CHAPTER – 2
CHAPTER 2
REVIEW OF LITERATURE

2.1 Introduction
The literature review is a critical look at the existing research that is significant to the work that a researcher is carrying out. He needs to summarize relevant research, it is also vital that the researcher evaluate this work, shows the relationships between different works, and shows how it relates to his/her work. This means that the researcher will try to integrate the importance of his research topic and the results that were already obtained by previous studies. This will generally help the readers understand more about his/her and the value of researching his/her presented topic of interest.

The literature review shall provide the context for the research by looking at what work has already been done in that research area. It is not supposed to be just a summary of other people's work.

2.2 Review of Literature for GDP, GDS, and GDI

2.2.1 Review of Literature for Abroad
Shahbaz Nasir & Mahmood Khalid (1998) in their study “Saving – Investment Behavior in Pakistan” studied that Domestic saving is a major source of the Investment. On the other hand foreign saving is not effective for Investment in Pakistan.

Christopher D. Carroll and David N. Weil (1994) examined the relationship between income growth and saving using both cross-country and household data. At the aggregate level, found that growth Granger causes saving, but that saving does not Granger cause growth. Using household data, found that households with predictably higher income growth save more than households with predictably low growth. They argue that standard Permanent Income models of consumption cannot explain these findings, but that a model of consumption with habit formation may. The positive
effect of growth on saving implies that previous estimates of the effect of saving on growth may be overstated.

Pradeep Agrawal (2000) in his paper entitled “Savings, Investment and Growth in South Asia” analyzed the performance of the South Asian countries regarding the savings and investment rates and tried to compare it with East Asia. He also carried out econometric analysis of the determinants of savings and investment ratios in South Asia. The savings as a proportion of GDP is in the low to medium range for the South Asian countries as compared to high for the East Asian countries where it has been over 30 percent since 1980. His econometric analysis shows that the main factors behind the lower rates of savings in South Asia are: (a) a less rapid decline in the age dependency ratio (which has remained virtually stagnant in Nepal, Pakistan and Bangladesh), while falling dramatically in East Asia (and Sri Lanka), (b) the moderate to low rates of growth of GNP compared to East Asia, and (c) less prudent fiscal management by many South Asian governments (especially India, Pakistan and Sri Lanka) leading to low or negative public sector savings. Finally, interest rates on bank deposits were found to have a positive but insignificant effect on savings. Similarly, gross fixed investment as proportion of GDP has also been lower in South Asia compared to East Asian countries. His econometric analysis suggests that availability of much smaller inflows of foreign direct investment and lesser availability of domestic credit are some of the main factors behind the lower investment rates in South Asian countries as compared to the East Asian countries. An important focus of this paper was on Granger causality analysis to test whether the high savings rates caused high growth or high growth rates led to high savings rates in the countries under consideration. He found evidence that higher savings rates cause higher growth rates of real GNP in two countries (Bangladesh and Pakistan) and that higher growth rates Granger cause higher savings rates in two countries (India and Sri Lanka), with the results for Nepal failing to reject non-causality in either direction. Results for South Asian countries contrast sharply with the previous empirical findings that savings rates do not cause growth but are determined by it. A plausible conclusion from our analysis is that in the case of countries with low savings rates, low levels of savings may well become a significant constraint on growth by restricting the supply of funds available for capital formation and growth. Such a constraint may be absent in countries with relatively high levels of savings.
Sinha (2002) found that savings and investment rates are cointegrated for Myanmar and Thailand indicating the growth of savings rate causes the growth of investment rate. Interestingly, reverse causality between savings rate and investment rate has been observed for Hong Kong, Malaysia, Myanmar and Singapore.

Lutfi Erden and Randall Holcombe (2005) in their work “The effects of public investment on private investment in Developing economies” finds that public investment complements private investment, and that, on average, a 10 percent increase in public investment is associated with a 2 percent increase in private investment.

Nwachukwu and Egwaikhide (2007) examined the determinants of private saving in Nigeria or the period 1970-2005. They compared the estimation results of the Error-Correction Model with those of three conventional models: Partial-Adjustment, Growth Rate and Static Models. The conclusion was that the ECM performed much better than the other models. The estimation results for the error-correction model pointed to the level of per capita income, terms of trade changes, public saving rate, external debt service ratio, and the inflation rate as having statistically positive influences on domestic saving. The real interest rate and growth rate of income had a negative impact on the saving rate. They also found a clear role for fiscal policy in increasing total saving in the economy, with the private sector considering public saving as a complement for its own saving.


Pradeep Agrawal and Pravakar Sahoo (2009) study on “Savings and growth in Bangladesh” found that the total savings rate is mainly determined by the GDP growth rate. The private savings rate is also affected by the public savings rate and bi-directional causality between savings and growth.

