CHAPTER I

INTRODUCTION

1.1 Background of the Study

Since the early work of development pioneers such as Albert Hirschman, Arthur Lewis and Raul Prebisch in the 1950s, one of the major concerns of development economics was the ability of the economic system to absorb the whole working population in productive activities. According to these theorists, the dualistic character of less advanced countries imposed important restrictions on their development potential. In their view, only overcoming that duality through a process of structural change would lead them out of poverty.

More than half a century later, this issue continues to be at the core of policy and an academic debate. In many cases, the long expected transformation of poor rural societies into modern urbanized and industrial economies has left a bitter flavor. Huge urban conglomerations have absorbed increasing numbers of rural migrants who instead of finding good quality jobs in modern industries ended up enlarging the pool of self-employed and informal workers in service activities. The sectoral structure of many countries has radically changed during these decades, but their dualistic nature has remained the same: labor markets are still sharply divided between a small fraction of good quality, highly paid jobs in modern industry and modern services and a large body of the working population employed in bad quality, low income activities, typically informal and in many cases oriented towards subsistence (Lavopa, 2015).

From a dual economy perspective, this concern actually reflects the need for higher rates of labor absorption in the modern sector of the economy. In a globalized world, this goal could hardly be achieved unless that sector is international competitive. In fact, it may be argued that the long-run survival of any job opportunity created in the modern sector would rely heavily upon its capacity to face global competition.

It follows that the ability of the modern sector to absorb labor needs to be assessed together with its capacity to compete in world markets. This capacity, in turn, is ultimately shaped by the innovation and technological capabilities of the country. Though price competitiveness based on the exploitation of cheap labor might be a suitable mode of entry into international markets, there

is a widespread consensus today that this is not a sustainable avenue towards development ultimately the factors that really matter for international competitiveness are quality upgrading, quality differentiation and technological change. Nevertheless, economic transformation from rural agricultural to modern industrial or services sectors is the fundamental requirement to achieve high and sustainable growth. This can be said as the rapid and sustainable economic development in most of the developed as well as emerging economies has been achieved with the permanent shifts in their economic structure over the long-run. They have experienced a gradual transformation of the economy from rural subsistent agriculture to the modern industrial and then ultimately to the services dominant.

Lewis (1954) emphasized the need to transform the structure of an economy from low labor productive agriculture sector to the high labor productive modern industrial sectors. In the least developed countries (LDCs), a large numbers of population depend upon traditional rural subsistence sector with surplus labor and hence, such surplus labor will transfer to a highly productive modern sector in the process of development. Observing the happenings in the United States, Fuchs (1980) emphasized the importance of services sector in the economy, particularly, the changing patterns of employment, which grew across western economies as time passed. Likewise, Fuchs (1980) found that to augment the contribution of services sector, it is required to increase participation of females in labor force as working-wives who are more likely to spend more out of their earnings to the services. Further, as proposed by Baumol (1967) in cost-disease hypothesis, the growth rate of advanced economies lowered down significantly when contribution of services in the GDP expanded over time being concentrated share of it.

It is a historical inevitability that all successful developing countries have undergone a fundamental and potent process of structural transformation. Structural transformation or 'structural change' is therefore a critical prerequisite for economic and social development. Through its impact on labor productivity, structural change plays an instrumental role in sustaining economic growth, generating productive employment, and raising living standards. In addition, economic processes that support structural transformation and economic diversification are also more likely to foster inclusive and sustainable growth especially through the expansion of modern sectors and higher value added exports.

In simple terms, structural change can be defined as the reallocation of labor from low productivity sectors to more dynamic (higher productivity) economic activities. For most developing countries, this would usually require shifting labor from subsistence agriculture to commercial agriculture, manufacturing and modern services. This process has strong implications for the economy (e.g. what is produced and how), but also for how society is organized. According to Timmer and Akkus (2008), structural transformation entails four interrelated processes: (i) a declining share of agriculture in total output and employment; (ii) rapid urbanization as people migrate from rural to urban areas; (iii) the rise of a modern industrial and service economy; and (iv) demographic transition that leads to a spurt in population growth. Hence, structural transformation has implications that go beyond the economic sphere.

The structure of Nepalese economy according to the contribution of major sectors is now changed. The data for Nepal show that a steady decline in the agriculture sector, a modest increase in the secondary sector and a rapid expansion of tertiary sector. The share of primary sector was 71.8 percent in 1975 which is estimated to be 28.2 percent in 2018 (MoF, 2017/18). However, share of service sector is estimated to be reached 57.6 percent and share of manufacturing sector is only 14.2 percent (MoF, 2017/18). The fall in the share of primary sector has been distributed to secondary and tertiary sectors with the latter having large chunk. Thus, the study expects the need to study empirical relationship between major sector shares with real GDP of Nepal along with conventional growth regressors. It anticipates that the sectoral shift measured in terms of contribution to real GDP has contribution to growth by absorbing unlimited labor of agriculture sectors to modern sectors manufacturing and service.

1.2 Statement of the Problem

Sector share is one of the major forms of economic growth, which leads to economic development, i.e. real per capita GDP growth. Every sector has its own impact on economic growth as well as on per capita income. Empirical studies investigated the relationship between sector shares and per capita income. To investigate the relationship among primary, secondary, tertiary sector and per capita real GDP for both long term and short term provide the

performance to these sectors which is helpful to balance inputs and outputs in the economy. Relationship among these variables is important for main two reasons. Firstly, sector shares have always played a significant role in economic growth and per capita income. Sector share stimulate immense economic growth by expanding business activities, increasing employment opportunities and encourages FDI in the country. Secondly, it is important for government what policies should it adopted regarding sector shares in order to sustain economic growth and per capita income.

For designing economic development policies, the evaluation of sectoral economic performance and sectoral growth linkages are both very important issues. Sectoral interaction is one of the most important sources of economic expansion in a competitive economy. A sector with high backward and forward linkages should be the focus of the development effort and there is a strong case for concentrating investment in this sector. The expansion of this sector has significant impact on increasing output, per capita income and employment levels throughout the economy. The primary sector is the main sector of the economy. This sector provides the food, labor, capital, foreign exchange and other inputs, which must play a crucial role in establishing the framework for industrialization. The relative share of agriculture in GDP declines sharply while the industry share increases significantly and provides the leading role in the economic growth of the economy. Rising industrial wages, on one side, can faster growing agriculture product demand. On the other side, higher wages is the root cause of down falling in the labor's share in the agriculture sector.

Nepal still remained as one of least developed country in terms of social economic indicators. GDP per capita was $ 1004 in FY 2017/18 (MoF, 2018) remaining under least developed country category and human development index ranked 149th out of 189 with the HDI value 0.574 (UNDP, 2018). There are several constraints to economic progress. Some of major constraints are more population depend on primary sector, lack of industrialization, burden of trade deficit, low development expenditure, high regular expenditure, growing unemployment and underemployment, political instability, growing inequality, insecurity, corruption and growing volatility and inflation, lack of infrastructure like electricity and better road connectivity. Such kinds of crisis are deepening further. To identify root causes of the crisis for slow pace of economic growth and find out the way to overcome from the vicious cycle of crisis need to

analysis of related factors of problems. The proper identification of effective causes of problem can be helpful to find out the remedy of those.

There are different approaches for analysis of different aspect of the economy. The fundamental aspect of economy is structural shift process, in terms of share of primary, secondary and tertiary in the real per capita GDP. For the desirable speed of economic growth, there should have a proper speed of structural shift process of labor forces from traditional agricultural sector to modern non-agricultural sector such as manufacturing and services and the contribution of agriculture sector to overall growth rate must be stagnant even after labor force reduced in this sector. Further, sector contribution of primary, secondary and tertiary must be positive and significant due to shift of labor force from traditional sector to modern sector. Nevertheless, primary, secondary and tertiary sectors must be grown rapidly in a balanced manner and they should contribute to growth in such a way that there is inter sectoral balance between them. In Nepal, the share of primary sector of this latest decade is nearly about 33.3 percent (MoF, 2018) and it was 71.8 percent in 1975 (MoF, 2009). To gain prosperity of economy, there should be structural transform from agro-based to non-agro based sectors.

