EFFICIENCY OF FISCAL AND MONETARY POLICIES IN THE PHILIPPINES: THE ST. LOUIS MODEL APPROACH 1

Neil Angelo C. Halcon
Leah Melissa T. De Leon

Introduction

Debates have persisted around what policy is deemed effective in stimulating as well as in stabilizing growth in the Philippines. Over time, the interactions of both fiscal and monetary policies have largely depended on the structural adjustments and the reformation of government and financial institutions. However, fiscal policies in the past were influenced by structural deficits and internal economic volatilities caused by political upheavals in the last two decades. Similarly, the vulnerabilities of large monetary shocks bolster the impression that the country’s monetary strategy is less than optimal. While a policy mix feasible enough to achieve the right balance of macroeconomic stability and growth remains an elusive dream, it is hoped that the policy implications arising from the study and relevant to the Philippines would encourage better management of these major policy instruments.

It would be useful, therefore, to undertake an empirical investigation into the efficiency of both fiscal and monetary policies at achieving the twin macro objectives under the internal equilibrium of stable growth and low inflation within the framework of the St. Louis Model. This paper also reviews briefly the issues around which the fiscal and monetary policies are hinged, as well as highlights the fiscal and monetary policy scenario of the Philippines.

Issues on Monetary Policy Efficiency

Although monetarism is as alive and well as ever, considerable skepticism and contrary opinions can be found that surprisingly echoes the vital flaw in human reasoning: expectations. The twin realization that it is impossible to observe expectations directly, and that reasoning is supposed to be based largely on experience, made monetarists confront the issues of credibility and sustainability among decision-makers.

Expectations. The monetarist theoretical scenario has a strong policy message. The existence of an “expectations component” in the argument means that lags of various kinds exist within the implementation of monetary policy. The central bank in itself has both the inside and outside lags to contend with. Inside lags exist because of administrative delays and delays in the recognition of adverse macroeconomic developments in output, employment and prices. While these may be of shorter actual duration than in the case of fiscal policy, the outside lag – the length of time it takes before the actual changes in monetary expansion/contraction are felt on the “target” variables of inflation, output, and employment – is very significant.

In the monetarist view, expectations adjustment is a time-consuming process. Comparatively little is known, however, about the formation of expectations and other factors affecting the length of lags. For that reason, a good deal of uncertainty accompanies the conduct and effectiveness of monetary policy.

Dynamic inconsistency and inflationary bias. This refers to the difference between the optimal policies that a central bank would announce if it were considered credible by the public, and the policies it would carry out after the public had made decisions on the basis of its expectations. In reality, however, the public can discount the announcements of the central bank, and the resulting inflation rate will be higher than it needs to be. As a result, output may or may not rise above the full employment rate, depending on current wage rigidities in the system that prevent complete wage and price adjustments. The incentive of policymakers to promote low inflation...
is constrained by the behavior of rational agents, creating an economy with inflationary bias.

**Rules versus discretion.** The old debate on rules versus discretion is related to the behavior of central banks in the conduct of monetary policy: rule-like behavior implies a systematic conduct of policy without exploiting the existing expectations to achieve temporary gains in output. Discretion, on the other hand, considers the choices of different periods (time-consistent strategy) and offers mainly a shortsighted solution. As time-consistent policy may bring about significant short-run social benefits, economic agents will learn to anticipate the period-by-period optimization, vitiating the credibility of the policymaker. Rules would have provided for more useful information about the stance of monetary policy during particular episodes and a credible central bank is essential to achieve this.

**Sustainability of monetary policy in uncertain times.** In a speech made by William Poole of the Federal Reserve Bank of St. Louis, he emphasized the inflation objective of the Fed, which is to maintain a low and stable rate of inflation. The reason for emphasizing this goal is that the U.S. economy’s long-run economic performance in terms of employment growth and economic growth is maximized when the rate of inflation is low and stable. Moreover, no other economic policy authority can achieve the inflation outcome. Hence, controlling the creation of money is its main responsibility, and exercising that power wisely is its main monetary policy function.

Interestingly, Poole acknowledged the fact that economic historians studying monetary policy in the United States and other countries have argued that central banks have from time to time made serious mistakes that increased rather than reduced fluctuations in the unemployment rate. Certainly, the first obligation of a central bank is to do no harm. Over time, advances in economists’ understanding of macroeconomics and monetary policy have led to improvements in monetary policy.

