INFLATION IN NEPAL*

1.   Introduction

Inflation has become a problem of major concern in Nepal. In spite of the government efforts for taming the wild bull of inflation, higher rate of inflation has now become a major impediment to economic growth by discouraging savings, distorting investment pattern, generating inflationary expectations, and seriously eroding the purchasing power of poor and vulnerable groups of people.

2.   Overview of Price Situation

A general overview of price situation in Nepal as measured by the changes in Consumer Price Index (CPI) shows, on average, a progressive escalation of price level during the successive Five Year Plan periods. During the Fifth Plan period (1974/75-1979/80), average annual inflation rate remained subdued at a low level of 5.3 percent. It reached a higher level of 9.7 percent a year during the Sixth Plan period (1980/81-1984/85). Further escalation was recorded during the Seventh Plan period (1985/86-1989/90) with annual average rate of increase at 11.9 percent. Nepalese economy experienced the highest rate of inflation of 21 percent in 1991/92.

The amplitude of fluctuations in annual price changes was, however, erratic during the successive plan periods. The annual price changes, for instance, ranged from a negative 0.6 percent (1975/76) to 11.3 percent (1977/78) during the Fifth Plan period. The corresponding figures for the Sixth and the Seventh Plan periods were 4.1 percent (1984/85) and 14.2 percent (1982/83), and 8.1 percent (1988/89) and 15.9 percent (1985/86), respectively.

A wide variation in price situation was also recorded both by geographical regions and by commodity groups during the successive plan periods under review. Kathmandu experienced the highest rate of annual average price rise and the Terai, the lowest, during the Fifth and the Seventh Plan periods. During the Fifth and the Sixth Plan periods, prices of non-food items and services rather than food and beverages groups contributed more to price escalation. However, the food and beverages group was largely responsible for price rise during the Seventh Plan period and thereafter.

The price escalation during each successive plan period was very closely and invariably associated with supply shortages in Nepal (decline in foodgrain production in 1977/78, 1979/80, and 1982/83) and price rise in India. The devaluation of Nepalese currency (November 1985 and July 1991), Nepal-India trade and transit deadlock (March 1989 - June 1990) combined with sharp increases in government-administered prices must have had their own share in price escalation process in Nepal.

The changes in prices as measured by the present CPI have certain limitations. One obvious limitation is that CPI does not reflect the changes in overall price situation as the price

movement of raw materials, intermediate goods, and final products not directly consumed by households falls outside its scope. The wholesale price index which takes into account the price changes of such items as well can alone measure the overall price changes more realistically. It is, therefore, very useful to initiate construction of wholesale price index as well in order to measure more accurately the inflationary situation in the economy. Even the current CPI may be redesigned in future to show how various economic groups of people such as agricultural laborers, industrial workers, salaried employees, etc., are affected by the price changes.

Similarly, as import-content of economic sectors (agricultural, industrial, construction, and export sectors) is generally high in Nepal, an export price index is important for knowing the behavior of export sector and for taking appropriate measures. As both import and export price indices are necessary to construct terms of trade index, due priority should be placed on the preparation of such indices.

3. Sources of Inflation

In order to identify the sources of inflation, an eclectic approach between monetarist and structuralist views has been adopted. At the outset, the causes of inflation are identified as money supply, international prices and particularly the Indian prices, exchange rate, real output, government expenditure, and expectant factors. Besides, qualitative factors such as infrastructural bottlenecks, imperfect market conditions, and market-oriented economic policies are also supposed to be instrumental in escalating price problem.

The empirical analysis of the determinants of inflation in a closed economy and monetarist framework (where prices are supposed to be the function of money supply and real output only) reveals that growth of money supply in excess of real output growth exerts a significant positive impact on the rate of inflation. However, since the explanatory power of the estimated equation is very low, it has to be realized that there are other variables also to govern the behavior of prices in Nepal. Estimation of the regression equation with alternative definitions of money reveals that narrow money has an edge over broad money in explaining the behavior of prices. However, the highest explanatory power of the estimating equation was attained when money supply was defined as narrow money plus saving deposits at the banks. This signals that the monetary authority in Nepal should consider narrow money plus saving deposit as the intermediate target variable rather than narrow (M_1) or broad (M_2) definition (which are seemingly the alternative targets at present).

