CHAPTER I
INTRODUCTION

1.1 Background of the Study

The term balance of paymentsis much discussed but least understood concept. Because of its broader concept and complicated networking between various socio-economic elements people often get confused and puzzled. It is because of the fact that "... the term balance of payments is an ambiguous one. It is often used loosely without any precise definition of what it is intended to cover and such loose usage of the term in the case of much muddled thinking of the subject"(Meade, 1980).

The term balance of paymentsis defined as statistical tabulation of economic transactions between residents of one country and the residents of the rest of the world, another country or group of countries. So the balance of payments provides the basic data in a locally organized form for the quantitative analysis of international trading relationships as well as for the formulation of judgments concerning the significance and result of the foreign trade. As a total of economic analysis, it indicates how the goods, services and capital received from abroad, are paid for and how foreign nations pay for the things they received(Wasserman & Hultman, 1970).

The balance of payments accounts of a country are constructed on the principle of double entry book keeping. Each transaction is entered on the credit and debit side of the balance sheet. Thus a balance of payments account must always balance, if full and accurate figures are entered in the account and if the accounts are not in balance, an error has been made(Wasserman & Hultman, 1970).

The 1930 world depression collapsed the entire superstructure of the classicists along with its two pillars – Say's law of market and Quantity theory of money. These economic disorders collapsed the international regime of fixed exchange rate and full employment and wage price flexibility become a dogma. These changed situations gave rise to the importance of new way of analysing economic situation as well as balance of payments. The new way of analysing the economic mechanism was led forward by the revolutionary work of Keynes "The General Theory of Employment, Interest and Money" based on the assumption of mass employment and wage-price flexibility (Johnson, 1977).

The new theory analysed the economic phenomenon in quite different way and the balance of payments. Contrary to the classical doctrine, the balance of payments was a policy problem instead of automatically adjusting one. With its assumption of mass unemployment and wage price flexibility, the balance of paymentscould be corrected with the help of policy variables (Johnson, 1977).

The theory which was developed along the Keynesian ideas is known as Elasticity Approach. This approach is based on the Marshallian tradition of treating the exchange rate as a relative price that clears a market with well-defined flow of demand and supply curves. The theory is based simply on the elasticity condition of demand and supply for goods and services and applicable if and only if Marshall Learner Condition is fulfilled and for complex models assuming independent elasticities of demand for import and supplies of exports, which is complex algebraic expression and challenging to derive and explore (Johnson, 1977).

The so called Elasticity Approach to devaluation proved unsatisfactory in the post war period of full and over full employment. This changed situation of full employment

and inflationary pressure required a new way of correcting the balance of payments. To study this new problem a new theory came into existence especially organized by S.S. Alexander known as "Absorption Approach" which argued essentially that a favourable effect from devaluation alone, in a fully employed economy, depends not on the elasticities but on the inflation resulting from the devaluation in these conditions producing a reduction in aggregate absorption relative to aggregate productive capacity (Johnson, 1977). The absorption approach relates a country's international surplus (or deficit) on current account to its excess (or shortfall) of national production in relation to national absorption, the latter being output absorbed in consumption, investment, and government activity. Equivalently, it relates the country's current account surplus (or deficit) to the excess (or shortfall) of national saving in relation to national investment, a government surplus or deficit counting as part of (or as a deduction from) national saving.

Both of the approaches Elasticity Approach and Absorption Approach are generally known as the traditional approaches of the balance of payments (Salvatore, 1998). These approaches have a common defect is that both deals with the balance of payments problem through the current account of merchandise trade only. The study of balance of payments through current account is incomplete in nature. The policy suggested by the traditional approach may not be able to achieve the goal of balance of payments equilibrium. As a matter of fact that the goods and services exported and imported in less developed countries are inelastic in nature. With an inelastic supply and demand, the price variation cannot change the supply and demand for goods and services, that is to say these approaches cannot meet the goal with its policy variable. The Nepalese economy suffers from the same problem (Rhomberg & Heller, 1977).

As the Elasticity and Absorption approaches fail to provide the correcting measures of balance of payments deficit in the less developing countries; another approach is still available which is known as the Monetary Approach to the Balance of Payments. According to the monetary approach, the balance of payments is purely a monetary phenomenon. Being a monetary phenomenon, it can be corrected only through the monetary measures. According to the monetary approach, the balance of payments is a monetary phenomenon is related to inflow and outflow of international reserves. If money supply is defined as the sum of reserve and net credit creation, the monetary authority can hold a control over only a single component of it. That is only net credit creation. So, the monetary authority can influence the money supply just by controlling a component of the money supply and through it the international reserve. So, viewed from the supply side of money, the balance of payments problem is a monetary problem and monetary policy is applicable to control it. The monetary approach relates a country's overall international surplus or deficit to change in the aggregate balance sheet of its monetary institutions.

Unlike "elasticities" and "absorption" approaches, the MABP treat BOP as monetary problems and should be tackled by explicitly investigating the domestic monetary behaviour (Alawode, 1997). The proponents of the monetary approach contend that beside the monetary factors, real factors do affect BOP through monetary channels. Valinezhad (1992) argues that the MABP only asserts that the effect on the BOP of a high rate of economic growth should be analysed with the tools of monetary theory. Talking about the monetary approach to the balance of payments, (Johnson, 1976a) said that the central point of the monetary approach to balance-of-payments policy theory is the balance-of- payments deficits or surpluses reflect stock disequilibrium between money demand and supply in the market for money.

A balance of payments deficit or surplus represents a transient stock adjustment process evoked by initial inequality between actual; and desired money stocks.(Johnson, 1977b)

The monetary approach maintains that the BOP are essentially a monetary phenomenon and the root cause in the payments imbalances are the disequilibrium between the demand for and supply of money. This proposition is often called strong version of the monetary approach (Rabin & Yaeger , 1982)

One of the major conclusions of the MABP analysis is that the exchange flexibility is unnecessary and that the BOP disequilibrium can only be corrected by policies that rectify the disequilibrium in the domestic money markets. In any event BOP imbalance is said to be self-limiting   (Kreinin & Officer , 1978)

The monetary approach diverges from other models of the BOP adjustment in two ways. First, it gives a simultaneous analysis of both current and capital accounts by focusing the attention on the official reserves account of the BOP. Hence, MABP obtains a vantage view of overall BOP movements unlike traditional models which deals either with the current account or capital account in isolation. The second divergence of the MABP is the utilization of monetary analysis and portfolio choice theory in its explanation of BOP disequilibria and adjustment. The MABP argues that any disequilibrium in the BOP mirrors an imbalance in the domestic money market and the traditional tools of analysing demand for and supply of money are directly relevant to the analysis of BOP movements.

The MABP particularly stresses following three points (Jhonson, 1976a):

- Balance of payments problems are monetary problems in a world monetary economic system and should be analysed by models that explicitly specify monetary behaviour and integrate it with the real economy, rather than by models that concentrate on real relationships and treat monetary behaviour as a residual of real behaviour.

- Money is a stock, not a flow, and monetary equilibrium and disequilibrium require analysis of stock equilibrium conditions and stock adjustment processes.

- It is essential for balance of payments analysis to recognize that, although money can be obtain from two alternative sources. The two sources are expansion of domestic credit and the exchange of goods or assets for international money and conversion of international into domestic money via the monetary authority.

Like other approaches, the MABP too suffer from a number of shortcomings (Alawode, 1997). Firstly, the existence of a stable money demand function is the cornerstone of the MABP. However, there is no general consensus about the precise specification of the money demand function and no justification is provided for selected specification. (Boughton, 1980)has pointed out that there is ample evidence that money demand functions are highly unstable, economies are rarely at full employment, and purchasing power parity is useless as a guide to exchange rate movements. Although these assumptions holds reasonably well in the long-run, but are very rarely fulfilled in the short-run.

The empirical violation of these assumptions brings open questions regarding the policy relevance of the monetary approach. However, (Akhtar, 1978) argued that for the MABP, stability of money demand is important rather than the nature of the specification. Secondly, extensive financial liberalization in many countries implies that multiple currencies are freely held by individuals within the same region (Connolly , 1978). If foreign currencies are more stable than domestic currency then individuals substitute domestic currency for foreign currencies. The exchange rate therefore becomes a more relevant argument in the money demand function and the greater the substitution between domestic and foreign currencies, the less stable will be the exchange rate and the money demand function (Alawode, 1997). Thirdly, the MABP assumes instantaneous adjustment of portfolios when money market equilibrium is disturbed. This assumption ignores the fact that there are lags in the adjustment process and it takes time for excess balances to dissipate. If portfolio adjustment is not instantaneous, the linkage between domestic credit and BOP disappeared and a key relationship in the structure of MABP collapses. Therefore, the speed of adjustment is a vital determinant of whether credit policy can correct BOP deficits as MABP predicts.

However, regarding the misinterpretation of the MABP, (Frenkel & Johnson, 1976) stated that:

> The monetary approach to the balance of payments asserts neither that monetary mismanagement is the only cause nor that monetary change is the only possible cure, for balance of payments problems; however, that monetary processes will bring about a cure of some kind not necessarily very attractive unless frustrated by deliberate monetary policy action, and that policies that

neglect or aggravate the monetary implications of deficits and surpluses will not be useful in their declared objectives.

It is argued that the policy proposition of the MABP can only be hold if the change in money demand is independent of the rate of change of domestic credit. This is possible only in the long run. However, in the short run, it is unlikely that nominal income and interest rate will be unaffected by the change in domestic credit. Furthermore, BOP is unlikely to be a monetary phenomenon if domestic credit is not exogenous and can be affected by nonmonetary forces such as tariffs. If stock-flow equilibrium is to be restored after a change in a real variable, the domestic credit must necessarily be changed, implying that domestic credit is endogenous and is determined by real factors in the long run. Therefore, domestic credit may not be a useful policy variable. In this case real analysis of the BOP might be preferable to a monetary one (Curri, 1976).

Despite the various shortcoming outlined above, the MABP remains a useful analytical tool for policy purposes. The MABP has continued to serve as the theoretical fulcrum for IMF-sponsored stabilization programmers in developing countries. For example, the monetary approach clearly warns that policy of excessively expansionary monetary policy will lead to a depreciation of domestic currency and BOP deficit via an outflow of international reserves. Hence, for the correction of the BOP deficits, monetary restraint is required.

The MABP contain no clear-cut specification of the dynamics of adjustment to disequilibrium. It simply relates the BOP to changes in money demand and domestic credit, which is the outcome of an adjustment process, but does not describe the channels, through which a disturbance to equilibrium is eliminated (IMF, 1987). Hence, due to the lack of a clear-cut adjustment mechanism, a substantial degree of confidence in the MABP is impossible.

The monetary approach to the balance of payments relates the balance of payments directly to the demand for and supply of money. In a closed economy analysis, the main interest is focused on the effects of variations in the nominal stock of money (monetary base), on interest rate, output and domestic price level. However, in a small open economy, the money supply can no longer be considered an exogenous instrument because it can be made to change through surpluses and deficits in the balance of payments. Therefore, it can be said that the monetary approach to the balance of payments is concerned with the relationship between the domestic component of money stock, prices, output, interest rate and the balance of payments.

On the demand side of money, the monetary approach assumes that, in an open economy, price, income and interest rates are exogenously determined. Being exogenously determining factors, the monetary authority cannot influence the demand side of the money. So, the demand side of money has to be controlled through the supply side of it. So, when the nominal or actual demand for money increases, there will be a tendency for reserve inflows and when demand for money decreases it tends to outflow of the international reserve. This shows that money supply and money demand have a relationship with international reserve or balance of payments.

1.2 Statement of the Problem

Despite large recorded trade deficits, Nepal often maintains a surplus in its current account thanks to surpluses in services (including tourism), official aid transfers, and increasingly large remittances from Nepalese living abroad, and in spite of unrecorded trade and smuggling across the Indian border. The IMF reported small surpluses on Nepal's current account of $24 million and $28 million respectively, for the fiscal years 1998/99 and 1999/2000, even exclusive of official aid transfers. Adding in official transfers brought the total current account surpluses for these years to $98 million and

$114 million, respectively, representing 2% to 3% of GDP. Nepal's overall balance of payments was positive for the fiscal years 1998/99 and 1999/2000, at $136 million and $192 million, respectively, as outflows of capital and other payments were estimated to be more than offset by inflows of capital grants and official disbursements. However, in 2001/02, by IMF's preliminary estimate, Nepal's overall balance of payments was a negative $77 million (1.4% of GDP) due primarily to a falling off in foreign aid. Official reserves held by the central bank in 2000/01 were initially estimated to be sufficient to cover 6.7 months of imports, just above the 6 months' coverage deemed financially prudent. However, of these reserves, about $290 million were being held in Indian rupees, with about $732 million in convertible currencies, enough to cover only 4.8 months of imports. Total external debt in FY 2000/01 was $2.55 billion, about 46% of annual GDP. Nepal's debt service ratio (the ratio of annual payments on the debt to annual exports) was a low 6% in this period, reflecting the highly concessional nature of its external finance. Nepal's debt has never been rescheduled. Its last arrangement with the IMF was in October 1992 under the Extended Structural Adjustment Facility (ESAF), for a line of credit of SDR 33.5 million—47% of Nepal's quota—of which only half, SDR 16.79, was ever drawn down by Nepal. The obligation was scheduled to be fully repaid by 2006, with payments of SDR 2.4 million in 2003; SDR 0.8 million in 2004; SDR 0.2 million in 2005; and SDR 0.2 million in 2006.

