

CAUSES OF INFLATION IN NEPAL : A QUANTITATIVE ANALYSIS

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I. Introduction

A simplistic view of economic development is sustained growth in output and employment under conditions of relative stability in general price level. Inflation is a process of continuously rising price of goods and services, or equivalently, of a continuously falling value of money and other fixed-priced assets in the economy¹. Consumer price index and GDP deflator are the most commonly used indicators to measure the rate of inflation. Economists argue that a moderate rate of inflation (less than 5 percent per annum) may be desirable to any economy to promote production and efficient allocation of resources. A high rate of inflation is undesirable factor in the process of economic development because it may cause shock and upheaval in the economy and therefore disrupt economic stability. A higher rate of inflation causes misallocation of resources because it increases the inflationary expectations and encourages hoarding of goods to make greater profit rather than investing in productive sectors. If money income did not increase in proportion to increase in price level, people dependent on fixed income such as salary, pension, fixed term contract and the like will be affected negatively. Similarly, people holding financial assets such as bonds, fixed and savings deposits with fixed interest rate will suffer from capital loss. Therefore, higher rate of inflation may cause instability in the economy and, hence, there is a need for analyzing the causes and finding the possible solutions to curb it.

There is lack of time series data on wholesale prices, wage rate, export and import price indices, price index of construction materials etc. in Nepal. Therefore, it is difficult to analyse the inflationary trend in Nepal. Due to the lack of other statistics, the analysis needs to be based mainly on CPI (Consumer Price Index) or GDP deflator. The available statistics on CPI shows that for the period of 25 years (1965-1990), the consumer price index has increased more than six-fold which clearly depicts the inflationary situation in the country (for details, see Appendix I). The annual average rate of inflation has reached 9.3 percent in 1985-90 period from 6.71 per cent during 1965-70. On the basis of group-wise classification of available statistics on consumer price index, pulses, milk and milk products, vegetables and fruit, meat, fish and eggs in the food and beverages group and housing and fuel, light and water in the non-food items & services group have higher rates of inflation as compared to other items. (Appendix II). Besides the consumer price index,

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¹ Gordon, R.J. "Recent Developments in the Theory of Inflation and Unemployment", Journal of Monetary Economics (April 1976) pp.185-219.

prices of construction materials, wages of skilled and the semi-skilled labour, imported goods etc., which are not included in the index, have also increased rapidly. Thus inflation has become one of the major problems in the Nepalese economy. Hence it is necessary to analyze the causes of inflation in the country.

Empirical studies show that monetarist model can provide a fairly reasonable explanation of the inflationary process in the LDCs (Less Developed Countries). According to the monetarist explanation, inflation is always and everywhere a monetary phenomenon. However, a number of studies, especially those pertaining to the post-1970 international economic crisis, show that for a systematic analysis of the inflationary process in the LDCs the test of monetarist hypothesis need to be supplemented by a careful consideration of the structural factors affecting the LDCs.²

Studies on inflation in Nepal show clearly that the monetarist model has not been adequately tested using the latest available data, while the structuralist hypothesis has not been considered. The objective of this paper is to examine the monetarist and structuralist hypothesis for Nepal to determine whether the inflationary process in Nepal is adequately explained by the monetarist hypothesis or the analysis needs to be further supplemented by a study of the structural factors as in the case of other developing countries.

The arrangement of this paper is as follows. Section II presents a brief review of economic indicators of the Nepalese economy. Section III provides a description of the model employed in this paper. Section IV briefly describes the data sources and their limitations. The empirical results of the models are analyzed in section V. The paper is concluded with section VI which contains a brief recapitulation of the main points including the policy implications.

II. Causes of Inflation in Nepal

Some of the macro-economic indicators of the Nepalese economy are presented in Table 1 which shows that the average annual growth rate of per capita GDP (1965-88) has remained low and unstable over time. The average annual growth rate of per capita GDP (from 1965 to 1988) has remained at 0.75 percent which shows that there is very little improvement in per capital income in the country . This is mainly due to the over dependence of Nepalese economy on agriculture which has grown very slowly. For example, during the period 1974/75 to 1990/91, the average production of principle food crops has increased by 2.3 percent while the annual population growth rate was recorded to be 2.67 per cent (1981 census).³ Thus the slow growth rate of agricultural production and rapidly growing population has increased the demand for food items. It can be shown from

² Faiz Bilquees, "Inflation in Pakistan: Empirical Evidences on the Monetarist and Structuralist Hypothesis". *The Pakistan Development Reivew* (Summer 1988), Vol. 27, No.2, p.109.

