Causality Between Money and Prices in Indonesia

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Abstract: The purpose of this study is to examine the relationship between money supply and prices in Indonesia, where money supply is taken to be the stock of narrow money (currency + demand deposits) and prices are proxied by the Jakarta cost of living index. The period studied is 1969–1980.

Two concepts of causality namely "proper" causality in which the causal effect takes at least one quarter to manifest itself and "instantaneous" causality in which there are no lags, are employed. The hypothesis of "proper" causality is rejected by both Granger and Sims tests. However, the hypothesis that money and prices are contemporaneously correlated cannot be easily dismissed. Using the framework of [Geweke], contemporaneous causality is treated as a part of linear feedback and the lagged version of Sims test was used. We found that the hypothesis that prices cause money supply cannot be dismissed on the basis of Wald test. However, the contribution of instantaneous causality is very large to the total variance of linear feedback.

Introduction

The objectives of this study are to examine the relationship between money supply and prices in Indonesia, where money supply is taken to be the stock of narrow money (currency and demand deposits) and prices are proxied by the Jakarta Cost of Living index. The period studied is 1969–1980.

Several studies of the inflationary process in Indonesia have been undertaken in recent years [Sundrum; Aghevli; 1977; Aghevli/Khan 1977; Grenville]. With the exception of Aghevli, these studies have included the period of hyperinflation in the early and middle 1960s. In their study of the dynamics of inflation in Indonesia between 1951 and 1972, Aghevli and Khan [1977] tested a feedback model of inflation, where money supply increases cause increases in the price level, and price level increases then cause further increases in money supply, mainly through their effect on the government budget. These authors had assumed that both money supply and prices were endogenous on the results of previous studies of Indonesian inflation [see especially Sundrum], and on the work of other scholars such as Sargent and Wallace [1973] who explicitly recognized the importance of feedback from inflation to further expansion in the money supply. Aghevli and Khan thus did not conduct any statistical tests of causality before constructing simple four equations model.

To the extent that endogenous money supply and prices depend on the fiscal actions of government in expanding the real deficit as prices rise [see Aghevli/Khan,
1977, p. 390] there are good grounds for arguing that a model based on this assumption which fitted Indonesian data for the period 1951–1972 may not be satisfactory for the period of the 1970s. During this decade the Soeharto government has ostensibly run a balanced budget with revenues (including oil revenues and foreign aid and borrowing) roughly equal to expenditures. In fact in the period 1976–1981, revenues from all sources exceeded government expenditures, and the central government has been accumulating a large surplus with the banking system, as is evident from the monetary statistics. Although for political reasons, this surplus has not been shown in government accounts. It is true that the rapid growth of oil revenues relative to domestic tax and other revenues has meant that the domestic deficit (the difference between domestic expenditures and revenues) has grown, but it is difficult to link this causally to inflation, as it is only an indicator of the first round impact of the budget on domestic liquidity and subsequent leakages through imports are likely to be high. (For a discussion of fiscal policy in the Soeharto era, and the various concepts of the budgetary deficit relevant to the contemporary situation, see Booth/McCawley).

In constructing an economic model for Indonesia in the period since 1969, we thus cannot assume endogeneity of either money supply or prices and the main purpose of this paper is to examine the direction of causation between the two. It is not intended to construct a full scale macro model of the monetary sector here but it is attempted in another study (Parikh/Booth/Sundrum, 1983).

The concept of "Granger causality" is used in most of the statistical literature and although one would be reluctant to use the term "causal" for a statistical relationship, the commonly accepted practice seems to be to use the term causality. Causality may not be discovered by statistical or econometric techniques and one obviously needs a great deal of prior information to establish the cause and effect relationship. Moreover, the concept of causality is perhaps much deeper than Granger causality as defined in the statistical literature. However, as this paper is not a critique of the terms used, we shall use the term "Granger causality" so that no confusion is caused, at least among the professional econometricians who are familiar with this concept of causality.

This paper thus concentrates on the question: does causality run from money to prices or from prices to money supply in the sense of Granger or is there an instantaneous causality? A study of this kind will help in two directions: (a) to choose the appropriate lag structures in an econometric model framework and (b) to provide some evidence on how the monetary authorities have operated monetary policy in the face of various exogenous shocks from home and abroad. We obviously cannot discriminate among several alternative hypotheses on the basis of a statistical study but some conjectures can be made, which, with any possible prior information, may help in formulating further hypotheses and in testing them.

In section I, the data and literature on tests of causality are surveyed while in section II, we postulate explicit relationship based on Granger's concept of non-instantaneous causality. In section III, we make use of Sims' test on "proper causality" (minimum one period lag) and also the tests on contemporaneous causality. In section IV, some conclusions are drawn.