How can Inflation be Controlled? - The Working of Policy Instruments

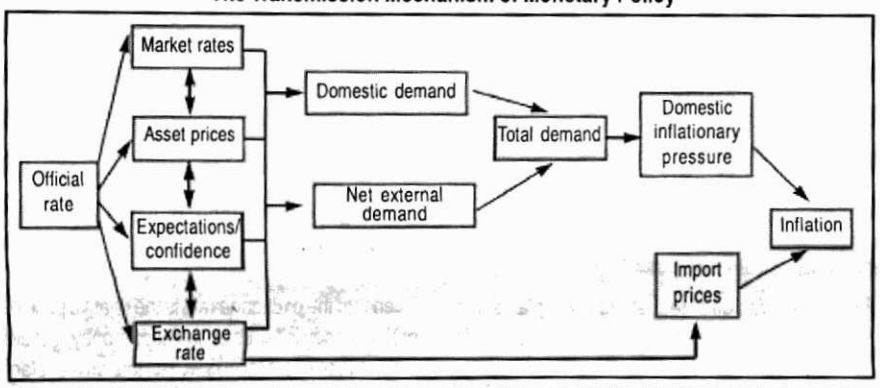
S. Manisha Wimalasuriya*

Senior Economist,
Central Bank of Sri Lanka.

Introduction

Price stability is now a primary goal of central banks. This position of central banks is in contrast with their earlier approach to monetary policy, that is, the pursuit of activist monetary policy[1]. In a market-based economy, which operates within a floating exchange rate regime, a central bank can only indirectly influence prices, primarily through policy interest rates and open market operations. Nevertheless, being the monopoly supplier of base money, that is, currency notes and coins, and the regulator of banks and finance and leasing institutions[2], the central bank has significant power to influence a range of economic variables such as credit, equity and other asset prices, the exchange rate, and inflation expectations, through which, it could influence aggregate demand in the country and thereby control inflation. Accordingly, there are several channels through which a central bank's monetary policy, that is, policy aimed at monetary and price stability, can take effect. These channels are collectively known as the 'transmission mechanism of monetary policy'. Figure 1 below shows the main links between the central bank's policy interest rates/monetary policy stance and inflation. The structure of financial markets, rigidities in the labour market, the extent to which the domestic economy is integrated into the world economy, the external environment and credibility of the central bank, are amongst the factors, which are exogenous to the channels of monetary policy transmission illustrated in Figure 1, but would determine the strength of these various channels.

Figure 1
The Transmission Mechanism of Monetary Policy



Note : For simplicity, this figure does not show all interactions between variables, but these can be important.

Source : The transmission mechanism of monetary policy, www.bankofengland.co.uk.

This paper reviews the channels of monetary policy transmission, by way of which, central banks control inflation, and other factors which are of significance for monetary policy transmission. In elaborating how monetary policy of a central bank is transmitted to aggregate demand and inflation, particular reference would be made to Sri Lanka.

Interest Rate Channel of Monetary Policy Transmission

A central bank is able to influence the entire spectrum of market interest rates by controlling the price or volume of the supply of its own liabilities, that is, reserve money (base money). In Sri Lanka, in compliance with statutory requirements, which are guided by policies aimed at monetary and financial system stability, each commercial bank is required to maintain a reserve of currency notes and coins with the central bank (Statutory Reserve Requirement (SRR)), and the amount to be maintained in such reserve is a stipulated percentage of the deposits that the bank has obtained from customers[3]. The central bank also lends to commercial banks and primary dealers by way of reverse repurchase agreements, and accepts their deposits on the basis of repurchase agreements. The repurchase/reverse repurchase transactions are carried out in relation to government securities. The interest rates at which it borrows (Repurchase rate) and lends (Reverse Repurchase rate) are its policy interest rates and they guide other money market rates, that is, short-term interest rates, because commercial banks, which account for the bulk of deposits and assets in the country, have to come to the central bank, if they are unable to fulfil their requirements, particularly in relation to the SRR, in the inter-bank market. Meanwhile, the central bank may also conduct open market operations, that is, sales/purchases of securities either on repurchase/reverse repurchase terms or on a permanent basis, at its own discretion, in order to control the amount of money circulating in the economy, which is negatively correlated with interest rates and positively correlated with inflation.

Bringing about changes in market interest rates is a key means through which central banks control inflation. While changes in the central bank's policy interest rates impact on both short-term and long-term interest rates prevailing in the economy, changes in interest rates, in turn, result in commensurate changes in the demand for credit. Changes in credit extended of course, in turn, impact on aggregate demand. For instance, if there is an increase in the interest rates applicable to credit advanced for housing purposes, trading activity, manufacturing or for any other economic activity, such activity is bound to slow down, with credit becoming more costly and perhaps unaffordable. As a result, spending would slow down, both due to the direct impact of lower economic activity as well as due to lower purchasing power of people consequent to the decline in demand for labour given the slowing down of economic activity. Meanwhile, even in the case of those with a steady income, high interest rates tend to encourage saving rather than spending. While reduced spending and a higher propensity to save would lower aggregate demand, declining aggregate demand would decelerate price increases.