³ Ministry of Finance, *Economic Survey 1990-91*, Table 2.1, p.4.

Appendix III that pulses, vegetables, milk and milk products, meat, fish and eggs have higher rates of price rise. This might have caused demand pull inflation in Nepal.

Table 1

MAIN ECONOMIC INDICATORS OF THE NEPALESE ECONOMY

(Unit: Percentage)

Indicators	1971	1975	1980	1985	1988
Growth Rate of Per capita GDP	-2.39	-0.75	-4.41	3.35	5.26
Growth Rate of Money Supply (M ₁)	12.14	3.39	13.03	13.63	13.18
Growth Rate of Money Supply (M ₂)	19.03	11.90	17.27	20.04	23.05
Government Budget Deficit(Rs.Mn)	-24.0	248.0	909.4	3,151.4	4,622.9
Current Account Balance (Rs.Mn)	NA	-120.3	-341.6	-1,849.0	-4,622.8
Rate of Inflation	-1.99	7.59	14.51	8.05	8.98
Growth Rate of Import Price	5.15	4.55	28.3	4.49	6.50

Sources: Economic Survey, Fiscal Year 1990-91, and World Bank, World Tables 1991.

On the other hand, despite slow growth of per capita GDP, money supply, both narrow (M₁) and broadly defined (M₂), has increased rapidly in the country. For example, the growth rate of money supply has remained in double digits except for 1975 (see Table 1). The average annual growth rate of money supply has been found to be 14.82 per cent during 1965-88. This shows that the growth rate of money supply is faster than the growth rate of per capita GDP which implies that there is more money in the economy as compared to the production level of goods and services. Thus, rapidly increasing money supply might be another important cause of inflation in the country.

There is lack of adequate infrastructure and other essential services in the country. The private sector is slow and less interested in developing infrastructures in the country, so public sector needs to play an important role to increase investment in the country. Therefore, government expenditure has witnessed an increasing trend. For example, total government expenditure has increased to Rs 14,050.1 million in 1987/88 from Rs 1,513.7 million in 1974/75. Revenue from tax and non-tax sources is not adequate to finance the growing government expenditure and, hence, there is a growing budget deficit. In order to finance the growing budget deficit, the government has borrowed from domestic as well foreign sources. The growing amount of external borrowing has helped to increase money supply and thus the inflation in the country. Similarly, internal borrowing has also been used as another source of financing government budget deficit. Most of the internal borrowing comes from the banking sector which reduces the availability of funds to the private sector which might also have created inflation. The continuous and growing amount of budget deficit has also helped the business community to make positive expectation on price hike and hoard goods in the country.

Nepal needs to meet a large percent of its demand from imports. While importing goods from abroad we also import inflation. Thus the growing amount of imports of goods also imports inflation in Nepal. Hence, imported inflation is another source of inflation in the country.

III. Model Specification

Three different theories have been offered to explain the causes of inflation in industrial countries during the sixties and seventies.⁴ The first theory, based on the Phillips Curve, envisages a negative correlation between the rate of growth of money wage, and hence, prices and unemployment rate. The second is known as the monetarist inflation theory which advocates a close connection between the rate of inflation and the growth rate of money supply per unit of output. The third approach emphasizes structural factors as an explanation for inflation. Two of these structural factors are of particular importance, viz., a higher growth rate of productivity in industrial sector as compared to that in services sector, and a uniform growth of nominal wage in both the sectors.

The Phillips Curve approach can not be tested in the context of LDCs like Nepal, where there is unemployment and underemployment problem and also data on unemployment and wage rate are not available on time series basis. Therefore, this paper attempts to examine the monetarist and structuralist models in the context of Nepal.