Countries that are not self-sufficient require substantial amounts of foreign exchange reserves in order to fulfil the world demand for it. Net importers like Nepal need good management of foreign exchange reserves as they are used to cover import bills. Excessive accumulation of reserves however increases domestic money supply whichin turn affects macroeconomic variables such as interest rates, production, employment, imports, exports, price level and exchange rates, ultimately affecting a country's balance of payments.The monetary approach to the balance of payments relates the balance of

payments directly to the demand for and supply of money. In a closed economy, the main interest for analysis is focused on the effects of variations in the nominal stock of money (monetary base), on interest rate, output and domestic price level. However, in a small open economy, the money supply can no longer be considered an exogenous instrument because it can be made to change through surpluses and deficits in the balance of payments. Therefore, it can be said that the monetary approach to the balance of payments is concerned with the relationship between the domestic component of money stock, prices, output and the interest rate.

The following three issues are the major problems of the study.

i. How demand for money and supply of money function behaviour affect overall BOP in the economy?

ii. What major factorsbring disequilibrium in the BOP?

iii. Is there any significant role of money supply in the disequilibrium of balance of payments?

1.3 Objectives of the Study

1.3.1 General Objective

The primary objective of this study is to analyse the balance of payments of Nepal from the monetary approach.

1.3.2 Specific Objectives

The following are the specific objectives of the study:

i. To analyse the behaviour of the demand for money and supply of money functions that effect in equilibrium of the BOP.

ii. To identify the macroeconomic variables that are responsible for creating disequilibriumin the BOP of Nepal.

iii. To interpret the role of money supply in the BOP disequilibrium.

1.4 Significance of the Study

The important syndrome of Nepal is its monetary dualism. It implies the coexistence of non-monetized rural economy and monetized economy. However, Nepalese economy is continuously transforming from non-monetized economy to monetized economy that will consequently affect the BOP but this model may not sufficiently cover these factors. This type of dualism bears problems for estimation of macroeconomic variables too. There are numerous factors which affect the BOP, and these all are not included in this study. This study only includes the macroeconomic variables level of income, price, interest, money multiplier, net domestic asset and net foreign assets as influencing factors for BOP changes.

1.5 Limitations of the Study

- Econometric research work in Nepal is seriously inhibited by a wide range a data shortcomings.

- For the purpose of the study, we require consistent time series data on variable that are believed to influence the demand for money, supply for money and balance of payments.

- There are no quarterly series on GDP. This has forced us to use annual data, which is of limited usefulness for analysing the seasonal variations in the demand for money and balance of payment.

- There is complete absence of any information on certain key variable like wealth, capital stock and monetized income.

- Besides, there is no suitable price index, such as the general price index, to convert the nominal money stock and constant prices.

- Though not a satisfactory way to do, values of M1 and its components, time deposits are converted to constant prices by using GDP deflator. Because of wider

coverage, the implicit GDP deflator is assumed to be more superior to CPI as a means of deflator.

- The interest rate variable also poses some problems, while demand deposits with commercial banks do not carry any interest earnings, the rates of interest on time deposits differ according to the length of the time period to which a view to ascertain the degree of suitability between money and financial assets of different durations.

1.6 Organization of the Study

This study has been organized withinfive different chapters.

The first chapter contains the brief introduction of the subject matter i.e. background of the study, statement of problem, significance of study, objective and limitation of the study.

The second chapter is an explanatory section of the thesis. It reviews the literatures regarding the price and brief sketch of previous research work.

The third chapter acknowledges the research methodology used in this study. It consists of research design, sources of data, data processing procedure, tools and techniques of analysis used.

The fourth chapter is truly an analytical section of the thesis. In this fourth chapter, data presentation and analysis with the help of selected tools and techniques have been included.

The final chapter consist summary of the overall study, conclusions from the analysis of data and put forward recommendations to improve the existing situation

CHAPTER II
REVIEW OF LITERATURE

2.1 Theoretical Review

From the earliest time, trade has involved discrepancies in values exchanged, settled in credit or money; and these discrepancies constitute the origin of the concept of "balance of payments" (Mundell, 1972). The term itself entered the English Economic Literature during the Mercantilist period, eventually replacing "over plus", "overvalue", "balance of accounts", "balance of remittance", and "grand balance of payments" (Viner, 1937). In its original usage, a 'balance of payments' meant an excess of payments over receipts and under the gold standard this excess meant a gold outflow. But the term soon acquired the neutral meaning of the "state of the balance of international accounts", whether negative or positive. Thus one speaks of a "balance of payments problem" whether gold is flowing in or out, and the term "balance of payments theory" is used to cover the entire subject (Mundell, 1972). Now the accounting balance of payments records both regular transactions and transactions made to settle any gap between regular purchases and sales. In other words, the accounting framework records the international exchange of goods and services and movement of capital.

This measurement of international economic performance is divided into three accounts: the current account, the capital account and the financial account. The current account records all transactions of goods and services and unrequited transfers in a country: they are referred to as autonomous transactions and they help to determine rather than depend on the balance of payments. On the other hand, the

capital account records all exchanges and money capital for various kinds of real or financial assets. Thus, the capital account transactions are "compensatory transactions" as they often only reflect short falls or surplus as might occur in the current account, and the financial account therefore, is that part of the balance of payment that is referred to as the "balancing item", or reserve movements. It wipes out such discrepancies that might arise, like when the volume of transaction of commodities and assets do not balance as they should (Ellsworth and Leith, 1975, p.p. 304-361).

Due to the double entry of each transaction, the balance of payments accounts will balance. Each of the three broad accounts is more finely divided. (*See Appendix IV*)

The approach emphasizes the budget constraint imposed on the country's international spending through which the excess of domestic flow demands over domestic flow supplies, and of excess domestic flow supplies over domestic flow demands, are cleared. Accordingly, surplus in trade account and capital account respectively represent excess flow supplies of goods and securities, and a surplus in the monetary account reflects an excess flow demand for money. Consequently, in analyzing the money account, the rate of increase or decrease in the country's international reserves, the monetary approach focuses on the determinants of the excess flow demand for or supply of money. A consistent use of budget constraint implies that the monetary approach recommends an analysis in terms of the behavioral relationships directly relevant to the money account, rather than an analysis in terms of the behavioral relationships directly relevant to the other account and only indirectly to the money account via budget constraint.

A deficit in terms of an excess of aggregate payments over receipts has two important aspects, its monetary implication, and its relation with the aggregate activity of the economy. This implies one of two alternatives. The first is that the cash balances of residents are running down, as domestic money is transferred to the foreign exchange authority. Eventually, cash balance would approach the minimum that the community wished to hold and in the process the disequilibrium would cure itself, through the mechanism of rising interest rate, tighter credit creations, reduction of aggregate expenditure, and possibly an increase in aggregate receipts. In this case where the deficit if financed by dishoarding; it would be self-correcting in time, but the economic policy authorities unable to allow the self-correcting process run its course, since the international reserves of the country may be a small fraction of the money supply that would be exhausted well before the running down of money balance had any significant corrective effect.The second is that the cash balance of residents are filled again by open market purchases of securities by the monetary or foreign exchange authority, as would happen automatically if the monetary authority followed a policy of pegged interest rate or the exchange authority automatically re-lent to residents any domestic currency received from residents or foreigners in return for sales of foreign exchange. In this case, the money supply in domestic circulation is maintained by credit creation, so that the excess of payments over receipts by the residents could continue indefinitely without generating any corrective process, until reserves exhaustion force the economic policy authorities to change their policy in some respect.

Hence, the balance of payments deficit implies either dishoarding by residents, increase in velocity of circulation, or credit creation by the monetary authority to maintain money supply. Similarly, the balance of payments surplus necessarily

involves either an increase in hoarding by domestic residents or a decline in domestic credit created by the central bank. Since a deficit associated with increasing velocity of circulation will tend to be self-correcting, a continuing balance of payments deficit ultimately requires credit creation to keep it going.

Therefore, we consider balance of payments deficit as being essentially monetary phenomenon under either of two cases: too low a ratio of the international reserve relative to the domestic money supply, so that the economic policy authorities cannot rely on the natural self-correcting process, or follow of governmental policies which oblige the authorities to feed the deficit by credit creation.

The difference between Keynesian and monetary models of the open economy is that the Keynesian assumes that the central bank can sterilize the effect of the balance of payments on the money stock, while Monetarists are models in which sterilization does not occur. This is because sterilization involves motivating (rising or falling interest rate) wealth holders to alter continuously their portfolio balance between money and bonds. This in turn reinforces surplus or deficit on balance of payments through capital flow and outflow (Rosalind L. & Alexander R. 1982). The important conclusion is that a country which operates a fixed exchange rate or managed float cannot have an exogenously determined money supply unless it can be sterilized successfully.

The money supply cannot be controlled by the monetary authorities because it is affected by the balance of payments, which in turn depends on decision of the private sector, given the exchange rate the monetary authorities decide to maintain. If foreign currency flows cannot be sterilized, then the government cannot choose both the

exchange rate and the money supply targets. If the government chooses a particular exchange rate, then the money supply has to adjust to be consistent with it.

Under flexible exchange rate the balance of payments remain at zero because the exchange rate adjusts to achieve overall balance of payments equilibrium. The domestic money supply therefore is exogenous because the base money is exogenous in the same way as in closed economy. The government can now select the stock of money as a policy target, but has to accept whatever the rate of exchange that is consistent with money supply target.

If the exchange rate is managed then the resulting imbalance of the balance of payments affects it so that the domestic money supply is endogenous.

Anti-monetarists argue that the money supply is not exogenous under any circumstances because the multiplier (m) varies substantially and erratically and because the base money is not under monetary authorities control. Instead they have to vary the base money in response to the private sectors' demand for credit and money, hence the money supply always adjusts to whatever the demand for it.

Given this difficultly of sterilizing a persistent surplus or deficit over an extended time period, the monetary approach to the theory of the balance of payments adjustment mechanism is along run phenomenon. Musa (1976) noted this phenomenon by stating that the feature of the monetary approach is a concentration on the long run consequences of monetary policy and parametric changes for the behavior of the balance of payments coupled with an eclectic view of the processes through which these long run consequences come about. Mundell (1960) demonstrated that monetary policy is a more effective than fiscal policy, in attaining

external balance, because monetary policy improves both the current and capital accounts of the balance of payments.

Under fixed exchange rate an expansionary monetary policy must always leads to a deterioration in the BOF, while a contractionary monetary policy will always lead to an improvement in the Balance of Finance (BOF). When monetary policy starts from an equilibrium position with BOFzero, its effects are nullified in the long run under a fixed exchange rate. Here the money stock must be largely endogenous. This conclusion also holds for an open economy model with perfect capital mobility. If monetary expansion occurs when the BOF is in surplus, then this would speed up the increase in the money stock that would have eventually occurred as a result of a surplus. The surplus will diminish and there will be smaller accumulation of foreign reserves as a result of monetary expansion. Here the effect of the policy on the domestic money stock will not be nullified. Similarly, when the BOF is in deficit under a fixed exchange rate, a monetary contraction will accelerate the adjustment in the domestic money stock that would eventually occurred as a result of foreign exchange reserve losses. This will limit the extent of reserve loss and in this case the money contraction is not nullified in the long run.

Thus the monetary approach views the BOP as a purely monetary phenomenon, with money play a fundamental role in its determination.

2.1.1 The monetary approach to the balance of payments

Literature on the fundamental basis of the MABP in a country has been generated by scholars such as (Dornbusch, 1971), (Frenkel & Johnson, 1971), (Laffer, 1969), and (Mundell, 1971). Mundell (1971) emphasized that monetary factors, not the real factors, exert the most influence on the balance of payments through their effects on

the currency and capital accounts of a country. He also contended that disequilibrium in a country's balance of payments shows an equivalent discrepancy between that economy's money demand and supply (Alawode, 1997). The balance of payments account records a country's international economic performance, with the two most significant accounts being the current account and capital account. Whereas the current account records all transactions of goods and services and unrequited transfers in a country, the capital account records all exchanges and money capital for various kinds of real or financial assets. The latter account is important as it relates domestic transactions to international transactions (Fleermuys, 2005).

When there is disequilibrium in a country's balance of payments, authorities often battle with how to correct it. Whether authorities can actually do something to remedy such a situation for example, through policy actions or whether there are self-correcting mechanisms in place is often a point of debate. Throughout the years different adjustment mechanisms to such disequilibria in a country's balance of payments have been identified (DuPlessis et al., 1998). Three of these mechanisms are the monetary approach, the elasticities approach, and the absorption approach.

The monetary approach to balance of payments (MABOP) is a long-run theory that originated much earlier than the elasticity and absorption theories. The approach can be thought of as the modernized version of the specie flow theory propounded by David Hume in the mid-1700's. According to thisapproach the BOP consists of the current account, capital account and the official reserves account. The main proponents of the monetary approach to BOP surfaced in the late 1960's and throughout the 1970's and these were Robert A. Mundel, Harry G. Johnson, Jacob A. Frenkel, David I. Meiselman, Marc A. Miles and Arthur B. Laffer. It was later

advanced by the International Monetary Fund (IMF) economists with the view of restoring the role that money and money balances play in the adjustment process.

The approach which is based on the general equilibrium framework views the overall balance of payments as essentially a monetary phenomenon. Under a fixed exchange rate system, excess money supply results in increased domestic spending and this increases domestic demand for foreign goods. Foreign exchange reserves are eventually used to finance the high demand and this worsens the BOP. The outflow of the foreign exchange will reduce money supply until equilibrium is restored. Excess demand for money will require the opposite adjustment. Defining the balance of payments mechanism as essentially a monetary phenomenon does not imply that only money plays a key role, the approach takes into consideration the influence of real variables such as interest rates and the level of income on the BOP behavior, (Mussa, 1974).