In Sri Lanka, the interest rate channel has been effective in lowering inflation. For example, along with the average weighted lending rate (AWLR) of commercial banks gradually increasing from 18.1 per cent at the end of 2007 to 19.6 per cent by September 2008, the year-on-year growth in the credit extended by commercial banks to the private sector had slowed down from 19.3 per cent at end 2007 to 9.3 per cent by September 2008. Along with this slow-down in credit extended to the private sector, the year-on-year growth in the money supply (M_{2b}) has gradually decelerated from 16.6 per cent at the end of 2007 to 10.6 per cent at the end of the third quarter of 2008. In response to this tightening of the monetary policy stance of the Central Bank, and supported by the sharp reductions in the prices

* *The views expressed in this paper are those of the author and do not necessarily reflect those of the Central Bank of Sri Lanka. The author would like to thank Mr. B. D. W. A. Silva for his helpful comments.*

of imported commodities as well as improvements in domestic supply conditions, year-on-year inflation, which was 18.8 per cent in December 2007 and was on an increasing path till June 2008, decelerated from July 2008, to 14.4 per cent by end 2008.

With respect to the impact of interest rates on inflation, the margin between deposit rates and lending rates could be of significance. While this margin could vary over time, it is determined by the competitiveness of financial markets as well as expectations in relation to inflation. If this margin narrows, for example, following an increase in the policy interest rates of the central bank, with rates of interest offered on deposits increasing faster than those charged on credit (due to contracts signed with borrowers), that would encourage savings while lending may not slow down at a similar pace.

Meanwhile, with respect to the response of interest rates to changes in policy interest rates of the central bank, it should be mentioned that the change in long-term interest rates may not be in the same direction as in the case of short-term interest rates. This is because the expected *future* short-term interest rates, which in turn would depend on inflation expectations, also determine the segment of the yield curve pertaining to long-term maturities, in addition to current interest rates.

Asset Price Channel of Monetary Policy Transmission

Monetary tightening reduces wealth, because asset prices tend to decline with increases in interest rates, and as a consequence, consumer spending, aggregate demand and finally, inflation fall.

Prices of equities fall in response to rising interest rates, because expected future returns would then be discounted by a larger factor. For example, during the period from end-2007 to mid-September 2008, along with the gradual increase in market interest rates, the All Share Price Index and the Milanka Price Index of the Colombo Stock Exchange declined by around 8 per cent and 19 per cent, to 2338.3 index points and 2656.8 index points, respectively, by 15th September 2008 (both indices declined sharply thereafter with the unfolding of the world financial crisis). Hence, it is apparent that monetary policy could have a significant impact on stock market valuation. Stock price reactions, in turn, could have repercussions for consumer behaviour, through wealth effects, as Ehrmann and Fratzscher (2006) explain. Similar wealth effects on consumer spending could result from alterations in bond prices following some tightening of monetary policy. Prices of bonds, which are inversely related to long-term interest rates, fall if long-term interest rates rise.

A further consequence of a decline in asset prices as a result of monetary policy tightening is that, raising funds would become costlier for firms. For example, the funds a firm is able to raise by issuing shares would be less at a time when there is a down-turn in the stock market due to a tightening of monetary policy. As a result, the ability of firms to expand their business activity is contained. Therefore, aggregate demand is held in check, which helps decelerate increases in the general price level. This latter effect of monetary policy however, would become diminished in the case of large multinational companies operating in the country, as they would have access to international capital markets.

Bank Capital

When a central bank makes decisions in relation to monetary policy, it is important that it has an in-depth understanding of the structure of financial markets as well as the key financial institutions operating in the country. An important factor guiding lending activities of banks is their capital. Regulations pertaining to banks stipulate that banks maintain a specified ratio between lending and capital, on a risk-weighted basis. Hence, the level of bank capital could also play an important role in monetary policy transmission, as Van den Heuvel (2002) points out. For instance, due to a positive monetary policy shock, lending could slow down, reducing profits of banks. As retained earnings of banks are added to banks' capital, a slowing down of banks' profitability would restrain the expansion of bank lending by limiting the earnings to be retained and added to capital. The ability of tighter monetary policy to restrain bank lending and thereby reduce aggregate demand would be greater, the higher the fraction of banks whose capital is at or below the regulatory minimum, as explained by Van den Heuvel (2002). As he explains, this is because, with a binding risk-based capital requirement, a bank cannot expand lending without additional capital, and if it is costly to issue equity, the bank has to limit lending. A well-capitalised bank however, would not be as restrained. Meanwhile, when more banks have low capital relative to the regulatory minimum, expansionary monetary policy would be less effective in the short-term. In the longer-term however, as equity and bond prices rise with expansionary monetary policy, capital could be raised to increase lending, and increased lending could increase profitability, which helps build up capital and expand lending.

