CHAPTER TWELVE

SUMMARY, CONCLUSION AND POLICY IMPLICATION

12.1 Summary

The present study consists of twelve chapters. The summary of the whole study from chapter one to chapter eleven is presented below.

Chapter One includes to 'Introduction' consisting the general background of Nepalese economy with some political and socio-economic scenario. The monetary background with reference to banking and financial institutions and, price and inflationary situation of Nepalese economy are focused in this chapter. Besides, statement of the problem, importance of the study and objectives are mentioned clearly. 'To examine the relationship between money supply and price level in Nepal' is the general objective of the present study. Hypothesis, limitations, scope for future research and plan of the present study as the requisites of the study are also mentioned clearly.

Chapter Two is associated with the review and analysis of some important theoretical and empirical studies relating to money-price relationship. Important findings and conclusions of different past studies are reviewed thoroughly.

Chapter Three presents the 'Research Methodology' as very important part of the present study. Nature and sources of data required to accomplish the present study are clearly mentioned. So far as the nature and source of data are concerned, the present study has utilized the secondary data relating to money supply, price level, Indian price, remittance and population. The money supply, price level and Indian price level are the quarterly data from $1976Q_1$ to $2012Q_2$. However, the data associated with remittance and population are annual from FY 1974/75 to 20111/12. The annual data of price level to show the relationship between remittance and inflation is also utilized in accordance with the objectives of the study. Some key econometric tools used in the present study are also highlighted in this chapter. However, other necessary econometric tools have been presented in the related chapters and sections.

Chapter Four analyzes the forecasting of inflation in Nepal by employing ARMA/ARIMA and ARCH/GARCH models. From the analysis, inflation of Nepal is found to be long-range fluctuating and ARMA {(4,5,6,8),1} model is found to be more efficient than GARCH (1,2) model for forecasting inflation in Nepal.

Chapter Five endeavors the impact of remittance along with the population growth and political instability on Nepalese inflation. The inflation, remittance, population growth and political instability have long run equilibrium relationship. There is little economic significance between inflation and remittance. The remittance of previous period is found causing inflation to increase in the current time. It means the remittance the remittance is also one of the responsible factors to cause inflation in Nepal.

Chapter Six analyzes the unit root test on money supply and price level by employing various 'unit root tests'. The price level and money supply (both M_1 and M_2) transformed at logarithmic form are found to be non-stationary at levels and they are stationary at their first differences.

Chapter Seven analyzes the relationship between money supply and price level using the techniques of Johansen's cointegration test, VECM and Granger causality test. The M_1 money supply and price level as well as M_2 money supply and price level have long run equilibrium relationship. The M_1 money supply has caused price level and M_1 money supply is also caused by price level directly. Likewise, same relationship (as of price and M_1 money supply) holds between M_2 money supply and price level. Bi-directional Granger causality is found between M_1 money supply and price level as well as M_2 money supply and price level.

Chapter Eight analyzes the relationship between money supply and price level employing the distributed lag models. There is direct but non-proportional relationship between M_1 money supply and price level and, M_2 money supply and price level. A ten percent increase in M_1 money supply has caused price level to increase by 2.76%, that is, M_1 money supply contributes 27.6% of total inflation of Nepal. On the other hand, M_2 money supply contributes 20.4% of the total inflation in Nepal. This clearly indicates that M_1 money supply is more powerful than M_2 money supply to explain the relationship between money supply and price level. The Indian wholesale price along with M_1 money supply covers 20.6% of the total inflation.

However, the Indian wholesale price alone (excluding M_1 money supply) covers nearly 50% of the total inflation in Nepal. The Indian wholesale price along with M_2 money supply covers 42.6% of the total inflation. Thus, it can be claimed that Indian inflation plays vital role in Nepalese inflation.

Chapter Nine is devoted to forecasting money supply and price level by the technique of VARs. So far as the relationship between money supply and price level by VAR model is concerned, M_1 money supply and price level as well as M_2 money supply and price level are directly related. The estimated VAR models between M_1 money supply and price level and, M_2 money supply and price level are stable as reported by various tests.

Chapter Ten analyzes the relationship between money supply and price level by the techniques of impulse response function and variance decomposition. As reported by impulse response function, the short run price variations are not appeared through monetary channels. Likewise, the variations in money supplies are negligibly generated through price shocks. The price variations are mostly generated by price shocks and monetary variations are mostly generated by monetary shocks. As reported by variance decomposition, of the total variations in price, the shocks accounted by price are 74% and by M_1 money supply 26%. Likewise, between M_2 money supply and price level, the variations in price by M_2 money supply accounts 17% and rest 83% is accounted by price shocks. It is, therefore, M_1 money supply is more powerful than M_2 money supply to explain the relationship between money supply and price level in the economy of Nepal.