3.1 The Monetarist Model of Inflation

The monetarists' theory of inflation has been widely employed in studying inflation in many developing countries. The monetarist model was first formulated and tested by Harberger (1963). Later Vogel (1974), Sheehy (1980), Aksoy (1982) and others have tested the monetarist approach in the Latin American countries. The result of the empirical studies supports the monetarist hypothesis. According to the monetarist theory, aggregate excess demand resulting from an excess supply of money is regarded as the principal cause of inflation. Similarly, Akhtar, M.A. (1975), Krishan G. Saini (1982) and others have tested the monetarist hypothesis in Asian countries and found that monetarist model can explain the inflationary behaviour better in high inflation countries.

According to the simple quantity theory of money, inflation is caused by an excess of monetary demand over the market clearing supply at current prices. In terms of equation of exchange;

$$MV = PY \dots\dots\dots (3.1)$$

⁴ Helmut Frisch, "Inflation Theory 1963-1975: A Second Generation Survey," Journal of Economic Literature, (December 1977), Vol. 15, No. 4, p. 1290.

Where

- M = Quantity of Money Supply
- P = Price Level
- V = Velocity of Circulation of Money
- Y = Volume of Real Income

According to this framework, assuming V and Y are constant, changes in M will cause changes in P. In this line of reasoning, inflation is, therefore, invariably caused by monetary and fiscal policies affecting money supply.⁵ A fairly widely used monetarist model of the determinants of inflation is written as;

$$P/M - \alpha Y + \beta C \dots\dots\dots (3.2)$$

in the logarithmic form equation (3.2) can be written as;

$$\ln M = \ln P - \beta \ln C \dots\dots\dots (3.3)$$

Since the rate of inflation is measured in percentage change the above equation changes to

$$\dot{P} = \dot{M} - \alpha \dot{Y} + \beta \dot{C} \dots\dots\dots(3.4)$$

Where

- \dot{P} = Rate of Inflation (percentage change in Consumer Price Index)
- \dot{M} = Percentage in the Rate of Growth of Money Supply
- \dot{Y} = Percentage Change in the Rate of Growth of per Capita Income, and
- \dot{C} = Rate of Growth of the Expected Cost of Holding Money.

The percentage change in the consumer price index is considered as rate of inflation. Money supply is narrowly defined as currency plus demand deposits. Y is the growth rate of real per capita income. $\dot{C} = P_t - P_{t-1}$, the first difference of the change in the inflation rate, is used as the proxy to estimate the cost of holding money. Equation (3.4) permits us to express the inflation rate as a function of quantity of money, the level of real per capita income and the expected cost of holding cash. The absence of a constant term in front of M in equation (3.4) implies that the demand for real cash balance depends on real variables,

⁵ A.H.M.N. Chowdhury and J. Malcom Dowling, "Inflation in Developing Member Countries: An Analysis of Recent Trends", Asian Development Bank, Economic Staff Paper No. 6 (March 1982), p. 11.

i.e., there is no money illusion and the adjustment is instantaneous. But due to the lack of well developed financial market in Nepal, the adjustment of changes in the money stock is not instantaneous, hence, we had modified equation (3.4) into;

$$\dot{P}_t = a + a_1 \dot{M}_t + a_2 \dot{M}_{t-1} + a_3 \dot{Y}_t + a_4 \dot{C}_t \dots\dots\dots (3.5)$$

Where M_t and M_{t-1} are growth rate of money supply in current year and lagged by one year, included into the model to capture both the current year and one year lagged adjustment of changes in money and prices. $C_t = (P_t - P_{t-1})$ is used in this analysis as a proxy for the cost of holding money. The cost of holding money (C_t) is simply the difference in inflation rate between the current year and the last year. Interest rate is another possible variable for it but the minimum interest rate on savings and fixed deposits and maximum interest rate on lending were centrally fixed by the Nepal Rastra Bank during the sample period, and hence, interest rate has very little role to play in the Nepalese financial system. Thus, interest rate is not deemed to have adequate representation of the cost of holding money. Hence the difference in inflation rate has been chosen as proxy for cost of holding money in this study.