The structural transformation process is still incomplete and running with slow pace. However, the share patterns of agriculture is continuously distributing to secondary and tertiary sectors and it seems that the economy is taking right direction in terms of sectoral shares contribution to overall economic growth. In this backdrop, this study intends to examine the relationship between shares of primary, secondary and tertiary sector and real per capita GDP whether such shares separately contributing to real per capita GDP positively and significantly in Nepal or not.

The following research questions need to be answered:

i. What is the growth trends and composition of primary, secondary and tertiary sectors in Nepal?

ii. Does growth of primary, secondary and tertiary sectors enhance real per capita GDP in Nepal?

1.3 Objectives of the Study

The general objective of this study is to examine the relationship among primary, secondary, tertiary sectors share and real per capita GDP in Nepal. However, the specific objectives are:

i. To analyze trends and composition of primary, secondary and tertiary sectors output in Nepal, and

ii. To explore effects of primary, secondary, tertiary sectors on real per capita GDP in Nepal.

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1.4 Significance of the Study

Processes of modern economic growth and catch-up do not merely involve significant increase in productivity levels and also entail changes in the distribution of inputs and outputs across sectors. Kuznets has stated that "It is impossible to attain high rates of growth per capita or per worker without commensurate the substantial shifts in the shares of various sectors" (Kuznets, 1979). The hypothesis that structural change is an important source of growth and productivity improvement is a central tenet of the growth literature and is derived from classical models of a dual economy (Lewis, 1954). Every country's economy is composed of economic sectors, while composition and development of economic sectors is a rather new trend in economics and is called "structural economics".

Economic growth cannot be perceived without the role of economic sectors, as they are the constituents of our economy. Structural change is the central insight of development economics. Therefore, this study measured the contribution of major sectors of Nepalese economy in the sense that either structural shift from traditional sector to modern sectors interaction contributing to real GDP positively or not. The results would serve as guidance in policy formation strategy focusing on balanced sectoral growth policy of structural change.

1.5 Limitations of the Study

The study has the following inherent limitations:

i. This study covers the time series data between FY 1975/76 to 2016/17.
ii. GDP implicit price deflator has used to convert nominal data of all required variables into real figures.
iii. Before the fiscal year 2000/01, no readily data by major sectors are available. Thus, primary sector figure is derived from adding output of agriculture, fisheries and forestry; and mining economic activities. Secondary sector data is generated by adding the output of electricity, gas and water; and construction economic activities and summing the output of trade, restaurant and hotel; transport, communication and storage; finance and dwelling; and community and social service provided the data for tertiary sector.

1.6 Organization of the Study

This study consists of six chapters to make it more systematic. The very beginning part of the study is the preliminaries i.e. the title and others. The first chapter deals with background of the study, statement of the problem, research questions, and objectives of the study, significance of the study, study limitations and organization of the study.

The second chapter covers theoretical framework of the study. It also deals with an extensive review of literature regarding international and national context covering cross country studies as well as country case studies.

The third chapter explains research methodology. It includes research design, sample period, sources of data, sample size, estimation procedures, time series properties and data and measurement issues along with detail discussion on specification of models and definition of variables.

The fourth chapter describes overall historical trends of economic growth in Nepal. It also explains complete historical story of share of primary, secondary and tertiary sector in GDP of Nepal. Nevertheless, both dependent and explanatory variables are explained with descriptive

statistics. It explores the empirical relationship between real per capita GDP and share of primary, secondary, tertiary, sector in Nepal. Different econometric tools and techniques of data analysis are used to establish the linkage between real per capita GDP and share of agriculture, manufacturing and service sector.

The fifth chapter presents major findings, conclusions, and recommendations.

CHAPTER II

REVIEW OF LITERATURE

Literature review formulates the foundation of previous developed theories. Sector shares and economic growth is very broad research field. Literature review provides additional information on agricultural, manufacturing, services sectors and economic growth. This study entails the relationship among economic growth, agriculture, manufacturing and services sectors in Nepal.

2.1 International Context

The theoretical framework is considered to assist the reader in developing rational sense of the relationships of the variables and factors that have been related to the problem. It offers relationships between all the variables so that the reader can comprehend the theoretical link between them. A theoretical framework provide guidance in research study, evaluate what things researcher is about to measure, and what statistical link have to look for.

2.1.1 Economic Base Theory

Economic base theory suppose that all local level economic relevant activities can be labelled as basic or non basic. Firms that sale stuff to both local and an export market essentially, be allocated to one of these areas or some means of assigning their employment to each sector must be employed. Ways of allocating firms to basic and non basic sectors is debated in the different techniques outlined below.

Why the difference between basic and non basic is important? Economic base theory profess that the ways of strengthening and improving the local economy is to establish and expand the basic sector. The basic sector is therefore determined as the engine or wheel of the local economy. The economic base technique is on a rely on simple causal model that asserts the basic sector is the basic reason of local economic growth, that it is the economic base of the local economy. Economic base theory also points that the local economy is at its best when it promotes those economic sectors that are not linked to the local economy. By establishing firms that depends mainly on external markets, the local economy offers a protective shell from the economic downfall since, it is believed, that these external markets will still be powerful even if the local

economy suffers from serious issues. In opposite to that, a local economy completely rely upon local factors will have immense problem responding to stagnant economy.

2.1.2 The Solow Model

The Solow growth model is representative of neo-classical school which is highly stable and assumes a multifactor production function including labor and capital which are assumed to be close substitutes. It assumes that the production function increases with each input and input bears diminishing marginal return. Production function under this model linearly homogenous which means zero units of input are used for either K or L, then nothing is produced. Also the production function shows the constant returns to scale. The Solow Models (1956, 1957) consist of a production function which is given by: $Y = F(K, L)$.

Where, Y is output, K is capital and L is labor. Capital stocks include plant and machinery, bridges, factories and labor represents economically active population. Consequently, for an economy to grow based on this model there must be an increment in the stocks of capital through investment and supply of labor through population growth. Investment on capital stock depends on savings and capital inflows i.e. such as external debt, grants, foreign direct investment, remittances, can be used as substitute or to increase the domestic fund hence increase in capital funds. Solow model can be augmented adding extra explanatory variables into the equation. This study flow augmented Solow type of model examining core messages of the economic base theory.

2.1.3 Harrod Growth Model

This model was developed by Harrod in 1939. This model is dynamic analysis of growth rate and attack on classical theory of full employment proposition. This model is considered as representative of Keynesian growth theory. This model also attacks the wage-price flexibility assumption of classical theory. This model assumes that economy is always less than full employment. Full employment under this Harrod model is like Razor's edge balance which is very momentary. Moreover, the steady state equilibrium is remote possibility when it is disturbed once.

$$\boxed{\frac{s}{v} = \frac{\Delta Y_t}{Y_t}}$$ … … … …. (i)

Where,

s = Marginal Propensity to Save ($0 \leq s \leq 1$)

v = capital output ratio, v is always positive.

This is the fundamental equation of Harrod growth model. This equation states that growth rate of national economy depends on growth rate of saving at given capital output ratio.

2.1.4 Domar Growth Model

Domar growth model is the integration between classical and Keynesian income determination model with dynamic analysis in them. This model is considered as highly unstable model. Stability under this model is like Razor's Edge. This model shows dual effect of investment both demand side and supply side. The demand side of economy is income generating force which is based on Keynesian school. On the other hand, capacity generating force which is supply side and based on classical school.