Hooi Hooi Lean, Yingzhe Song (2009) on China data for the year 1955-2004 found exists causality between the domestic savings growth and the economic growth in the short-run. In the long-run, a unidirectional causality exists running from the domestic savings growth to the economic growth.
Pradeep Agrawal and Pravakar Sahoo (2009) analyzed the main determinants of the total domestic savings rate and the private savings rate for Bangladesh using the Autoregressive distributed lag (ARDL) procedure and the Forecast Error Variance Decomposition (FEVD) analysis in the vector auto-regression framework. They also analyzed the direction of causality between the savings rate and GDP growth in Bangladesh. The ARDL estimation showed that there exists a stable and long-run equilibrium relationship between total savings rate, economic growth, and dependency rate, banking density, interest rate and foreign savings. While higher GDP growth, banking facility and interest rates were found to increase the domestic savings rates, higher dependency was found to lower it. Similar results were also obtained for the private savings rate, except that higher public savings rate also lowers it but by a fraction of the increase in the public savings. The FEVD analysis for total domestic savings rate shows that the dependency rate and GDP growth are the major determinants of the domestic savings rate. The other factors, namely real interest rates, banking density and foreign savings have a relatively minor impact on domestic savings. They also undertook tests of the direction of causality between the total domestic savings rates and GDP growth. Granger causality analysis showed that the direction of causality between these variables is bi-directional. The FEVD analysis also corroborate these same findings since growth innovations are found to affect the savings rate and savings rate innovations are also found to affect the growth rate. The ARDL estimation also suggests that the savings rate in Bangladesh has also improved due to better access to the banking system. Thus, further spread of the banking system, especially in remote areas lacking access to banking services may be beneficial in improving the savings rate further. Similarly, prudent policies regarding taxation and government expenditures that raise public savings rates are also conducive to raising the total savings rates. On the other hand, raising the real interest rates have a positive but small effect on savings rates (a one percent increase in interest rates would raise the savings rates by only 0.09 percent) and thus interest rates is not a very important policy instrument for affecting the savings rates. The result that the direction of causality between savings rate and GDP growth rate is bi-directional suggests that further improvements in the savings rates are important for Bangladesh as these might help improve the growth rate of the economy.
Abu Al-Foul (2010) examined the long-run relationship between real gross domestic product (GDP) and real gross domestic saving (GDS) for Morocco during the period 1965-2007 and Tunisia over 1961-2007 using a developed approach to cointegration by Pesaran et al. (2001). The empirical results of his study revealed that in the case of Morocco a long run relationship exists between the variables, but they found no evidence indicating a long run relationship in the case of Tunisia. The results of the Granger causality test supported bidirectional causality between economic growth and saving growth in Morocco. However, in the case of Tunisia, it is found the there is a unidirectional Granger causality from saving growth to economic growth.

Olajide S. Oladipo (2010), in his paper “Does Saving Really Matter for Growth in Developing Countries? The Case of a Small Open Economy.” He studied causality between domestic savings and economic growth, in both bivariate and multivariate systems, using the Toda and Yamamoto methodology. The empirical results suggest that savings and economic growth are positively cointegrated, indicating a stable long-run equilibrium relationship. Further, he found that unidirectional causality between savings and economic growth and the complementary role of FDI in growth.

Birendra Budha (2012) in his study “A multivariate analysis of savings, investment and growth in Nepal” employed Autoregressive Distributed Lag (ARDL) approach to test for cointegration and Error correction based Granger causality analysis for exploring the causality between the variables. Empirical results show that there exist cointegration between gross domestic savings, investment and gross domestic product when each of these is taken as the dependent variable. Granger causality analysis shows that there exists short-run bidirectional causality between investment and gross domestic product as well as between gross domestic savings and investment. Nevertheless, no short-run causality is

Mohsen Mehrara, Maysam Musai, Sima Nasibparast (2012) studied the relationship between Savings and GDP in Iran. This paper examines causal relationships between gross domestic savings (GDS) and GDP for Iran using annual data over the period 1970-2008. The Gregory-Hansen (1996) cointegration technique, allowing for the presence of potential structural breaks in data, is applied to empirically examine the long-run co-movement between GDS and GDP. The results suggest that there is a long-run relationship between these variables. The Granger Causality test indicates strong unidirectional effects from GDP to GDS. However, there is no evidence that
GDS promotes long-term economic growth. Moreover, the main results in this paper confirm that there is an instantaneous as well as unidirectional causal link running from GDP to GDS.

G. Ramakrishna (2012) in his study “The Long run Relationship between Savings and Investment in Ethiopia: a Cointegration and ECM Approach”. He examined the Long run Relationship between Savings and Investment in Ethiopia using cointegration method. The result suggests that there is no causation between savings and investment in either direction in Ethiopia.

Charles Ruranga, Bruno Ocaya and William Kaberuka (2014) analysed real Gross Domestic Product (GDP), Domestic Investment (DI), Foreign Direct Investment (FDI), Domestic Savings (DS) and Trade (TR) in Rwanda for the period 1970 to 2011. GDP and DI have an upward trend and annual growth of real GDP was around 8% in average for all period. FDI and DS have remained below 2% of GDP each and trade balance of Rwanda is always negative. Augmented Dickey-Fuller (ADF) tests showed that GDP, DI and FDI are not stationary at the level but the first differences are stationary. VAR (1) was identified as the appropriate model according to Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criterion. Granger causality tests showed that there is bi-directional causality between GDP and TR and TR and DI and unidirectional causality from GDP to DI, from DS to GDP, from DS to DI and from DS to TR. These findings showed that GDP can be used to promote Domestic Investment and Trade. Domestic savings have significant effects on GDP, DI and TR. VAR was estimated and the forecasted values of GDP, DI and FDI in 2011 are respectively, 3,843.6233 million, 22.67% and 0.95% while their actual values in 2011 are 3891.9 million, 22.7% and 1.66%. There is under-prediction for GDP, DI and FDI. The differences can be explained by the efforts of the Government of Rwanda to promote GDP, Domestic Investment and Foreign Direct Investment.

