

## MONEY AND ECONOMIC ACTIVITY: A RESPONSE TO THE RESERVE BANK: A REPLY

C.D.I. BARR AND B.S. KANTOR\*

BARR AND KANTOR (1989) considered an econometric analysis of the efficacy of the current SA Reserve Bank monetary targeting procedures. The analysis focused on the predictability of various measures of economic activity *viz.* Gross Domestic Expenditure and Gross Domestic Products, using a range of monetary measures *viz.* Reserve Bank note issue, *M0*, *M1*, *M1A*, *M2* and *M3*, as predictor variables. In particular the article demonstrated that the growth rates of the narrower definitions of money are more highly correlated with the growth rates of measures of GDE, and GDP growth than are wider measures of monetary growth. It thus concluded that there was little empirical evidence for the Reserve Bank view that *M3* is a superior target to *M0* for the purposes of monetary policy.

Barr and Kantor (1989) do not address the issues that Professor Moore raises. Professor Moore in a comment on the article gives a short review of a mainstream macro-economic debate *viz.* the degree of exogeneity of money supply to the macro-economy. He offers the neo-Keynesian view that the monetary measures considered above are endogenously demand determined. Barr and Kantor (1989) do not address the issues that Professor Moore raises. Rather our intention was to provide a complete analysis of the extent to which published Reserve Bank monetary measures correlated with Reserve Bank measures of economic activity and how this might be reconciled with a Reserve Bank view that narrow monetary measures (and *M0* in particular) correlated poorly with economic activity.

As a practical matter, movements in *M0* over the past several years have been found to correlate relatively poorly (more so than other monetary aggregates) with movements in macro-economic variables, such as nominal gross domestic product or the general price level. . . . (SARB *Quarterly Bulletin*, March 1988, p. 16-17) as quoted in Barr and Kantor (1989) p. 292.

We believe that the analysis of Barr and Kantor (1989) would certainly be inappropriate for addressing the issue of the extent of the endogeneity of

money in the South African economy as raised by Professor Moore. The reduced form econometrics approach used in that article has limited applications. In a more recent article Barr and Kantor consider the application of a Vector Autoregression Approach to the modelling of the South African economy and in particular consider the bi-directional nature of the causal link between money and economic activity (Barr and Kantor, 1990). This article demonstrates that the relationship between money and economic activity has a bi-directional causal component and that although the money-income link was stronger than the income-money link, money certainly has a strong endogenous behavioral component.

Such a result was certainly no surprise. In another study to which Moore refers (Kantor, 1986) the sources of endogenous money supply growth were fully identified in a general model. Where we and Moore would differ and where monetarists generally would differ with Neo-Keynesians is whether such endogeneity of the money supply could be avoided by adopting a different set of procedures and institutional arrangements for controlling money supply growth.

Our argument is that it would be possible for the monetary authorities to control some narrow definition of money. Such controls could be exercised with or without reserve requirements. Essential for such control would be the denial of any automatic access by banks to the lending window of the central bank. If for any reason the commercial banks were to suffer a loss of cash to the public they would be forced to draw on their deposits at the central bank. If the commercial banks total cash reserves then declined below their desired or required levels the banks would be forced to restrict their lending. The important point is that a central bank need not simply accommodate demands for cash from the banking system. That central banks often do is not a law of nature but the result of a particular set of historical and political developments.

The conclusion of our Vector-Autoregression study was that while money in South Africa has been partly endogenous, it is possible to identify predictable links between narrow money and the real economy. The only way to fully resolve the issue of the degree of endogeneity of money would be to set up a hypothetical experiment in which the central bank manipulated the money growth levels, but that all other influences on the economy, (for example interest and exchange rates) were allowed to be fully market determined, and to observe the resulting effects on the real economy. One form such an experiment could take would be for the central bank to auction off any additional supply of reserves on a regular basis. Banks could borrow reserves from each other or acquire them at a related price from the central bank at its regular auction.

\* Associated Professor, Department of Economics and Mathematical Statistics and Professor, Department of Economics, University of Cape Town, respectively.

- BARR, G.D.I. and KANTOR, B.S. (1989). 'Money and Economic Activity, A Response to the Reserve Bank', *South African Journal of Economics*, vol. 57, no. 3, pp. 292-298.
- and — (1990). 'The Application of a Vector Autoregression Model to Money, Income and Price links in the South African Economy', *J. Stud. Econ. Econometrics*, 14(10), pp. 39-49.
- KANTOR, B.S. (1986). 'The De Kock Commission Report: A Monetarist Perspective', *South African Journal of Economics*, vol. 54, no. 1, pp. 94-107.