Further, as Van den Heuvel (2002) explains, the composition of a bank's capital can also play a role in how that bank responds to monetary policy. He cites an example of two well-capitalised banks with assets of equal quality, but different liability structures with respect to capital: bank one has more debt and less equity than bank two. Following a contractionary monetary policy shock, which results in an outflow of deposits due to competition for deposits (as a result of yields on government securities increasing, for example), both banks would have to raise funds if they were to continue to maintain lending at the previous level. If both banks were to issue certificates of deposits (CDs) to raise funds, bank one's CDs would be more risky than the CDs of bank two, because they would be subject to problems of asymmetric information regarding the value of the bank's assets to a greater degree. Hence, bank one's CDs would command a larger "lemon's premium". Given the higher cost involved, bank one would decide to issue fewer CDs than bank two. Accordingly, the lending channel of monetary policy would be stronger for banks with lower equity capital.

Inflation Expectations

Changes in the monetary policy stance of the central bank can influence expectations about inflation as well as real activity in the economy. For example, if it is generally believed that inflation would rise and real activity would slow down in response to the consequent likely tightening of monetary policy, decisions in relation to lending and investment would change accordingly, so that real economic activity will in fact slow down. Changes of perceptions of market participants in one sector of an economy, meanwhile, could affect other sectors. For example, a significant tightening of monetary policy could be expected to curtail consumer spending and firms' demand for inputs, resulting in suppliers reducing investment in production capacity or inventories. In fact, it is in the nature of business cycles that, in upturns, many sectors expand together and in downturns, they slow down together. Expectations tend to reinforce cautiousness in spending during downturns of economic activity. Similarly, expectations tend to stimulate spending during times of expansion in economic activity, sometimes leading to the economy overheating.

Given the important role of expectations in economic activity, consumer spending and firm outlays, central banks have to pay attention to market expectations in formulating policy. They have to manage inflation expectations through policy changes and timely and appropriate communication. In managing expectations therefore, credibility of a central bank plays an important role.

Exchange Rate Channel of Monetary Policy Transmission

Given that the exchange rate is the relative price of foreign money in terms of domestic money, it could vary with both domestic as well as foreign monetary conditions. Tightening of monetary conditions with an increase in the central bank's policy interest rates, with other things remaining unchanged, would tend to strengthen the domestic currency vis-à-vis foreign currencies. This is because interest rates in the domestic market would increase, raising the rates of return on deposits of domestic currency, thereby attracting inflows of foreign capital, which

raise the demand for the domestic currency. Meanwhile, expectations with regard to inflation in the domestic economy and in foreign economies also impact on the exchange rate, primarily through net inflows of long-term capital. An expected decline in inflation in the domestic economy would raise the real interest paid on investments made in the domestic economy, encouraging investments, and therefore inflows of foreign capital, provided of course that there is a stable macroeconomic and political environment. Such inflows, by raising the demand for the domestic currency, tend to appreciate the domestic currency vis-à-vis other currencies.

While the exchange rate would vary along with changes in domestic monetary conditions as explained above, domestic prices of imported goods as well as goods and services which contain inputs of imported items would vary in response to changes in the exchange rate. The degree of pass-through of exchange rate changes into domestic prices however, depends on several microeconomic and macroeconomic factors. "Menu costs", that is, the costs that firms have to incur in adjusting prices; "pricing to market" to preserve market shares; inflation expectations and exchange rate volatility are key amongst these factors. In Sri Lanka, exchange rate pass-through into consumer prices is about thirty per cent, that is, in response to a depreciation of 1 per cent in the nominal effective exchange rate (NEER), consumer prices, as measured by the consumer price index, increase by about 0.3 per cent, as per the findings of Wimalasuriya (2007).

It is apparent from the above discussion that the exchange rate plays an important role with respect to inflation. Hence, issues concerning the exchange rate must necessarily be addressed in containing inflation.