Abou Elseoud (2014) investigated the long run and short run relationship between real GDP growth rate and saving in Bahrain during the period(1990-2012), based on econometrics analytical approach. He finds that there is a bilateral causality between these variables, which means that real GDP growth could stimulate Savings, and savings could accelerate economic growth in the long run.
Moses Joseph Shawa, Grafoute Amoro and Yaoshen (2014) investigated on how foreign direct investment (FDI) relates with host country’s GDP growth, domestic investment and export in Kenya. Therefore the causality relationship between FDI, Export, domestic investment and GDP growth of Kenya from the year 1980 to 2013 is examined by using co integration and granger causality test. The co integration test results indicated that there is a long run relationship among the four variables being analyzed in this study. The Granger causality test results showed that the causal unidirectional relationships exist between export(EXP) and domestic investment(DI) at 5 percent level with the direction running direct from export(EXP) to domestic investment(DI) implying that export(EXP) is a good predictor of domestic investment(DI) in Kenya and that export led strategy is appropriate while the results found the bidirectional relationship between export (EXP) and foreign direct investment(FDI) at 5 and 10 percent level respectively implying that there is a feedback linkage of predicting each other between these two variables suggested that both the export led FDI growth and FDI led Export growth are appropriate strategy to be adopted for Kenya. Finally the results showed domestic investment (DI) and foreign direct investment (DI) to have a unidirectional relationship at 1 percent level with a direction of linkage running from direct investment (DI) to foreign direct investment(FDI) which implies that domestic investment(DI) is important in predicting the inflow of foreign direct investment(FDI) in Kenya economy.

2.2.2 Review of Literature for India

Sinha Dipendra (1996) in his paper “Savings and Economic Growth in India”, looks at the relationship between gross domestic product and saving in India. First, he looks at the trends in gross domestic saving and gross domestic private saving. Secondly, he looks at the long run relationship between gross domestic saving and gross domestic product. He found that gross domestic product is cointegrated with gross domestic saving as well as with gross domestic private saving. Thirdly, he test for the causality between the growth rates of gross domestic product and gross domestic saving as well as between the growth rates of gross domestic product and gross domestic private saving. Finally, he tests for the causality between the growth rates of gross domestic product and gross domestic saving as well as between the growth rates of gross domestic product and gross domestic private saving. He does not find any causality in any direction.
Sinha Dipendra (1997) in his study “The Long Run Relationship between Saving and Investment in India”, found that both saving and investment rates are non-stationary in their levels but stationary in their first differences. Next, he proceed with the cointegration tests using the Johansen-Juselius framework. The results show that saving and investment ratios have a long run relationship for India. His tests also show that he cannot reject the null hypothesis of a one-to-one correspondence between saving rate and investment rate. This convergence implies that if past data are any guide, India is unlikely to suffer from macroeconomic instability in the long run.

Agrawal (2001) examines the causality between GDP and saving for a number of Asian countries. He found evidence that higher savings rates cause higher growth rates in Bangladesh and Pakistan and higher growth rates cause higher savings rates in India and Sri Lanka.

Prema-Chandra Athukorala and Kunal Sen (2002) worked on patterns of Investment and savings in India, covering the period from 1980 to 1996. They found there was a consistent increase in domestic saving and investment rates in India throughout the period under study. The saving rate increased from about 10 percent in the early 1950s to 17 percent in the early 1970s, and then to over 25 percent by the mid-1990s. The investment rate increased from 11 percent in the early 1950s to around 19 percent in the early 1970s, and then to 26 percent by the mid-1990s.

Shasiah, S.V and Vuyuri S. (2005), in his paper entitled “Savings and Investment in India, 1970-2002: A Cointegration Approach.” investigated relationship between savings and investment. The results are quite interesting show that savings influence the investment and where as investment does not influencing the savings. The results also showed cointegration between savings, investment and yield spread. Yield spread and investment have not been found to Granger-cause savings indicating savings are independent of investment and yield spread.

Reetu Verma (2007) in her paper “Savings, investment and growth in India: an application of the ARDL bounds testing approach” found that savings do not cause growth, but growth cause savings in India. The study used annual time series data to endogenously determine the most significant and important structural break for GDS, GDI and GDP for India from 1950/51 to 2003/04. The empirical results based on the
Perron’s innovational outlier model show that GDP is non-stationary while GDS and GDI are both stationary at log levels. Moreover, she found that the most significant structural breaks occurring over the last five decades and which were detected endogenously coincided with the two wars (1962 and 1964), regime change (1964) and nationalization of banks (1980). Next, the ARDL cointegration approach was employed to determine the long-run relationship of GDS, GDI and GDP. She found that savings do not cause growth, but growth causes savings. The results clearly support the view that savings drive investment in both the short-run and long-run. Lastly, there is no evidence that investment is the driver of economic growth in India since independence.

