-0.19	(-1.82)◆
$\Sigma_{i=0}^{10}$ $\mathbf{f}_{2,i}$	1.27	(3.61)**			0.63	(0.32)
$m_{1,0}$			0.03	(0.56)	-0.10	(-1.22)
$m_{1,1}$			0.16	(1.94)◆	0.04	(0.30)
$m_{1,2}$			0.15	(1.88)◆	0.17	(0.83)
$m_{1,3}$			0.14	(1.48)	0.29	(0.84)
$m_{1,4}$			0.17	(1.96)*	0.36	(0.81)
$m_{1,5}$			0.23	(3.14)**	0.35	(0.76)
$m_{1,6}$			0.27	(3.41)**	0.27	(0.65)
$m_{1,7}$			0.25	(3.08)**	0.12	(0.41)
$m_{1,8}$			0.15	(1.86)◆	-0.05	(-0.27)

TABLE IV.C (Continued)

Coefficient	(1)		(2)		(3)	
$m_{1,9}$			0.01	(0.15)	-0.15	(-0.97)
$m_{1,10}$			-0.02	(-0.34)	-0.07	(-0.61)
$\Sigma_{i=0}^{10}$ $\mathbf{m}_{1,i}$			1.55	(3.32)**	1.23	(0.53)
$m_{2,0}$			-0.32	(-1.06)	-0.60	(-0.99)
$m_{2,1}$			-0.94	(-1.88)◆	-1.46	(-0.90)
$m_{2,2}$			-1.15	(-1.98)*	-1.90	(-0.70)
$m_{2,3}$			-1.13	(-1.83)◆	-1.96	(-0.64)
$m_{2,4}$			-0.99	(-1.62)	-1.71	(-0.69)
$m_{2,5}$			-0.79	(-1.30)	-1.31	(-0.94)
$m_{2,6}$			-0.54	(-0.85)	-0.88	(-1.06)
$m_{2,7}$			-0.26	(-0.40)	-0.53	(-0.43)
$m_{2,8}$			0.00	(0.00)	-0.31	(-0.26)
$m_{2,9}$			0.15	(0.29)	-0.21	(-0.28)
$m_{2,10}$			0.01	(0.04)	-0.10	(-0.21)
$\Sigma_{i=0}^{10}$ $\mathbf{m}_{2;i}$			-5.95	(-1.48)	-10.98	(-1.04)
AR(1)			0.38(1.57)			
AR(2)	-0.32(-1.29)					
AR(4)					-0.41(-1.03)	
$R/\bar{R}2$	0.81/0.67		0.75/0.55		0.97/0.79	
SEE	0.007		0.009		0.006	
Q(12)	7.54	(0.82)	15.99	(0.19)	16.91	(0.15)
DW	2.00		2.02		2.49	

Note: $f_{1,j}$, $f_{2,j}$, $m_{1,j}$, $m_{2,j}$ refer to the coefficients on AF_{t-i}, UF_{t-i}, AM_{t-i}, UM_{t-i}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significance at the .10, .05, and .02 (two-tail) levels are indicated by ◆, *, and **, respectively

TABLE IV.D

Granger Causality Tests of Policy Measures, Singapore, 1982:2-1989:4

Casual Variable		AM_t		AF_t	
AF_{t-i}	F	0.52	(0.78)	1.02	(0.48)
	Σ	-0.33	(-0.84)	0.45	(0.67)
UF_{t-i}	F	0.44	(0.83)	0.39	(0.86)
	Σ	0.65	(0.44)	-2.06	(-0.79)
AM_{t-i}	F	0.66	(0.68)	0.34	(0.89)
	Σ	0.63	(1.10)	-0.39	(-0.40)
UM_{t-i}	F	0.50	(0.80)	0.70	(0.66)
	Σ	-6.34	(-0.94)	5.47	(0.47)

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(6,7) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ♦, *, **, respectively.