The elasticities approach, which has been associated with (Robinson, 1937), places its emphasis on the effects of exchange rate changes on the exports and imports of a country and, hence, on the trade account balance, whilst ignoring all other variables such as income. This approach as an aspect of equilibrium also excludes the capital account on the basis that an excess or deficiency of exports in relation to imports will result in a balance of payments surplus or deficit; thus, its main focus is on the current account to the balance of payments. Furthermore, this approach assumes that the price elasticity of supply (domestically and internationally) is equal to infinity (Fleermuys, 2005).

Purported by (Alexander, 1952) the absorption approach looks at the balance of payments from the national income accounting perspective. The approach intends to

show how devaluation changes the relationship between expenditures and income in both nominal and real terms. The approach which is limited to the balance of trade (current account) emphasizes how domestic spending changes relative to domestic production. According to the approach, if a country is in deficit it implies that domestic expenditure on consumption and investment (absorption) exceeds national income (output).The approach is of the view that BOP disequilibrium is a result of domestic consumption and therefore the current account improvement or deterioration depends on the relative changes on the domestic income and domestic expenditure.

The MABPhas largely been criticized for emphasizing monetary factors without taking into account that real factors also play a role, as it argues that balance of payments is in effect a monetary phenomenon (Howard &Mamingi, 2002). Nevertheless, the fact that the MABPis said to be a monetary phenomenon does not mean that it claims all other factors are unimportant. Rather, the approach explains that, since disequilibria in the balance of paymentsare caused by monetary imbalances, it would be more appropriate to use policy solutions that rely on monetary policy.

2.2. Alternative Approaches to the Balance of Payments

There are two alternative approaches to balance of payments: the elasticities approach, and the absorption approach.

2.2.1. The elasticities approach

The elasticities approach, which has been associated with Robinson (1937), places its emphasis on the effects of exchange rate changes on the exports and imports of a country and, hence, on the trade account balance, whilst ignoring all other variables

such as income. This approach as an aspect of equilibrium also excludes the capital account on the basis that an excess or deficiency of exports in relation to imports will result in a balance of payments surplus or deficit; thus, its main focus is on the current account to the balance of payments. Furthermore, this approach assumes that the price elasticity of supply (domestically and internationally) is equal to infinity (Fleermuys 2005). The elasticities approach applies the Marshall-Lerner condition, which states that the sum of the elasticities of demand for imports and exports must be more than 1 in absolute terms for a devaluation to improve the balance of payments (Du Plessis et al., 1998).

2.2.2. The absorption approach

The absorption approach, which has been linked to Alexander (1952), was developed to highlight the importance of income changes in the adjustment process (Du Plessis et al., 1998:251). The absorption approach intends to show how devaluation might change the relationship between expenditures or between absorption and income – in both nominal and real terms. It is worth noting that great emphasis is laid on the current account balance. This approach contends that the devaluation of a currency would lead to an increase in inflationary prices, which would in turn revoke the initial effect of an increase in prices. This resulting process can only be prevented if inflation itself deflates the aggregate demand for goods through an income redistribution effect or through a reduction in the real value of existing money balances (Fleermuys 2005). The absorption approach is based on the national income identity:

$$Y = C + I + G + X - M \cdots \cdots \cdots (5)$$

Where

Y = national income

C = private consumption of goods and services purchased at home and abroad

 I = total investment, by firms as well as by government

G = government expenditure on goods and services

X = exports of goods and services, and M = imports of goods and services.

Then C + I + G are combined into a single term, A, which represents domestic absorption (i.e. total domestic expenditure):

$$A = C + I + G \cdots \cdots \cdots (6)$$

Then, Y = A + X – M $\cdots \cdots \cdots$ (7) Stating that national income equals absorption plus the trade balance, rewritten as

$$X - M = Y - A \cdots \cdots \cdots (8)$$

This states that the trade balance is equal to the difference between domestic income and total absorption. Equation (8) is the fundamental equation of the absorption approach. It implies that, if total absorption (expenditure) exceeds income (production), then imports will exceed exports, resulting in a balance of payments deficit. If the opposite occurs, i.e. where income exceeds absorption, then the balance of payments will be in surplus. A balance of payments deficit can, therefore, only be corrected if the level of absorption changes relative to the level of income (Du Plessis et al., 1998:251). One aspect that these two alternative approaches have in common is that they assume balance of payments disequilibria are permanent. Furthermore, both approaches have been criticized mainly for not taking into account the capital account of the balance of payments. These mechanisms concentrate only on the current

account and, thus, ignore the particular impacts of capital movements on the balance of payments (Coppin, 1994:77).

2.3 Report Review

An enormous number of studies have emerged throughout the years testing the validity of the MABP empirically. There is credible evidence that the MABP in fact applies to small open economies with fixed exchange rates. Most parts of the empirical literature were based on the 'reserve-flow equation', where a country's international reserves, or the rates of change in reserves, are regarded as the dependent variable. On the other hand, the independent variables vary in the different studies. They can include domestic income, prices, the interest rate, government expenditure, money multiplier, money stock, the exchange rate, and demand for nominal and real money balances. (Umer, Muhammad et al, 2010).

(Aghevli & Khan, 1977) Performed an empirical test on the MABP for 39 developing countries and found highly significant results, maintaining that the mechanisms underlying this approach held strongly for these countries.

(Leon, 1988), who examined Jamaican data, found that the MABP's predictions were not rejected. He used the reserve-flow and sterilization equations in single and simultaneous equations and found strong evidence that the reserve-flow equation was working; however, he also observed that monetary authorities were in fact sterilizing reserves in Jamaica.

(Watson, 1990), in a study where he modelled Trinidad and Tobago's balance of payments for the period 1965–1985, found that, although all the other variables were significant and had the correct signs, modelling the change in international reserves as

the dependent variable found a coefficient which was less than 1; thus, it was not in accord with what the MABP predicted.

A study by Jimoh (1990) also found strong evidence of the MABP in Nigeria. His suggestion (ibid.74) was that "monetary authorities in Nigeria must pay adequate attention to domestic credit creation in any of their attempts to control balance of payments in Nigeria".

(Dhliwayo, 1996)studied "the monetary approach to Zimbabwe's balance of payments during the period 1980 to 1991". It examines whether excess money supply played a role as a disturbance using multivariate cointegration and error-correction modelling. The empirical results suggest that money played a significant role in determining the balance of payments. The one-to-one negative relationship and strong link between domestic credit and the flow of international reserves is established

(Gaudel, 2003, p: 86) studied the monetary system of the Nepalese economy in his book. "Monetary System of Nepal". The purpose of this study in general, was to analyze the monetary system of Nepal with various components of money supply and money demand .He made various empirical studies about money market, money demand and currency substitution in Nepal by using various econometric models. He argued that the BOP often acts as critical constraints in economic activities .So, it is useful to examine the monetary approach to the BOP in the context of small and open economy. He also showed that the BOP is substantially a monetary phenomenon through which demand for and supply functions will be determined.

(McNown, 1980)conducted a test on the monetary approach to balance of payments for Nepal for the period of 1958-1978. He observed macroeconomic policy variables such as, import quotas, tariffs, dual exchange rate regimes and export promotion

activities designed to correct the balance of payments were ineffective. Rather he found that there is one for one relation between net domestic creation and the loss of foreign assets. And, he has recommended that domestic credit creation or contraction is more effective tool which can correct the deficit in the balance of payments for long period of time.

(Mainaly, 1981)tried to find out significant factors causing balance of payments problem in Nepal. He used Johnson's small country model and Aghevli Khan Model to analyze the data for the period of 1964-1980. The study shows that domestic credit creation can be used effectively to influence surplus or deficit in the balance of payments. This study also shows that an increase in income increases the overall balance of payments. He also found that the use of exchange rate as a policy variable will not help to correct the balance of payments problem. His study reveals that the monetary approach to the balance of payments is an efficient tool to study the balance of payments problem of Nepal.

(Upadhyaya, 1983)analyzed the balance of payments in Nepal for the period of 1974-82. He separated total imports from India and imports from other countries. Expenditure elasticity of imports for India was lower than that from other countries. In general, imports from India were found inelastic but those from the rest of the world were found highly elastic. Goods imported in Nepal were found price inelastic in the long run in the study.Upadhyaya found that an increase in net domestic asset increases money supply and to some extent the expenditure, GDP, price and imports in the short run. But in the long run, the growth rate of imports was found more influenced than other variables. An increase in imports causes a deficit in the balance of payments as it reduces the net assets holding of the central bank. He concluded that the use of credit policy by the Nepal Rastra Bank to enhance the long run growth of

the Nepalese economy is inappropriate because it would bring about a permanent decrease in international reserve of the country.

He further analyzed the relationship between deficit financing and balance of payments in Nepal for the period of 1970-82. He found out that an increase in the government expenditure increases government demand for credit from the central bank which ultimately increases money in which in turn increases domestic price level and imports. Increase in imports raised current account deficit, which in turn, had a negative effect on the international reserves of the central bank. According to his findings there was positive association between government expenditure and credit creation and negative association between the domestic credit creation and the international reserves of the central bank.

(Khatiwada, 1976)tested the impacts of different economic variables on the balance of payments of Nepal for the period of 1965-1990. He found that nearly one to one negative association between changes in net domestic credit and NFA of the monetary authority. Money multiplier and required reserves were found significant factors affecting NFA negatively and positively respectively. In his findings, real income and domestic prices were found significant positive effect on NFA. The coefficient of foreign prices were found less significant indicating that Nepal does not have a perfectly open economy, i.e. domestic price are not determined by international prices alone. Results of his test show that changes in exchange rate have no impact on foreign assets flow. It is because the variable was found insignificant in his study. Furthermore, he says that exchange rate adjustment should be viewed as a tool to stabilize price rather than the balance of payments.

(Shah, 1993)analyzed the balance of payments problem of Nepal for the period of 1964-92 and tried to detect the significant factors that influence balance of payments in Nepal. She found that domestic interest, money multiplier, net domestic assets, changes in GDP and India's expected rate of inflation are significant factors to influence Nepal's balance of payments. In her study, Indian bank interest and money market interest have a positive impact on balance of payments in Nepal, but were not foundsignificant. She recommended that government should regulate monetary variables to bring favorable position in balance of payments. According to Shah, the major monetary variables are interest, expected inflation, money multiplier, net domestic assets and high powered money. She also recommended that Nepal should closely observe and monitor the change in India's expected rate of inflation and take corrective countervailing measures.

Institute of Sustainable Development (1994) analyzed the balance of payments problem of Nepal with India and found that problem is basically of monetary nature. Empirical analysis shows that an excess supply of money compared to its desired level generates additional demand for goods and services in the economy. As supply response of domestic economy is weak due to structural rigidities in production, additional demand is met through imports. The results of the test indicate that one rupee increase in net domestic assets of the banking system causes a proportional deficit in the balance of payments with India. Therefore, the study recommends domestic credit control of the banking system to achieve favorable balance of payments with India.

Malla (1994) has analyzed the balance of payments of Nepal for the period of 28 years (1965-1993) using monetary approach and he found that there is one to one negative and significant impact of the change in net domestic credit creation on

change in net foreign assets reserve of Nepal. According to him, increase in domestic credit leads to an increase in the money supply which create additional demand for goods and services in the domestic economy, resulting net increase in import of goods and services and outflow of foreign assets reserve to the abroad. In this way, as domestic credit creation increases, net foreign assets of the country decreases nearly by the same amount and vice versa.

Sunar (2003) analyzed the balance of payments of Nepal for the period 1983-2001. He found that GDP as negatively related with foreign asset reserve of Nepal with small magnitude. Similarly, the interest rate and money multiplier were found to be negatively associated with the net foreign assets in Nepal, though the magnitudes of these variables were very minimal. But change in net domestic assets had nearly one to negative impact on change in net foreign asset of monetary authority in Nepal. He recommended that domestic credit was only policy variable that could be very effective to correct balance of payments problem in Nepal.

Fleermuys (2005) examined the monetary approach to the Namibian balance of payments for the period 1993–2003. The empirical results showed that monetary variables do not play an overwhelming role in determining Namibia's balance of payments. The results evidently showed that, although some variables suggested by the monetary approach play significant roles, the balance of payments is not a purely monetary phenomenon. Balance of payments disequilibrium can, therefore, not be corrected only through monetary actions by the authorities.

Karki (2007) analyzed the balance of payments of Nepal for the period 1965-2005 using Bijan B. Aghevli and Mosin S. Khan model and Johnson's small country model. He found that growth rate of income is statistically insignificant to change net foreign asset of Nepal. The growth rate of domestic price level has significant positive impact with very

small coefficient to change the net foreign asset. The domestic interest is found to be statistically significant variable to influence net foreign asset holding of the monetary authority of Nepal, though the variable produces very minimal effect. Money multiplier is found to be highly significant and the coefficient of this particular variable is tending to minus one. He concluded that the desired change in the Net Foreign Asset reserve of Nepal can be achieved by managing the supply and the demand for money effectively.

Khand (2010) analyzed the macroeconomic variables on balance of payments for the period 1978-2008 using Johnson's small country model. He found that growth rate of income is statistically insignificant to change ratio of net foreign asset to money supply of Nepal. The growth rate of domestic price level has significant positive impact to the change in the ratio of net foreign asset to money supply of Nepal. He found the growth rate of domestic interest rate on net foreign assets is inconsistent and statistically insignificant. And, the domestic credit creation is found statistically very significant and consistent to influence the NFA.