Achintya Ray (2007) in his study “A Time Series Analysis of Long Term Capital Formation in India” analyzes the effects of economic liberalization on the capital formation in the Indian economy. Three major forms of capital formation, Gross Fixed Capital Formation, Gross Domestic Capital Formation, and Net Domestic Capital Formation are studied in this paper. All the measures of capital formation have strongly positive time trends. This study reveals that there may not be statistically significant impact of economic liberalization on capital formation in India. Lagged values are of most importance while determining the current values of capital formation.

Sinha, Dipendra and Sinha, Tapen (2007) worked on the relationship between per capita saving and per capita GDP for India using the Granger causality Data for 1950-2004. They distinguished between three types of saving: household saving, corporate saving and public saving. Ng-Perron unit root tests show that all variables with the exception of per capita public saving are I(1). The results of Toda-Yamamoto tests of Granger causality show that there is bidirectional causality between per capita household saving and per capita corporate saving. However, there is no evidence of causality in any direction between per capita GDP and per capita corporate saving/per capita household saving.

P.K. Mishra, J.R. Das and S.K. Mishra (2008) estimated the relationship between savings and investment for India. They found that the gross domestic investment causes gross domestic savings and gross domestic savings also causes gross domestic investment in India. That means there is bidirectional causality between gross domestic investment and gross domestic savings.
Bordoloi (2008) employing the Engle-Granger two-step method over the sample period from 1950-51 to 2005-06 found existence of cointegration relationship between saving and investment in India with a high coefficient.

Sinha and Sinha (2008) in their study “Relationships among Household saving, Public saving, Corporate saving and Economic growth” examined the relationships among growth rates of the GDP, household saving, public saving and corporate saving for the period 1950 to 2001 and found that economic growth produced higher saving in various forms and it is never the other way around.

Khundrakpam and Ranjan (2010) examined the behavior of saving and investment for India for two separate periods using ARDL cointegration approach. The first period covers the period from 1950-51 to 1990-91 while the second period cover from 1950-51 to 2006-07. The study found existence of a unidirectional cointegrating relationship from saving to investment and not vice-versa and the relationship was found to have weakened while incorporating post-liberalisation data. The various economic policies initiated by the Government of India post the Balance of Payments crisis in the early 1990s have gradually increased the flow of overseas saving into India leading to the weakening of the saving-investment relationship post 1990-91.

Ramesh Jangili (2011) in his paper “Causal Relationship between Saving, Investment and Economic Growth for India” examines the direction of the relationship between saving, investment and economic growth in India at both aggregate level and sectoral level for the period 1950-51 to 2007-08 by using Granger causality test. The empirical results suggest that there exists reciprocal causality from saving and investment of the private sector to economic growth. This reciprocal causality emanates from the household sector, where saving and investment led growth and growth driven saving and investment was observed. It is empirically evident that private corporate sector saving does not lead to economic growth, however, saving and investment of the sector collectively lead to economic growth and vice-versa. Saving led growth in emerging market economies implies that the economy is not catching up with the technology frontier and hence growth is not driven by the innovations that are taking place worldwide. The results indicate that though the Indian economy is opened to foreign investments, growth is still driven by the domestic saving. Furthermore, local firms may not be absorbing the technology which comes through the foreign investment in order to undertake more profitable innovation projects.
Sanjib Bordoloi and Joice John (2011) examine relationship between saving and investment in three diverse economies, viz., US, UK and China and compare it with India. They used Autoregressive Distributed Lag (ARDL) bounds testing approach for testing cointegration relationship between saving and investment in all the four countries. They found that saving and investment are cointegrated in all the countries examined but the magnitude of the long-run coefficient is different for different economies.

Bichitrananda Seth (2011), in his paper “Long Run and Short Run Saving-Investment Relationship in India” examined the long-run and short-run relationship between domestic savings and investment on the one hand and between private corporate savings and private corporate investment on the other hand. He found that the gross domestic savings and investment are cointegrated and the coefficient of saving is close to one. This indicates that the degree of capital mobility into India is very low i.e. domestic investment is mostly financed by domestic savings. In the short run, change in domestic savings effects domestic investment. The corporate savings and corporate investment are also cointegrated and the coefficient is more than one denoting that corporate sector is more dependent on their own fund.

Rupal Chowdhary and Vivek Kushwaha (2013) investigated the relationship between Domestic Investment, Foreign Direct Investment and Economic Growth in India during Post reform period. The data are on GDP at Factor cost, Gross Domestic Capital Formation (Domestic Investment) and Foreign Direct Investment from the period of 1992 to 2012. The Granger Causality test has been used to analyze the data. The results of the study indicated that the DI does Granger cause GDP and GDP does Granger cause DI. It was also found that FDI has no effect on domestic investment in India. This means that with increase in FDI, domestic investment is not increasing. FDI and economic growth have no causal relationship that is FDI does not accelerate economic growth in India. Thus, it could be concluded that the relationship between these variables can vary from country to country and time to time.