TABLE: V.A

Anticipated Fiscal and Monetary Policy Equations for Sri Lanka, 1974:2 - 1988:3

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.07	(3.80)**	Constant	0.10	(2.89)**
M_{t-1}	-0.30	(-2.56)**	F_{t-1}	0.06	(0.36)
M_{t-2}	0.02	(0.19)	F_{t-2}	-0.05	(-0.29)
M_{t-3}	-0.16	(-1.46)	F_{t-3}	0.06	(0.44)
M_{t-4}	-0.00	(-0.03)	F_{t-4}	0.51	(3.99)**
M_{t-5}	-0.02	(-0.18)	F_{t-5}	0.13	(0.94)
M_{t-6}	-0.43	(-4.24)**	F_{t-6}	0.05	(0.39)
F_{t-1}	0.27	(2.97)**	F_{t-7}	-0.18	(-1.65)◆
F_{t-2}	-0.18	(-1.82)◆	F_{t-8}	0.30	(2.19)*
Y_{t-1}	-0.81	(-3.74)**	M_{t-1}	-0.22	(-1.66)◆
P_{t-1}	-0.80	(-2.04)*	M_{t-2}	0.15	(0.96)
P_{t-2}	0.03	(0.06)	M_{t-3}	0.15	(0.95)
P_{t-3}	0.36	(0.78)	M_{t-4}	-0.25	(-1.56)
P_{t-4}	0.07	(0.17)	Y_{t-1}	-2.59	(-2.41)**
P_{t-5}	-0.38	(-0.87)	Y_{t-2}	6.02	(3.00)**
P_{t-6}	-0.76	(-2.04)*	Y_{t-3}	-2.83	(-1.41)
R_{t-1}	0.00	(2.26)*	Y_{t-4}	-2.24	(-1.21)
			Y_{t-5}	1.14	(0.56)
			Y_{t-6}	-1.12	(-0.48)
			Y_{t-7}	4.27	(1.85)◆
			Y_{t-8}	-3.80	(-1.37)
			Y_{t-9}	4.48	(1.78)◆
			Y_{t-10}	0.21	(0.10)
			Y_{t-11}	-6.36	(-2.62)**
			Y_{t-12}	5.70	(1.89)◆
			Y_{t-13}	-1.98	(-0.73)
			Y_{t-14}	-1.21	(-0.47)
			Y_{t-15}	-4.49	(-1.74)◆
			Y_{t-16}	4.64	(3.11)**
			R_{t-1}	-0.00	(-0.84)
			R_{t-2}	0.02	(2.89)**
			R_{t-3}	0.00	(0.33)
			R_{t-4}	-0.03	(-4.17)**
			R_{t-5}	0.03	(3.10)**
			R_{t-6}	-0.02	(-3.23)**
			P_{t-1}	-1.06	(-2.36)**
			P_{t-2}	-0.50	(-0.88)

TABLE: V.A (Continued)

Explanatory variable	M_t	t-statistic	variable	F_t	t-statistic
			P_{t-3}	0.86	(1.53)
			P_{t-4}	-1.29	(-2.57)**
			P_{t-5}	0.05	(0.11)
			P_{t-6}	-0.13	(-0.29)
			P_{t-7}	-0.32	(-0.63)
			P_{t-8}	1.17	(2.28)*
			P_{t-9}	-0.73	(-2.10)*
$R/\bar{R}2$	0.99/0.87			0.82/0.75	
SEE	0.01			0.06	
Q(21)	29.76	(0.10)	31.06	(0.07)	

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the coefficient estimates. The marginal significance level of the Q-statistic is also in parentheses. Coefficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE V.B

F-Statistics for Explanatory Power in Anticipated Policy Equations for Sri Lanka, 1974:2 - 1989:4