Analysis of the price equation in an open economy paradigm exhibits that international prices have a significant bearing on domestic prices. Estimation of the inflation equation with rates of growth of money supply, real output, and Indian wholesale price as the explanatory variables reveals that these three valuables can explain more than 55 percent of the variation in the rate of inflation. The coefficient on Indian prices shows that each 10 percent increase in the Indian prices causes a more than 8 percent rise in domestic prices. In the same way, the coefficient on money supply shows that each 10 percent growth in money supply exerts a 5.4 percent rise in the level of prices. However, when monetary aggregate is defined as average money stock (rather than end of the period stock as adopted above), the coefficient on it shows each 10 percent increase in money supply to cause price rise by more than 8 percent and each 10 percent rise in Indian prices to cause domestic inflation by 6.5 percent.

Analysis of the sources of inflation including exchange rate as an additional explanatory variable indicates that the gradual depreciation of the exchange rate of the Nepalese rupee has also been partly responsible for increasing prices in Nepal. However, the role of expectational factor in exacerbating inflationary situation is not recognized in this study. Similarly, the direct role of government expenditure in affecting prices also could not be established. However, this does not negate the indirect role of government expenditure in causing price rise through higher budget deficit and, hence, money supply.

Examination of the lagged effect of money supply on prices reveals that one year lagged money supply has also a significant effect on prices along with the current money supply. As money supply is the major indigenous source of inflation, it is recommended that the authorities take stern measures to contain the growth of real money supply at the desired level. The desired level of real money supply would be determined by the growth of real output. Conversely, the desired rate of nominal money growth would be determined by the growth of real output and the expected (desired) rate of price increase.

Since narrow money plus saving deposit is found to influence prices more effectively than narrow money or broad money, it is recommended that the Nepal Rastra Bank consider this new monetary aggregate as the intermediate target of the monetary policy. As saving deposit accounts are mostly of the demand deposit nature, it is recommended that such deposits be included in the narrow definition of money. If all such deposits are not to be included in the narrow definition of money, the Nepal Rastra Bank could conduct a survey to identify and assess the current deposit nature of such saving deposits and, based on the survey, the aggregate saving deposit could be segregated into current deposit and fixed deposit type of accounts.

Although government expenditure is not found to directly affect the price situation, the indirect effect through higher money supply cannot be ruled out. In this context, it is recommended that the government adopt a fiscal policy that does not exert highly expansionary effect on money supply. The degree of bank financing of the fiscal deficit and hence monetization of the deficit in the recent years has played a pivotal role in excess money supply in the economy. This has accentuated price rise in the country. So the fiscal deficit of the government be limited to the extent that it would not disturb money market equilibrium.

As demand management measures of price control such as fiscal and monetary policies are effective for the short and medium term only, it is the supply management measure that is effective in the long-run and is sustainable also. Therefore, efforts are to be directed to ensure productive use of the financial resources of the banking system and improve production (supply) situation of the country.

4. Implications of Administered Prices

The prices of a wide range of consumption goods and a few important non-consumption goods have been administered by the government over the years to contain inflation and to stabilize the general price level. Such administered prices were revised several times in the past. The liberalization process initiated with the Structural Adjustment Programme in 1986/87 was further intensified with the implementation of the policy of partial convertibility in March 1992 and full convertibility in February 1993 of Nepalese currency. This again required upward adjustment of the administered prices in varying degrees. Such upward adjustment of consumption goods affects

the general price level directly while that of non-consumption goods indirectly. The share of administered consumption goods in Consumer Price Index (CPI) of urban Kathmandu is estimated by Nepal Rastra Bank at 18.3 percent, while the remaining 81.7 percent is shared by non-administered goods. The CPI of urban Kathmandu recorded an increase of 10.5 percent from 1991/92 to 1992/93. The percentage share attributable to the changes in the prices of administered consumption goods in the overall inflation rate of 10.5 percent is found to be 22.8 percent which may be considered substantial and significant. It is, therefore, suggested that the revision or change in administered prices in future be done, considering fully its implications for general price situation.