Girish Jain and Meenu Baliyan (2014), in this study examine the determinants of saving and investment in the process of economic development. They found that the saving rate rises and the rate of growth of disposable income and the magnitude of the impact of the former is smaller than that of the latter. The real interest rate on bank deposits has a significant positive impact, but the magnitude of the impact is modest.
Public saving seems to crowd out private saving, but less than proportionately, suggesting that public policy can influence the national saving rate. Among the other variables considered, the spread of banking facilities in the economy and the rate of inflation seem to have a positive impact and changes in the external terms of trade and migrant remittances a negative impact on private saving.

2.3 Review of Literature for Money Supply, Inflation and Interest Rate

2.3.1 Review of Literature for Abroad:
Albatel (2000) used data from 1973 to 2004 in the case of Saudi Arabia, and employed granger causality test to examine the association between money supply, government expenditure and economic growth and his findings showed bilateral causality between the variables.

Faria and Carneiro (2001) investigated the relationship between inflation and economic growth in the context of Brazil using annual data for the period between 1980 and 1995, they found that although there exist a negative relationship between inflation and economic growth in the shortrun, inflation does not affect economic growth in the long-run. Their empirical results also support the superneutrality concept of money in the long run. This in turn provides empirical evidence against the view that inflation affects economic growth in the long run.

Gokal and Hani (2004) review several economic theories to ascertain consensus on the inflation-growth relationship and the empirical literature developed recently on this issue. This study tests whether a meaningful relationship held in case of Fiji. In order to estimate the effect of inflation on the economic growth, regression equations are used, in which many other determinants of growth are held constant. The findings indicate a weak negative correlation between inflation and growth, while the change in output remains significant. The results prove that the causality between the two variables ran one-way from GDP growth to inflation.

Mohd Fahmi Ghazali, Hanudin Amin, Mohd Zulkifli Muhammad, Siti Hajar Samsu (2008) in their paper entitled “Linkage between Money and Prices: A Causality Analysis for Malaysia.” investigated relationship between money and prices using monthly data of money supply M1, M2 and M3 and consumer price index (CPI) from
January 1974 to September 2006. They used Johnson approach for cointegration and Toda-Yamamoto causality approach for causality. The Johansen cointegration method suggests that there is a long-run equilibrium relationship between money supply with prices. Toda-Yamamoto causality tests found that there is uni-directional causality running from money supply to CPI.

Erbaykal and Okuyan (2008) examined the relationship between the inflation and the economic growth in Turkey has been in the framework of data covering 1987:1-2006:2 periods. The existence of the long term relationship between these two variables was examined using Bound Test. The empirical result show that there was no causality relationship found from economic growth to inflation, a causality relationship was found from inflation to economic growth.

Bigyan Shrestha (2010) used Nepal data from 1980 to 2009 in order to find out the impact of Money Supply on GDP and Price. This empirical study used three tests, Augmented Dickey-Fuller test, the Engle-Granger cointegration test and the Granger causality test. Researcher found that The Price, GDP, M1 and M2 all are stationary at first difference level. GDP and Price cointegrated with both of M1 and M2. Granger causality tests revealed that price level not affected by money supply, but the money supply is affected by price level.

Ahmed Elsheikh M. Ahmed and Suliman Zakaria Suliman (2011) investigated the long-run relationships between three macroeconomic variables (real Gross Domestic Product (GDP), money supply (MS) and price level (CPI)) have been examined for the Sudan economy using annual data over the period 1960 to 2005. To explore the short-run direction of causality between GDP, MS and CPI, Granger Causality test has been applied and in order to investigate the existence of long-run relationship, cointegration analysis has been employed. The direction of causation between real GDP and prices was found to be uni-directional from real GDP to CPI without any feedback. Regarding the causal relationship between money and prices, the analyses suggests that the causation runs from money supply to prices, but price level does not causes money supply. Finally, there is no causality between real GDP and money supply in the case of Sudan during the period 1960 – 2005. Further, the co-integration analysis established that the real GDP, money supply and CPI were found to be co-integrated suggesting a existence of long-run relationship.
Tara Prasad Bhusal and Sajana Silpakar (2011) in their paper “Growth and Inflation: Estimation of Threshold Point for Nepal” estimated threshold level of inflation in Nepal using annual data for the period 1975-2010. The study revealed the positive relationship between the inflation and the economic growth. The inflation and economic growth are one way related to each other, there is one way causal relationship from inflation to economic growth but not from economic growth to inflation.

Andreas G. Georgantopoulos and Anastasios D. Tsamis (2012). In this study researchers investigate the short run as well the long run relationships between money supply, inflation, government expenditure and economic growth by employing the Error Correction Mechanism (ECM) and Johansen co-integration test respectively for the case of Cyprus using annual data from 1980 to 2009. Collectively, empirical results imply that public spending promotes economic development in Cyprus. However, deficit financing by the government causes more liquidity effects but also inflationary pressure in the economy. Results show that inflation negatively effects economic growth probably due to adverse supply shock. Money supply should be allowed to grow according to the real output of the economy but excess growth of money causes inflationary pressure in case of Cyprus. Therefore, this paper suggests that the government should control its current expenditure that stimulates aggregate demand and to focus more on development expenditure, which stimulates aggregate supply and increases real output level.