Chapter Eleven examines the relationship between money supply and price level through invariance proposition of rational expectations. Under this chapter, first the suitable models associated with M_1 and M_2 money supply are built using ARIMA model and with the help of such ARIMA models, the anticipated part of both M_1 and M_2 money supply are estimated. Finally, the regressions of price on anticipated money supplies are run to examine whether anticipated money supplies cause inflation in Nepal. The suitable ARIMA models for both M1 and M2 money supply are found to be ARMA (2,1,2). With the help of ARIMA (2,1,2) models, anticipated part of both M_1 and M_2 money supply are estimated. When the regression of price on M_1 anticipated money supply is run without including M_1 money supply, 40% of the

total inflation is caused by M_1 anticipated part of money supply. However, the anticipated part of M_2 money supply has no role to cause inflation in Nepal.

12.2 Conclusion and Policy Implication

From the present study, it is found that ARMA{(4,5,6,8),1} and GARCH(1,2) models are the estimated models for forecasting inflation in Nepal. However, the ARMA{(4,5,6,8),1} model is the suitable model of forecasting inflation in Nepal. It is because the ARMA{(4,5,6,8),1} has smaller Theil inequality coefficient (0.28) than that of Theil inequality coefficient (0.5) of GARCH(1,2) model.

The present study has bridged the research gap in the sense that very few studies are found in the economic literature regarding the impact of remittance on inflation so far. This research gap has been attempted to bridge by the present study by examining the impact of remittance on inflation in Nepal. In underdeveloped countries like Nepal, there is a large amount of remittance inflow from foreign countries. But unfortunately, the income recipients from remittance use the funds in unproductive activities like purchase of vehicles (motorcycle and car), luxurious goods and again there is imitative and emulative nature of consumption. In the absence of production, a high rate of consumption automatically brings inflationary pressure in the society. The present study has found that remittance along with population growth and political instability causes inflation to occur.

The present study has utilized the distributed lag models to identify the extent of relationship between money supply and price level. Additionally, the objective of applying distributed lag models is to verify the 'Quantity Theory of Money' in Nepalese context. There is direct but non-proportional relationship between money supply and price level in Nepal. This implies that monetarists' view on money and price is not applicable in Nepal. However, the Keynesian view of money-price relationship holds in Nepal. Next, not only Nepalese money supply but also Indian price is responsible to cause inflation in Nepal.

The cointegration, VECM and Granger causality test also support the direct relationship between money supply and price level. There is bi-directional Granger causality between money supply (both M_1 and M_2) and price level. This means, price is caused by money supply and money supply is also caused by price. When money

supply increases, the price level rises due to the fall in value of money. In the situation of falling of value of money, the society still needs more money to purchase expensive commodities. As a result, the monetary authority is compelled to bring expansionary monetary policy for the temporary relief. Thus, higher price invites more money in the society.

From VAR, impulse response function and variance decomposition, it is found that although there is direct relationship between money supply and price level, the variations in price is mostly due to price shocks and variations in money supply is mostly due to monetary channel. The money supply has negligible effect on inflation. Although monetary shocks have negligible effect on price level, of the two monetary aggregates, M_1 money supply has better explained price in Nepal.

All the models like ARMA,VECM, distributed lag, VAR, ARIMA etc used in the present study are stable and robust as reported by different types of test like residuals diagnostic test (autocorrelation, heteroscedasticity) stability test (Ramsey's RESET, CUSUM, CUSUM of squares etc) to explain the relationship between the variables under study.

Finally, the selection of suitable ARIMA model for money supply to estimate the anticipated money supply indicates that ARIMA(2,1,2) model for both M_1 and M_2 money supply is appropriate as reported by different types of tests. While running the regression of price level on anticipated money supply, it is observed that the price level is caused by the rational expectations of money supply. That is, the expected money supply is also responsible to cause inflation in Nepal. However, the anticipated part of M_2 money supply has no role to cause inflation in Nepal.

The present study is very important in the policy perspectives. Since remittance along with the population growth and political instability causes inflation, the government should immediately induce the remittance recipients to invest their funds in productive activities through remittance investment policies so that level of output can be increased. The growing population should be controlled through further effective population control policies. The political instability of the country should be removed through quick issue of the Constitution of Republican Democratic Nepal. As new constitution is issued, political chaos would be minimized through stable government. As there is political stability, domestic as well as foreign investment may increase due

to the investment friendly environment. The increase in investment plays dual role: output generation and employment opportunity. Increase in output reduces import as well as crisis of commodities, and thereby growing inflation is automatically checked.

In Nepal, the price of goods and services are mounting due to the petroleum price hike in international market. The electricity is very important substitute of petroleum substances. So investment in hydropower should be increased. For this, the central bank of Nepal, NRB should formulate the increasing investment policy in hydropower in Nepal. As electricity is adequately available, the number of industries automatically increases and national output increases and thereby growing inflation would be controlled. While doing so, higher imports from India can be reduced.

Of the two monetary aggregates, M_2 money supply is less responsible than M_1 money supply to cause inflation. Nepal Rastra Bank should formulate the policy so as to increase quasi money. For this, higher interest rates can be offered for the time deposits of non-bank public by commercial banks. As amount of quasi money increases, the quantity of M_1 money supply reduces and thereby there would be relief from higher inflation to some extent.