Fundamental equation of Domar model is;

$I = I_0 \, e^{\square \, s \, t}$

Where,

I = Investment

I_0 = Initial Investment

$\square$s= Desired Growth Rate

2.1.5 Lewis Transformation

Lewis (1954) emphasizes the need to transform the structure of an economy from low labor productive agriculture sector to the high labor productive modern industrial sectors. In the least

developed countries (LDCs), a large population depends upon traditional rural subsistence sector with surplus labor and hence, such surplus labor will transfer to a highly productive modern sector in the process of development.

2.2 Empirical Literature

Abdullah (1993) examined the relationship between agriculture exports and growth in Malaysian agricultural sector. Annual observations were used by the author for the period of 1960 to 1989. Vector Autoregressive (VAR) model was used for the results. According to the results, there was still a very small use of capital in agriculture sector. A large amount of capital should be used for the growth of this sector. The results showed that there was positive relationship between agriculture export and economic growth. It concluded that increase in the agricultural export would help to maintain a large contribution in the Malaysian economy.

Khan, Hasan, and Malik (1995) investigated on the variables exports, growth and causality applying Co-Integration and Error-correction Modelling. This study investigated the direction of causation between exports growth and economic growth and found a stable, long-run two-way relationship between exports as well as manufactured exports and output, but a one- way stable relationship between output and primary exports, further found a bi-directional causation between exports growth and economic growth. Based on these findings, it was recommended that export promotion policy with a major emphasis on manufactured exports must be vigorously pursued to achieve a higher rate of economic growth.

Echevarri and Cristina (1997) studied that the relation between income levels and rates of growth were explained as effective changes in sectoral composition driven by different income elasticity's of premises, manufacturing and services. They used dynamic general equilibrium methods to interrogate the connection between sectoral component and achievement. This study had proven that growth was influenced by sectoral composition but in the opposite order.

Henneberry, Khan, and Piewthongngam (2000) examined the relationship among Pakistan's agriculture sector and industrial sector. Authors took Pakistan because Pakistan was the semi-industrialize country and also its economy heavily depended on agriculture. Annual observations of time series were used. According to the results, these sectors were complementary while industry was getting more benefits from agriculture.

Koivu and Tuuli (2002) studied the connection between financial sector and economic development in transition countries. They used fixed effects panel model and unbalanced panel data from 25 transition countries during the period 1993 to 2000. Results showed that the interest rate margin was significantly and negatively related to economic growth in the transition countries.

Tang (2002) analyzed the inter sector integration in Malaysian economic transition and change. He used time series data in this study for the period of 1960 to 1998. According to the results there was no long run stability exist between these sectors. Manufacturing output was influenced by the agriculture sector in the short run but the agriculture sector affects the services sector output negatively. There was a very limited influence of manufacturing sector on the output of agriculture sector. The study concluded that there was a need of growth in agriculture sector because any increase in this sector had sizeable and positive effect on the growth of manufacturing sector.

Roshan (2003) examined the export led growth hypothesis for Iran by employing time series data for the period 1970-2001. To examine the causal connection among exports and economic development, the author used Granger causality and co-integration modeling techniques. According to the results if there was growth in exports, then there was growth in GDP. The export of oil had very important role in the economic growth of Iran. This study suggested that the manufacture sector exports also had potential for the growth of economy.

Alfaroa, Chandab, and Kalemli-Ozcanc (2004) evaluated that there was a link between foreign investment, financial markets and economic advancement. Empirical inspection based on the transnational data between 1975 and 1995 showed that FDI as a sole player played vague role in promoting economic advancement. Thus, foreign states that belonged to better off financial markets availed great from FDI. The results were applicable to various judgmental factors of measuring financial market progress and to the different elements of economic progress and careful thinking about the ingenuity.

Dritsakis and Nikolaos (2004) examined the influence of tourism on economic development of Greece in the long run. Author used Causality analyses for the outcomes. Time series data was used in this study for the period of 1960 to 2000. According to the results a co-integrated vector

exist between real effective exchange rate, gross domestic product, and international tourism earnings. Granger causality tests which were based on Error Correction Models (ECMs) had indicated that international tourism earnings had strong Granger causal relationship with economic growth. Real exchange rate had also strong causal relationship with economic growth.

Li and Liu (2005) determined that FDI influenced the economic progress. For the period of 1970 to 1999, panel data of 84 states were employed. Authors used single equation and simultaneous equation system techniques for the results. According to the results, there existed a strong connection among FDI and economic development from the mid-1980s onwards. There was a strong influence of FDI on economic growth with human capital while there was significant negative relationship among technology gap and FDI.

Katircioglu (2006) analyzed the connection between agricultural sector and economic development in North Cyprus. Time series data were used for the period of 1975-2002 to gauge the causality direction among agricultural growth and economic growth. According to the results, the agriculture output and economic growth were co integrated and were stationary at their levels. The relationship between these two variables was stable and such relationship between was bidirectional in the long run.

Son, Liu, and Li (2007) checked the linkages of construction sector among China and South Africa. The object of this paper was to compare the economic pull and push effects of construction sectors between the China and South Africa. There was very important role of construction sector in growth of GDP and also in generating the employment opportunities in both countries. Annual observations from 1992 to 2002 were used. According to the results, South African construction industry had features of both developed and developing economies. Authors suggested that the construction sector of South Africa should pay more attention on the latest techniques.

Chakraborty and Nunnenkamp (2008) did a sector level analysis between India's economic reformation, economic improvement and FDI. Author used Granger causality test to examine the causal relationship by considering industry FDI and outcome. For studying industry FDI and outcome data, panel co-integration framework was applied. The growth effects of FDI varied widely across sectors. FDI stocks and output were mutually reinforcing in the manufacturing

sector, whereas any causal relationship was absent in the primary sector. Most strikingly, it was found that the only transitory effects of FDI on output in the services sector. However, FDI in the services sector appears to have promoted growth in the manufacturing sector through cross-sector spillovers.

According to the results, FDI stocks and output were combined in the long run manner. At the aggregate level, FDI and output both were co-integrated in the short and in the long run. However, the output growth was attracting more to the FDI as compare to the FDI in boosting economic growth. At the sector level, FDI was affecting the growth of manufacturing sector more as compare to the other sector and its impact was mostly limited to this sector. In service sector the feedback effects were short termed between output turn out and FDI. At the industry level Granger causality test estimated that there was the elasticity of output with respect to the FDI. In turn of economic impact the manufacturing sector of India was getting more benefits from FDI in post reform. Development impact of FDI was greatly different between sectors. There was no causal relationship between FDI stocks and production in the main sector but both were symbiotically boosting in the production sector. Although there was very limited effect of FDI on results in the service sector but the appearance of FDI in the service sector was promoting the growth of production sector through trans-sectoral effects.

Gemmell, Lloyd, and Mathew (2008) examined the linkages of dynamic sectoral and structural Change in the developing countries. Time series data were used to investigate the linkages between manufacturing sector, services sector, and agriculture sector for the GDP of Malaysia. Econometric techniques were used to investigate the linkages between these variables of Malaysian economy. According to the results, the manufacturing GDP reduced the output of agriculture sector in the short run but it was associated with agricultural expansion in the long run. On the other side, service growth seemed to be unfavorable for the growth of agriculture sector in the long term as well as in the short term.

Yazdani, (2008) studied the relationship between development in financial market and agricultural GDP growth in Iran. Annual data for the period 1979-2005 was used. VAR modeling was used for the results. According to the results, financial growth and other main growth factors were empirically examined in Iran agricultural sector. The causality between financial

development and GDP growth was evaluated. Author found that financial development, capital stock, international trade and real interest had significant impact on agricultural growth.

Alam, Hoque, Khalifa, Siraj and Ghani (2009) analyzed the prevailing situations of the agricultural sector in Bangladesh using both secondary and primary data. Findings showed that contribution towards GDP shared by agriculture sector was dramatically descended, while the decline of employment was not notably dropped. The article examined the probable underpinning reasons causing agriculture as a less productive industry. With many reasons, it was noted that education system was not currently supporting the development of agriculture industry. This article proposed a policy change towards agriculture education aiming an improvement of agriculture economics of the country which ultimately bring national development.