Explantory Variable	M_t				F_t		
M_{t-6}	F(6,41)	4.46	(0.00)**	M_{t-4}	F(4,14)	2.75	(0.07)
F_{t-2}	F(2,41)	5.76	(0.00)*	F_{t-8}	F(8,14)	9.60	(0.00)**
Y_{t-1}	F(1,41)	14.00	(0.00)**	Y_{t-16}	F(16,14)	4.82	(0.00)**
P_{t-6}	F(6,41)	2.88	(0.02)*	P_{t-9}	F(9,14)	3.71	(0.01)*
R_{t-1}	F(1,41)	5.10	(0.03)*	R_{t-6}	F(6,14)	7.40	(0.00)**

Note: See Table V.B for variable definitions. Each variable is entered with the appropriate lags shown in Table V.B. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE V.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:2-1989:4, the case of Sri Lanka

Coefficient	(1)		(2)		(3)	
Constant	-0.00	(-0.59)	0.03	(0.67)	0.38	(0.53)
$f_{1,0}$	-0.01	(-0.53)			-0.23	(-2.76)**
$f_{1,1}$	-0.03	(-1.69)◆			-0.30	(-1.56)
$f_{1,2}$	-0.03	(-1.96)*			-0.21	(-1.27)
$f_{1,3}$	-0.03	(-1.83)◆			-0.06	(-0.72)
$f_{1,4}$	-0.01	(-0.92)			0.08	(1.81)*
$f_{1,5}$	0.00	(0.29)			0.18	(2.66)**
$f_{1,6}$	0.01	(1.38)			0.23	(2.77)**
$f_{1,7}$	0.02	(2.38)**			0.23	(2.64)**
$f_{1,8}$	0.02	(2.76)**			0.20	(2.16)*
$f_{1,9}$	0.02	(2.44)**			0.15	(1.74)◆
$f_{1,10}$	0.02	(2.13)*			0.11	(1.87)◆
$f_{1,11}$	0.01	(1.99)*			0.09	(2.23)*
$f_{1,12}$	0.01	(1.84)◆			0.10	(1.05)
$f_{1,13}$	0.02	(1.69)◆			0.11	(0.95)
$f_{1,14}$	0.01	(1.52)			0.10	(3.52)*
$\Sigma_{i=0}^{14} \mathbf{f}_{1,i}$	0.78	(1.53)			0.78	(1.53)
$f_{2,0}$	-0.03	(-0.33)			-0.60	(-2.15)*
$f_{2,1}$	0.10	(0.76)			-0.82	(-1.91)◆
$f_{2,2}$	0.07	(0.51)			-1.95	(-2.48)**
$f_{2,3}$	-0.02	(-0.14)			-3.12	(-2.72)**
$f_{2,4}$	-0.10	(-0.65)			-3.80	(-2.80)**
$f_{2,5}$	-0.14	(-0.87)			-3.80	(-2.79)**
$f_{2,6}$	-0.12	(-0.79)			-3.13	(-2.61)**
$f_{2,7}$	-0.05	(-0.34)			-2.00	(-2.01)*
$f_{2,8}$	0.06	(0.47)			-0.71	(-0.78)
$f_{2,9}$	0.18	(1.17)			0.43	(0.43)
$f_{2,10}$	0.28	(1.52)			1.15	(1.04)
$f_{2,11}$	0.33	(1.65)			1.30	(1.16)
$f_{2,12}$	0.32	(1.62)			0.95	(0.90)
$f_{2,13}$	0.24	(1.49)			0.40	(0.45)
$f_{2,14}$	0.11	(1.18)			0.33	(0.50)
$\Sigma_{i=0}^{14} \mathbf{f}_{2,i}$	1.24	(0.91)			-15.36	(-1.53)
$m_{1,0}$			0.02	(0.48)	-0.03	(-0.21)
$m_{1,1}$			-0.06	(-0.79)	-0.24	(-0.95)
$m_{1,2}$			-0.10	(-0.94)	-0.70	(-1.02)
$m_{1,3}$			-0.12	(-0.87)	-1.20	(-1.00)
$m_{1,4}$			-0.12	(-0.77)	-1.60	(-1.00)

TABLE V.C (Continued)