When financial institutions are relatively underdeveloped and economic activities are insufficiently monetized as in the case of Nepal, the adjustment specification should help to capture most of the delayed effects of an increase in the money stock. Therefore, such a specification changes equation (3.5) into:

$$\dot{P}_t = a + a_1 \dot{M}_t + a_2 \dot{M}_{t-1} + a_3 \dot{M}_{t-2} + a_4 \dot{Y}_t + a_5 \dot{C}_t \dots\dots\dots (3.6)$$

Here M_{t-2} is the lagged money supply by two years. Thus the current rate of inflation is expected to vary, ceteris paribus, positively in relation to the rate of change of money supply and negatively with respect to the rate of change of per capita income. The cost of holding money is assumed to be positively related to inflation. Hence, symbolically, the hypothesis can be written as:

$$\partial \dot{P}_t / \partial \dot{M}_t, \partial \dot{P}_t / \partial \dot{M}_{t-1}, \partial \dot{P}_t / \partial \dot{M}_{t-2}, \partial \dot{P}_t / \partial \dot{C}_t > 0, \text{ and } \partial \dot{P}_t / \partial \dot{Y}_t < 0.$$

We shall estimate equation (3.6) with various alternatives to evaluate the monetarist model of inflation in Nepal.

3.2 The Structuralist Model of Inflation

An alternative approach to explain the inflationary behaviour in developing countries was developed in the 1950s when the monetarist model could not explain the rapidly growing inflation in the Latin American countries. The basic argument of the structuralist approach is that inflationary process in the LDCs can not be adequately explained by reference to the level of aggregate demand. They argued that fragmentation

between supply and demand in and between different sectors of the economy is the root cause of inflation in developing countries.

The cause of inflationary pressures, i.e., the basic structural limitations are taken to be (a) the inelastic food supply in the face of rapidly growing demand - agricultural sector bottleneck; (b) the inelasticity and instability of purchasing power of exports - the foreign exchange bottleneck; and (c) the inelasticity of the tax revenue due to structural inefficiencies in the tax system - the financial constraints.

3.2.1 Agricultural Bottlen

Agricultural bottleneck is one of the persistent ideas in the structural thesis. According to this hypothesis, population growth, changes in the living standards and urbanization combine to make demand of the food supply. In some countries and for a number of reasons, the agricultural sector will not respond adequately to these demands. Hence, as excess demand develops for domestic food production it leads the price to rise. The growth rate of commodity producing sectors, mainly agriculture and manufacturing (which accounts for more than two-thirds of the GDP), has been used as a proxy of output bottleneck in this study.

3.2.2 Foreign Exchange Constraints

Many developing countries are suffering from balance of payments deficit. This is due, on the one hand, to low income elasticity of demand for their primary exports and, on the other hand, higher income elasticity of demand for imports (mainly due to industrialization and development of infrastructures). In such conditions, in the long run, it needs to impose restriction on imports. If the import restriction takes place in the form of duties, direct controls, or devaluation of national currency, it will tend to raise the domestic price level. On the other hand, due to restriction on the imports the domestic import substitutions process entails demand shift which accumulates inflationary situation. It is widely believed that in developing countries a major source of inflation has been the behaviour of prices of imported goods.⁶ Nepal meets a large percentage of its consumption and investment demand from imports. Hence, the percentage change in the import price index has been used in this study.

3.2.3 Fiscal Constraints

In many developing countries public sector has to play an important role to develop infrastructures, agricultural and industrial sectors. Revenue from tax and not-tax sources is not adequate to meet the growing expenditure. Thus there is budget deficit and hence, government in these countries needs to borrow from internal and external sources. Studies by Aghçveli and Khan (1978) and Mikesell (1969) show a positive association between

⁶ K.G. Sani, "The Monetarist Explanation of Inflation: The Experience of Six Asian Countries, World Development, (October 1982), Vol. 10, No. 10, p. 875.

inflation and the budget deficit. Thus government budget deficit has been used as fiscal constraint in this study.