These observations make clear that the issue of the length of the lag from the Fed’s policy action is not well defined, because the market gradually eases its rates in anticipation of eventual Fed action. What central banks can do is to respond sensibly to current developments, making sure that long-term policy goals are kept in place and there are no short-run disturbances nor overreactions that will have unfavorable effect on the economy.

**Issues on Fiscal Policy Efficiency**

The macroeconomic relationship between fiscal policy and economic growth has long fascinated economists. Indeed, fiscal policy has been the major policy instrument for macroeconomic management. However, it has been found to be a clumsy instrument with its attendant delays in the start-up of investment projects, which includes the preparation and floatation of tender documents and approval of contracts as well as uncertain impacts due to lags in project implementation.

**Role of fiscal policy in recession.** Recent years have seen a revival of the debate about the role of fiscal policy in stimulating economic activity, particularly given the recessions in Asian crisis countries, the prolonged slump in Japan and, more recently, the slowdown in the United States (Lane, et al., 1999). While fiscal policy in the Asian crisis countries became increasingly oriented toward supporting economic activity, questions still remain about the effectiveness of fiscal stimulus during a crisis. Even if it is generally agreed that there are circumstances where fiscal policy cannot be loosened (e.g., when fiscal imbalances or debt sustainability problems are the root causes of the crisis), whether and when expansionary fiscal policy is effective in supporting activity need to be studied further.

Overall, many of the observations appear to be broadly in line with theoretical predictions and the following stylized facts emerge (Baldacci, et al., 2001):

- On average, fiscal policy is expansionary during recession episodes. However, a very large number of recession episodes (40 percent of total) are accompanied by contractionary fiscal policy. Unfavorable initial conditions (high public debt, and large fiscal and current account deficits) are associated with a contractionary fiscal response in a recession, while negative terms of trade shocks or a large public sector trend to result in a more expansionary fiscal response.
• There is some evidence that expansionary fiscal policy dampens the severity of a recession, especially in open economies with a fixed exchange rate, favorable initial fiscal and external conditions (low public debt, a large public sector, and a small current account deficit), and in combination with expansionary monetary policy. Expenditure-led fiscal expansions are also associated with less severe recessions. All these results are consistent with the predictions of the theory, even though the magnitude of the average effects is small, and the variance is large.

• There are marked differences between advanced economies and other country groups. The fiscal response is more often expansionary in advanced economies. At the same time, the impact of fiscal policy tends to be smaller than in other groups.

• A number of other factors are associated with both the fiscal response and the severity of a recession. Inflation tends to be higher, and monetary policy more contractionary during episodes with a contractionary fiscal response, which makes the interpretation of the results somewhat difficult and points to the need for a multivariate approach.

Apart from the empirical studies confirming the superiority of fiscal over monetary policy efficiency, equally important also is the role of the central bank in conducting monetary policy. The latter has attracted arguments as to the ineffectiveness of the policy and in assessing the general framework of monetary policy, (Barth, 2002) discussed current issues highlighting the fallacies inherent in the framework: dynamic inconsistencies resulting from rational expectations, and the long standing issue on rules versus discretion.

Crowding out effect. There have been three distinct sets of arguments to the effect that fiscal policy will be ineffective, under the general heading of “crowding out”. The first, in the context of the IS-LM analysis, was a “crowding out” due to a rise in interest rates following a fiscal expansion. This was based on an exogenous money supply and the interest rate equating the demand for and supply of money. The second form of “crowding out” arose from a combination of the notion of a supply-side equilibrium (i.e., NAIRU) and that the level of aggregate demand would adjust to be consistent with the supply-side equilibrium. As has been argued above, fiscal policy has an effect on the level of aggregate demand, and “crowding out” only occurs if it assumed that the supply-side equilibrium must be attained and that level of aggregate demand would be equivalent to the supply-side equilibrium. The third route comes from the “Ricardian equivalence” proposition. An expansion of government expenditure, however funded, is postulated to lead to an equivalent reduction in private expenditure, leaving the overall level of demand unchanged (Arestis and Sawyer, 2003).