So far as the effects of administered prices of non-consumption goods are concerned, the government maintained the price of urea unchanged and increased the prices of other types of fertilizer by varying degrees (complex by 76%, TSP by 72%, DAP by 66%, and MOP by 124%) and allowed the private sector to import fertilizers initially at official exchange rate of dollar (during partial convertibility period) and later at market rate of exchange (after full convertibility) in September 1992 soon after the government of India freed the prices of some fertilizers and reduced subsidy on others. When Nepalese currency was made fully convertible, the government increased the price of urea also by about nine percent, while the prices of all other fertilizers continued to be determined by the market.

Urea is, thus, the only type of fertilizer whose price is still administered. While some studies have found the demand for fertilizer inelastic to certain increase in its price, the question of total and sudden deregulation or decontrol of urea deserves a careful consideration in view of its importance in agricultural output increase and also in the light of recent experience in India where decontrol of phosphatic and potash fertilizers resulted in sharp increase in their prices which, in turn, led to sharp decline in their consumption, bringing about serious distortion in combination of various fertilizers in use. It is, therefore, preferable to go slow in deregulation of urea price on the basis of further studies on the use of various types of fertilizers in relation to their recent relative price changes. At the same time, the question of decontrol may also be considered on the basis of changes in the price of urea in India. The price in Nepal of such sensitive item as fertilizer cannot be widely divergent from that of India across the open border.

Regarding the POL products, it is very likely that the quantum of loss due to the present system of cross subsidization could be too high to be sustainable in future as the consumption of such products will go up with the expansion of development activities. Whether it is a question of urea or POL products, the net effects on general price level as a result of decontrol on the one hand and possible increase in money supply as a result of fiscal deficit due to subsidy element on the other should be quantitatively assessed before any firm conclusion is drawn on the question of decontrol and deregulation, if general price situation is the only consideration. It is, therefore, suggested that further study be undertaken for such quantitative assessment.

5.   Impact of Inflation

The impact of inflation on various aspects of the economic activities was examined with the available information and the empirical evidence. In particular, the impact of inflation on income distribution, savings, investment, financial development, real output growth, fiscal situation, and money supply is analyzed and the direction of causality between money and prices is established with econometric tools.

Regarding the impact of inflation on income distribution, the available information reveals that inflation seems to have accentuated the already uneven distribution of income in Nepal. However, no empirical analysis could be done due to the unavailability of time series data on income distribution.

The impact of inflation on domestic savings is found to be adverse. A simple regression of growth rate of domestic savings on real interest rate (defined as nominal interest rate minus the rate of inflation) exhibits that each 10 percent increase in real interest rate causes a 15 percent increase in gross domestic savings. As inflation tends to lower the real rate of interest, the negative relationship between inflation and savings is established. A more direct negative relationship between savings and inflation is established by regressing savings on the rate of inflation. The result shows that one percent increase in the rate of inflation exerts a nearly two percent reduction in domestic savings, other things (including nominal interest rate) remaining the same.

However, so far as the impact of inflation on investment is concerned, the empirical study could not establish any significant (positive or negative) relationship between inflation and investment. So was the effect of inflation on economic growth. A simple regression of real output growth on the rate of inflation exhibited growth as inflation-neutral in Nepal.

Regarding the impact of inflation on financial development, the empirical finding reveals that inflation has adverse effect on financial savings. A simple regression of financial savings (represented by changes in time deposits at banks) on real interest rate shows that each 10 percent increase in real interest rate exerts a nearly 5 percent growth in financial savings. This indirectly establishes a negative relationship between inflation and financial savings.

Inflation is also found to have had adverse effect on the fiscal position of the government. An estimation of the revenue and expenditure of the government with the level of prices (along with other variables) indicates that the price elasticity of expenditure is higher than the price elasticity of revenue. This means that rising prices cause wider budget deficit, other things remaining the same, by increasing the volume of expenditure at a higher rate than the growth of revenue. The empirical study shows price elasticity of expenditure at 1.68 and the price elasticity of revenue at 1.22 only. A straight forward examination of the effect of increasing prices on the fiscal situation is made by regressing budget deficit with the level of prices. The result shows that each 10 percent rise in the level of prices causes a 15.6 percent increase in budget deficit of the government.