## REFERENCES

*Money and Economic Activity: A Reply*

MONEY AND ECONOMIC ACTIVITY, A  
RESPONSE TO THE RESERVE BANK: COMMENT

B. MOORE

DURING the 1970's in response to the dissolution of the Keynesian consensus many central banks moved toward monetary targeting in order to facilitate the control of inflation. This move was predicated on the twin perceptions that the money supply could be controlled within fairly narrow limits by the monetary authorities over the target period, and that the income velocity of money was stable and predictable. In addition the adoption of floating exchange rates by many countries in 1973 was widely expected to lead to greater domestic monetary autonomy (Tavlas, 1989).

At about the same time as the move toward monetary targeting was taking place, many countries also began to deregulate their financial markets. This deregulation, combined with a surge in financial innovation and greater variance in inflation and interest rates, had widespread implications for the conduct of monetary policy. The well-behaved statistical relationships between money and nominal income that had held during the regulated environment seemed to break down (Goodhart's Law). Relationships estimated on the basis of the more tranquil data of the 1970's were unable to extrapolate with any degree of accuracy to the more unstable conditions of the 1980's, which were outside the realm of previous historical experience. At the same time the innovations in financial technology led to a blurring of the distinctions among the monetary aggregates. Most central banks consequently demonstrated a striking inability to hit consistently their money targets. As a result of both these factors most central banks currently place much less emphasis on monetary targeting, and several have stopped announcing monetary targets altogether (Tavlas, 1989).

In contrast to this conduct of monetary policy in other countries South Africa first adopted monetary targeting in 1984, when the recommendations of the De Kock Commission to deregulate the financial sector were being implemented. Like most other central banks, the South African Reserve Bank (SARB) has been unable to attain its money supply targets consistently, and money supply growth has frequently substantially exceeded its target ranges.

\* Visiting Professor, National University of Singapore.

Nevertheless, in spite of the clear record of the failure of monetary targeting in most industrial countries, some South African monetarists still remain unconvinced (Kantor, 1986). If only central banks would do their job properly!

Barr and Kantor (1989) have recently argued in this Journal that reserve bank note issue ( $N$ ) or the monetary base ( $MO$ ) would be greatly superior targets for monetary policy to the Reserve Bank's current  $M3$  (broad money) or 'effective  $M3$  ( $VM3 = Y$ ) money supply targets. Their argument appears to be based exclusively on evidence that these narrow monetary aggregates are much more closely correlated with gross domestic expenditures ( $GDE$ ) than are the broader aggregates ( $M1$ ,  $M2$ ,  $M3$ ). The contemporaneous correlation ( $R^2$ ) of the narrow aggregates with  $GDE$  is between 0.6 and 0.7, based on year-on-year growth rates with quarterly data for a polynomial distributed lag. This is much higher than with  $GDP$  ( $R^2 = 0.3$ ), and also much higher than for the broad aggregates ( $R^2 = 0.1$ ). For inflation, there is little for or no statistically significant positive relationship with any monetary aggregate.

Barr and Kantor argue persuasively that the much greater correlation of narrow aggregates with  $GDE$  than with  $GDP$  is due to the openness of the South African economy. The lack of a simple correlation of money with inflation is attributed to the omission of lagged changes in the exchange rate and import prices, which have a powerful effect on the consumer price index in an open economy.

Unfortunately nowhere do Barr and Kantor consider whether their preferred monetary aggregates are in fact exogenous policy variables under the control of the Reserve Bank. They appear (implicitly) to assume that any monetary aggregate could be chosen as a money supply target, and conclude that the narrower aggregates are superior targets because their growth rates are more closely related to (possess higher predictive power for) the growth rate of gross domestic expenditure.

However even Milton Friedman himself has never suggested using bank notes in circulation as a monetary target! The supply of bank notes outstanding is universally regarded, both by Monetarists and Keynesians alike, as an entirely endogenous variable, completely determined by wealthowner preferences between notes and deposits. If economic units wish to hold more notes relative to deposits, this demand must be perfectly accommodated by the central banks. Notes must be supplied as a tap issue if banks are to maintain the 'instant repurchase' clause on their demand deposits, on which their very acceptability as a means of payment rests. So long as transactions deposits retain the property that they can be continuously convertible into notes on demand, it would be very interesting to learn how the authors envision the

quantity of notes could be exogenously controlled by the SARB?