Fragile fiscal policy indicators. Unfortunately, analyses of fiscal policy indicators have frustrated empiricists for almost as long (Fu, et al., 2003). One root of that frustration is the array of possible policy indicators. As earlier discussed in Tanzi and Zee (1997), there are three candidate indicators of fiscal policy—government expenditures, taxes and deficits. The literature does not systematically favor one indicator of fiscal policy over the others. Furthermore, Levine and Renelt (1992) find that none of these fiscal indicators is robustly correlated with economic growth when evaluated individually.

The fragility of fiscal indicators found in Levine and Renelt (and contradictory findings in the growth literature in general) probably arises from the inability of any single budgetary component to fully capture the stance of fiscal policy. For example, an increase in government expenditures could be considered expansionary if it were financed by deficit spending. However, it could also be considered contractionary if it were financed by an increase in taxes because such a policy would imply an increase in the size of the public sector.

Keynesian versus Monetarist. The Keynesian tradition gave government the responsibility of stabilizing a troubled economy. Keynesians developed the notion of a fiscal/monetary mix to control spending and the balance of payments simultaneously. Judicious, well-timed changes in taxes and government spending were to be balanced against propitious changes in money to manage the economy. The famous Phillips curve trade-off supposedly gave economists a tool
for choosing between inflation and unemployment. If the choice did not work out as intended, Keynesians relied on informal price and wage controls, jawboning (threats), and guideposts to improve the trade-off.

To know when and how much to adjust policies, Keynesian economists developed forecasting models that could simulate possible policy changes to predict their effect and more closely adjust the mix of policy actions. The Monetarists have always been critical of these models and their use in policy. They favor stable policy rules that reduce variability and uncertainty for private decision makers. They argue that government serves the economy best by enhancing stability and acting predictably, not by trying to engineer carefully timed changes in policy actions.

For the Monetarists, such efforts are frequently destabilizing (that is, doing the opposite of what they were supposed to do). Thus, the attempt to apply Keynesian policies, notably in the United States and Britain produced alternating periods of rising inflation and rising unemployment, and not the finely adjusted trade-off that the Keynesians sought.

No perfect forecast. Forecasting proved a weak foundation for policy actions. The best forecasts of spending, output, prices, and inflation proved to be unreliable. Systematic studies of forecasting accuracy show that on average forecasters have been unable to distinguish between booms and recessions a quarter or a year ahead, so they are as likely to mislead as to benefit policymakers. The records of the Federal Reserve that have become available show that during the period of rising inflation, annual inflation was always underpredicted. When inflation fell in the eighties, the Federal Reserve persistently predicted too high an inflation rate. A vast amount of research has shown that econometric models cannot accurately forecast interest rates and exchange rates.

**Philippine Case: Structures and Arrangements**

**Fiscal policy.** Fiscal balance is important in achieving economic stability, and there are two important issues that must be addressed: (1) the sustainability of the fiscal balance, and (2) the impact of government spending and debt on the economic growth (Paderanga, 2001).

For the sustainability of the fiscal balance, the ability of the economy to accumulate savings in order to finance its public investment is very important. Unfortunately, the slow accumulation of savings by the public sector has been offsetting the high savings achieved by the private sector. This resulted in negative savings-investment gap for 17 consecutive years. Further, with the growing trade gap, there has been increasing pressure for the private sector to generate private savings and likewise for the government to generate a large primary surplus.

The second issue relating to fiscal policy for sustainable growth is the impact of government spending and debt on economic growth. The debt burden keeps the government from providing services to the people and the necessary infrastructure to help improve the economy. The trend in the government’s budgetary policies is a rising allocation for general public services and a decreasing budget for economic services. This means that the government is in essence spending more for less important matters and spending less on areas that are more crucial in achieving sustainable growth.

Fiscal stability after the financial crisis in mid-1990s remains in jeopardy. To raise its sustainable growth rate, the Philippines needs to close its fiscal gap without necessarily sacrificing essential physical and social infrastructure, i.e., physical and human capital investment. Posting a well-behaved fiscal position after the Asian contagion set in, the government indulged in deficit-spending in an attempt to stimulate the economy out of a mild recession. Both the revenue (tax collection) and expenditure sides require tremendous restructuring efforts and commitment.