An empirical investigation on the impact of inflation on money supply shows that inflation does not cause money supply growth. An econometric test of the direction of causality between money supply and price reveals that there is a unidirectional causality from money to prices and the feedback from prices to money is insignificant.

As real interest rate is found to cause a positive effect on real as well as financial savings, it is necessary that the rate of inflation be controlled so that a positive real rate of interest could be ensured. If inflation goes up persistently, it is difficult to maintain a positive real rate of interest unless nominal interest rate is revised upward significantly which is not always possible. So it is warranted that the inflationary situation be controlled and the rate of price rise be contained at a single digit level so that at least the real interest rate on time deposits could be maintained at a positive level in the present structure of nominal interest rate.

As already observed, inflation worsens the fiscal situation of the government. Expansionary fiscal policy (which causes higher fiscal deficit) will, therefore, lead to higher money supply; higher money supply, in turn, increases prices; and increasing prices again deteriorate the budgetary position. This type of vicious cycle may turn to be explosive unless it is broken by containing either fiscal deficit or inflation by other means. Therefore, it is recommended that fiscal deficit be contained at the desired level for bringing about internal stability.

Proposal for Non-Inflationary Government Budget for 1993/94

An attempt is also made to quantify the level of government expenditure consistent with the desired rate of price increase. The desired level of government expenditure that does not disturb the money market equilibrium is derived in a two sector model, i.e., the government sector and the monetary sector. In the monetary sector, the desired level of money stock is estimated by the standard demand for money function. Once the level of the desired money stock is estimated, it is segregated into net foreign assets and net domestic assets. Then projections are made for net foreign assets of the banking system and also for each component of net domestic assets, namely, credit to the government enterprises, credit to the private sector, and capital and other items, net of the banaking system. Credit to the government is derived as a residual (as broad money supply minus credit to the government enterprises, minus credit to private sector, plus capital and other items, net). The first difference (one year change) in outstanding bank credit to the government is taken as bank borrowing of the government from the banking system. This figure represents the maximum limit that the government can borrow from the banking system without disturbing the money market equilibrium.

The forecast of some of the variables is done with behavioral equations and some with identities. The forecast and desired money stock for FY 1993/94 based on the standard money demand function is Rs 25,645 million in the case of narrow money and Rs 63,560 million in the case of broad money. The forecast of net foreign assets for this year is Rs 32,484 million. This gives the desired level of net domestic assets of Rs. 31,076 million for FY 1993/94. Of this, Rs 2,500 million is estimated as credit to government enterprises, Rs. 28,168 million as credit to the private sector, Rs 21,560 million as a capital and other items, giving credit to the government as a residual figure of Rs 21,968 million (= Rs 63,560 - Rs 32,484 - Rs 2,500- Rs 28,168 + Rs 21,560). As the outstanding bank credit to the government as at the end of 1992/93 is estimated at Rs 21,110 million, the level of bank financing to the Government budget amounts at Rs 868 million.

The forecast of the revenue position shows that the government would realize Rs 18,249 million worth of revenue in 1993/94. Similarly, the forecast of foreign aid shows that the government can mobilize foreign aid to the tune of Rs 14,328 million in 1993/94. It is also estimated that the government can mobilize non-bank internal borrowing to the extent of Rs 600 million during 1993/94. Summing up all the resources of the government (revenue amounting to Rs 18,249 million, foreign aid amounting to Rs 14,328 million, bank borrowing amounting to Rs 868 million, and non-bank borrowing amounting to Rs 600 million), the desired level of government expenditure is found to be Rs 34,045 million.

As the forecast for demand for money during 1993/94 is based on the assumption that real output and prices will grow at a rate of five percent each during this year, the government expenditure at this level will ensure the desired level of money supply that would help attain the desired rate of price rise in the economy.

Given the trend growth rate of revenue and foreign aid of the government, it is recommended that the level of government expenditure be contained at Rs 34 billion. If the level of expenditure is to be increased to a higher level, additional revenue measures will have to be taken in order to ensure the equilibrium in the monetary sector.