Umer, et al., (2010) in their paper examined the monetary approach to Pakistan's balance of payments for the period 1980-2008. Through the reserve flow equation, it tests whether excess money supply played a significant role as a disturbance by using Co- integration test and error correction modeling. The empirical results showed that monetary variable does not play an overwhelming role in determining Pakistan's balance of payments. The results evidently showed that, although some variables suggested by the monetary approach play significant roles, the balance of payments is not a purely monetary phenomenon. Balance of payments disequilibrium can, therefore, not be corrected only through monetary actions by the authorities.

Most of the empirical studies carried out have focused on using the vector error correction mechanism and other method of analysis without using the impulse response function and

variance decomposition to analyze the MABP in Pakistan, Namibia and Bangladesh. Effort was made to use the log linear model to analyze MABP in Nepal in this study. This study intends to fill this gap. Therefore, it would be interesting to empirically verify using the simple multiple regression model to determine whether balance of payments is a monetary phenomenon or not during the period of study.

2.4 Research Gap

Different scholars and researchers have given their different opinions, finds and conclusions in the field of analysis of monetary approach to balance of payments in Nepal .From the above literature review, it seems that this study is trying to find out something new in the field of balance of payments and its determinants. There are three major theories in the field of international economics that explain the BOP disequilibrium and movement of international reserves. One of them is monetary approach to thebalance of payments. The above literature reviews prove that researchers have been increasingly using MABP to understand and explain the BOP fluctuations by using international reserve equation and econometric analysis. The present study employs the MABP to explain the relationship among monetary policy, domestic credit policy and flow of international reserves in the context of BOP for small and open economy like Nepal. It is because of the fact that the BOP study of Nepal by using monetary approach was carried outin 2010. The time after that, the study of BOP by using monetary approach is not being carried out and this study tries to cover the gap. The variables used in this study have been studied separately; their simultaneous study on the overall BOP by using simple liner regression model .So, the present study has the main motto of the finding out these specific variables that have influenced the fluctuation in demand for and supply of money as well as the overall BOP of the small developing countries like Nepal. It is also expected that this study might be useful for further research studies for the concerned authority too.

CHAPTER III
RESEARCH METHODOLOGY

A suitable methodology for a systematic research study is a key to achieve the required objectives. Methodology stated below has been developed to fulfil the set objectives of the research study. This chapter, therefore deals with the methodologies used in the study

3.1 Research Design

Research Design is the strategy and framework of conducting research work. The study is based on descriptive as well as empirical research methodology. The primary objective of this research is to analyse the balance of payments of Nepal through applying monetary approach.

3.2 Data Collection Technique and Sources of Data

The collection of data is the important part of research study. There are always two types of data- primary and secondary. But, this study is conducted with the help of secondary data only. There are different national and international agencies that provide the data for different macroeconomic variables. The national sources are:

- Nepal Rastra Bank (NRB), Annual Reports, Quarterly Bulletin
- Ministry of Finance (MOF); Economic Survey
- Central Bureau of Statistics
- Statistical Year Book of Nepal, Central Bureau of Statistics

The international sources are:

- International Monetary Fund (IMF), International Statistical Financial Year Book.

The relevant statistical information's are collected from Quarterly Economic Bulletin of Nepal Rastra Bank, Economic survey, Central Bureau of Statistics.

3.2.1 Quality of Data

The quality of data could be the question of the study. Still it is felt quite difficult to measure the quality and relevance of data. So that data from only renowned and authorized agencies are collected. There are different national and international sources of data, which are mentioned already. These data from different sources are found to be identical and some variations. So still it creates difficulties to pick up the correct information. However, the data of Quarterly Economic Bulletin Nepal Rastra Bank have been found to be best standard and qualitative. Students, researchers, and scholars have been found to be using this bulletin for a long time. To solve confusions, necessary corrections are applied from the scholars of research division of Nepal Rastra Bank.

In this study, time series data have been employed for the period of FY 1990/91 to FY 2015/16. The secondary sources of data are mainly taken from various publications of Nepal Rastra Bank (NRB), Central Bureau of Statistics (CBS), Ministry of finance (MOF), National Planning Commission (NPC) and International Monetary Fund (IMF) for the period FY 1990/91-FY 2015/16.

The variables descriptions alone their sources are explained as the source for the balance of payments (BOP) and net domestic assets (NDA) are taken from the

quarterly economic bulletin of NRB, real output (Y) is measured by the real GDP at the constant price of FY 2000/01. The series is calculated using various issues of Economic Survey and deflated by the GDP deflator taken from same source, the domestic price level (P) is measured by the National Urban Consumer Price Index (CPI) taking base year 2014/15 and its source is quarterly economic bulletin of NRB; and the domestic interest rate (I) is measured in the form of fixed deposit rate of commercial banks for one year and it is taken from quarterly economic bulletin of NRB(2016) publication of Research Department of NRB on 2016, Inflation in Nepal.

3.3 Data Collection Procedure

Table 3.3.1:Definition of Variables and Expectations

Variables	Measure/Definition	Expected sign
Balance of Payments	Net foreign Assets	
Inflation	Consumer price index	*Negative;* An increase in the general price level depresses demand for real balances resulting in excess money supply and hence reserve outflows
Interest Rate	Prime rate	*Negative*; An rise in real interest rates reduces demand for liquidity hence creating excess money supply and reserve outflows
Domestic Credit	Net claims on the private sector by financial sector	*Negative* An increase in domestic credit increases money supply and hence reserve outflows
Real GDP growth	Level of domestic income/real GDP	*Positive;* Increase in domestic income is expected to increase foreign reserves
Money Supply	Broad money supply(M2)	*Positive;* Increase in money supply is expected to reserve outflows

3.4 Data Processing Procedure and Analysis

The monetary approach to balance of paymentsis applied for selecting and forecasting the influencing macroeconomic variables for the balance of payments. The monetary approach to Nepal's balance of payments is tested on the basis of annual data taken from various secondary sources. To analyse the data for drawing the conclusions, statistical tools like regression equations are applied for the study. The coefficient values of explanatory variables are estimated in the regression model by using SPSS computer program. To test the explanatory power of the independent variables, the coefficient of determination (R^2) is used. Statistical criteria (t-test and F-test) are also employed to evaluate the significance of the variables.

3.4.1. Coefficient of Multiple Determinations (R^2)

Coefficient of multiple determinations explains how good is the fit of the estimated regression line to the sample observations of Y and X. therefore, it is the measurement of the dispersion of observation around the regression line.

$R^2$is taken as a measure of goodness of fit as it shows the percentage of total variation of the dependent variable that can be explained by the independent variables of the multiple determinations. The higher the dispersion of the observations from the regression plane, higher the total variation. In other words, closer the observation to the line, the better the goodness of fit, i.e. the better explanation of the variations of Y by the change in the explanatory variables (Aryal, 2010)

The value of R^2 ranges from 0 to 1. If the value of R^2approaches to 1, the regression plane thus estimated is a good fit and if it approaches to 0, it implies the bad fit. It is

because increasing R^2 means explaining more of the total variation by regression plane.

3.4.2 Adjusted Coefficient of Multiple Determinations (Adj. R^2)

The value of numerator in R^2 increase with the addition of new explanatory variable that finally affect the presentation of the result and decision made based on R^2(Aryal, 2010). So, the adjusted R^2 is calculated to overcome this problem.

$$\text{Adj. } R^2 = 1 - \frac{\text{Unexpected variation / d.f.for unexpected variation}}{\text{Total Variation / d.f.for total variation}}$$

$$= 1 - \frac{\Sigma e^2 / n - k}{\Sigma y^2 / n - 1}$$

Where,

n = number of observations,

k = number of parameter,

d.f. = degree of freedom.

3.4.3 Test of significance of parameters

It is applied for judging the statistical reliability of the estimates of the regression coefficients. Gujarati defines test of significance is a procedure by which sample result are used to verify the truth or falsify of a null hypothesis (Gujarati, 2004). In order to test the hypotheses, following tests are performed:

i. t-test

Hypothesis testing or test of significance is different for large and small sample cases. In practice, most of the statistician conclude that a large samples is that which exceed 30 samples units (i.e. n>30). For small sample (i.e. n<30), t-test is applied.

The computed t-test is compared with the tabulated value of a certain level of significance for a given degree of freedom. If calculated value is grater then tabulated value, the null hypothesis is rejected inferring that estimated coefficient is significantly different from zero. It is defined by:

$$t = \frac{\hat{\beta}_i}{S.E.(\hat{\beta}_i)}$$

Where, $S.E.(\hat{\beta}_i)$ = Standard error of $\hat{\beta}_i$

$$= \sqrt{Var(\hat{\beta}_i)}$$

The t statistics has N-k degree of freedom.

N= No. of observation,

K =No. of parameters in the regression.

ii. F-test

This is used to examine the overall significance of the model. It is also a test of significance of R^2. It is also known as the variance ratio test and is mostly used in context of analysis of variance. The value of F must lie between 0 to ∞ .

It is calculated by the following formula.

$$F = \frac{R^2 / K - 1}{(1 - R^2)/ N - K}$$

Where, R^2 = coefficient of determination

K = numbers of parameters and N = numbers of observation in the sample.

There is direct relationship between F and R^2. The larger the R^2, greater the F value. In the limit, where $R^2 = 1$, then F is infinite. The calculated F-variance ratio is compared with the tabulated value at specific level of significance with $V_1 = (k-1)$ and $V_2 = (N-k)$ degree of freedom. The same rule rejecting and accepting the hypothesis are applicable as in the case of t-test.

3.5 Specification of the Model

The formal monetary model of the balance of payments consists on, the money demand function, a money supply equation and an equilibrium condition.

Money demand function

The demand for real money balances can be written as:

$$M^d/P = a\, y^{b1} i^{b2} \pi^{b3} \qquad\qquad (1)$$

Where M^d is the demand for nominal money balances; P is the domestic price level; y is the level of domestic real income; i is the domestic interest rate; and π is the rate of inflation. Equation (1) can be written as in logarithmic form:

$\ln m^d - \ln p = \ln a + b_1 \ln y + b_2 \ln i + b_3 \ln \pi$

$\ln m^d = \ln a + \ln p + b_1 \ln y + b_2 \ln i + b_3 \ln \pi$

Taking derivative with respect to time and denoting it by (g), above equation becomes as:

$g\, m^d = \alpha_0 + \alpha_1\, g\, p + \alpha_2\, g\, y + \alpha_3\, g\, i + \alpha_4\, g\, \pi + u$

where: $g\,x = (1/x)\,(dx\,/\,dt)$, and $x = p,\ y,\ i,\ \pi$ and u is the stochastic disturbance term.

The parameters α_2, α_3 and α_4 are the elasticity of real income, interest rate and rate of inflation with respect to nominal money balances respectively, thereare expected to have the following signs:

$$\alpha_2 > 0, \qquad \alpha_3 < 0\,, \qquad \alpha_4 < 0$$

Since the demand for money is assumed to be homogeneous of degree one in price level, so the expected sign of $\alpha_1 = 1$.

Money supply equation

The money supply is defined as equating the product of money multiplier and the high-powered money.

$$M^s = Km \qquad\qquad (2)$$

Where M^s is the supply of money; K is the money multiplier and m is the monetary base (volume of high-powered money)

By definition the stock of high-powered money or the liabilities of the monetary authorities (m) is equal to the stock of international reserves(R) and domestic assets (net of liabilities) holdings of the monetary authorities (DC).

$$m = R + DC \qquad\qquad (3)$$

Putting it in equation (2):

$$M^s = K\,(R+DC)$$

Writing equation in logarithmic form we get:

$$Ln\ m^s = ln\ k + ln\,(R + D)$$

Where, $\ln m^s$ is the log of money supply (M^s) and $\ln k$ is the log of money multiplier (K).

Taking theirderivatives with respect to time and denoting them by (g) and after some manipulation we get:

$$gm^s = g\,k + (R/m)\,g\,R + (DC/m)\,g\,DC \qquad (3a)$$

Where:

$$g\,x = (1/x)\,(dx/dt), \text{ and } x = k, R, \text{ and } DC$$

Equation (3a) can be rewritten as:

$$gm^s = g\,k + g\,r + g\,dc$$

Where:

gm^s = Growth rate of money supply. $g\,k$ = Growth rate of money multiplier

$g\,r$ = Growth rate of international reserves weighted by its share in monetary base .(R/M)

$g\,dc$ = Growth rate of domestic credit weighted by its share in monetary base.

Money market equilibrium

With the help of monetary equilibrium, we can derive the international reserves flows equations as,

$$gm^s = g\,m^d \qquad (4)$$

$$gk + gr + gdc = a + b_0 gp + b_1 gy + b_2 gi + b_3 g\pi + u$$

$$gr = \beta_0 + \beta_1 gp + \beta_2 gy + \beta_3 gi + \beta_4 g\pi - \beta_5 gk - \beta_6 gdc + u \qquad (5)$$

Equation (5) represents the key relationship in the monetary theory of the balance of paymentss. The expected signs and expected magnitudes of the parameters of equation (5) are $\beta_1 = 1$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 < 0$, $\beta_5 = \beta_6 = -1$

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

Keeping in view the objectives of the study, the data collected from various sources were analyzed using suitable analytical techniques. The results obtained from this study have been presented and discussed critically in this chapter under three major and other sub headings.