Najid Ahmad and Uma-Tul Shafi Joyia (2012) examined the relationship between inflation and Gross Domestic Product of Pakistan. A time series data has been used to check the relation between inflation and GDP for the period of 1971 to 2011. Granger Causality test and Ordinary Least Square method has been used to obtain the empirical evidence. The results of Granger Causality test suggest that GDP causes inflation. The results of OLS reveal that there is a positive relation between inflation and economic growth of Pakistan. One percent increase in inflation will raise GDP by 0.45%. Inflation encourages productivity and output level.

Dr. Md. Elias Hossain, Bikash Chandra Ghosh and Md. Khairul Islam (2012). The main purpose of this study is to find out the longrun of relationship between inflation and economic growth in Bangladesh over the period 1978 to 2010. A stationarity test was carried out using the Augmented Dickey-Fuller (ADF) and Phillip-Perron
(PP) tests and stationarity found at first difference at 1% and 5% level of significance. The result of the Co-integration test showed that for the periods, 1978-2010, there was no co-integrating relationship between inflation and economic growth for Bangladeshi data. Further effort was made to check the causality relationship that exists between the two variables by employing the VAR-Granger causality at two different lag periods. The results showed the same at different lags. The first test was conducted using lag two (2) and in the result unidirectional causality was seen running from Inflation to economic growth. Further test at lag four (4) was carried out and it supported the first by also indicating a unidirectional causality running from inflation to economic growth. Thus, the study through the empirical findings maintain the fact that the causality that run from inflation to economic growth is an indication of relationship showing that inflation indeed has an impact on growth.

Khalil and Haider (2013) explained the determinants of savings in Pakistan via the process of economic growth by using Autoregressive Distributed Lag Model (ARDL) bound testing approach for cointegration techniques to check the robustness for long run relationship and ECM for short run dynamics during the period (1974-2010). They find that the per capita income inversely related with national saving rate, both in long run and as well in short run significantly. Money supply was positively linked with national saving. The growth of the income level had negatively related with national savings. Keynesian and permanent income hypothesis of income and savings was not valid for Pakistan because per capita income and income growth inverse function of savings at national level.

Mohamed Sayed Abou El-Seoud (2014) in his paper “The Effect of Interest Rate, Inflation Rate and GDP on National Savings Rate” investigated the effect of Real Gross Domestic Product (GDP), interest rate, and inflation rate on national saving rate in kingdom of Bahrain over the last twenty years. The study adopts Augmented Dickey-Fuller unit root test and cointegration test to examine the long run relationship between the variables under study. The findings indicated that the Real GDP growth rate has positive effect on national saving in the short run and significant at 5% level in the long run. Nominal interest rate has positive and significant effect on national saving rate at 1% level on the short run; however, its effect in the long run appears to be positive but insignificant, while the inflation has positive and significant effect on national saving rate in both the short run and the long run.
2.3.2 Review of Literature for India

Ramchandra (1983) used yearly data for the period 1951-71, to study the causality between money on one hand and both output (real and nominal) and prices. He used NNP at current and at 1960-61 prices, Narrow money, M1 as annual average monthly values, Implicit NNP deflator with base 1960-61. The study used Sims’ test with independent variables involving past, present and one future lags. The result revealed that Money causes both real income and price level, price level causes real income and Nominal income cause money.

Sharma (1984) investigated the causality between price level and money supply (M1 and M2) using Granger (1969) and Sims (1972) methods for the period 1962-1980 and established bi-directional causality between M1 and Price level as well as M2 and price level. Although he found that causality from M1 to Price level was much stronger than the reverse causality from price levels to M1.


Das (2003) examined relationship between money, price and output in India in his paper “Modeling Money, Price and Output in India: A Vector Autoregressive and Moving Average (VARMA) Approach.” The empirical finding revealed that there is bidirectional causality exist between money and prices and unidirectional causality between money and output, with causality running from money to output.

Athukorala and Sen (2004) examined the determinants of savings in India, during the period (1954-1998). The methodology used in this study involving the estimation of a saving rate function derived from the life-cycle model. The results of the estimated model provided an evidence of a statistically positive effect of the real interest rate, the growth and the level of per capita income, the spread of banking facilities, and the rate of inflation on saving. On the other hand, terms of trade and inward remittances by expatriate Indians witnessed a negative impact on the saving rate. Fiscal policy reported that public saving seemed to be an imperfect substitute for private saving.
The result relating to the inflation rate suggested that mild inflation seemed to have a positive impact on private saving.

L Krishna Veni and Pradeep Kumar Choudhury (2007) examined the relationship between inflation and growth of the Indian economy during 1981-2004. The results of the causality test prove that the variables, viz., growth and inflation are independent of each other in India. The results of the cointegration test confirm the fact that the two variables—inflation and growth—are not cointegrated. Therefore, it is evident that there is no long run relationship between these two variables in India.

Medhavin Bhalchandra Dave and Gaurang Dattubhai Rami (2008) in their paper entitled “A study of causality between money supply and price level in india (monthly data): 1953 to 2005” examined the relationship between money supply and price level using monthly data on two alternative measures of Money supply viz. Narrow Money (M1) and Broad Money (M3) and a measure of Price Level viz. the Whole Sale Price Index (WPI) for the Indian economy from June 1953 to December 2005. The results show that there is unidirectional causality running from WPI to M3 and M1. It means WPI Granger causes M1 and M3, However, M1 and M3 not Granger causes WPI.