Table 1: Average Inflation Rates by Plan Period

	National	Kathmandu	Hills	Terai
Fifth Plan (1975-80)	5.3	6.2	6.1	4.6
Sixth Plan (1980-85)	9.7	9.3	10.8	9.6
Seventh Plan (1985-90)	11.9	12.9	11.4	11.2

Source : Nepal Rastra Bank.

Table 2: Rate of Change in Consumer Price Index

Fiscal Year	National	Kathmandu	Hills	Terai
1975/76	-0.6	5.3	2.8	-3.9
1976/77	2.5	-	3.8	4.2
1977/78	11.3	10.2	10.7	11.2
1978/79	3.4	3.4	3.4	3.6
1979/80	9.7	12.1	9.8	8.1
1980/81	13.4	14.7	12.9	12.9
1981/82	10.4	10.6	10.1	10.8
1982/83	14.2	12.3	14.8	15.1
1983/84	6.2	5.3	6.5	6.3
1984/85	4.1	3.8	9.2	3.1
1985/86	15.9	17.0	11.8	15.8
1986/87	13.2	14.1	13.6	12.5
1987/88	11.0	9.5	11.8	12.2
1988/89	8.1	8.4	10.4	7.5
1989/90	11.5	15.0	0.3	7.8
1990/91	9.8	10.0	9.7	9.6
1991/92	21.0	20.8	19.7	21.5
1992/93[*]	7.5	10.7	7.6	5.2

* Based on CPI for first nine months.

Table 3: Groupwise National Urban Consumer Price Index Changes

Fiscal Year	Food & Beverages (F&B)	Non-food & Services (NF&S)	Overall Index
1975/76	-4.0	7.3	-0.6
1976/77	0.3	7.0	2.5
1977/78	14.9	4.4	11.3
1978/79	1.5	7.5	3.4
1979/80	11.0	7.6	9.7
1980/81	13.5	13.3	13.4
1981/82	11.0	9.4	10.4
1982/83	15.0	10.6	14.2
1983/84	5.2	8.5	6.2
1984/85	1.3	9.9	4.1
1985/86	18.5	10.8	15.9
1986/87	15.2	9.5	13.2
1987/88	12.1	9.0	11.0
1988/89(A)	5.9	12.8	8.1
1989/89(B)	N.A.	N.A.	N.A.
1989/90	9.6	15.3	11.5
1990/91	10.2	9.1	9.8
1991/92	24.4	15.0	21.0
1992/93*	4.4	13.4	7.5

Note -   1972/73 to 1988/89(A) - Old Series (Base Year 1972/73 = 100)
      -   1988/89(B) to 1991/92 - New Series (Base Year 1983/84 = 100)
* Based on price index of first nine months.

Table 4: Regionwise Commodity Price Index Changes

Fiscal Year	Kathmandu		Hills		Terai	
	F & B	NF & S	F & B	NF & S	F & B	NF & S
1975/76	3.6	7.9	-	10.8	-2.5	6.0
1976/77	-3.3	5.5	2.2	6.3	2.4	8.0
1977/78	14.5	4.1	12.8	6.9	14.7	3.4
1978/79	2.3	4.6	1.2	6.8	1.3	8.9
1979/80	14.1	5.4	10.8	7.5	8.9	6.4
1980/81	-15.1	18.3	12.4	14.0	12.8	13.1
1981/82	10.8	10.4	10.6	9.4	12.1	8.7
1982/83	14.5	8.7	17.9	7.9	16.1	12.6
1983/84	4.7	6.6	4.2	12.3	5.3	9.1
1984/85	0.8	8.8	6.1	15.8	0.3	9.4
1985/86	20.3	11.9	13.1	9.1	18.6	10.1
1986/87	16.3	10.3	16.3	8.3	14.0	8.6
1987/88	10.6	7.7	13.5	7.8	13.0	10.6
1988/89	6.9	11.3	8.8	14.1	4.8	14.0
1989/90	19.5	10.0	-	1.4	7.8	8.6
1990/91	9.8	10.1	8.7	11.7	10.6	8.0
1991/92	22.4	18.3	22.8	14.5	26.2	12.8
1992/93*	8.0	15.3	6.2	10.1	1.4	13.0

* Based on CPI for the first nine months.
F & B = Food and Beverages.
NF & B = Non-food and Services.