Beura and Kaboski (2009) evaluated traditional explanations for structural changes. This study integrated both standard growth model and quantitatively evaluated them vis-a-vis time series. It was identified a set of puzzles for standard theories: (i) the model could not account for the steep decline in manufacturing and rise in services in the later data; (ii) the standard model requires implausibly low elasticity of substitution across goods to match the consumption and output data; and (iii) the behavior of consumption and output shares differs significantly from that of employment shares. It also argued that models that incorporate home production, sector-specific factor distortions, and differences across sectors in the accumulation of human capital were promising avenues to amend the standard models.

Kaya (2009) examined the link between aid to agriculture, economic growth and poverty reduction. Generalized method of moment estimation technique was used with cross sectional time series data. According to the results, there was significant absolute relationship existed between aid to agriculture and growth. Aid to agriculture affected the poverty directly as well as indirectly.

Wang (2009) studied the different effects of FDI on the economic growth of the host country's different sectors. Panel data of 12 Asian economies was taken for the period of 1987 to 1997 and panel regression was used for the results. Results showed that impact of FDI was different from country to country economic growth. There was very strong evidence that the impact of FDI was

very positive and strong on the growth of manufacturing sector of the host country. But the FDI inflow was not playing the significant role in the growth of the sectors other than the manufacturing.

Ali, Ali and Fatah (2010) analyzed the dynamic interaction among macroeconomic indicator and agricultural income in Malaysia. Authors found that macroeconomic policy changes had affected Malaysian agriculture economy greatly in recent years through its impacts on money supply, exchange rates, interest rate and inflation. However money supply and rates of interest played a crucial role to influence agricultural performance in that country.

Chakrabtory and Basu (2010) checked the two way link among FDI and economic growth for India. Annual observations were used. Structural co-integration model along with Vector error correction mechanism was used for the result. According to the result, FDI did not Granger caused the GDP in India but the GDP Granger caused the FDI. There was some positive short run impact of trade liberalization policy on the FDI flow.

Chebbi (2010) investigated the relationship among energy consumption carbon emissions and the sectoral components of output growth in Tunisian. Time series data for the period of 1971 to 2005 were used. According to the results, there was effect of energy usage on the economic development of Tunisia. In the short run, dynamics showed that linkages among consumption of power and economic development was not uniform in the three primary sectors. There was no uniformity among economic growth and environmental pollution across sectors (agriculture, industry and services).

Humpries and Knowles (2010) analyzed that if agriculture contributes in the growth of economy. Augments the Solow Swan model was used. Time series annual data were used. According to the results, the labor of agriculture sector which transfer to the other sectors was connected with economic growth.

Hye, Malik, and Mashkoor (2010) investigated the relationship among expenditure of government, prices of agricultural products and agricultural growth in Pakistan. Time series data were used in this study for the period 1971 to 2007. Autoregressive distributed lag model (ARDL) was used to get the results. The results showed that for the growth of agriculture sector

the expenditure policy and price policy of the government both were very important. Agricultural sector progress depends a lot on these policies of the government.

Junying (2010) examined the relationship between agricultural loan and forestry agriculture growth. Time series data from 1990 to 2008 were used. Results showed that agricultural loan highly correlated with forestry agriculture growth in Hubei and a long term stability relationship was found among the variables. In the promotion of agriculture industry, the agriculture loan was playing a vital role and the role of forestry agriculture GDP growth in promoting agricultural loan was not obvious.

Kathuria & N (2010).analyzed whether the manufacturing has acted as an engine of growth for the Indian states and also evaluated the current path of industrialization were sufficient to generate the jobs necessary to absorb the growing population of Indian states.

The analysis was reinforced by computing productivity levels and productivity growth of both organized and unorganized manufacturing sector across major Indian states. This was done by employing a technique by Levinsohn and Petrin (2003) that accounts for simultaneity bias. In order to do so, the study used unit level data for both organized and unorganized sectors and aggregates at 4-digit level. The results indicated that manufacturing had acted as an engine of growth for the period 1994-95 to 2004- 05. This was despite its declining share over the period. On the other hand, despite continuous increase in the share of services in the last 2-3 decades, it was not unequivocally acting as an engine of growth.

Analysis yielded that it was primarily the factor accumulation, especially the capital, not the productivity growth, that was driving output. It was also concluded that the trend of growing without creating employment was not sustainable and pointed out to implement appropriate policy interventions so that states follow desired growth path.

Ragoobur (2010) examined the long run and short run impact of the services sector on economic growth in Mauritius. The autoregressive distributed lag (ARDL) model was applied on time series data over the period 1975 to 2009. The result showed that the services sector contributed positively to economic growth with a larger growth impact. It was also confirmed the stability of the relationship between service sector development and economic growth.

Tambunan (2010) studied the importance of agricultural growth for poverty reduction in Indonesia. Annual observations were used. The main purpose of the paper was to examine the important role of agriculture growth towards poverty reduction in Indonesia. According to the results agriculture sector was still generating the biggest employment opportunities in Indonesia and the majority of Indonesian families were depending on the agriculture sector. Author suggested that in Indonesia poverty was the main problem of the rural areas and poverty reduction mostly depended on the performance of the agriculture sector. There existed cause and effect relationship between performance of agriculture sector and poverty reduction.

Mani, Bhalachandran, and Pandit (2011) studied about the investment of public in agricultural and GDP growth. It was another way to look at inter-sectoral linkages and policy implications. Annual data were used for the period of 1971 to 2009. Industry, service, and agriculture sectors were taken for explanatory variables. According to the results, there was strong relationship between industrial sector and agriculture sector and also there was strong relationship of industry and agriculture sector with services sector. There was a significant impact of public investment on the private investment in both agriculture sector and industrial sector.

Salami and Kelikume (2011) evaluated the relationship of manufacturing sector and the other sectors of the Nigeria. Time series data from 1986 to 2010 were used on quarterly basis in this study. To examine the impact of change in manufacturing sector output on the other sectors output Granger causality test and the vector auto regression method were used. According to the results relation between manufacturing sector and other sectors of Nigerian economy was very weak. There was no causal relationship exist between the manufacturing sector output and other real economic activities which was measured through the real gross domestic product. The study concluded that manufacturing sector was not playing its role in the progress of the other sectors of the economy.

Srikanth and Sathyanarayana (2011) analyzed the co-integration between Gross Domestic Product (GDP) and Agricultural Sector to study the causal relationship between Gross Domestic Product (GDP) and Agricultural Sector. The stochastic property of the variables was analyzed by employing unit roots test. Since, both the variables are integrated to same order; co-movement between the Agriculture Sector and GDP had been tested by the Johansen's Trace and Maximum Eigen value test. Johnson's co-integration test indicated that there exists of co-integration

between GDP and Agriculture Sector. Hence, it could be inferred that the agriculture sector and GDP had long-run equilibrium relationship between them. Granger Causality test was conducted and found there was an existence of significant causal relationship in both the directions between GDP and agriculture sector.

Szirmai (2011) overviewed of theoretical arguments and empirical evidence for the proposition that manufacturing had functioned as an engine of growth in developing countries in the past 50 years. There was no doubt that manufacturing had been an important driver of growth in most developing countries. But not all expectations of the engine of growth hypothesis were borne out by the data, in particular not with regard to capital intensities and labour productivity growth. The review of the secondary literature also presented a mixed picture. The older literature was tending to emphasize the importance of manufacturing, the more recent literature found that the contribution of service sector had increased. Manufacturing was definitely important, especially in the period 1950–1973 and more so in developing countries than in advanced economies. It continued to act as an engine of growth up to the present. But in the advanced economies, the contribution of the service sector had become more and more important and the share of services in GDP was observed well above 70 per cent. These trends justifiably raised the question whether manufacturing would continue to be the engine of growth in catch-up economies that it had been since 1950. The historical evidence provided stronger support for the engine of growth thesis.