Gaurang Rami (2010) “Causality Between Money, Prices and Output in India (1951-2005): A Granger Causality Approach” in his paper investigated relationship between money, price and output, using pairwise Granger causality test on annual data of the Indian economy covering a period from 1951 to 2005. Lag length is selected using standard criteria – LR, FPE, AIC, SC and HQ through VAR estimation. The results revealed that the Keynesian views that money does not play an active role in changing income and price is partially supported. However, the monetarist view that money (Narrow Money) plays an active role and leads to change in income in India.

Ashutosh Sharma, Abodh Kumar and Prof. Neeraj Hatekar (2010) investigated causality relation between money and output and money and prices by making use of monthly data covering the period of 1993:1 to 2009:9. The results show that causal and reverse causal relations between money and output and money and prices vary across frequencies. The causality running from money to output remains a short-run phenomenon. The relationship between money and output remained unidirectional for this sample period, with causality running from money supply to output. This study also found a unidirectional causality between money and prices, with causality
running from money supply to prices. The unique contribution of this study lies in decomposing the causality on the basis of time horizons and demonstrating that short run causality from money supply to output, long run causality from money supply to prices, as well as lack of long run causality from money supply to output.

Prasanna V. Salian and Gopakumar K. (2011) in their paper “Inflation and Economic Growth in India – An Empirical Analysis” investigated the cointegration and error correction models have used to empirically examine long-run and short-run dynamics of the inflation-economic growth relationship in India using annual data 1972-73 to 2007-08. The interesting results found in this exercise was that the, inflation and economic growth are negatively related. Second, the sensitivity of inflation to changes in growth rates is larger than that of growth to changes in inflation rates.

Ovyas, Narayan Prasad, and Alok Kumar Mishra (2011) had attempted to empirically examine the causal nexus between stock price, demand for money, interest rates, foreign institutional investment and exchange rates in India in the post subprime mortgage crisis period. The study employed Granger causality test, Vector Auto Regression and Johansen Maximum Likelihood procedure to examine the short run and long run dynamic interaction among the above mentioned variables for the period January 1993 to May 2009. The major findings of the study are: stock return affects exchange rate return, net foreign institutional investment and growth of demand for money. Growth of demand for money, in turn, affects interest rate. Interest rate is more affected by exchange rate return. Foreign institutional investment also affects interest rate. The cointegration test confirms that there does not exist any long run equilibrium relationship between stock return and exchange rate return.

Lekha S. Chakraborty (2012) examined whether there is any evidence of financial crowding out in the recent years of financially deregulated interest rate regime. Using the high frequency macro data, he found quite contrary to the popular belief that increase in fiscal deficit induces a rise in the interest rate, that there exists no significant relationship between the two. The conclusion drawn from the multivariate vector autoregressive analysis for the period from FY 2006[4] to FY 2011[4] revealed that the interest rate is affected by the unanticipated components of high-powered money, expected inflation, and fluctuations in capital flows. As the causality is not established from fiscal deficits to interest rates, the plausible evidence for nil financial crowding out is reinforced in the Indian context. A reverse causality runs from real
interest rate to deficit. This result is in conformity with the recent trend in Indian public finance where the share of non-interest expenditure in total expenditure is on the decline because of the sharp rise in interest payment. One of the principal reasons for the sharp increase in interest payment obligation is the rising cost of servicing the internal debt. The reason behind this can be attributed to interest rate deregulation, where the high interest rate fuelled the accumulation of more debt through increase in interest payments and the consequent debt-deficit spiral. The econometric results revealed that neither the long-term nor short-term interest rate is determined by fiscal deficit in India. This result has significant policy implications for interest rate determination in India, as the central bank has kept the policy rates unchanged in all recent policy announcements, citing prime reasons being the high fiscal deficits. Keeping the interest rates high or unchanged has negative implications for economic growth. While the central banks, globally, reduced the interest rates, only RBI of India deciding not to cut interest rates, as fiscal deficit— which does not have any empirical evidence for determining both shorts and longs—is high in India.

P. Srinivasan and M. Kalaivani (2013) in their paper entitled “On the Temporal Causal Relationship between Macroeconomic Variables: Empirical Evidence from India” investigated the dynamic interactions among macroeconomic variables such as real output, prices, money supply, interest rate and exchange rate in India during the pre-economic crisis and economic crisis periods, using the ARDL bounds test for cointegration, Johansen and Juselius (1990) multivariate cointegration test, Granger causality/Block exogeneity Wald test based on Vector Error Correction Model, variance decomposition analysis and impulse response functions. The empirical results reveal a stronger long-run bilateral relationship between real output, price level, interest rate and exchange rate during the pre-crisis sample period. Moreover, the empirical results confirm a unidirectional shortrun causality running from price level to exchange rate, interest rate to price level and real output to money supply during the pre-crisis period. Also, it is evident from the test results that there exist short-run bidirectional relationships running between real output and exchange rate, price level and interest rate in the pre-crisis era. In addition, the feedback relationship is also observed between interest rate and exchange rate variables in the shortrun. Most importantly, long-run bidirectional causality is found between real output, exchange rate and interest rate during the economic crisis period. And the study
results indicate short-run bidirectional causality between money supply and exchange rate, interest rate and price level and interest rate and output in India during the crisis era. Also, a shortrun unidirectional causality runs from prices to real output in the crisis period.