**Monetary policy.** Despite evidence showing that only M1 is co-integrated with interest rates, output and the exchange rate (Gochoco-Bautista, 1993), the Central Bank of the Philippines (CBP) used M3 or total liquidity as its intermediate target, specifically because the ultimate target is the rate of inflation. As an intermediate target, the CBP used the base money (BM) as operating target, and the BM is related to M3 via the money multiplier, i.e.

\[ M3 = \text{money multiplier} \times BM \]
In the mid-1980’s, the CBP conducted monetary policy through monetary aggregate targeting. Under this approach, its policy actions were aimed at influencing the behavior of monetary aggregates. Behind this is the presumption that monetary aggregates are meaningful indicators of economic activity, implying that there are stable and predictable relationships between high-powered money (or the monetary aggregate that the central bank is able to control) and money supply, as well as between money on the one hand, and output and inflation on the other hand.

However, financial liberalization in 1993 had led to changes in financial structures and the evolution of new financial products and services. These changes have caused large fluctuations in the money multiplier and the velocity of money such that the traditional relationships between monetary aggregates (monetary base and money supply) and between money supply and the rates of inflation and economic growth have weakened considerably. Guinigundo (1999) presented evidence supporting this claim: the money multiplier increased beginning in 1993 after financial liberalization; however, there was deceleration in the rate of inflation from 9 percent in 1994 to 8.1 percent in 1995 despite high rates of liquidity growth in those years. He attributed this inflation performance in part to supply-related factors such as the increase in agricultural output in 1994 and the alleviation of power shortages.

The apparent weakening of these key relationships under the monetary targeting framework prompted the Bangko Sentral ng Pilipinas (BSP) to adopt a “modified targeting framework” beginning June of 1995, putting greater emphasis on price stability as well as broadening the information set for monetary policy decisions. This information set includes movements in key interest rates, exchange rate, equity prices, demand-supply indicators and external economic conditions, among other things.

The BSP’s shift to inflation targeting was approved by the Monetary Board in 2000 and implemented in January 2002. Inflation targeting as monetary policy framework has emphasized the central role of information in the conduct of monetary policy. As a forward-looking and an information-intensive approach to monetary policy, the shift to inflation targeting would require the use of a wider set of information variables on the economy than had been previously utilized. Under inflation targeting, monetary authorities in the Philippines would have reliable and timely economic indicators and a good system for economic forecasting, particularly inflation. A well-organized system for economic statistics—based on reliable, timely and comprehensive information—enable informed decisions and the efficient functioning of markets. It is also an essential element in strengthening the monetary policy decision-making process by providing a focused and consistent framework for setting the monetary policy stance (Tetangco and Tuaño-Amador, 2002).

Exchange rate policy. The country’s experience with fixed and then floating exchange rate regimes imparts several important lessons. Recall that the lack of sustainability and implementation of loose financial policies under the fixed exchange regime resulted in two large devaluations in the mid-1980’s that brought about the adoption of a flexible exchange rate in 1985.

Initially viewed to promote external recovery, it produced mixed results on the inflationary front as the economy was left without a nominal anchor for domestic prices. The use of base money targets was uneven, and the exchange rate was not allowed to float freely. Apart from imparting an inflationary bias, the implicit shifts between money supply and exchange rate targets sent conflicting signals to markets, affecting the credibility of monetary policy (Houben, 1997).

The opening of the economy suggested that an exchange rate anchor could be an effective instrument to limit inflation. However, a formal exchange rate commitment would limit monetary policy independence, making the economy vulnerable once more to large real shocks. It also depends on whether the real exchange rate continues to appreciate (reflecting the rapid structural and technological improvements).

In such a case, adhering to either a strict monetary or exchange rate anchor could have high costs in terms of output growth or inflation. According to Houben, the Philippine experience points to the inflation targeting approach as a more viable strategy, since monetary policy is targeted directly at inflation,
rather than its intermediate targets. By committing to more stable prices in a more transparent and consistent framework, the monetary authority can maintain some flexibility to cope with unforeseen shocks.

**The St. Louis Model**

The St. Louis Model is almost an obscure model to begin with. Developed in the early 1970s, it was described by Andersen and Carlson as a small-scale monetarist model of economic activity (King and Wolman, 1996). It relates the growth of nominal income (GNP) to changes in monetary and fiscal actions that are measured by the growth of money and government expenditures, respectively.