After reviewing the various indicators of structural bottlenecks and keeping in view the structure of the Nepalese economy, the following structural variables are selected for the study which are expected to explain the structural reasoning of inflation in Nepal.

$$\dot{P}_t = \beta + \beta_1 \dot{Y}_{t-1} + \beta_2 \dot{MP}_{t-1} + \beta_3 \dot{GOV}_t + \beta_4 \dot{C}_t \dots\dots\dots(3.7)$$

Where

- \dot{P}_t = Rate of Inflation (Percentage change in Consumer Price Index)
- \dot{Y}_{t-1} = Percentage change in out put in commodity producing sectors lagged one year
- \dot{MP}_{t-1} = Percentage change in the import price Index lagged one year
- \dot{GOV}_t = Government Budget Deficit
- \dot{C}_t = Percentage change in the Rate of Growth of Expected Cost of Holding Money.

The growth rate of commodity producing sector (agriculture and industrial production) is postulated to be negatively related to the inflation rate. An increase in the imports price is expected to be positively related to inflation. The government budget deficit and cost of holding money variables are also expected to be positively related to the inflation rate. The above hypothesis can be written symbolically as:

$$\frac{\partial \dot{P}_t}{\partial \dot{MP}_{t-1}} > 0, \frac{\partial \dot{P}_t}{\partial \dot{GOV}_t} > 0, \frac{\partial \dot{P}_t}{\partial \dot{C}_t} > 0, \text{ and } \frac{\partial \dot{P}_t}{\partial \dot{Y}_{t-1}} < 0.$$

We shall estimate equation (3.7) with various alternatives to examine the structuralist model of inflation in Nepal.

IV. Data Source and Limitations

This section considers the type of data that will be used in the estimation of monetarist and structuralist model. Data on money supply (M1 = currency plus demand deposits), Gross Domestic Product (GDP), population and consumer price index (CPI) are obtained from the International Financial Statistics (IFS) Year Book 1991. Data on Import Price Index and Gross Domestic Output by sectors are obtained from World Tables 1991, a World Bank publication. Similarly, data on government budget deficit are obtained from the Economic Survey, Ministry of Finance, HMG/Nepal.

The empirical analysis covers the period of 18 years (1971-1988). The selection of the period is largely due to the availability of data on import price index. In theory, the wage level or rate of unemployment should be included in the inflation model. Similarly,

quarterly data may provide a better explanation to the causes of inflation but due to the unavailability of data on quarterly GDP and rate of unemployment on time series basis, the study precludes such analysis.

V. Empirical Results

In this section we present the empirical results of the monetarist and structuralist models. The data are analysed by the Ordinary Least Squares method (OLS) using the rate of change in consumer price index (CPI) as rate of inflation. Further, it should be noted that the analysis is based on the results reported in this paper as well as many reports unreported here.

5.1 Results of the Monetarist Model

The regression results of the monetarist model are presented in Table 2 with various alternatives. The regression results show that all the estimated coefficients follow the prior expected sign. The R^2 of 0.52 shows that (equation 3) about 52 percent change in inflation has been explained by this model. The F-statistic of 5.10 shows that the overall models are statistically significant at 99 per cent confidence level. In some of the models a low value of Durbin Watson statistic is found which cast some doubt about the presence of first order autocorrelation. Therefore, Cocherane-Orcutt method of detecting the presence of first order auto-correlation has been tested with the help of computer package TSP5. But the coefficient of the first order auto-correlation was found to be statistically insignificant. This result implies that there is no evidence of first order auto-correlation problem in our models.

Table 2

RESULTS OF THE MONETARIST MODEL **Excluding Cost of Holding Money (1971-88)**

Equation	Constant	M_t	M_{t-1}	M_{t-2}	Y_t	R^2	F	DW
(1)	-1.26 (-0.31)	2.23 (1.21)	0.44* (2.94)	-	-	0.40	4.94	1.73
(2)	3.04 (0.58)	0.18 (0.92)	0.41* (2.70)	-0.20 (-1.27)	-	0.46	3.96	1.87
(3)	-2.09 (-0.56)	0.21 (1.20)	0.56* (3.69)	-	-0.74 (-1.91)	0.52	5.10	1.70

Including Cost of Holding Money (1971-88)

Equation	Constant	M_t	M_{t-1}	M_{t-2}	Y_t	C_t	R^2	F	DW
(4)	-2.11 (-0.54)	0.21 (1.16)	0.44* (3.52)	-0.75 (1.80)	-0.02 (-0.05)	-	0.52	3.55	1.70
(5)	1.75 (0.51)	0.13 (0.88)	0.38* (2.68)	-0.52 (-1.51)	-0.11 (-0.34)	0.33* (2.79)	0.71	5.88	1.41
(6)	1.81 (0.54)	0.13 (0.89)	0.38* (2.75)	-0.50 (-1.53)	-	0.33* (2.87)	0.71	7.86	1.41

Note: * = Denotes statistically significant at 99% confidence level.
 Figures in parentheses are t statistics.