With regard to the monetary base (*MO*) the argument for endogeneity is similar, though perhaps not so self-evident. The money base includes note issue, plus required cash balances of banking institutions. However, required cash reserves in any period are predetermined by the quantity of deposits existing in some previous accounting period. These required balances must thus somehow be made available by the authorities, if the banks are to meet their reserve requirements. The monetary authorities consequently are unable to control the supply quantity of required balances, but only their supply price, i.e., the level of short term interest rates.

In the real world banks do not make loans as a function of the size of their excess reserves holdings, as the text book money-multiplier analysis implies. Rather they make loans first, in response to increases in demand for bank credit, and then look for the reserves later. Individual banks can always obtain additional cash, at a price, either by selling previously-issued securities (e.g. *TB's*, *BE's*, *RP's*) from their portfolio, or by selling newly-issued securities (e.g. *NCD's*) in the process of liability management. Borrowing from the central bank is only one of a number of sources of funds, and the decision as to which source to draw upon ordinarily will be made solely on expected cost. It is bank arbitrage that keeps short term market rates in line, so that the differentials simply reflect differences in liquidity, risk, and transactions costs.

As a matter of policy monetary authorities all over the world ordinarily attempt to keep banks 'in the bank', i.e., to supply a quantity of reserves slightly insufficient to meet total bank reserve requirements, in order to force the banks to borrow the residual at the Discount Window. This is done in order to enhance the authorities' ability to determine the level of short term interest rates at their discretion within the market period.

With regard to the endogeneity of the narrow monetary aggregates *M1A* and *M1*, a similar argument holds. Banks are quantity-takers in their retail deposit markets. They continuously provide demand deposits on demand as a tap issue.

The ability of the monetary authorities to determine the proportion of demand to short and medium term (time and savings) deposits thus depends solely on their ability to control the level and structure of interest rates. When demand deposits did not bear interest, raising the general level of market short term rates would induce wealthowners to economise on their holdings of non-interest-bearing checking deposits, so that the ratio of *M1* to *M2* and *M3* would fall. With the recent innovation of new forms of interest-bearing transaction accounts, the ability of the authorities to affect the proportion of demand to other deposits demanded has been sharply reduced (Goodhart,

1984). But in any case it always solely by changing the market demand for different deposit types that control could be exerted, rather than by direct quantity control over the supply of bank reserves.

Post Keynesian economists have recently extended this argument to the entire spectrum of bank liabilities, and have concluded that even the broader monetary aggregates (*M3*, *M4*, *M5*) are endogenously demand determined (Kaldor, 1986; Moore, 1988). In a competitive banking system, banks are typically price-setters and quantity-takers in all their retail markets, loans as well as deposits, so long as borrowers are within their credit limits. Borrowers as well as depositors are always at liberty to go elsewhere. Credit money is created by increases in the demand for bank credit (loans made deposits). Since most loans are now made under previously-existing credit commitments (overdrafts), and the utilization rate on bank credit lines typically averages only about 50-60 per cent, changes in loan volume are now almost entirely determined by changes in borrower demand for credit. Demand deposits are created and destroyed in the act of bank borrowing and loan repayment. The composition in which these new deposits are held between demand, time and savings deposits depends solely on depositor preferences. It follows that the demand for broad money in the aggregate is equal to the supply of broad money created. The supply and demand for credit money are thus interdependent (Moore, 1988).

If Professors Barr and Kantor purport to propose to the monetary authorities those monetary aggregates which they consider most appropriate as targets for monetary policy, is it unreasonable to require them to state how they propose the Reserve Bank is to achieve these targets?

## REFERENCES

- BARR, G.D.I. and KANTOR, B.S. (1989). 'Money and Economic Activity. A Response to the Reserve Bank', *South African Journal of Economics*, vol. 57, no. 3, pp. 292-98.
- GOODHART, C.A.E. (1984). *Monetary Theory and Practice: The U.K. Experience*. London: Macmillan.
- KALDOR, N. (1986). *The Scourge of Monetarism* (2nd ed.) New York: Oxford University Press.
- KANTOR, B.S. (1986). 'The De Kock Commission Report: A Monetarist Perspective', *South African Journal of Economics*, vol. 54, no. 1, pp. 94-107.
- MOORE, B.J. (1988). *Horizontalists and Verticalists: the macro-economics of Credit Money*. New York: Cambridge University Press.
- TAVLAS, G.S. (1989). 'The Demand for Money in South Africa: A Test of the Buffer Stock Model', *South African Journal of Economics*, vol. 57, no. 1, pp. 1-13.