The current version of the St. Louis Model consists of five estimated equations and a number of identities. The centerpiece of the St. Louis Model was the total spending equation, put forward by Andersen and Jordan (1968), which put together the change in nominal GNP to changes in the nominal money stock and to (high employment) government expenditures. Since the effects of expenditures are small, the specification embodies the monetarist viewpoint that monetary change is the key variable that explains nominal income movements while fiscal variables only have transitory effect (Meyer and Varvares, 1981).

**Limitations.** Although its monetarist background and structural linkages from money to economic activity are now widely accepted, the model remains vulnerable to criticisms due to the essential quantitative effects of expectations (or Lucas’ Critique) in the model (Andersen and Carlson, 1970).

Model specification also posted a problem that concerns specifying the order of the distributed lags (1, K). Batten and Thornton (1984) furthered that in any finite distributed lag model, a trade-off occurs such that a bias is created in specifying too short a lag (or too low a polynomial degree) against the inefficiency associated with too long a lag (or too high a polynomial degree). Either way, the estimates will be unbiased but inefficient. Since the Andersen-Jordan equation, and in effect the St. Louis model employs distributed lag equations, it follows that the resulting estimates will be biased and may be inefficient if one lag is too long and the other too short.

**Results of St. Louis model researches.** Thus far, evidence point to the robustness of the St. Louis equation owing both to the specification of its lag structure and the imposition of polynomial restrictions. Taking these into consideration, Batten and Thornton concluded that in a sample over the period 1962:2 to 1982:3, a one-percentage point increase in money growth leads to a one-percentage point increase in the rate of growth of nominal GNP cannot be rejected at conventional levels of statistical significance. Alternatively, high employment government spending has a permanent impact on the rate of growth of nominal GNP only when contemporary government spending growth alone is included in the distributed lag of money growth in the model. In the long run, monetary policy is effective and fiscal policy is ineffective in influencing the growth of GNP in the U.S. economy.

Estimation of the St. Louis equation involving six developed countries (Canada, France, Germany, Japan, the UK and the US) was conducted (Batten and Hafer, 1983). A modified Andersen-Jordan equation is herein introduced in response to the past criticism of the original St. Louis equation. Estimating the modified St. Louis equation for the six countries yielded results that indicated that changes in money growth have a significant and lasting impact on nominal income growth in all six cases. Furthermore, the money-GNP link was stable in all developed countries, owing to the then recent move from fixed to floating exchange rates. On the contrary, fiscal actions are significant only in the UK and France.

While both studies validated the generalized St. Louis result, there had been attempts at reassessing the role of fiscal policy within the framework of the St. Louis equation (Hafer, 1982). The results are broadly consistent with previous findings. Specifically, fiscal actions exert neither a significant nor lasting impact on the growth of GNP. The results also provide further evidence against the reliance on fiscal policy measures to explain movements in GNP. It concludes by saying that fiscal policy measures (1) do not significantly increase the explanatory power of an equation that already incorporates money growth, (2)
do not exhibit stable statistical relationships with GNP growth, and (3) are not exogenous with respect to GNP growth.

The Andersen-Jordan Equation

The centerpiece of the St. Louis Model was the total spending equation put forward by Andersen and Jordan (1968), that linked the change in nominal GNP to four-quarter distributed lags of changes in the nominal money stock and of high-employment government expenditures. Currently specified in rate-of-change form, it has the following as independent variables: nominal income $Y$, the money supply $M$ ($M1B$ is the definition of money currently used with the St. Louis Model), and the high-employment level of government expenditures $G$. Dots over the variables indicate compounded annual rates of change.

The estimates on the $M$ and $G$ variables approximately sum to unity and zero, respectively. Hence, these estimates support the general conclusion associated with a monetarist viewpoint: Monetary change is the key variable explaining nominal income movements while fiscal variables only have a transitory effect.

$$
Y_t = a_0 + \sum_{i=0}^{4} \beta_{1i} M_{t-i} + \sum_{i=0}^{4} \beta_{2i} G_{t-i} + \epsilon_t
$$

However, since monetary and fiscal actions obviously affect the foreign sector, discussion on the Andersen-Jordan estimates assume the economy being analyzed is relatively “closed”; that is, its exports do not account for a large proportion of its GNP. As such, correlation between external and domestic influences on GNP is minimized, and external influences excluded in the analysis (Batten and Hafer, 1983).