Table 2 shows that the adjustment in price level to change in money supply spreads over two years. It is seen from the equation (2) in the above Table that the coefficient of M_{t-2} is found to be following unexpected sign and is also statistically insignificant. The coefficient of one year lagged money supply (M_{t-1}) is statistically significant at 99 percent confidence level in all the models. The coefficient of current money supply M_t follows expected sign but is statistically insignificant in this study. This may be due to lag in adjustment between money supply and price level. Thus, it can be said that people do not realize immediately the increase in money supply and, as a result, money illusion is at work in the economy.

The variable of growth rate of per capita GDP follows the correct sign but in neither case the variable is significantly different from zero on the basis of t-test at 99 per cent confidence level. The slow and even negative growth rate of per capita GDP in comparison to high growth rate of money supply might have caused this variable to be insignificant in this study. The negative but insignificant coefficient of Y_t may also be interpreted a priori as evidence of the structural hypothesis that the supply side constraint, namely a decline in output below the trend would lead to higher inflation.

Next we include the inflationary expectation variable into the model. The results obtained from the model including expectation variable are presented in equations 4, 5 and 6 in Table 2. On the basis of statistical criterion we found equation 6 to be more appropriate estimated equation. Equation 6 shows that the four arguments of the monetarist model, namely, money supply (current and one year lagged), real income per capita and cost of holding money explain about 71 per cent of the observed variation of the rate of inflation in Nepal. The coefficient of one year lagged money supply is significant at 99 per cent confidence level and the sum of the coefficient of M_t and M_{t-1} is greater than zero but less than unity. This finding suggests that there are other non-monetary influences which have

exerted a stronger influence on the rate of inflation. The variable of cost of holding money (C_t) has been found to be another important variable to explain inflation in Nepal which is also found to be statistically significant at 99 per cent confidence level. This implies that a simultaneous consideration of the structural factors may be important to explain the inflationary process in Nepal.

5.2 Results of the Structuralist Model of Inflation.

In this section we present the regression result of the structuralist model. The regression results are reported in Table 3. All the variables in the model follow the expected sign. The R^2 of 0.74 (equation 2) implies that 74 per cent of the change in the inflation has been explained by this model. The F-statistic shows that the model is overall significant at 99 per cent confidence level. The Durbin Watson statistic indicates the non-existence of first order auto-correlation in the models. The results of equation (1) in Table 3 show that changes in the output producing sector (Y_{t-1}), change in the import price MP_{t-1} and government budget deficit (GOVT) are the important structural variables to cause inflation in Nepal. All the three coefficients are found to be statistically significant at 99 per cent confidence level. In equation 2, when the expectation variable has been included, the result has shown a significant change. The explanatory power of the model has increased from 0.42 to 0.74 in equation (2). The expectation variable (C_t) has been found to be highly significant while the growth rate of output producing sector (Y_t) has turned out to be insignificant. It implies that a decline or low growth in output gives rise to the expectations of higher inflation.

Table 3
RESULTS OF THE STRUCTURALIST MODEL (1971-88)

Equation	Constant	Y_{t-1}	MP_{t-1}	GOVT	C_t	R^2	F	DW
(1)	7.96 (3.55)	-0.13* (2.49)	0.19* (2.33)	0.002* (2.20)	-	0.42	3.44	1.98
(2)	6.89 (4.31)	-0.18 (-1.38)	0.16* (2.84)	0.002* (2.54)	0.42* (3.91)	0.74	9.02	1.71

Note:* = Denotes statistically significant at 99 % confidence level.
Figures in parentheses are t statistics.