Faraji Kasidi and Kenani Mwakanemela (2013) in their entitled working paper “Impact of Inflation on Economic Growth: A Case Study of Tanzania” examined the impact of inflation on economic growth and established the existence of inflation growth relationship. Time-series data for the period 1990-2011 were used to examine the impact of inflation on economic growth. Correlation coefficient and co-integration technique established the relationship between inflation and GDP and Coefficient of elasticity were applied to measure the degree of responsiveness of change in GDP to changes in general price levels. Results suggest that inflation has a negative impact on economic growth. The study also revealed that there was no co-integration between inflation and economic growth during the period of study. No long-run relationship between inflation and economic growth in Tanzania.

Ashwani (2014) in her paper entitled “Determinants of Inflation in India: A Co-Integration Approach” investigated relationship between inflation and macroeconomic variable using annual time series data from 1981 to 2011. Co-integration method is used to identify the long-run relationship followed by error correction model for short-run relationship among the inflation and other macroeconomic indicators. The result found that there is presence of long-run relationship between inflation, money supply, private and social spending and exchange rate in India. Money supply, exchange rate and private final consumption expenditure contribute the inflation significantly.

Virender Kumar, Vijender Kumar and Raj Kumar (2014) had examined the effect of interest rate differential on net capital flows to India by taking net foreign institutional investments as proxy for capital flow. Monthly data from April, 2005 to December, 2012 were procured and analyzed using time series econometric modeling. The co-integration results show that interest rate differential does not have any significant long-run impact on net foreign institutional investments flows to India. Further, only two variables namely, foreign exchange rate and Bombay stock exchange return have significant impact on Net foreign institutional investments and between the two, Bombay stock exchange index/return is the major pull factor for Net foreign
institutional investments flows into Indian financial market. Results imply that monetary policy actions should continue to be guided by objectives related to inflation and growth and the management of capital flows resulting from monetary policy actions should be left to other instruments.

2.4 Conclusion

The classical growth theory was that savings led to investment and investment led to economic growth but economic growth does not led to savings and investment, while Keynes specified that Investment led to Economic Growth and Harrod Domer growth theory specified that investment as the key to promoting economic growth. On the other hand Solow model indicate the saving rate boosts steady-state output by more than its direct impact on investment, because the induced rise in income raises saving, leading to a further rise in investment. New endogenous growth theories of Romer (1986, 1990), Lucas (1988) and Barro (1990) claimed that the accumulation of physical capital are the drivers of long-run economic growth. Development and growth theories are replete with examples of how savings and investment play a critical role in promoting economic growth. In the Indian context, though empirical studies exist on the role of saving and investment in promoting economic growth. Some empirical studies support the classical growth theory, some studies agree with the Keynse and Harrod Domer hypothesis and some do not support either of these.

As the literature review indicates development and growth theories are replete with example of how saving and investment inflows do indeed economic growth. However these studies have the following limitations which this study carried out.

1. Most Indian study look at the relationship between savings, investments and growth by commonly testing for Granger causality separately between two concern variables. But studies on Granger causality procedure on the ground that they do not check cointegrating properties of the concern variables. If the variable cointegrated then the standard causality techniques lead to misleading conclusion as these tests miss some of the forecastability which becomes available through the error correction term. The traditional tests give only long run information, however cointegration and error correction modeling give short run information with long run.
2. Only limited Indian studies examine the long run relationship between these variables. But these studies only look at the relationship between savings and growth, ignoring the important effects of investment, or between investment and growth, ignoring the important effects of saving. For example, Sinha Dipendra (1996) and Agrawal (2001) only investigate relationship between savings and economic growth without taking into account the role played by investment in economic growth. Sinha Dipendra (1997), Shasia, S.V and Vuyuri S. (2005), Sinha, Dipendra and Sinha, Tapen (2007), P.K. Mishra, J.R. Das and S.K. Mishra (2008), Khundrakpam and Ranjan (2010) and Bichitranaanda Seth (2011) only investigate relationship between savings and investment.

3. Very limited studies attempt to disaggregate gross domestic savings and investment into four sector of private, household, private corporate and public sectors.

The overcome the above limitations, this study will focus on key economic interrelationship between gross domestic savings, gross domestic investment and economic growth in India in light of the popular growth theory various hypotheses. To fill these gaps, this study will (i) conduct unitroot test (ii) using the Johansson’s cointegration test for the long run relationship among the variables. (iii) carry out short run and long run estimates using the vector error correction mechanism.

Further to this measures of savings and investment will be disaggregated into the four sectors of private, household, private corporate and public sectors and relationship between these and also examines relationship between economic growth and other selected macroeconomic variables likes money supply (M1 and M3), inflation (WPI) and interest rate. Overall this thesis is a comprehensive study which examines the important variable of savings, investment, money supply, inflation, interest rate and growth to gather for the Indian economy.

However, before estimation is carried out, it is important to understand the trends and pattern of each of these variables. Therefore next Chapter provides an overview of savings, Investment and economic growth in India since independence.