As a response both to past criticism of the St. Louis equation and the likely correlation of domestic and external influences on GNP, a modified version of the St. Louis model as conceptualized by Batten and Hafer (1983) is likewise used.

$$
Y_t = a_0 + \sum_{i=0}^{J} \beta_{1i} M_{t-i} + \sum_{i=0}^{K} \beta_{2i} G_{t-i} + \sum_{i=0}^{L} \beta_{3i} EX_{t-i} + \epsilon_t
$$

where: $EX = $ merchandise exports $Y = $ GNP $M = $ narrow money $G = $ government expenditures

The dots above each variable indicate that the equation is estimated in growth rate form. The modified St. Louis equation is typically estimated with each distributed lag’s coefficients restricted to lie on a fourth-degree polynomial with endpoints constrained to equal zero.

For the Philippines, the following are the data used in the study for the estimation of the St. Louis Model: (in growth rates for the period 1986:Q1 to 2003:Q1, for a total of 69 observations)

1. Seasonally adjusted Gross Domestic Product (GDP)\(^3\) – previous estimations under the St. Louis approach used the GNP as the dependent variable. Since we only measure the domestic implications and effectiveness of fiscal and monetary policy, an internal measure of growth is needed. GDP is used over GNP so as to remove the external factors (i.e., net factor income from abroad). To correct the GDP series for seasonality, the TRAMO-SEATS approach was used.\(^4\)

2. Domestic Liquidity ($M3$) – it reflects a more relevant feature of total money circulating in the Philippine economy since it consists of money supply, peso savings and time deposits and deposit substitutes of deposit money banks held by the general public. Quarterly series of $M3$ is computed using the average of each 3-month level. The $M3$ series were sourced from the Bangko Sentral ng Pilipinas (BSP).

3. Government Expenditures – it reflects the high-level expenditures made by the national government. Quarterly series of government expenditures were obtained by adding up 3-month levels of expenditures. The Government Expenditure series were sourced from the Bureau of Treasury (BTr), since they have the sole responsibility of releasing funds for the consumption of the national government.

4. Exports – refers to all final goods going out of the country, which is either classified as domestic exports or re-exports. The Bureau of Customs (BOC) should properly clear all export goods. Exports series were sourced from the National Statistics Office (NSO).
Following the Andersen-Jordan equation, the modified version is formed as:

\[
SAGDPGR = \alpha + \beta_1 M3GR + \beta_2 GEGR + \beta_3 XGR + \varepsilon
\]

where:
- \(SAGDPGR\) = seasonally adjusted GDP
- \(M3GR\) = domestic liquidity
- \(GEGR\) = government expenditures
- \(XGR\) = exports

While the original version of the Andersen-Jordan equation is formed as:

\[
SAGDPGR = \alpha + \beta_1 M3GR + \beta_2 GEGR + \varepsilon
\]

From the original and modified versions, the polynomial distributed lag procedure was employed with the lags varied from 8 quarters (2 years for the medium to short term) and to 12 quarters (3 years for the long term effect). Thus, it reflected a total of four (4) estimation procedures. Statistical analysis would be heavily dependent on the sum of lags, since this has the interpretation of the long run effect of domestic liquidity, government expenditure and exports, to the seasonally adjusted GDP series.

**Estimation Results**

**Modified St. Louis model estimation.** Under the 2-years (8-quarter lag) structure, the sum of lags points to government expenditure having a long run effect on GDP growth, assuming stationarity. Domestic liquidity and exports do not have a long run implication on GDP growth. The same result was obtained under the 3-years (12-quarter lag) structure. Although both domestic liquidity and government expenditure are statistically significant, the latter possesses a much higher t-statistic.

**Original St. Louis model estimation.** Under the 2-years (8-quarter lag) structure, the sum of lags reflects that government expenditure has a long run impact on GDP growth, assuming stationarity. Under the 3-years (12-quarter lag) structure, government expenditure still possesses a longer lasting effect on GDP growth by virtue of a higher t-statistic than domestic liquidity (see Table 1).