The variable of MP_{t-1} is statistically significant in this study which implies that increase in import price leads to inflation in Nepal. The lag import price implies that availability of import from the previous period is the indicator to increase the price and make expectation. The government budget deficit variable shows positive impact on

inflation and is also statistically significant at 99 per cent confidence level but the very small coefficient (0.002) for this variable shows that government budget deficit will cause very little change in the price level. But the growing budget deficit and financing it from foreign loans helps to increase net foreign assets which leads to increase in money supply and hence, inflation. It should be noted that a continuous deficit budget helps the business people and importers to make positive expectation on inflation.

VI. Conclusion

In this paper we examined the monetarist and structuralist hypotheses to evaluate the causes of inflation in Nepal. The regression results based on monetarist approach provide a fair explanation of inflationary process. Based on this model, one-year lagged money supply and cost of holding real balances are the important explanatory variables to explain the causes of inflation in Nepal. Due to lack of quarterly data on GDP, the exact length of the lag adjustment of money supply could not be identified.

Besides, the results of the structuralist approach suggest that a shortfall in commodity producing sectors, increasing import prices and government budget deficit are important causes of inflation in the country. The continuously increasing government budget deficit and slow growth of agricultural and industrial production generates inflationary expectations.

The findings of this paper suggest that monetary policy is an important instrument to control inflation. A policy of increasing money supply in line with the growth of per capita GDP will help to control inflation because growing government budget deficit and financing it from external borrowing helps to increase money supply via increase in net foreign assets. Growing rate of money supply has thus been found to be inflationary in Nepal. Fiscal policy must be directed towards controlling, regulating and managing regular supply of goods. Similarly, effective policy is needed to control the unexpected price hiking activities. A price monitoring unit to control or regulate wholesale and retail prices of both domestically produced or imported goods is needed to control the inflationary expectation in Nepal. Government policies must be directed toward increasing production in agriculture and manufacturing sectors. This policy will help to increase supply of goods in the market which will help to combat inflation.

The outcome of this study supports the relevance of the debate between the monetarist and structuralist approaches. It is therefore needed to examine both the approaches to understand the inflationary process in Nepal. This study does not provide superiority of one hypothesis to another, but it provides a much broader perspective of the complexities of the inflationary process in Nepal.

APPENDIX I

Rate of Inflation in Nepal (1965-88)

<u>YEAR</u>	<u>CONSUMER PRICE INDEX</u>	<u>INFLATION RATE (%)</u>
1965	23.1	8.45
1966	26.4	14.29
1967	25.7	-2.65
1968	26.0	1.17
1969	27.0	3.85
1970	31.1	15.19
1971	30.5	-1.93
1972	33.1	8.52
1973	36.8	11.18
1974	44.2	20.11
1975	47.5	7.47
1976	46.0	-3.16
1977	50.6	10.00
1978	54.3	7.31
1979	56.7	3.50
1980	64.5	14.77
1981	71.7	11.16
1982	80.1	11.72
1983	90.0	12.36
1984	92.5	2.78
1985	100.0	8.11
1986	119.0	19.00
1987	131.8	10.76
1988	143.6	8.95

Source: International Financial Statistics, Year Book 1990.

APPENDIX II

National urbans Consumer Price Index Base Year 1983/84 = 100

<u>Commodities</u>	<u>1972/73</u>	<u>1979/80</u>	<u>1984/85</u>	<u>1989/90</u>
<u>Food and Beverages</u>	<u>36.9</u>	<u>65.0</u>	<u>104.1</u>	<u>179.9</u>
Restaurant	35.5	61.7	106.8	179.1
Grains and Cereal Products	41.8	63.5	93.1	150.2
Pulses	32.3	69.2	110.5	211.4
Vegetables & Fruits	30.2	66.2	101.0	204.4
Spices	28.1	67.7	114.6	187.0
Meat, Fish and Eggs	32.1	66.5	108.7	207.2
Milk and Milk Products	35.0	64.5	117.4	231.4
Oil and Clarified Butter	31.7	64.6	104.4	159.1
Sugar	51.4	71.5	107.1	189.7
Beverages	37.7	65.1	106.9	197.8
<u>Non-food Items and Services</u>	<u>37.2</u>	<u>67.3</u>	<u>109.9</u>	<u>182.1</u>
Cloth, Clothing & Sewing Services	47.3	73.8	105.3	175.9
footwear	43.7	71.0	107.6	163.5
Housing	28.5	61.0	113.6	200.5
Fuel, Light and Water	24.0	57.6	116.5	207.3
Transport and Communication	38.2	72.3	108.8	182.2
Medical and Personal Care	45.5	75.0	109.4	167.8
Education, Reading Materials and Recreation	38.5	63.6	105.4	179.9
Cigarettes	47.5	76.9	108.1	163.0
Overall Index	37.1	65.8	104.5	179.1