This paper argued that there were no important examples of success in economic development in developing countries since 1950, which were driven by industrialization. All the Asian success stories were stories of industrialization. Neither tourism, nor primary exports, nor services had played a similar role, with the possible exception of software services in India since 2000. The empirical data discussed in this paper were primarily data for developing countries in Asia and Latin America.

Alataweneh, (2012) examined the relationship between manufacturing, services, and agriculture sector. Vector error correction model was used in this study for the results. According to the results the restructuring of banking and improvement in the service quality were very beneficial for the agricultural sector. Agriculture sector was also getting benefits from the development of

commerce and service sector. The credit market constraints could not slow down the growth of agriculture sector in Palestine.

Behera (2012) analyzed the sectoral shares domestic product and inter sectoral linkages in Indonesia at state level. Author used time series data for the period 1980-81 to 2011-12. Error correction model was used. According to the result in the growth process a weak linkage was found among the primary and secondary sector. There was a weak relationship among the sectors in the short run. Although the linkage among the sectors was significant, but it was not linked with three sector analysis where primary sector was completely missing for a relatively faster adjustment towards long run equilibrium rate of growth.

Gamhewage and Peiris (2012) evaluated the sectoral interdependence evidence from an emerging economy. Quarterly time series data were used for the period of 2000 to 2010. To get results, Augmented Dickey-Fuller (ADF) test, Granger causality test, Vector Autoregressive (VAR), Variance decompositions and Impulse response analysis were applied. According to the results, the most influential and the most independent sector was the service sector and agriculture and manufacturing sectors heavily depended on this sector. According to the study, the results provided important information to individual investors and also to the policy makers for the practical application and adjusting the strategic decisions.

Gilaninia, Mousavian, Salimi, Zadeh, Makarehchian, and Seighalani, (2012) examined the important component on economic growth. Components of real exchange rate deviation, effect monetary variables, the importance of foreign capital flows, the theory of equality power and structural models were used for measuring real rate deviation indicator , deviation of real exchange rate in each model makes a negative impact on economic growth in Iran, in economical real variables (production and employment) and amount of money could not find significant relationship and monetary policy was neutral in Iran and real Gross Domestic Product (GDP) didn't have strong fluctuation in recent years. In examining the role of globalization in attracting foreign capital, the results showed a positive relationship between foreign direct capital flows and investment in portfolio on economic growth in countries that have a higher degree of globalization. Finally, commercial cycle fluctuations were caused decrease economic growth in long term and fluctuations in output growth led to distrust in production and was caused reduces Investors and economic growth in the long term.

Matahir (2012) studied the linkage between Industrial sector and the agriculture sector; He used time series data from 1970 to 2009. Co-integration test is used to check the long run relationship between the variables and Granger causality test was used to check the causality direction among the sectors in near and far off future outputs. According to the results industrial sector and agricultural sector were co- integrated in the long run. There was one way causality direction between these variables which was from industrial sector to the agriculture sector in long run as well as in the short run. The conclusion of this study was that the output of agriculture sector may improve by the industrial sector.

Ramaswamy and Agrawal (2012) analyzed employment growth, structure, and job quality outcomes in manufacturing and service-sector in urban India spanning the period 1999-2000 to 2009-10. The context was that of dynamic growth of service-sector in India beginning in the 1990s. This raised the question whether India would skip the traditional sequence of agriculture to manufacturing with services taking up the leading sector role in India's growth path. It was also studied employment growth and related aspects of employment structure using the NSS surveys of employment and unemployment carried out in 1999-2000 and 2009-10 with a view to throw more light on the future role of manufacturing and services as providers of employment to large numbers joining the labour force and it was not found any acceleration in the service-sector employment growth relative to manufacturing in the urban areas of India. It was also found that the young males had increased their share of regular employment both in manufacturing and services. However, Greater duality in services sector in terms of the incidence of informality and wage inequality was found. In the service-sector those with more skills were receiving higher real wage. The service-sector was relatively more skill demanding than manufacturing. It showed that skill composition of the workforce was markedly different between the two sectors with services clearly skill biased. Social security conditions were not found to be relatively much superior in services. The results strongly suggested that service-sector was an unlikely destination for the millions of low skilled job seekers. India needs to focus on manufacturing sector to provide large scale employment.

Elbeydi (2013) checked the causal relationships among agricultural output and economic growth in Libya and employed time series data for the period 1962 to 2010. Vector error correction model (VECM) was used. According to the results, there existed a long run unidirectional

causality among agriculture production and GDP. Agricultural sector in Libya was playing a major role in the progress of economic growth and it was expected that that sector would play a major role in the progress in the future years.

Farooq, Sabir, Tahir and Rasheed (2013) identified the key factors like agriculture, industrial, the services sectors output, exchange rate and the trade openness on the economic growth in Pakistan. Time series data spreading over the last 37 years (1975-2011) were collected from world development indicator (WDI). The empirical analysis used the Johansen VAR-based co-integration approach to examine the sensitivity of real economic growth to changes in the explanatory variables in the long-run. The estimated coefficients of agriculture, services, industrial output, trade openness and the exchange rate positively and significantly affected the real GDP. The most significant factor identified, having impact upon the real GDP was the industrial output.

Guncavdi, Kucukcifci, and Bayar (2013).assessed the role of agriculture sector in Turkey. During the last two decades, Turkey implemented a number of structural adjustment programmes, and changed the economic structural priorities from agriculture to manufacturing sectors. However, agricultural sector remained as the most important sector in terms of employing almost 29.5% of total employment in the economy. Despite the share of agricultural production in total value added was drastically declined. This research aimed to enlighten changing role of agricultural sector in Turkish economy using input– output model, in which sectoral inter-linkages could be defined. Input–output tables from 1968 to 2002 and analyzed the importance of agricultural sector basing upon the forward and backward linkages calculated under different hypothetical cases. It was examined the changes in total production in the economy. Through a sensitivity analyses, It was investigated the extent of which other sectors rely on the production of the agricultural sector.

The presence of the inter-linkages between the agriculture and the non-agriculture sectors was found. Backward and forward income generation linkages were generally small over the sample periods, but particularly weakened after 1980. On the demand side, the agriculture sector constituted a relatively important role in the demand of the service and manufacturing sectors. This importance for the agriculture sector became even more evidence for the manufacturing sector particularly when the share of manufacturing production in total was taken into account.

The manufacturing sector, as a demander, constituted a market for agricultural output. The general dependence on total agricultural intermediate goods of the manufacturing sector seemed to have increased slightly after 1996 following Turkey's accession to the World Trade Organization (WTO) in 1995. However, the manufacturing sector appeared to have been an importer of agricultural intermediate goods, and its import dependence remained very large by constituting a major constraint for the domestic agriculture sector. It was believed that the imported agricultural input dependence of the manufacturing sector could be considered as a potential demand to be gained by the domestic agriculture sector.

Kularatne and Sivarajasinghan (2014) examined the relationship between GDP and sector share. They used Granger causality analysis to analyze causality direction between real GDP and sector shares in Sri Lanka by using annual time series data. The high positive correlation between industrial and services sectors suggested that there existed a strong linkage between two sectors thus development in one would positively affect the others. Services sector had proven to be a growth driver of the economy. Co- integration analysis result indicated that in long relation of all sector growth were highly linked. Growth rate graphical behavior indicated that growths of all three sectors were assembled. It could be derived that the growth of services and industrial sectors would be able to generate sufficient development in agriculture sector. In fact agriculture linked industrial sector and agriculture linked services sector would be benefit for the growth and development of agriculture sector.

Pervez (2014) explored the impact of agriculture growth on poverty. They used time series data from 1980 to 2010. Johansen co-integration methodology was used to check the far off impact of connection between variables. Findings of this study suggested that agriculture growth, employment in agriculture, GDP, and trade openness had significant but negative impact on the poverty in the long run.