Other Factors of Importance: Information and Regulations

In taking steps to control price increases through various monetary policy measures, a central bank would take into consideration information on a variety of variables. A primary source of information is data in relation to monetary aggregates. Berry et. al. (2007) explain the role of money in inflation as follows:

... changes in the money stock primarily reflect developments in bank lending as new deposits are created. Often, those who borrow will not want to keep the new deposits, but will instead use them to purchase goods and services or other assets. So the money passes to other individuals as the transactions are completed. These other individuals will also not want to hold the extra money balances for long unless their demand for money has changed. So over time they will spend the extra money, moving it on once again to a different set of individuals who face the same issue. To the extent that money balances are not used to repay loans, they cannot be eliminated, only moved around the economy. So an increase in money supply, other things being equal, leads to households and companies having temporary 'excess' money balances that they are prepared to hold in the short term as a buffer, but do not want to hold in the medium term. That leads to higher demand for goods and services or other assets that will eventually push up their prices. As prices rise, the real value of money balances falls back, restoring the balance between money demand and money supply. (Berry S. et. al. (2007), p. 378)

Further, as they point out, measuring the output gap is difficult, and the sustainable level of output is not directly observable, while early estimates of actual output are subject to considerable uncertainty[4]. So, money growth may provide corroborative evidence of economic activity, given that the role of money as a medium of exchange means that money is correlated with movements in activity.

Other data that central banks monitor include information on demand and supply conditions in various markets. Specific mention must be made of the fact that a central bank can only control demand-driven inflation. Inflation due to supply side factors must necessarily be accommodated if it is a global phenomenon, although temporary supply side constraints in the domestic economy, which raise domestic prices, may be addressed through imports, for example. Nevertheless, even in the case of supply side shocks driving price increases, a central bank would have to take steps to prevent inflation due to second-round increases of prices, which result from monetary accommodation of price increases due to supply side shocks.

A central bank is also empowered to impose regulations on financial institutions in order to achieve its price stability objective. However, many central banks have now moved away from regulatory measures such as credit ceilings, to market-oriented instruments of monetary policy, namely, policy interest rates and open market operations.

Conclusion

As discussed above, monetary policy measures taken by a central bank impact upon an array of economic variables, through different channels of monetary policy transmission. Hence, central banks are able to control inflation in their respective economies. However, the effectiveness of each channel of monetary policy transmission depends on how developed the financial sector is, and its efficiency and competiveness. As to how developed and competitive the other sectors of the economy are, also determine the effectiveness of different channels of monetary policy transmission. Given that the strength of different channels of monetary policy transmission differ, in order to effectively control inflation, central banks use a combination of these channels, rather than relying on any specific channel of monetary policy transmission.

Bibliography

Amato, J. , Filardo, A., Galarti, G., von Peter, G, and Zhu, F. (2005). "Research on exchange rates and monetary policy: an overview", BIS Working Papers, No.178.

Berry, S., Harrison, R., Thomas, R., and de Weymarn, I. (2007). "Interpreting movements in broad money", Bank of England Quarterly Bulletin, Quarter 3, 2007.

Brazier, A., Harrison, R., King, M., and Yates, T. (2006). "The danger of inflating expectations of macroeconomic stability: heuristic switching in an overlapping generations monetary model", Bank of England, Working Paper No. 303.

Ehrmann, M., and Fratzscher, M. (2006). "Global Financial Transmission of Monetary Policy Shocks", European Central Bank, Working Paper Series, No.616.

Gray, S., and Hoggarth, G. (1996). "Introduction to Monetary Operations", Handbooks in Central Banking, No.10, Centre for Central Banking Studies, Bank of England.

Hoggarth, G. (1996). "Introduction to Monetary Policy", Handbooks in Central Banking, No.1, Centre for Central Banking Studies, Bank of England.

Hoggarth, G., and Sterne, S. (1997). "Capital Flows: Causes, Consequences and Policy Responses", Handbooks in Central Banking, No.14, Centre for Central Banking Studies, Bank of England.

Mishkin, F. S. (1997). "Strategies for Controlling Inflation", National Bureau of Economic Research, Working Paper No.6122.

Van den Heuvel, S. J. (2002). "Does Bank Capital Matter for Monetary Transmission?", FRBNY Economic Policy Review, May 2002.

The Monetary Policy Committee (George, E., Governor, King, M., Deputy Governor responsible for monetary stability, Clementi, D., Deputy Governor responsible for financial stability, Budd, A., Buiter, W., Goodhart C., Julius, DeA., Plenderleith, I., and Vickers, J.), Bank of England, "The transmission mechanism of monetary policy", www.bankofengland.co.uk.

Wimalasuriya, S. M. (2007), "Exchange Rate Pass-Through: To What Extent do Prices Change in Sri Lanka?", Central Bank of Sri Lanka Staff Studies Volume 37.

Footnotes

[1] Mishkin (1997) defines 'activist monetary policy' as: '... the taking of active steps to reduce unemployment with expansionary monetary policy whenever unemployment rose above a "full employment level." Mishkin, 1997, p. 2.

[2] Some central banks do not regulate and supervise financial institutions.

[3] No interest is paid on the Statutory Reserve Requirement (SRR).

[4] The Central Bank has to tighten its monetary policy, by increasing its policy interest rates and/or through open market operations, for example, if the gap between the actual rate of economic growth and the potential rate of economic growth is positive, as a positive output gap results in inflation.

■