Coefficient	(1)		(2)		(3)	
$m_{1,5}$			-0.11	(-0.65)	-1.82	(-1.02)
$m_{1,6}$			-0.09	(-0.53)	-1.86	(-1.07)
$m_{1,7}$			-0.06	(-0.41)	-1.71	(-1.15)
$m_{1,8}$			-0.03	(-0.28)	-1.44	(-1.27)
$m_{1,9}$			-0.01	(-0.13)	-1.11	(-1.47)
$m_{1,10}$			0.00	(0.03)	-0.77	(-1.73)◆
$m_{1,11}$			0.01	(0.25)	-0.49	(-1.75)◆
$m_{1,12}$			0.01	(0.60)	-0.30	(-1.47)
$m_{1,13}$			0.02	(1.14)	-0.21	(-1.44)
$m_{1,14}$			0.04	(2.20)*	-0.16	(-1.09)
$\Sigma_{i=0}^{14} \mathbf{m}_{1,i}$			-0.60	(-0.47)	-13.65	(-1.25)
$m_{2,0}$			0.02	(0.60)	0.38	(1.07)
$m_{2,1}$			-0.04	(-0.79)	0.31	(0.70)
$m_{2,2}$			-0.08	(-1.04)	0.15	(0.20)
$m_{2,3}$			-0.11	(-1.04)	-0.10	(-0.09)
$m_{2,4}$			-0.13	(-0.98)	-0.41	(-0.29)
$m_{2,5}$			-0.14	(-0.93)	-0.75	(-0.45)
$m_{2,6}$			-0.15	(-0.89)	-1.08	(-0.61)
$m_{2,7}$			-0.16	(-0.88)	-1.34	(-0.77)
$m_{2,8}$			-0.17	(-0.88)	-1.50	(-0.94)
$m_{2,9}$			-0.16	(-0.92)	-1.53	(-1.13)
$m_{2,10}$			-0.15	(-0.99)	-1.41	(-1.30)
$m_{2,11}$			-0.14	(-1.10)	-1.15	(-1.44)
$m_{2,12}$			-0.12	(-1.28)	-0.80	(-1.48)
$m_{2,13}$			-0.09	(-1.50)	-0.44	(-1.38)
$m_{2,14}$			-0.07	(-1.55)	-0.17	(-1.47)
$\Sigma_{i=0}^{14} \mathbf{m}_{2,i}$			-1.68	(-1.00)	-9.86	(-0.68)
AR(1)	-0.04(-0.14)		-0.21(-0.70)			
$R/\bar{R}^2$	0.74/0.46		0.76/0.52		0.99/0.86	
SEE	0.003		0.003		0.002	
DW	2.17		2.17		3.61	
Q(12)	10.34	(0.59)	3.10	(0.99)	28.38	(0.01)

Note: $f_{1,j}$, $f_{2,j}$, $m_{1,j}$, $m_{2,j}$ refer to the coefficients on AF_{t-i}, UF_{t-i}, AM_{t-i}, UM_{t-i}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significance at the .10, .05, and .02 (two-tail) levels are indicated by ◆, *, and **, respectively

TABLE V.D

Granger Causality Tests of Policy Measures, Sri Lanka, 1982:2-1989:4

Casual Variable		AM_t		AF_t	
AF_{t-i}	F	0.81	(0.64)	0.57	(0.75)
	Σ	0.20	(0.74)	1.14	(1.38)
UF_{t-i}	F	1.61	(0.43)	0.50	(0.79)
	Σ	-3.88	(-1.22)	-10.50	(-1.06)
AM_{t-i}	F	0.58	(0.74)	0.82	(0.64)
	Σ	0.26	(0.28)	-0.74	(-0.25)
UM_{t-i}	F	3.18	(0.26)	0.56	(0.75)
	Σ	0.42	(0.70)	1.87	(1.01)

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(7,3) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ♦, *, **, respectively.