Epaphra (2016) analyzed the role of FDI in Tanzania and observed effects greatly varying across sectors. Time series data spanning from 1970 to 2015 and Error Correction Mechanism was applied in the study. FDI exerted a negative effect on agriculture value added, unsurprisingly, produced a positive effect on manufacturing, construction and transport, storage and communication sectors. The unexpected negative causal relationship between FDI inflows and agricultural sector in Tanzania could be because of the low level of FDI in the sector relative to

other sectors. However, it was possible for FDI to be contributing to the GDP through manufacturing, construction and transport, storage and communication sectors and yet not increasing the welfare of the people in the country. Agricultural sector, which constituted more than 70 percent of the total labour forces, contributed, on average, less than 30 percent, in total GDP. It was surprising to find that very little effort was devoted to quantifying the sources of agricultural decline.

Herman (2016) highlighted the role of the Romanian industry, especially the manufacturing sector, in the national economy and its impact on employment and sustainable development. The result showed that, Romania had entered a process of deindustrialization for over two decades. A real challenge of the Romanian manufacturing was the low level of labour productivity and low level of medium and high-technology manufacturing activities. In order to increase the resilience of the Romanian economy in the context of economic globalizations and to assure sustainable economic growth and development a reindustrialization through sustainable and productive manufacturing was necessary.

Matthew and Mordecai (2016) explored the impact of agricultural output on economic development in Nigeria using annual time series data spanning 1986 to 2014. Economic development proxied by per capita income was explained by agricultural output and public agricultural expenditure. The study employed the Augmented Dickey-Fuller Unit Root test and the Vector Autoregressive model. All the lagged terms were statistically significant, implying that agriculture played an important role in Nigeria's economic development. The results of the impulse response function in support of the variance decomposition analysis showed that per capita income responded positively to shocks in agricultural output. The study concluded that agriculture was beneficial and played a significant role in the development process of Nigerian economy.

Singariya and Naval (2016) checked the casual relationship between GDP, agricultural, industrial and service sector output in India using time series data from 1950-51 to 2011-12. The study conducted an econometric investigation by applying methodologies, viz., Stationary tests, and Johansen's Cointegration test, Johansen's Vector Error Correction Model (VECM) in VAR and Impulse Response Function and Variance Decomposition Analysis. It was revealed that there existed bidirectional causality among the agriculture, industry, service sector and GDP and

agriculture and industrial sector with services sector, while there was a unidirectional causality between agriculture and industry sector. However, results based on vector error correction model indicated a weak association between the sectors in the short run. Dynamic causality results showed that contribution GDP forecast error by the services sector was the highest, followed by agriculture and industry sectors, while the contribution to the agriculture sector forecast error by GDP was the highest, followed by the service sector and industry. In the case of the industry sector, the explanatory power of one standard deviation innovation in the agriculture sector and the services sector to forecast error variance was quite high. Further, results of decomposition variance analysis and impulse response suggested that the agriculture sector played the main role in determining the overall growth rate of the economy through its linkages to other sector. The analysis of inter - sectoral linkages identified agriculture as the main economic activity that controlled most economic activities in India

Chand, Srivastava and Singh (2017) analyzed the long term changes in sectoral composition of rural output and employment, their relationships and implications for output growth and employment and income inequalities across sectors and between rural and urban sectors in Indian economy. The study analyzed changes in rural economy and employment during the last forty years covering the period 1971-2012. The study highlighted the profound changes experienced by India's rural economy which have not been reckoned. Contrary to the common perception about predominance of agriculture in rural economy, about two third of rural income was now generated in non agricultural activities. Similarly, it was amazing to find that more than half of the value added in manufacturing sector in India was contributed by rural areas. However, the impressive growth of non agricultural sector in rural India was not brought significant employment gains or reduction in disparity in worker productivity. This underlined the need for a new approach to direct the transition of rural economy.

Perez and Villarreal (2017) assessed the Mexican economic reforms in the 1980s and 1990s in a wide array of areas. Over the past three decades, the Mexican economy had gone through a structural change and experienced a successful insertion into global markets. Yet productivity growth had been modest, leading to low and volatile economic growth. To examine the weak association between structural change and productivity growth, two features were studied: inter- and intra-industry transformations, and the contribution of production factors to value added

growth. The paper showed that despite a significant reallocation of hours worked across industries, its aggregate impact had been hindered by the prevalence of flows from sectors with high labor productivity growth towards those with lower or declining productivity growth. In addition, highly qualified production factors (both labor and capital) had not showed a significant contribution to value added growth.

Landesmann and Stollinger (2019) assessed the importance of appropriate industrial policy for countries at different developmental stages to support their position in the current global context and emphasized the role of appropriate industrial policy for European low- and medium-income economies to support their tradable sectors were of great importance. Persistent changes in the position of countries in global value chains due to rapid technological and human capital up-grading were also discussed. It was recommended that industrial policy should have addressed for international knowledge flows and the building up of domestic capabilities so that successful catching-up processes an essential role of linking up with international production networks were conformed.

It was also observed that the emphasis nowadays had moved on being successful receptors of internationally generated knowledge regarding product and process development and attracting the main agents of diffusion of such knowledge, i.e. internationally operating companies in which multi-national company could transfer their organisational structures along with their international linkages to other production sites and markets. What was provided by the local state was good infrastructure, an ability to draw on the most mobile and skilled part of the domestic labour force and provided legal and institutional conditions in these enclaves that were conducive to attract foreign investors. Over time, of course, a successful strategy in such a context implied to make sure that the achieved linkages to international production networks and the technology transfer exert important spillover effects unto domestic companies, either in the form of widening the supplier network or the build-up of domestic export-oriented firms that could themselves link up with international production network. It was also mentioned in order to pursue a sustained catching-up process, the positioning of a country or region in international value chains should continuously be acted upon through the use of a battery of support policies: most prominently would be the sustained build-up of a strong human capital base and adjusting training and educational structures to the changing requirements of skilled labour demands. And

there was scope for a dynamic 'multi-hub' approach in the development of innovation systems across the European continent to avoid the rigidities of a sustained vertical structure of centres of excellence.

2.3 National Context

In context of Nepal, the empirical studies on sectoral share and real GDP are scarce. The studies on sectoral contribution to real GDP growth were reviewed below.

NRB (2009) a joint study of Economic Analysis Division (EAD) and Financial Institution Division (FID) examined the causal relationship between economic liberalization and financial development in Nepal for the period 1975 to 2007. The results showed that financial development enhanced real GDP in Nepal.

Kharel and Pokhrel (2012) investigated the role of financial structure in economic growth of Nepal during 1994 to 2011 using Johansen's co-integrating vector error correction model. They argued that the banking sector played a key role in promoting economic growth compared to capital market in Nepal. They favored the policy to be focused on the banking sector development by enhancing its quality and outreach to promote economic growth in Nepal.

Bhatta (2014) explored the relationship between various sectoral shares and real GDP for Nepal during the 1975 to 2012. The study is used OLS technique and unit root test was conducted for time series data. Variance Inflation Factor test was conducted to check multi-collinearity among explanatory variables. Along with independent variables role of agriculture, manufacturing and service sectors, it included mean years of schooling as human development, working age population as labor, life expectancy as health index, Gross Fixed Capital Formation as capital stock and population growth and per capita income is dependent variable. Domestic as well as the World Bank data sets were employed for the analysis. Nevertheless, the paper used Pender (2000) methodology. The results showed that industrial sector was significant to increase per capita income compared to the agriculture and services sectors in Nepal. Moreover, health as indicated by life expectancy and population at working age were presented as significant to increase the income whereas it showed that education and capital formation were inconsistent

with the theory and international empirics. Finally, it recommended that developing agricultural sector viewed prerequisite for high and sustainable growth however efforts should be made in increasing investment significantly for the mechanization and modernization of agriculture. It added to its recommendation that developing infrastructures and fostering favorable business environment were other pre-requisites to support growth. In addition, employment-led service sector development was must with more emphasis on the tourism and human capital development.