4.1. Behavioral analysis of demand for and supply of money in the economy

4.1.1 BOP and MD

4.1.2 BOP and MS

4.2. Identification of macroeconomic variables that areresponsible for creating disturbance in the BOP

4.3 Importance of money supply in the disequilibrium of BOP

4.1.1. BOP and MD

The demand for money is one of the critical variables affecting the level of aggregate economic activities in the economy. This has a decisive role in the process of transmission mechanism of monetary policy and hence the effectiveness of monetary variables on the real and external sectors of the economy. The Keynesian type of transmission mechanism which posits an indirect role of money on income depends upon the interest elasticities of the money demand and investment. The higher the interest elasticity of the demand for money, the smaller would be the change in the rate of interest required for restoring monetary equilibrium and, given the interest elasticity of investment , the lower the effect of changes in money supply on income. But if the demand for money is less sensitive to interest rate, then a small change in

money supply leads to higher change in the rate of interest needed to restore monetary equilibrium; and given the investment function, the higher would be the effect on the level of income. At the extreme case of liquidity trap where money demand is perfectly elastic with the rate of interest, no change in interest rate with respect to any change in money supply is required to restore monetary equilibrium and hence no effect on investment and income. Thus, given the interest elasticity of investment demand, the strength of the Keynesian transmission mechanism is derived from the demand for money function explaining the elasticity of demand for money with respect to the rate of interest.

Theoretically, the demand for money is cast as a function of some measure of income or wealth, the rate of return on alternative assets, and some other variables representing the structural composition of the economy. The most often debated issues in the specification of money demand function are the choice of income, the interest rate, the price variable, definition of money and economic development.

(i) Income variable

In the Nepalese context, we choose measured income as measured income as the appropriate variable. In fact, there are convincing prima facial arguments favouring the selection of measured income as the appropriate variable. First, the transaction motive of holding money presumably dominates the 'asset' or speculative motive of holding money and the level of income would be appropriate scale variable for such demand for money. Second, data on wealth are not available, nor permanent income series can be constructed because of very short time series of national income data, and income, which is regarded as a steady stream or return on wealth, would serve as a proxy for wealth variable. Third, the demand for money studies done in Nepalese

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context (Poudel, 1987 and Sharma, 1987) have found significant and stable function between income and the demand for money.

As the transaction demand for money increases, partly because of growth in the degree of monetization, a correct assessment of the rate of monetization is essential for determining the money demand in a developing economy. He argued that if the demand for money function is to be used for designing a suitable monetary policy to affect money income, the appropriate income concept would be total income rather than monetized income and its rate of growth and the arguments put forward against the use of narrow definition of income, we choose total GDP, and the monetized GDP, for the estimation of demand for money in Nepal.

(ii) Interest rate variable

Despite the conflicting views that interest rate is or is not an important variable in the demand for money function, the theoretical logic as well as overwhelming empirical studies agree that the money demand function contain some rate of interest that best represents the opportunity cost of holding money. Some study shows that observable interest rates in developing countries do not, in general, reflect money market conditions (as they are institutionally pegged) and the interest rates prevailing in the unorganized markets are unobservable. Since, the prevailing interest rate in the market would reflect the degree of credit restraint in an economy, the degree of credit restraint per see can be treated as a proxy variable for the interest rate to be specified in the money demand function. Therefore, the interest rate on time deposits will be taken as the opportunity cost variable in the statistical demand for money function in Nepal.

(iii) Price variable

In developing country like Nepal where there are very few financial assets other than money and where price rise has become a regular phenomenon, inflation appears as the opportunity cost of holding money. This is because substitution between money and physical assets is more apparent in the generalized portfolio of wealth and a substitute for real assets, rather than a substitution to financial assets only, the inclusion of price variable in the money demand function seems logical.

A. Correlation Test

According to the calculation, the correlation coefficient between the BOP from 1990 to 2016 and money demand is 0.86156, which shows close correlation relation between both variables. Figure 1 is the Scatter diagram of balance of payment and the money demand, from which, there is approximately proportionate change trend.
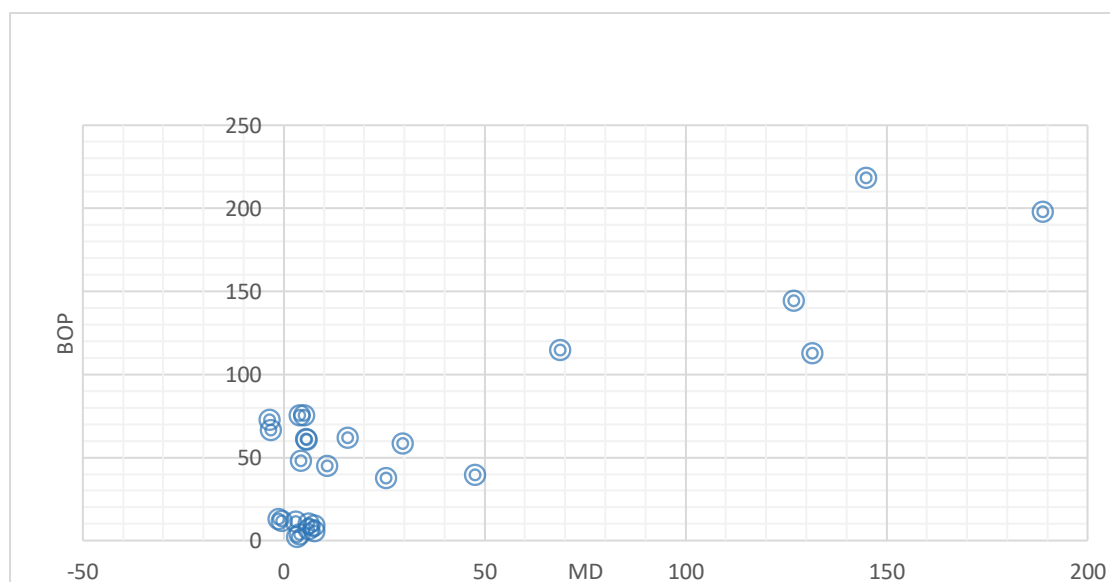

Fig 1: Change Trend of proportion of BOP and MD

B. Linear regression model

A linear regression model has developed to explore the relationship, where the balance of paymentsis taken as dependent variable and money demand is taken as

independent or influencing variable. The result obtained from the regression equation is given as: If all other remaining constant, the estimated regression equation is as follow.

BOP= β_0 + β_1 MD……………………………………………………(i)

Where,

BOP =Balance of payment

MD = Money Demand

And the estimated function is, *BOP = -15.316 + 0.801 MD*

Table 4.1.1.a.

Coefficient Calculation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-15.316	7.933		-1.931	.065
	MD	.801	.096	.862	8.314	.000

a. Dependent Variable: BOP

Table 4.1.1.b

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.862[a]	.742	.732	27.78760	.742	69.126	1	24	.000	1.748

a. Predictors: (Constant), MD

b. Dependent Variable: BOP

Table 4.1.1.c

ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53375.656	1	53375.656	69.126	.000[a]
	Residual	18531.619	24	772.151		
	Total	71907.274	25			

a. Predictors: (Constant), MD

b. Dependent Variable: BOP

- From the table 4.1.1.a, the coefficient of the money demand is 0.801 implying that one percent increase in money demand increases the balance of payments by 80.1 percent.

- From the table 4.1.1.b, it can be said that the fitted line is reasonably good, where the goodness of fit, R^2 value is 0.742. That is, almost 74.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money demand. The adjusted R^2 is 0.732. The value of d-statistic is 1.748. For n = 26 and k = 5 Durbin-Watson statistic d_L = 0.979, and d_U = 1.873 at 5% level of significance. Since $d_l < d_U$, so there is statistically significant evidence of positive autocorrelation.

- According to table 4.1.1.c the value of the F – statistic is 69.126, while the critical values for F are 3.32 at 5% and 5.39 at 1% level of significance which indicates that R^2 is statistically significant. On the whole, the estimated equation is found significant.

C. Combo Chart Presentation
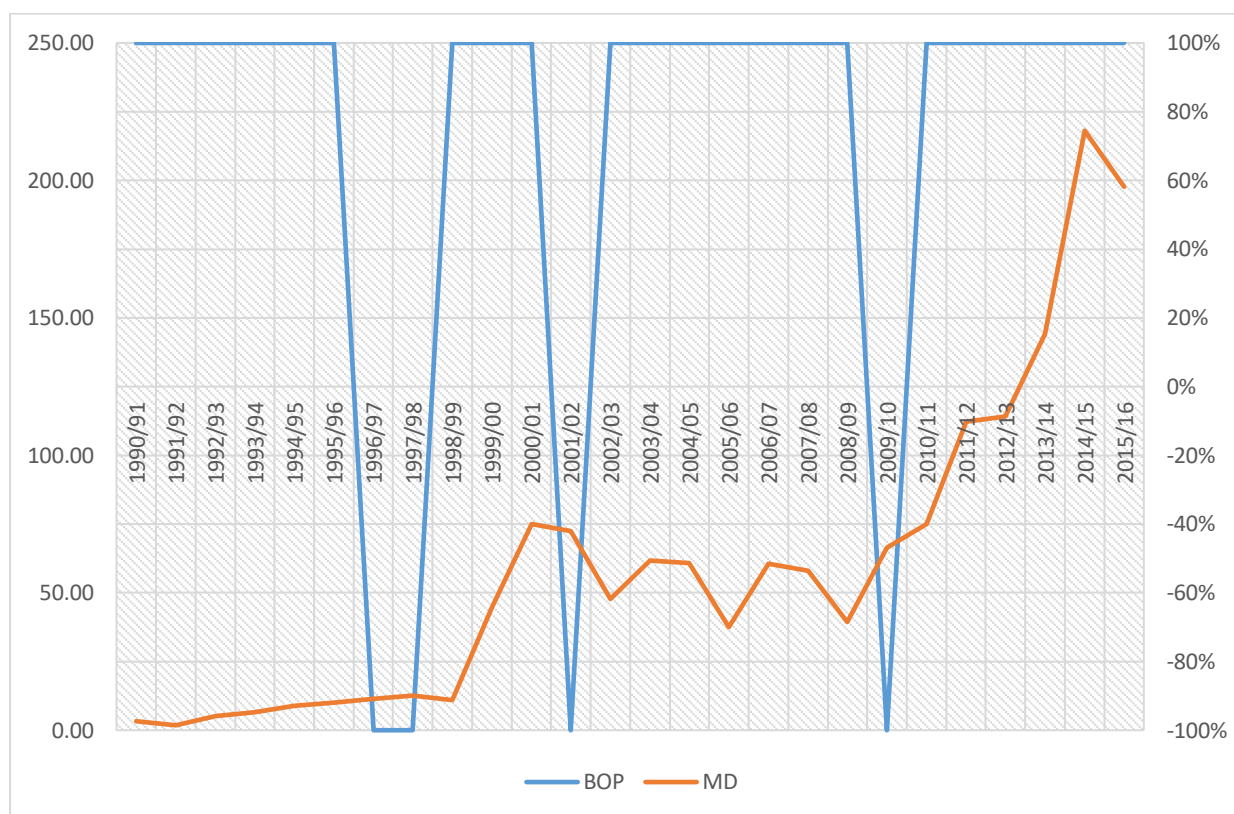
Fig 2: Relationship between BOP and MD

From the above diagram, we can say that there is more fluctuation in balance of payments in Nepal due the fluctuation of money demand. The money demand function is affected by interest rate, real GDP and inflation.

4.1.2 BOP AND MS

Balance of payments statistics are also used in explaining changes in the money supply, an important indicator for the determination of monetary policy. Increases in the money supply are usually closely correlated with price increases over the long term.

The major factors affecting money supply in Nepal are currencies, demand deposits, time deposits, net domestic assets and net foreign assets of the banking system. Generally, money supply is determined by two factors that is base money (BM) or

reserve money (Rm) and money multiplier (MM). There is a positive relationship between reserve money, money multiplier and money supply. Change in reserve money occur as a result of transaction of NRB with the rest of the economy. Change in financial assets occur as a result of the changes in net foreign assets (NFA) , net domestic assets (NDA) , credit to government enterprises (CGE) , credit to the commercial bank(CCB) , credit to private sectors (CPS) , net other assets (NOA) and capital & reserve (Ca and R). Changes in sources of base money (BM) are not completely policy controlled as the behavior of the commercial banks and public in particular is hardly within the control of monetary authority.