### Table 1. Sum of Lags Summary Statistics: St. Louis Model Estimation

<table>
<thead>
<tr>
<th></th>
<th>2 YEARS LAG STRUCTURE</th>
<th>ORIGINAL</th>
<th>MODIFIED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coefficients</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- M3 Growth Rate (M3GR)</td>
<td>-0.00045</td>
<td>0.02815</td>
<td></td>
</tr>
<tr>
<td>- Gov’t Expenditure Growth Rate (GEGR)</td>
<td>-0.11946</td>
<td>-0.11078</td>
<td></td>
</tr>
<tr>
<td>- Exports Growth Rate (XGR)</td>
<td>-0.00131</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>T-Statistics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- M3 Growth Rate (M3GR)</td>
<td>-0.00687</td>
<td>0.43897</td>
<td></td>
</tr>
<tr>
<td>- Gov’t Expenditure Growth Rate (GEGR)</td>
<td>-1.75210</td>
<td>-1.69588</td>
<td></td>
</tr>
<tr>
<td>- Exports Growth Rate (XGR)</td>
<td>-0.04508</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3 YEARS LAG STRUCTURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coefficients</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- M3 Growth Rate (M3GR)</td>
<td>-0.12921</td>
<td>-0.14410</td>
<td></td>
</tr>
<tr>
<td>- Gov’t Expenditure Growth Rate (GEGR)</td>
<td>-0.31279</td>
<td>-0.29423</td>
<td></td>
</tr>
<tr>
<td>- Exports Growth Rate (XGR)</td>
<td>0.03927</td>
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<tr>
<td><strong>T-Statistics</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- M3 Growth Rate (M3GR)</td>
<td>-2.75206*</td>
<td>-2.31017*</td>
<td></td>
</tr>
<tr>
<td>- Gov’t Expenditure Growth Rate (GEGR)</td>
<td>-6.23533*</td>
<td>-6.71514*</td>
<td></td>
</tr>
<tr>
<td>- Exports Growth Rate (XGR)</td>
<td>1.87009</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 95%
Chow breakpoint test results. To bring about the significance of any changes from 1994:3 to the present - characterized by trade liberalization and the Central Bank’s initial steps on implementing the modified monetary targeting framework - testing for structural stability was performed. Results show the original model of the St. Louis equation proved to be more stable than the modified version although both models failed the stability testing as implied by a low F-statistic, thereby higher p-values (see Table 2). Overall, all the four equations reject the null hypothesis of no structural change. Indeed, structural reforms and adjustments made by the Philippine government are deemed vital for sustainable growth in the domestic economy.

Table 2. Chow Breakpoint Test (1994:3 Breakpoint)

<table>
<thead>
<tr>
<th>EQUATION</th>
<th>CALCULATED F-STAT</th>
<th>REJECT STABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINAL ST LOUIS</td>
<td></td>
<td></td>
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<tr>
<td>2 years lag structure</td>
<td>7.75783</td>
<td>NO</td>
</tr>
<tr>
<td>3 years lag structure</td>
<td>5.974042</td>
<td>NO</td>
</tr>
<tr>
<td>MODIFIED ST LOUIS</td>
<td></td>
<td></td>
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<tr>
<td>2 years lag structure</td>
<td>3.155918</td>
<td>NO</td>
</tr>
<tr>
<td>3 years lag structure</td>
<td>2.711809</td>
<td>NO</td>
</tr>
</tbody>
</table>

Granger causality results. Under the imposition of 4 lags in the Modified St. Louis model, government expenditure growth Granger-causes GDP growth and vice versa. But under the imposition of 8 lags in the Original St. Louis model, only government expenditure growth Granger-causes GDP growth. Domestic liquidity and exports do not Granger-cause GDP growth and vice versa for both lag impositions and for both St. Louis models (see Table 3).

Table 3. Granger Causality Test Results

<table>
<thead>
<tr>
<th>EXOGENEITY TEST</th>
<th>CALCULATED F-STAT</th>
<th>REJECT EXOGENEITY OF POLICY VARIABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>G (Granger causes) Y</td>
<td></td>
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</tr>
<tr>
<td>1 year lag structure</td>
<td>3.28916</td>
<td>NO</td>
</tr>
<tr>
<td>2 years lag structure</td>
<td>3.38082</td>
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<tr>
<td>Y (Granger causes) G</td>
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<td>1 year lag structure</td>
<td>3.61739</td>
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<td>1 year lag structure</td>
<td>1.20956</td>
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<tr>
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<tr>
<td>1 year lag structure</td>
<td>0.53617</td>
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Empirical Findings