TABLE VI.A

Anticipated Fiscal and Monetary Policy Equations for Thailand, 1974:2 - 1989:4

Explanatory variable	M_t	t-statistic	Explanatory variable	F_t	t-statistic
Constant	0.11	(3.31)**	Constant	0.04	(2.60)**
M_{t-1}	-0.21	(-1.42)	F_{t-1}	-0.14	(-0.85)
M_{t-2}	-0.24	(-1.57)	F_{t-2}	0.08	(0.62)
M_{t-3}	-0.30	(-1.99)*	F_{t-3}	-0.08	(-0.63)
M_{t-4}	0.22	(1.32)	F_{t-4}	0.18	(1.36)
M_{t-5}	-0.09	(-0.54)	F_{t-5}	-0.08	(-0.62)
M_{t-6}	-0.47	(-3.08)**	F_{t-6}	-0.07	(-0.54)
R_{t-1}	0.00	(0.22)	M_{t-1}	-0.15	(-2.21)
R_{t-2}	0.00	(0.06)	M_{t-2}	-0.17	(-2.61)
R_{t-3}	-0.00	(-1.00)	Y_{t-1}	-0.52	(-3.96)
R_{t-4}	0.01	(1.59)	P_{t-1}	0.07	(0.27)
R_{t-5}	-0.01	(-1.69)◆	P_{t-2}	-0.10	(-0.35)
R_{t-6}	0.00	(0.59)	P_{t-3}	0.28	(0.98)
R_{t-7}	-0.01	(-1.67)	P_{t-4}	-0.35	(-1.33)
R_{t-8}	0.01	(2.49)**	P_{t-5}	0.25	(0.79)
R_{t-9}	-0.01	(-2.52)**	P_{t-6}	-0.39	(-1.21)
P_{t-1}	-0.14	(-0.34)	P_{t-7}	-0.12	(-0.36)
P_{t-2}	0.31	(0.71)	P_{t-8}	0.10	(0.34)
P_{t-3}	0.37	(0.90)	P_{t-9}	-0.64	(-2.30)
P_{t-4}	-0.62	(-1.52)	P_{t-10}	0.27	(0.87)
P_{t-5}	1.25	(2.69)**	P_{t-11}	-0.17	(-0.64)
P_{t-6}	-0.85	(-2.12)*	P_{t-12}	0.11	(0.39)
Y_{t-1}	1.31	(2.00)*	P_{t-13}	0.64	(2.51)
Y_{t-2}	-1.51	(-2.02)*	R_{t-1}	0.001	(0.27)
F_{t-1}	-0.09	(-0.38)	R_{t-2}	-0.001	(-0.47)
			R_{t-3}	0.004	(1.25)
			R_{t-4}	-0.000	(-0.05)
			R_{t-5}	-0.002	(-0.55)
			R_{t-6}	-0.000	(-0.15)
			R_{t-7}	-0.003	(-1.21)
$R/\bar{R}2$	0.90/0.84			0.86/0.73	
S.E.E	0.031			0.019	
Q(15)	6.54	(0.97)		13.25	(0.58)
DW	1.949			1.996	

TABLE VI.A (Continued)

Note: M_t = percent change in M1, F_t = change in government budget deficit relative to potential GNP, Y_t = deviation of output from trend, P_t = percent change in the GNP deflator, RM_t = interest rates, t-statistics are in parentheses after the coefficients estimated and SEE is the Standard Error of the Estimates. The marginal significance level of the Q-statistic is also in parentheses. Coefficients significant at the .10, .05, and .01 (two-tail) levels are indicated by ♦, *, and **, respectively.

TABLE VI.B

F-Statistics for Excluding a set of Explanatory Variables in Policy Equations for Thailand, 1974:2 to 1989:4

Explantory Variable		M_t				F_t	
M	F(6,38)	24.29	(0.013)**	M	F(2,33)	5.54	(0.008)**
F	F(1,38)	0.14	(0.70)	F	F(6,33)	0.67	(0.67)
Y	F(2,38)	2.06	(0.14)	Y	F(1,33)	5.71	(0.0004)**
P	F(6,38)	1.64	(0.16)	P	F(13,33)	1.97	(0.05)*
R	F(9,38)	1.80	(0.10)	R	F(7,33)	1.32	(0.27)

Note: See Table VI.A for variable definitions. Each variable is entered with the appropriate lags shown in Table VI.A. The F-statistics are to test the null hypothesis that the coefficients of all lagged coefficient values for each variable are equal to zero. The marginal significance levels are in parentheses after the F-statistics.