Gautam (2014) analyzed the relationship between economic growth and financial development in Nepal consisting data for the period 1975 to 2012. The study used Augmented Dickey-Fuller and Philips-Perron tests to test for the existence of unit root, Co-integration test to examine long run relationship and Granger Causality test to find out causal relationship. In addition, vector error correction method applied to find out the speed of adjustment and the dynamics of relationship. The empirical evidence confirmed that the financial development causes economic growth. In fact, financial development was the cause for economic growth in terms of short-term dynamics, while economic growth sustained financial development in the long-run.

Timsina (2014) analyzed the impact of commercial bank credit on economic growth in Nepal using time series data for the period of 1975-2013. Employing Johansen Co-integration Approach and Error Correction Model, the study found positive effects of bank credit to the private sector on the economic growth only in the long run. It also indicated the feedback effect from economic growth to private sector credit in the short run.

Adhikari (2015) assessed the contribution of agriculture sector to national economy in Nepal GDP was regressed with domestic savings, government expenditure on agriculture and FDI on agriculture with the data from FY 2002/03 to 2014/15. The study found significant association among these variables. The analysis showed that the contribution of government expenditure on agriculture to GDP was found significant whereas the domestic savings and FDI on agriculture were found insignificant. The compound annual growth rate of government's expenditure was found slightly lower than that of budget allocated to ministry of agricultural development. The study concluded that the government expenditure on agriculture is crucial for the national economy. The investment in agriculture was not encouraging.

Shrestha (2017) observed the changes in structure, employment and productivity in the Nepalese economy for the period of 1991-2011 based on the World Bank's sectoral growth decomposition method. Despite some structural changes through economic liberalization process, empirical evidence showed that the Nepalese economy was remained sluggish in employment generation and the structural changes was not growth enhancing. Government should devise the policies of generating employment in high productive sectors in order to increase both employment and productivity in the economy to raise per capita income.

2.4 Research Gap

The study both national and international context found that impact of macroeconomic variable on economic growth. Most of the national study explored impact of financial and foreign sector on GDP of Nepal. There is no any study of sector wise performance on PCI of Nepal. Hence this study tries to fulfill gap of previous study. It explores the impact of primary, secondary and service sector on PCI of Nepal. This study uses both descriptive and analytical tools. Moreover this study tries to fulfill a comparative study before and after liberalization of each variable which is not found in above study.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Design

This study is associated with the relationship among primary, secondary and tertiary sectors and real GDP in Nepal. Particularly, this research work seeks to answer to these questions: Is there a meaningful causal relationship among primary, secondary, tertiary sectors and real per capita GDP? What is the nature of such relationship? Is such relationship significant along with other key explanatory variables? The econometric procedure to answer these questions required testing for stationarity through unit root tests. Then OLS equation is estimated along with other core determinant. Residual tests such as normality, serial correlation and heteroscedasticity are made. Multi-collinearity among the explanatory variables is gauged. Finally, the cumulative sum of squares test is conducted to check the stability of the equation.

The research design is followed descriptive as well analytical approach. The research is completely based on time series secondary data.

3.2 Sample Period

The study uses annual data on different variables from FY 1975/76 to FY 2016/2017 comprising 43 observations of each. The study symbols FY 1975/76 as equivalent to 1976.

3.3 Nature and Sources of Data

The nature of the study is descriptive as well as analytical. The study is primarily based on the secondary sources of data. In reviewing the theoretical and empirical concepts on economic growth and sectoral shares, the study uses various journals, working papers, study reports, case studies, peer reviewed articles, books, among others, published by various national and international institutions and scholars along with unpublished thesis and dissertations.

Quarterly Economic Bulletin (NRB), Banking and Financial Statistics (NRB), Government Finance Statistics (NRB), Economic Survey Reports (MOF, GON), National Accounts of Nepal

(CBS), Statistical Year Book of Nepal (CBS), Statistical Pocket Book (CBS) are the major sources of data and information for the study.

3.4 Model Specification

In terms of model specification, this research specified equation. The equation is used to explain the relationship between dependent and explanatory variables. The study purposes following model to explore relationship among shares of primary, secondary and tertiary sectors, and real per capita in Nepal. The model is based on Bhatt (2014) NRB, study on sector wise performance of Nepal.

$$lnPCI_t = \beta_1 + \beta_2 \ lnPRS_t + \beta_3 \ lnSES_t + \beta_4 \ lnTES_t + U_t$$

Where,

PCI = Real per capita GDP.

PRS = Real primary Sector Output.

SES = Real Secondary Sector Output.

TES = Real Tertiary Sector Output.

U_t = White noise error term.

t = Time subscript for time series data.

3.5 Data Analysis Techniques

All variables of each model are converted into natural logarithms to facilitate the calculation of elasticity and to make it possible the transformation of the non-linear models into log linear one. Basic structures of the transformed variables regarding its central location (mean); spread (standard deviation), and shape (skewness and kurtosis), variability and normality (Jarque-Bera) are calculated and presented as a summary statistics. Unit root test is conducted with the aim to determine order of integration of each variable used in the empirical model (Augmented Dickey-Fuller test). A correlation matrix of the variables is presented to know how the dependent variable is proportional to all explanatory variables for each model. Multi-collinearity among

explanatory variables is detected and highly collinear explanatory variables are deleted from the explanatory column vector leaving at least one collinear partner. Variance inflation factor test is conducted to check multicollinearity between explanatory variables. Serial autocorrelation in the error terms is detected and corrected. Graphical (histogram) presentation and mathematical Jarque-Bera (J-B test) is used to test the normality of error terms. The problem of heteroscedasticity is detected and corrected. The overall explanatory power of the model is gauged by adjusted R-squared and R-squared statistics. The F-test is used to determine the overall goodness of model. The t-test is used to test individual coefficients of explanatory variables. Computer packages Microsoft Excel, 2010 and EVIEWS 7 were applied for estimation procedures.

3.6 Time Series Analysis

One of the important types of data used in empirical analysis is time series data. Researcher takes such data in practice because they cause several challenges to econometricians and practitioners. Generally, empirical works based on time series data assume that the underlying time series is stationary. Therefore, it is important to determine the characteristics of the individual series before conducting empirical analysis. This is important because in the absence of non-stationary of time series variables, the normal properties of t-statistics and measures such as R-squared break results, hence a problem.

3.7 Serial Correlation

One of the important assumption of OLS is there is no autocorrelation among the error terms. i.e. COV (u_i u_J) = 0. Where u_i and u_j are error terms. If this assumption is violated or if error terms are correlated each other's then it is termed as autocorrelation i.e. COV (u_i u_J) ≠ 0. It is also termed as serial correlation.

The most common type of autocorrelation is first-order autocorrelation, and it is usually present when an observed error tends to be influenced by the observed error that immediately proceeds in the previous time period. The existence of autocorrelation in the residuals indicates that the assumption $E(\varepsilon_i \, \varepsilon_j) = 0$ has been violated. It is important to be sure that there is no autocorrelation in the residuals because otherwise the standard errors are invalid.

Consequences of Autocorrelation: The value of parameter are linear, unbiased but variance of parameters are inefficient.

Detections of Autocorrelation

Durbin-Watson (DW-test) and Breusch-Godfrey Serial Correlation LM test are applied to detect the problem and order of serial correlation in the error terms.

Remedial Solution of Autocorrelation

Cochrane-Orcutt method is used to correct the autocorrelation. If serial correlation problem is not handled at first step of Cochrane-Orcutt procedure, then its iterative procedures are conducted.