A. Correlation test

According to the calculation, the correlation coefficient between the BOP from 1990 to 2016 and money supply is 0.91527, which shows highly positive relationship between both variables. Figure 1 is the Scatter diagram of balance of payment and the money supply, from which, there is approximately proportionate change trend.
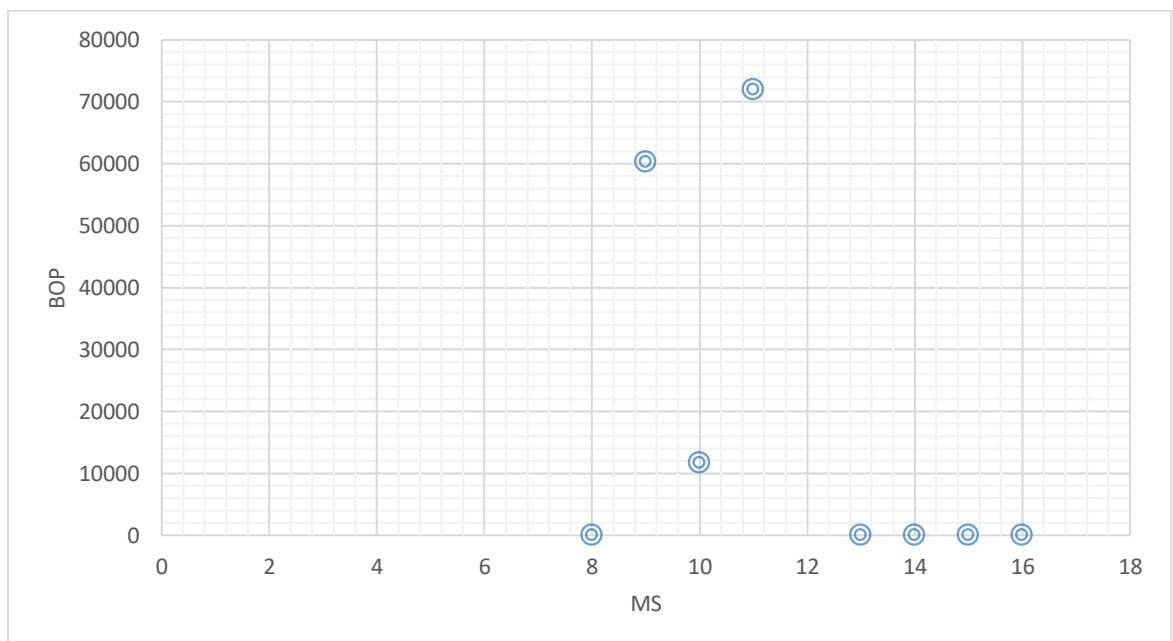
Fig 3: Change Trend of proportion of BOP and MS

B. Linear Regression Model

A linear regression model has developed to explore the relationship, where the balance of paymentsis taken as dependent variable and money supply is taken as independent or influencing variable. The result obtained from the regression equation is given as: If all other remaining constant, the estimated regression equation is as follow.

BOP= β_0 + β_1 MS……………………………………………………… (i)

Where,

BOP =Balance of payment

MD = Money Demand

And the estimated function is, *BOP = -6.457 + 0.058 MS*

Table 4.1.2.a

Coefficient Calculation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-6.457	6.421		-1.006	.326
	MS	.058	.009	.801	6.284	.000

a. Dependent Variable: BOP

Table 4.1.2.b

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.801[a]	.642	.626	22.74700	.642	39.488	1	22	.000	2.380

a. Predictors: (Constant), MS

b. Dependent Variable: BOP

Table 4.1.2.c

ANOVA Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20432.164	1	20432.164	39.488	.000[a]
	Residual	11383.370	22	517.426		
	Total	31815.534	23			

- From the table 4.1.2.a, the coefficient of the money supply is 0.058 implying that one percent increase in money demand increases the balance of payments by 5.8 percent.

- From the table 4.1.2.b, it can be said that the fitted line is reasonably good, where the goodness of fit, R^2 value is 0.642. That is, almost 64.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money supply. The adjusted R^2 is 0.626. The value of d-statistic is 2.380. For n = 26 and k = 5 Durbin-Watson statistic d_L = 0.979, and d_U = 1.873 at 5% level of significance. Since $d_l < d_U$, so there is statistically significant evidence of positive autocorrelation.

- According to table 4.1.2.c, the value of the F – statistic is 39.488, while the critical values for F are 3.32 at 5% and 5.39 at 1% level of significance which indicates that R^2 is statistically significant. On the whole, the estimated equation is found significant.

C. Combo Chart Presentation

In recent years, with the yearly expansion of balance of payments surplus, proportion of foreign exchange has become the main channel for the release of Nepal's money base, and the transmission mechanism of how the change of money base can influence money supply is: balance of payments surplus → increase of foreign net capital → increase of foreign exchange reserves → increase of proportion of foreign exchange → increase of money base → increase of money supply.
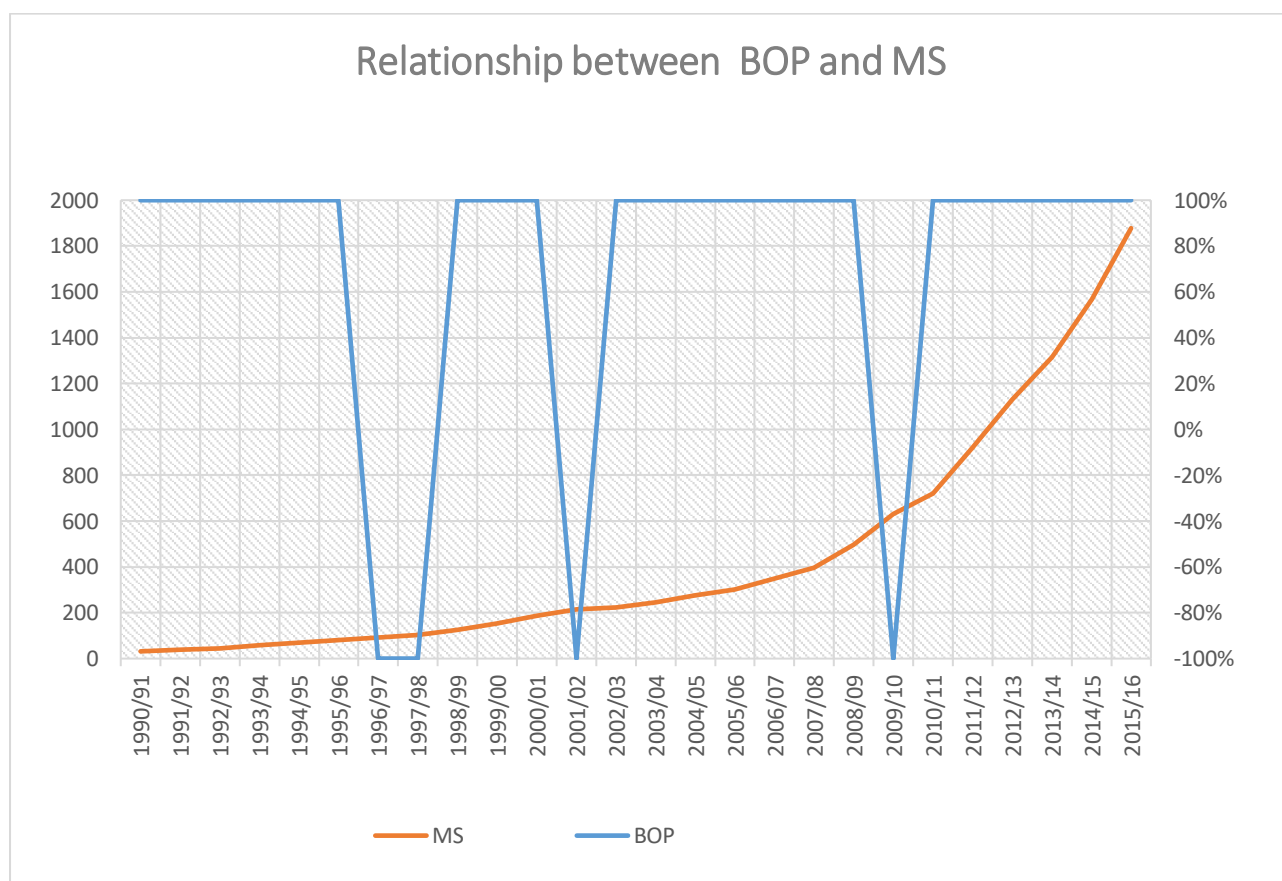

Fig 4: Relationship between BOP and MS

From the above diagram, we can say that there is more fluctuation in balance of payments in Nepal due the change in increasing rate of money supply in Nepal. There is deficits situation in FY 1996/97, 1997/98, 2001/02 and 2009/10 as 0.3139, 1.0805, 3.343, and 3.1103 respectively. (See Appendix III)

4.2. Identification of macroeconomic variables that areresponsible for creating disturbance in the BOP.

There are several variables which determine the BOP position of a country, viz., national income at home and abroad, exchange rate of national currency, prices of goods and factors, international oil and commodity prices, the supply of money, the rate of interest, etc. all of which determine exports, imports and demand and supply of foreign currency.A fundamental equation with the BOP as dependent variable and other macroeconomic variables such as real GDP, inflation rate, interest rate and the domestic asset to money supply are considered as independent variables.

4.2.1 Summary Statistics

The summary statistics for the balance of payments, domestic credit, and rate of inflation, interest rate and the level of real GDP are presented in Table 4.2.1. The table displays the summary statistics for the sample period of FY 1990/91 to FY 2015/16 .There are 26 observations for each variable, Column 1 reports the variable lists, column 2 reports the number of observations for the sample period, column 3 and 4 report the mean and standard deviation, and the last columns 5 and 6 report the minimum and maximum values of the variables.

Table 4.2.1

Summary Statistics

Variables	No of observation	Mean	Standard Deviation	Minimum	Maximum
BOP	26	32.61	53.63	-3.34	188.95
MS	26	447.96	509.58	31.55	1877.80
INF	26	8.09	3.71	2.48	21.12
Y	26	46.13	13.38	26.40	69.52
INT	26	7.27	2.93	3.20	12.00
NDA	26	285.72	325.49	21.56	1130.51

Source: Derived from Appendix I

For the balance of payments, the mean is 32.61 and the standard deviation is 53.63. The largest and the smallest value are 1877.80 and -3.34 respectively. For all the variables, mean is the highest for the money supply and standard deviation is the lowest for interest rate.

Table 4.2.2

Correlation Matrix

CORRELATION	BOP	MS	INF	Y	INT	NDA
BOP	1					
MS	0.915	1				
INF	0.095	0.065	1			
Y	0.767	0.909	-0.074	1		
INT	-0.135	-0.299	0.373	-0.622	1	
NDA	0.915	0.996	0.074	0.921	-0.326	1

Source: Derived from Appendix I

The correlation matrix of the variables is shown in Table 4.2.2. It shows that there is a positive correlation of the balance of payments with net domestic assets, money supply, inflation rate and the real GDP. However, there is a negativecorrelation of the balance of payments with rate of interest rate. The correlation is very high between the balance of payments and the domestic credit.

4.2.2 EstimatedFunction

The model aims to illustrate whether monetary variables are fundamental in determining the balance of payments in Nepal. In order to test this role, the study employs the standard model of the MABP. The equation and expected sign of the coefficients are as follows:

BOP= $\beta 0 + \beta 1$ MS+ $\beta 2$INF + $\beta 3$ INT + $\beta 4$ NDA + $\beta 5$ Y+ μ

Where, BOP = Balance of Payments, MS = Money supply, INF = rate of inflation

INT = Interest rate, NDA = net domestic assets, μ=stochastic or error term

4.3 Analysis and Discussion

Literature review also suggests and proves that in small and developing country like Nepal where there is a problem of data and the economy is not fully monetized, the monetary approach to balance of payments is the best tool to study the balance of payments problem. The traditional approach namely elasticity and absorption approach are not appropriate and historical evidences have already proved this fact. Johnson Small Country model is used to analyze the overall balance of payments problem of Nepal in this study. Thus, the influence of the different macroeconomic variables on the net foreign asset is studied with the aid of the Johnson's model. The monetary approach to the balance of payments specifies a money supply identity, money demand function, and an equilibrium condition. On the other hand,

equilibrium of money market signifies equally of demand and supply of money or the growth rate of money supply and growth rate of money demanded. A multiple regression model has developed to explore the relationship, where the balance of paymentsis taken as dependent variable and real GDP, inflation rate, rate of interest rate and the domestic credit are taken as independent or influencing variables. The result obtained from the regression equation is given as: If all other remaining constant, the estimated regression equation is as follow.

BOP = 63.079 - 0.026 MS - 0.0886 INF - 2.032 Y + 0.640 INT + 0.271 NDA

4.3.1 Regression Results under single equation system

Table 4.3: Simple Linear Model

Full period (1990 -2016)   Annual Data

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	63.079	81.558		.773	.448
MS	-.026	.097	-.250	-.271	.789
INF	-.886	1.285	-.061	-.690	.498
Y	-2.032	1.650	-.507	-1.231	.232
INT	.640	3.270	.035	.196	.847
NDA	.271	.162	1.648	1.680	.109

Notes:

BOP= Balance of payments

MS= Money supply

INF = Inflation rate

Y = Real GDP

INT = Interest Rate

NDA = Net domestic asset

The summary of the regression result in above table shows that, in the short run when the value of explanatory variable that is money supply, inflation rate, Real GDP, interest rate and the net domestic assets are held constant at zero value, the average value of balance of payments is 63.079 units. The coefficients of the different explanatory variables are explained below.

It can be said that the estimated coefficients have all expected sign. The coefficient of the money supply is - 0.026 implying that one percent increase in money supply decreases the balance of payments by 2.6 percent. Similarly one percent increase in inflation and the real GDP will also decrease balance of payments by 0.886 percent and 2.032 percent respectively as shown in above table 1. Likewise, one percent increase in interest rate and the net domestic assets will increase balance of payments by 64 percent and 27.1 percent respectively.

The 't' values of the coefficient of money supply is - 0.0271, which is significant, that is if money supply increases, balance of payments is decreased. Again, the 't' values of the coefficient of inflation and real GDP are - 0.690 and -1.231 , which are significant, that is if both inflation and real GDP are increased respectively , balance of payments will decrease. Likewise, the 't' values of the coefficient of interest rate is 0.196, which is insignificant, that is if interest rate increases, balance of payments is increased. Again, the 't' value of the coefficient of net domestic assets is 1.680, which is insignificant, that is if net domestic assets increases,the balance of payments also increases.