Results from the econometric exercise show that the policy conclusions of the original and modified St. Louis equation are robust with respect to both the specification of its lag structure and the imposition of the polynomial restriction. From the econometric exercise and the variations applied under the Andersen-Jordan equation as well as the Almon polynomial distributed lag procedure, we find a counterfactual result, heavily dependent on the sum of lags: that fiscal policy possesses long-run effects on real growth rather than the standard monetarist viewpoint. Thus, we accept the null hypothesis that fiscal policy is more effective than monetary policy in the long run. Given that the Philippines is only an emerging market and that the basic foundations on monetary and fiscal frameworks are still being fine-tuned, it is likely that real growth is really influenced by fiscal actions (budget management, tax collection, revenue generation and investment projects) rather than monetary actions (interest regulation, price stability and financial soundness). The results were further validated by the outcome of the Chow Breakpoint and Granger Causality Tests – which implies that the structural adjustments made by the fiscal sector, and the expenditures made by the national government are indeed vital for sustainable domestic growth in the Philippines.

Reassessing the role of fiscal actions within the framework of the St. Louis equation was further emphasized. Referring still to the result of updated estimates and tests, there is strong evidence validating the idea that fiscal actions are significant in determining GDP growth, once the effects of money growth is taken into account.
Concluding Remarks

The shift towards an inflation targeting monetary policy framework had enhanced BSP’s effectiveness in its pursuit of price stability. The transparency mechanism, the use of a wide set of information and the forward-looking nature of inflation targeting all contribute to a more effective monetary policymaking. With the achievement of a stable price environment, monetary policy plays a key role in supporting a sustained growth path. However, results from the St. Louis model show that the fiscal policy component had driven economic growth from 1986:1 until 2003:1. In this paper, it is argued that shifts in the level of aggregate demand cannot be readily offset by monetary policy. Therefore, fiscal policy remains a potent tool for offsetting major changes in the level of aggregate demand, given floating exchange rates, and some recent developments on inflation targeting and budget management for the Philippines.

The Authors

Mr. Neil Angelo C. Halcon is Research Analyst II of the Business Expectations and Leading Indicators Sub-group, Economic and Financial Monitoring Group of the Department of Economic Research. He obtained his Master in Applied Economics (M-AE) degree at the De La Salle University. He also obtained a Bachelor of Arts degree in Economics with Computer Applications (cum laude) at the San Beda College. Ms. Leah Melissa T. De Leon is Senior Computer Operator II of the Corporate Planning Services Group at the Government Service Insurance System (GSIS). She obtained her Bachelor of Science in Commerce major in Management of Financial Institutions and Bachelor of Arts in International Studies major in European Studies (honorable mention) at the De La Salle University. She recently completed 36 units of academic work towards obtaining a Master in Applied Economics (M-AE) degree from the same university.

Endnotes

1 This is a condensed version of the research paper submitted by the authors as partial fulfillment of the requirements for Applied Econometrics at the De La Salle University last August 2003.
2 The use of M3 as intermediate target allows the BSP to prevent excess liquidity, which causes inflation.
3 Taken from data series of Dr. Josef Yap’s article on the output gap.
4 TRAMO, “Time Series Regression with ARIMA Noise, Missing Observations and Outliers”, and SEATS, “Signal Extraction in ARIMA Time Series”, (Gomez and Maravall, 1996). TRAMO is a program for estimation and forecasting of regression models with ARIMA errors and missing values. The program interpolates these values, identifies and corrects for several types of outliers, and estimates special effects such as Trading Day and Easter and, in general, intervention-variable type effects. SEATS is a program for estimation of unobserved components in time series following the so-called ARIMA-model-based (AMB) method; the basic components are the trend-cycle, seasonal, and irregular components, which are estimated and forecast with signal extraction techniques applied to ARIMA models. The two programs are structured so as to be used together, both for in-depth analysis of few series or for routine applications to a large number of them, and can be run in an entirely automatic manner. When used for seasonal adjustment, TRAMO preadjust the series to be adjusted by SEATS. The two programs are intensively used at present by data producing and economic agencies, including Eurostat and the European Central Bank.
REFERENCES