TABLE VI.C

Effects of Anticipated and Unanticipated Fiscal and Monetary Policy on Real Output Growth, 1982:1-1989:4, the case of Thailand

Coefficient	(1)		(2)		(3)	
Constant	0.02	(1.62)	0.002	(0.59)	-0.23	(-2.41)**
$f_{1,0}$	-0.13	(-2.18)*			-0.17	(-0.26)
$f_{1,1}$	-0.13	(-3.06)**			-0.36	(-0.43)
$f_{1,2}$	-0.07	(-1.71)◆			-0.28	(-0.40)
$f_{1,3}$	-0.00	(-0.07)			-0.12	(-0.17)
$f_{1,4}$	0.05	(1.38)			0.03	(0.03)
$f_{1,5}$	0.07	(1.88)◆			0.12	(0.12)
$f_{1,6}$	0.07	(1.91)◆			0.15	(0.15)
$f_{1,7}$	0.05	(1.58)◆			0.13	(0.16)
$f_{1,8}$	0.03	(0.79)			0.10	(0.14)
$f_{1,9}$	0.01	(0.17)			0.09	(0.13)
$f_{1,10}$	0.01	(0.08)			0.11	(0.15)
$f_{1,11}$	0.02	(0.25)			0.16	(0.19)
$f_{1,12}$	0.04	(0.49)			0.19	(0.20)
$f_{1,13}$	0.04	(0.54)			0.08	(0.16)
$\Sigma_{i=0}^{13} \mathbf{f}_{1,i}$	0.05	(0.16)			0.23	(0.03)
$f_{2,0}$	0.05	(0.35)			-0.05	(-0.05)
$f_{2,1}$	0.01	(0.16)			-0.17	(-0.18)
$f_{2,2}$	0.06	(0.94)			-0.13	(-0.10)
$f_{2,3}$	0.12	(2.19)*			-0.04	(-0.02)
$f_{2,4}$	0.15	(2.67)**			0.04	(0.01)
$f_{2,5}$	0.15	(2.46)**			0.06	(0.02)
$f_{2,6}$	0.11	(1.89)◆			0.02	(0.00)
$f_{2,7}$	0.06	(0.93)			-0.08	(-0.02)
$f_{2,8}$	-0.00	(-0.01)			-0.20	(-0.05)
$f_{2,9}$	-0.04	(-0.63)			-0.32	(-0.08)
$f_{2,10}$	-0.06	(-0.92)			-0.41	(-0.11)
$f_{2,11}$	-0.07	(-0.92)			-0.42	(-0.13)
$f_{2,12}$	-0.09	(-1.12)			-0.36	(-0.15)
$f_{2,13}$	-0.19	(-1.40)			-0.22	(-0.16)
$\Sigma_{i=0}^{13} \mathbf{f}_{2,i}$	0.25	(0.46)			-2.30	(-0.06)
$m_{1,0}$			-0.07	(-1.62)◆	-0.09	(-0.48)
$m_{1,1}$			-0.03	(-0.75)	-0.15	(-0.46)
$m_{1,2}$			-0.01	(-0.27)	-0.17	(-0.27)

TABLE VI.C (Contiuned)