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	SEE	Change Statistics					DW
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.938	.880	.850	20.78870	.880	29.277	5	20	.000	2.365

Notes :

a. Predictors: (Constant), NDA, INF,

INT, Y, MS

b. Dependent Variable: BOP

R^2 = the degree of explanation of the dependent variable

SEE = Standard error of estimates

F = F statistic for the joint significance of all coefficients.

DW =Durbin Watson statistic for the presence of autocorrelation

From the table-2 it can be said that the fitted line is reasonably good, where the goodness of fit, R^2 value is 0.880. That is, almost 88 % of the variation in the balance of payments (BOP) in Nepal is explained by, money supply, interest rate inflation, net domestic assets and real GDP.

The adjusted R^2 is 0.88. The value of d-statistic is 1.312. For n = 26 and k = 5 Durbin-Watson statistic d_L = 0.979, and d_U = 1.873 at 5% level of significance. Since $d_l < d_U$, so there is statistically significant evidence of positive autocorrelation.

Table 4.5: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63263.871	5	12652.774	29.277	.000
	Residual	8643.403	20	432.170		
	Total	71907.274	25			

Notes:

a. Predictors: (Constant), NDA, INF, INT, Y, MS

b. Dependent Variable: BOP

R^2: The degree of explanation of the dependent variable.

SEE: Standard error of estimates

F: F statistic for the significance of all coefficients

According to table-3 the value of the F – statistic is 29.277, while the critical values for F are 3.32 at 5% and 5.39 at 1% level of significance which indicates that R^2 is statistically significant. On the whole, the estimated equation is found significant.

4.4 Major Findings

From the collected data published by public authority, this study has succeeded in finding our various facts and findings are related to different aspects in the study area. These major findings of the study are presented below.

i. From this study, it is concluded that desired change inNFA and BOP in Nepal can be achieved by managing supply and demand for money efficiently. There are many macroeconomic variables that determine supply and demand for money out of which real GDP, price level, interest rate and net domestic asset are considered as major influencing macroeconomic variables for NFA and BOP of the country.

ii. A fundamental equation with the balance of payments (BOP) as dependent variable and other macroeconomic variables such as real GDP, price level, interest rate and the domestic asset to money supply are considered as independent variables

iii. According to the calculation, the correlation coefficient between the BOP from 1990 to 2016 and money demand is 0.86156, which shows close correlation relation between both variables. On the other hand, the correlation coefficient between the BOP from 1990 to 2016 and money supply is 0.91527, which shows highly positive relationship between both variables.

The coefficient of the money demand is 0.801 implying that one percent increase in money demand increases the balance of payments by 80.1 percent. There is almost 74.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money demand. Whereas, the coefficient of the money supply is 0.058 implying that one percent increase in money demand increases

the balance of payments by 5.8 percent. There is almost 64.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money supply.

iv. Both equation of money demand and money supply are found significant where the F- statistic for MD and MS are 69.126 and 39.488 respectively.

v. For the balance of payments, the mean is 32.61 and the standard deviation is 53.63. The largest and the smallest value are 1877.80 and -3.34 respectively. For all the variables, the mean is highest for the money supply and standard deviation is the lowest for interest rate.

vi. The correlation matrix of the variables is shown in Table 2 and shows there is a positive   correlation of the balance of payments with net domestic assets, money supply, inflation rate and the real GDP. However there is a negativecorrelation of the balance of paymentsinterest rate. The correlation is very high between the balance of payments and the domestic credit.

vii. It can be said that the estimated coefficients have all expected sign. The coefficient of the money supply is - 0.026 implying that one percent increase in money supply decreases the balance of payments by 2.6 percent. Similarly one percent increase in inflation and real GDP will also decrease balance of payments by 0.886 percent and   2.032 percent respectively. Likewise, one percent increase in interest rate and net domestic assets will increase balance of payments by 64 percent and 27.1 percent.

viii. The't' value of the coefficient of money supply is - 0.0271, which is significant, that is if money supply increases, balance of payments is decreased. Again, the't' value of coefficient of inflation and real GDP are - 0.690 and -1.231 , which are significant, that is if both inflation and real GDP

are increased respectively , balance of payments will decreased. Likewise, the't' value of coefficient of interest rate is 0.196, which is insignificant, that is if interest rate increases, balance of payments is increased. Again, the't' value of coefficient of net domestic assets is 1.680, which is insignificant. That is, if net domestic assets increases, the balance of payments is also increased.

ix. There is almost 88 % of the variation in the balance of payments (BOP) in Nepal is explained by, money supply, interest rate inflation, net domestic assets and the real GDP. The value of DW statistic shows that, there is a statistically significant evidence of positive autocorrelation

x. The study in the end identified the role excess money supply have on balance of payments disequilibrium. However, the findings show that the balance of payments disequilibrium in Nepal is not solely due to the influence of monetary variables. On the whole, the domestic credit, interest rate and the real GDP affect balance of payments or the international reserves of Nepal.

xi. There are many macroeconomic variables that determine supply of and demand for money out of which net domestic asset is the one which have strong and significant impact on the balance of payments and thus can be regarded as the main policy variable.

CHAPTER V
SUMMARY, CONCLUSIONS AND SUGGESTIONS

This chapter includes three aspects of the study summary, conclusion and suggestions. The first aspect summarizing the whole study, the second aspect draws the conclusion and the last one forwards the suggestions.

5.1 Summary

In the first chapter, the meaning of the balance of payments as a monetary phenomenon has been examined. The monetary approach regards BOP as a monetary phenomenon and surplus or deficit in BOP is due to disequilibrium in the money market. Deficit is caused by money supply exceeding money demand, while surplus is caused by money demand exceeding money supply. The monetary approach, therefore, largely, emphasizes the monetary implications of BOP disequilibria. The monetary approach assumes money supply plays a vital role in BOP which can be controlled by altering cash balances of the people. So, if money supply is in control, whole problem is solved. In a modern banking system, the structure of money supply is a sum of NFA and net credit creation. And, in open economy, the monetary authority cannot control NFA because people can demand and sell foreign assets as they wish. However, the monetary authority has full control on credit creation and has control over part of the money supply. In this way, the monetary approach to balance of payments takes domestic credit as the only policy variable.

The second chapter has dealt upon the concerned literature thosewere reviewed during the study. The reviewed literature have provided important information on the major and useful indicators in measuring balance of payments with monetary phenomenon and the major findings obtained through using such indicators in the earlier studies. More than 19 literature were reviewed which were directly related to the study. Most of the modelshave been derived from these research works and applied with recent data available for the study. In fact, these research paper have provided adequate material and the practical application of statistics for this dissertation.

The third chapter has highlighted the methodology of conducting research work for finding out the money demand, money supply and its determinants that affect ultimately the balance of payments .The research has fully dependent on the secondary data for this purpose. The data have been collected mainly from the Central Bureau statistics, Nepal Rastra Bank, Ministry of Finance, articles, related books and booklets, websites and other materials published in newspaper. The data have been analysed by using different financial as well as statistical tools. Both qualitative and quantitative methods will have been used in this study.

The fourth chapter has provided in-depth analysis of fluctuation in net foreign assets and balance of paymentsdisequilibrium which is due to the fluctuation of money demand and money supply. In this study,the macro variables like price level, interest rate, level of income, money multiplier, net foreign assets and net domestic assets are the main causes of balance of payments disequilibrium. Major findings of this studyare also mentioned in this chapter.

The fifth chapter has provided summary, conclusion and suggestion for the study.

5.2 Conclusions

Economists and policymakers have been increasingly preoccupied with the problems of inflation and balance of payments disequilibria since the early 1990s. Their preoccupation has led to new approaches to monetary analysis. In this period, a gradual evolution of a third major approach called the monetary approach to the balance of payments took place; the two best-known earlier approaches are the elasticity (neoclassical) approach and the income absorption (neo -Keynesian) approach. Each of the three approaches, as often pointed out could in principle produce the right answers if it were correctly applied. However, for applied research and background work for policy discussion on balance of payments problems.

The monetary approach suggests itself as simpler and more manageable than the other approaches. It is based on the postulates of a stable demand function for money and of a stable process through which the money supply is generated. By focusing directly on the relevant monetary aggregates, this approach eliminates the intractable problems associated with the estimation of numerous elasticities of international transactions and of the parameters describing their interdependence, which are inherent in other approaches. This study therefore is concerned with testing the relevance of the monetary approach to the balance of payments problems in Nepal. It involves finding a stable demand for money function and then using it to estimate the desired demand for money in Nepal for the period of the study (1990 - 2016). The analysis system developed uses changes in desired demand for money and changes in domestic credit. If an increase ill desired demand for money is greater than an increase in domestic credit. Then it is expected that there would be a positive change in international reserves, and if, on the other hand, changes in domestic credit

isgreater than changes in desired demand for money then a negative change in international reserves would be expected.

This study examines the monetary approach to the Nepal balance of payments for the period FY 1990/91– FY 2015/16. Through the reserve flow equation, it tests whether different monetary variables played a significant role as a disturbance by using simple linear regression model. The main objective of this study is to find whether the monetary variables that is money supply, income, price, interest and domestic credit are responsible to produce fluctuations in BOP of Nepal or not. To achieve this objective, the study applies simple regression model for time series data.

According to the calculation, the correlation coefficient between the BOP from FY 1990 to FY 2016 and money demand is 0.86156, which shows close correlation relation between both variables. On the other hand, the correlation coefficient between the BOP from FY 1990 to FY 2016 and money supply is 0.91527, which shows highly positive relationship between both variables.The coefficient of the money demand is 0.801 implying that one percent increase in money demand increases the balance of payments by 80.1 percent. There is almost 74.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money demand. Whereas, the coefficient of the money supply is 0.058 implying that one percent increase in money demand increases the balance of payments by 5.8 percent. There is almost 64.2 % of the variation in the balance of payments (BOP) in Nepal is explained by, money supply.Both equation of money demand and money supply are found significant where the F- statistic for MD and MS are 69.126 and 39.488 respectively.

The result obtained from the regression analysis shows that 1 percent increase in the real GDP leads to 2.032 percent decrease in the balance of payments. Similarly, one percent increase in the price level leads to 0.886 percent decrease in the balance of payments. In the same way, one percent increase in the money supply leads to 0.026 percent decrease in the balance of payments, 1 percent increase in the rate of interest leads to0.64 percent increase in the balance of payments and 1 percent increase in the net domestic asset leads to 0.271 percent increase in the change in balance of payments. However, two macroeconomic variables such as rate of interest and net domestic assets are not found significant, but, other three macroeconomic variables, money supply, inflation rate and real GDP are found highly significant in the study.

The MABP, therefore, provides a convenient framework for the analysis of monetary disequilibrium in the economy. While taking into account the balance of payments in Nepal, it is evident that there has been a continuous surplus in the balance of payments since 1986. It has a direct impact on money stock in the absence of active and regular sterilization policies of the Nepal Rastra Bank. The Financial market in the economy is also narrow and rudiment. Due to these circumstances, the NRB has not yet been able to neutralize the expansionary effect of BOP surpluses on the money supply. Thus, in such a situation, the analysis of BOP through monetary approach as a determinant in the demand for money would be expected to restore the monetary equilibrium in the Nepalese economy.

5.3 Suggestions

With the help of the empirical findings of this study, it can be recommended that there are several economic variables that have significant impact on the change in NFA in Nepal. If these economic variables are left free, they can make far reaching adverse impact in the NFA of the country. Therefore, for efficient management of foreign assets reserve and to achieve stable and favourable BOP position following measures are recommended:

- The monetary approach to the balance of payments is an appropriate tool to study BOP problem of Nepal. And, at present, to solve the BOP problem of Nepal effectively, the monetary measures should be applied.

- The domestic credit which is very much influential among the four variables exerts negative impact on the NFA of the country. Thus, domestic credit must be taken as the policy variable and controlled to correct BOP in Nepal.

- The price level which is also influential variable exerts positive impact on the NFA of the country. PPE Price should be taken as policy variable to correct the BOP problem. However, in small country like Nepal, it is exogenously determined.

- The income variable and interest rate should not be given importance as policy variables to correct the BOP as these variables are not significant in this study.

- This study has considered only four macroeconomic variables such as income, price, interest and domestic credits. Additional study should be performed in future including more variables as well as further econometric models and econometric test.

- The policy implication for the Nepalese economy is that, increases in credit creation lead to a continuous loss of reserves. Thus, monetary authorities should pay special attention to domestic credit creation when controlling the country's balance of payments.

- Furthermore, it is important that the country achieves sufficient economic growth through money demand to correct the balance of payments deficit.

- Nepal should also pursue fiscal policies that do not result in large budget deficit. Excessive public debt negatively impact on balance of payments. The expansion in fiscal deficit leads to increase in domestic credit which has been shown to impact negatively on balance of payments.

- For further studies it is suggested that a much larger sample size than the one adopted for this research should be used. In addition other non-monetary variables such as Government expenditure should be included to achieve a comprehensive picture of variables that significantly affect balance of payments.

- For policy makers when looking for policy instruments to correct the disequilibrium in balance of payments, authorities should give equal attention to other policy levels instead of relying solely on monetary tools to attain stability in the country's balance of payments account.

- The empirical results showed that monetary variables do not play an overwhelming role in determining Nepal's balance of payments. The significant relationships were found among money supply, real GDP, inflation and balance of payments, which reflected a strong negative relationship, while reflected a strongly positive relationship among interest rate and net domestic

assets and balance of payments as posited by the monetary approach to balance of payments.