Source: Nepal Rastra Bank, Quarterly Economic Bulletin, Mid- October 1989-July 1990,
pp. 36-37.

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APPENDIX III

Data used in the Model with Monetarist Variables

(unit: Percentage)

<u>Year</u>	<u>CPI</u>	<u>M</u>	<u>M₁</u>	<u>M₂</u>	<u>GDP(85)</u>	<u>C</u>
1971	-1.99	12.14	-5.42	24.10	-2.39	-17.24
1972	8.39	7.33	12.14	-5.42	0.93	10.38
1973	11.43	29.52	7.33	12.14	-2.54	3.04
1974	19.80	18.31	29.52	7.33	4.09	8.38
1975	7.59	3.39	18.31	29.52	-0.72	-12.22
1976	-3.12	22.67	3.39	18.31	2.21	-10.70
1977	9.91	18.14	22.67	3.39	0.82	13.02
1978	7.35	13.85	18.14	22.67	2.22	-2.55
1979	3.55	15.19	13.85	18.14	0.20	-3.80
1980	14.67	13.03	15.19	13.85	-4.41	11.13
1981	11.15	11.88	13.03	15.18	1.06	-3.54
1982	11.70	15.61	11.88	13.03	1.09	0.55
1983	12.38	17.85	15.61	11.88	-5.49	0.67
1984	2.84	13.20	17.85	15.61	6.85	-9.53
1985	8.05	13.63	13.20	17.85	3.35	5.20
1986	19.00	23.78	13.63	13.20	1.62	10.95
1987	10.75	24.89	23.78	13.63	1.40	-8.25
1988	8.98	13.18	24.89	23.78	5.26	-1.76

Note:

- CIP = Percentage change in Consumer Price Index
- M = Growth Rate of Money Supply
- M₁ = Growth Rate of Money Supply one Year Lag
- M₂ = Growth Rate of Money Supply two Years lag
- GDP(85) = Growth Rate of Gross Domestic Product in 1985 price
- C = Cost of holding Read Balance

Source: International Financial Statistics, Year Book 1990 and World Bank, World Tables 1990

APPENDIX IV

Data Used in the Regression Model with Structural Variables

(unit: Percentage)

Year	Rate of <u>Inflation</u>	Growth Rate <u>of Output</u>	Import <u>Price Index</u>	Budget <u>Deficit*</u>	Cost of <u>Holding Money</u>
1971	-1.99	12.92	-8.11	39.0	-17.24
1972	8.39	-1.12	5.15	126.0	10.38
1973	11.43	17.48	4.20	223.0	3.04
1974	19.80	-6.38	25.84	248.0	8.38
1975	7.59	32.25	58.13	222.5	-12.22
1976	-3.12	28.95	4.55	438.0	-10.70
1977	9.91	1.77	5.00	614.9	13.02
1978	7.35	-5.82	6.45	626.3	-2.55
1979	3.55	13.15	7.36	909.4	3.80
1980	14.67	14.76	22.04	781.5	11.13
1981	11.15	1.73	28.30	804.2	-3.54
1982	11.70	15.69	0.26	1688.5	0.56
1983	12.38	14.95	-6.93	3049.5	0.67
1984	2.84	7.85	-17.20	3151.4	-9.53
1985	8.05	17.73	-1.00	3554.8	5.20
1986	19.00	9.60	-4.49	3979.7	10.95
1987	10.75	12.70	4.46	4253.0	-8.25
1988	8.98	17.22	12.49	4622.9	-1.76

* = Million Rs.

Sources: International Financial Statistics, Year Book 1990 and World Bank World Tables 1990.

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