Coefficient	(1)	(2)		(3)	
$m_{1,3}$		0.01	(0.24)	-0.19	(-0.16)
$m_{1,4}$		0.03	(0.99)	-0.19	(-0.11)
$m_{1,5}$		0.05	(1.73)◆	-0.18	(-0.08)
$m_{1,6}$		0.07	(2.12)*	-0.18	(-0.06)
$m_{1,7}$		0.10	(2.34)*	-0.17	(-0.06)
$m_{1,8}$		0.12	(2.57)**	-0.17	(-0.06)
$m_{1,9}$		0.14	(2.85)**	-0.18	(-0.07)
$m_{1,10}$		0.14	(3.12)**	-0.17	(-0.08)
$m_{1,11}$		0.14	(3.13)**	-0.14	(-0.12)
$m_{1,12}$		0.11	(2.70)**	-0.08	(-0.15)
$m_{1,13}$		0.08	(1.81)◆	0.05	(0.20)
$\Sigma_{i=0}^{13} \mathbf{m}_{1,i}$		0.87	(4.64)**	-1.99	(-0.10)
$m_{2,0}$		0.10	(2.65)*	0.02	(0.06)
$m_{2,1}$		0.05	(1.69)◆	0.12	(0.22)
$m_{2,2}$		0.06	(2.27)*	0.07	(0.09)
$m_{2,3}$		0.09	(3.98)**	-0.02	(-0.02)
$m_{2,4}$		0.11	(5.06)**	-0.10	(-0.09)
$m_{2,5}$		0.10	(4.77)**	-0.13	(-0.13)
$m_{2,6}$		0.07	(3.31)**	-0.10	(-0.13)
$m_{2,7}$		0.03	(1.19)	-0.03	(-0.06)
$m_{2,8}$		-0.02	(-0.70)	0.05	(0.11)
$m_{2,9}$		-0.04	(-1.91)◆	0.13	(0.23)
$m_{2,10}$		-0.05	(-1.80)◆	0.16	(0.27)
$m_{2,11}$		-0.03	(-0.93)	0.14	(0.21)
$m_{2,12}$		-0.02	(-0.48)	0.05	(0.07)
$m_{2,13}$		-0.05	(-0.94)	-0.09	(-0.16)
$\Sigma_{i=0}^{13} \mathbf{m}_{2,i}$		0.41	(1.88)◆	0.26	(0.03)
AR(1)	-0.19(-0.84)	-0.29(-1.15)		-0.85(-1.23)	
AR(2)				-0.47(-0.60)	
$R/\bar{R}2$	0.77/0.59	0.81/0.67		0.96/0.67	
DW	2.14	2.26		2.41	
SEE	0.006	0.005		0.005	
Q(12)	14.84(0.25)	21.84(0.04)		27.37(0.006)	

Note: $f_{1,j}$, $f_{2,j}$, $m_{1,j}$, $m_{2,j}$ refer to the coefficients on AF_{t-j}, UF_{t-j}, AM_{t-j}, UM_{t-j}, respectively, t-statistics for the coefficient estimates and marginal significance levels for the Q-statistic are in parentheses. Coefficients significance at the .10, .05, and .02 (two-tail) levels are indicated by ◆, *, and **, respectively

TABLE VI.D

Granger Causality Tests of Policy Measures, Thailand, 1982:2-1989:4

Casual Variable		AM_t		AF_t	
AF_{t-i}	F	2.63	(0.12)	23.75	(0.0002)**
	Σ	0.35	(1.86)◆	1.06	(10.38)**
UF_{t-i}	F	2.18	(0.17)	1.57	(0.28)
	Σ	3.02	(1.76)◆	1.70	(1.80)◆
AM_{t-i}	F	3.32	(0.07)	1.56	(0.29)
	Σ	0.63	(2.12)*	-0.28	(-1.71)◆
UM_{t-i}	F	1.90	(0.21)	1.08	(0.45)
	Σ	-2.08	(-1.90)*	-1.14	(-1.91)◆

Note: Causality tests are performed for regressions in which all four policy variables are entered with six lags. The table reports F-statistics which are distributed F(6,7) and test the null hypothesis that the coefficients for each variable are equal to zero. The marginal significance levels are in parentheses. The table also reports the sum of each set of lagged variables (Σ), with the corresponding t-statistic in parentheses. Statistics significant at the .10, .05, and .02 significance levels are indicated by ◆, *, **, respectively.