- The results evidently showed that, although some variables suggested by the monetary approach play significant roles in the disturbance, but the balance of payments is not a purely monetary phenomenon. Therefore, disequilibrium in the Balance of payments cannot be corrected only through monetary actions by the authorities. Some other measure should also be kept under consideration like increase in exports, improving quality of products, sustained growth in industrial and agriculture sectors and decrease in imports.

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The Data Series Used in the Regression Model

FY	BOP	MS	INF	Y	INT	NDA
1990/91	4.13	31.55	9.52	26.40	11.50	22.21
1991/92	3.39	37.71	21.12	27.69	11.80	21.56
1992/93	7.74	45.67	8.72	28.64	12.00	24.88
1993/94	6.28	58.32	8.96	30.91	12.00	29.20
1994/95	7.74	69.78	7.79	31.84	8.80	33.56
1995/96	6.28	80.98	8.03	33.67	8.80	43.90
1996/97	-0.31	92.65	8.18	35.39	10.30	54.95
1997/98	-1.08	103.72	8.25	36.56	10.30	63.53
1998/99	3.20	126.46	11.43	38.23	9.80	70.89
1999/00	10.97	152.80	3.42	40.57	8.40	87.77
2000/01	5.22	186.12	2.48	41.34	6.90	105.65
2001/02	-3.34	214.45	2.96	41.41	6.10	126.66
2002/03	4.36	223.99	4.70	42.97	5.30	135.57
2003/04	16.01	245.91	3.99	44.87	5.00	154.50
2004/05	5.74	277.31	4.56	46.32	4.30	168.51
2005/06	25.60	300.44	8.03	48.04	3.65	192.70
2006/07	5.90	347.42	5.73	49.37	3.65	207.98
2007/08	29.67	395.52	6.83	52.23	3.65	263.61
2008/09	47.72	495.38	12.59	56.35	4.25	323.92
2009/10	-3.11	630.52	9.52	56.58	5.75	402.85
2010/11	4.09	719.60	9.60	58.75	3.20	503.24
2011/12	131.63	921.32	8.21	61.46	4.50	700.05
2012/13	68.94	1130.30	9.90	63.78	5.60	746.53
2013/14	127.13	1315.38	9.12	67.42	8.80	847.14
2014/15	145.04	1565.97	7.18	68.98	6.70	966.75
2015/16	188.95	1877.80	9.50	69.52	8.00	1130.51

Source: NRB, Quarterly Economic Bulletin (Vol.48) Mid-July 2016

Note: 1. MS, Broad Money supply is in Rs. Billion 2. P, Price Level, is Nepalese CPI Basket (2014/15=100) 3.NDA =Net domestic assets 4. Y, Real GDP, is in Rs. Billion at 2000/01 5. INF, Inflation rate 6. INT, Interest Rate, one year fixed deposit rate of commercial banks

APPENDIX II

Money Demand Calculation

FY	MS	P	MD	GDP	INF	INT
1990/91	31.55	16.1	3.31	26.40	9.5	11.5
1991/92	37.71	19.5	1.79	27.69	21.1	11.8
1992/93	45.67	21.2	5.24	28.64	8.7	12
1993/94	58.32	23.1	6.51	30.91	9.0	12
1994/95	69.78	24.9	8.95	31.84	7.8	8.8
1995/96	80.98	26.9	10.08	33.67	8.0	8.8
1996/97	92.65	29.1	11.33	35.39	8.2	10.3
1997/98	103.72	31.5	12.58	36.56	8.2	10.3
1998/99	126.46	35.1	11.07	38.23	11.4	9.8
1999/00	152.80	36.3	44.69	40.57	3.4	8.4
2000/01	186.12	37.2	75.07	41.34	2.5	6.9
2001/02	214.45	38.3	72.52	41.41	3.0	6.1
2002/03	223.99	40.1	47.66	42.97	4.7	5.3
2003/04	245.91	41.7	61.63	44.87	4.0	5
2004/05	277.31	43.6	60.86	46.32	4.6	4.3
2005/06	300.44	47.1	37.43	48.04	8.0	3.65
2006/07	347.42	49.8	60.61	49.37	5.7	3.65
2007/08	395.52	53.2	57.93	52.23	6.8	3.65
2008/09	495.38	59.9	39.33	56.35	12.6	4.25
2009/10	630.52	65.6	66.26	56.58	9.5	5.75
2010/11	719.60	71.9	74.93	58.75	9.6	3.2
2011/12	921.32	77.8	112.28	61.46	8.2	4.5
2012/13	1130.30	85.5	114.20	63.78	9.9	5.6
2013/14	1315.38	93.3	144.19	67.42	9.1	8.8
2014/15	1565.97	100	218.07	68.98	7.2	6.7
2015/16	1877.80	107	197.66	69.52	9.5	8

Source: NRB, Quarterly Economic Bulletin (Vol.48) Mid-July 2016Note: 1. MD, Money demand is in Rs. Billion 2. P, Price Level, is Nepalese CPI Basket (2014/15=100) 3.NDA =Net domestic assets 4. Y, Real GDP, is in Rs. Billion at 2000/01 5. INF, Inflation rate 6. INT, Interest Rate, one year fixed deposit rate of commercial banks

BOP, MD AND MS

BOP	MD	MS
4.13	3.31	31.55
3.39	1.79	37.71
7.74	5.24	45.67
6.28	6.51	58.32
7.74	8.95	69.78
6.28	10.08	80.98
-0.31	11.33	92.65
-1.08	12.58	103.72
3.20	11.07	126.46
10.97	44.69	152.80
5.22	75.07	186.12
-3.34	72.52	214.45
4.36	47.66	223.99
16.01	61.63	245.91
5.74	60.86	277.31
25.60	37.43	300.44
5.90	60.61	347.42
29.67	57.93	395.52
47.72	39.33	495.38
-3.11	66.26	630.52
4.09	74.93	719.60
131.63	112.28	921.32
68.94	114.20	1130.30
127.13	144.19	1315.38
145.04	218.07	1565.97
188.95	197.66	1877.80

Source: NRB, Quarterly Economic Bulletin (Vol.48) Mid-July 2016

 Note. 1. BOP is Balance of Payments is in Rs Billions 2 MD, Money supply is in Rs.

Billion 3. MS, Money supply is in Rs. Billion

COMPONENTS OF BOP

The three main components are: 1. Current Account 2. Capital Account 3. Official Financing.

Balance of Payments Accounts

1. Current Account			
	Visibles	Export +	+
		Imports –	–
		Balance of Trade	A
	Invisibles	Credit +	+
		Debit –	–
		Net Invisibles	B
	Current Account Balance		A + B
2. Capital Account			
	Short term capital flows (inflow +, outflow–)		net
	Long term capital flows (inflow +, outflow–)		net
	Total investment and other capital inflows		C
	Balancing item (+ or –)		D
	Balance for official financing		A + B + C + D
3. Official Financing			
	Foreign currency borrowings (+) or lending (–)		net
	Changes in reserves (addition –, drawings +)		net
	Transactions with IMF and other central banks		net
	Total Official Financing		–(A + B + C + D)

Component # 1. Current Account:

This part of the balance of payments is regarded as the most important, as it shows a nation's trading strength. If payments are greater than receipts, there is a deficit which is undesirable.

This account is subdivided, as shown in above Table, into:

1. Visible Trade — trade in goods

2. Invisible Trade — trade in services.

A — Visible Trade:

The money earned from Indian exports of goods (e.g., cars sold to Nepal) is credited (added) to this account, whilst payments for imported goods (e.g., American aircraft sold in India) are debited. The difference between the totals is known as the Balance of Trade.

B — Invisible Trade:

The income earned from the sale of Indian services abroad is known as an invisible export, e.g., an insurance premium paid by a British ship-owner to an Indian broker. When Indian residents spend money on foreign services, e.g., a week's accommodation in London, they are creating invisible imports, because payment is going out of India.

The main invisibles are as follows:

1. Government expenditure:

Government expenditure on embassies, contributions to IMF or ADB and other international bodies, military bases/forces abroad, and overseas aid. All these create a substantial deficit.

2. Interest, profits and dividends:

The earnings from loans, companies and shares, respectively, earn substantial surpluses for the Indian economy.

3. Other financial services:

The earnings of solicitors, brokers, merchants and pensioners also contribute benefits to the invisible account.

4. Transport:

The earnings on passenger carrier by sea and air are two major items.

5. Tourism:

This covers the expenditure of travellers abroad.

6. Private transfers:

Individuals transfer money to other countries. Most industrialised nations contain migrants who remit fluids to relatives in their family of origin.

A + B — Current Account Balance:

The balance of trade (visible) and net invisibles are added, as in aboveTable , to give, the current account balance. The net figure may be plus or minus. A deficit (-) on the current account is a warning that the nation is spending more than it is earning, in the short run.

Component # 2. Capital Account:

C — Investment:

This account includes investment and other capital movements. Outflows create deficits (-) and inflows give surpluses (+) in the account. For instance, if an Indian trader purchases a new shop in London, this is an outflow of capital. Conversely, if Toyota (Japan) builds a showroom in Bangalore, then there is a capital inflow.

Expenditure on portfolio (paper) assets is also included in this selection of the accounts. Thus, if an Indian citizen buys shares in McDonald's or General Motors (USA) this count as a capital outflow.

The investment can also be distinguished between private and public sector. Private sector investment tends to be in buildings and paper assets held for a long period of time. Public investment, on the other hand, consists of low interest loans to underdeveloped nations (i.e., aid) where the aim is not always profitability.

Capital flows may be short-term or long term. The short-term ones tend to be unpredictable and volatile. They feature the shifting of very liquid assets (i.e., 'hot' money) between nations to gain the advantage of favorable interest-rate differentials.

In the short run, net inward investment benefits the balance of payments accounts because official financing is not needed — reserves can be accumulated and borrowing repaid. However, in the long run, it may be harmful. The profits, interest and dividends from the investment are remitted abroad and become invisible imports, thus weakening the current account.

D — Balancing Item:

This is an accounting device to cover errors and omissions. A balancing figure is added to — or subtracted from — the combined balances of the current and capital accounts. The balance of payments accounts always balance because the current and capital account totals together equal the official financing undertaken. As the latter figure is more accurate than the varied data in the other two accounts, the balancing item is calculated from it and is used to make the two totals the same. It is a net figure.

Component # 3. Official Financing:

The Balance for Official Financing (which used to be termed Total Currency Flow) shows the balance of monetary movements into and out of the country. A positive figure reveals a net inflow of funds into a country. Alternatively, a net outflow is represented by a negative figure.

When there is a negative figure, the amount has to be paid for either by:

(a) Borrowing from other central banks and international organizations, or

(b) Using up reserves which have been saved over the years, or

(c) Borrowing and withdrawing reserves.

When the balance for official financing is positive, then loans can be repaid and reserves replenished. Governments do sometimes borrow even when the balance for official financing is positive; this is in order to build up reserves for the future.

The fact that the amount of official financing equals the balance for official financing ensures that the balance of payments always balances.

So, through official financing, the account as a whole is brought into exact balance (Fig. 21.1). This is why it is said that the balance of payments always balances.
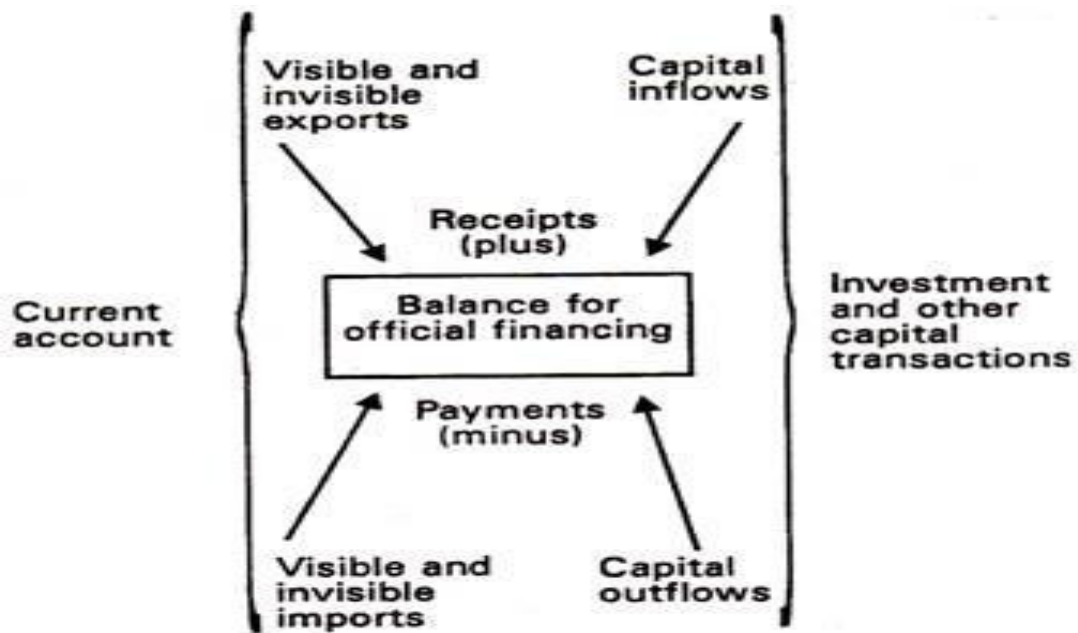

Fig. 21.1. Transactions in the Balance of Payments

A country has a balance of payments problem when a section of its accounts are in regular deficit or surplus. Deficit problems are more serious than surplus ones, as surpluses usually result from successful international trading, whilst deficits indicate failure. Persistent imbalances indicate that the balance of payments is in fundamental disequilibrium. This usually requires the government to undertake remedial measures.