3.8 Heteroscedasticity

One of the important assumption of OLS is variance of error terms is constant. i.e. $Var(u) = \sigma^2$ or homoscedasticity of variance of error terms. If this assumption is violated or variance of error terms are not constant then it is termed as heteroscedasticity i.e. $Var(u) \neq \sigma^2$. If this is the case, heteroscedasticity in the errors do not affect the un-biasness of the OLS estimates but it affects their precision.

Consequences of Heteroscedasticity: The value of parameter are linear, unbiased but variance of parameters are not estimated.

Detections of Heteroscedasticity: The standard errors become biased and the tests of statistical significance cannot be valid. Breusch-Pagan/Godfrey Lagrange Multiplier test of error term is conducted to detect the problem of heteroscedasticity.

Remedial Solution of Heteroscedasticity: Weighted least squares technique and log transformation model are used to minimize it.

3.9 Normal Distribution

It is also important to check that the residuals are normally distributed; this is done with the Jarque-Bera (J-B) statistic. This statistic tests whether there is a significant difference of skewness and kurtosis of the residuals from the normally distributed residuals. The null

hypothesis is that the residuals are normally distributed. The J-B has a Chi-square distribution and if it is rejected the residuals are said to be normal. Two components of this statistic are Skewness and Kurtosis. Skewness measures the symmetry of a normal distribution and its expected value is zero. Regarding Kurtosis, this is an indicator that measures how peaked and flat the distribution is, a normal distribution is expected to have kurtosis equal to 3.

H_0: Error terms are normally distributed.

H_1: Error terms are not normally distributed.

Results: If p value of JB test is less than 5 percent then error terms are not normally distributed.

However, If p value of JB test is greater than 5 percent then error terms normally distributed.

3.10 Unit Root Tests

One of the important types of data used in empirical analysis is time series data. Researcher takes such data in practice because they cause several challenges to econometricians and practitioners. Generally, empirical works based on time series data assume that the underlying time series is stationary. Therefore, it is important to determine the characteristics of the individual series before conducting empirical analysis. This is important because in the absence of non-stationary of time series variables, the normal properties of t-statistics and measures such as R-squared break results, hence a problem. The econometric methodology applied therefore begins by examining the rank of integration for the series of the dependent and explanatory variable in their natural log format using the Augmented Dickey-Fuller test. The regression equation for the ADF test of unit root can be written as follows:

$$\Delta Y_t = \alpha + \beta_t + \Delta Y_{t-1} + \mu_t \qquad\qquad (3.5)$$

Where, the t symbol denotes time trend, Y is the variable in estimation procedure, μ represent the distributed random error term with zero mean and constant variance. Assuming that μ_t is serially uncorrelated and using the AR (ρ) process, the hypothesis for the ADF test is specified as follows:

$H_O : \delta = 1$ is the Null Hypothesis implying unit root, and

$H_1 : \delta < 1$ is the Alternative Hypothesis implying stationary

This study considers Augmented Dickey-Fuller (ADF) unit root tests to all individual variable of interest. Non-stationary individual series are then transformed to stationary through difference stationary process if they suffer from unit root.

CHAPTRE IV

4.1 Performance of Primary Sector

GDP comprises of sector wise production in an economy. Similarly total growth rate of an economy depends on sectors wise growth performance. System of National Accounting of Nepal manages three major sectors, namely agriculture, manufacturing and service sectors synonymously as primary, secondary and tertiary sectors.

The primary sectors consist of agriculture and forestry, mining, fishery and animal husbandry. The output of primary sector is increasing in continuous very slow rate. The following table 4.1 and fig. 4.1show that the performance of primary sector output from FY 1975 to FY 2018.

Table 4.1: Average Growth Rate of Primary Sectors

After Liberalization Period			Before Liberalization		
Year 1	NPRIS (in million) 2	GPRIS 3	Year 4	NPRIS(in million) 5	GPRIS 6
1991	55943		1975	11457	
1992	65951	17.89	1976	11518	0.53
1993	71011	7.67	1977	10415	-9.58
1994	81579	14.88	1978	11636	11.72
1995	86686	6.26	1979	13399	15.15
1996	98238	13.33	1980	13562	1.22
1997	110280	12.26	1981	15568	14.79
1998	114048	3.42	1982	17781	14.22
1999	134058	17.55	1983	19167	7.79
2000	146946	9.61	1984	22681	18.33
2001	157442	7.14	1985	22954	1.20
2002	168239	6.86	1986	27364	19.21
2003	175113	4.09	1987	30880	12.85
2004	188632	7.72	1988	37072	20.05

1	2	3	4	5	6
2005	202116	7.15	1989	42993	15.97
2006	214838	6.29	1990	50919	18.44
2007	230240	7.17	**Average**	22460.38	10.79
2008	251566	9.26			
2009	314637	25.07			
2010	401681	27.66			
2011	482330	20.08			
2012	514450	6.66			
2013	544084	5.76			
2014	595942	9.53			
2015	632926	6.21			
2016	667827	5.51			
2017	707671	5.97			
2018	767633	8.47			
Average	292218.1	10.35			

Source: National Accounts of Nepal, Central Bureau of Statistics, Government of Nepal and
Own Calculations.

Table 4.1 shows that average output of primary sector after liberalization period is NRs.
292,218.11 million and growth rate is 10.35 percentages. Average output after liberalization
period is NRs 22,460.38 million. Average growth rate before liberalization period is 10.79
percentage. The average growth rate before liberalization period is greater than after
liberalization period. Hence, liberalization period has not significant impact in economy.

Figure 4.1: Trend Line of Growth Rate of Primary Sectors
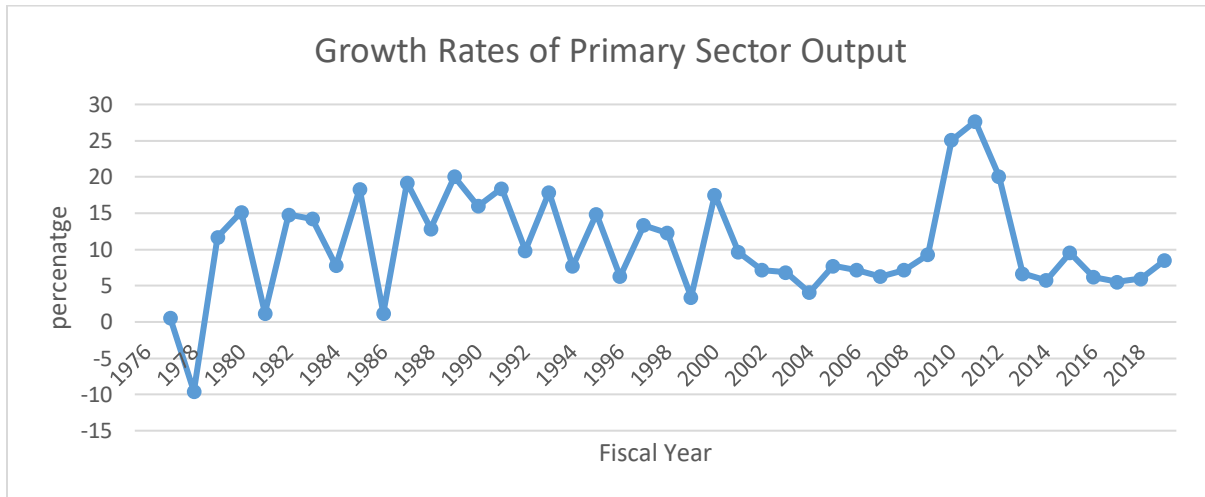
Source: Based on the table 4.1

Figure 4.1 shows that the trend line of growth rate of primary sector output during the study period FY 1975 to FY 2018. The trend line of growth rates is ups and down during the study period.

4.2 Performance of Secondary Sector

The secondary sector consists of construction, manufacturing, gas, water supply, electricity. It has significant role in GDP of an economy. The output of this sector is very low and unstable. The output and performance of secondary sector activates and boosts up economy. The table 4.2 and figure 4.2 shows performances of secondary sectors output from FY 1975 to FY 2018.
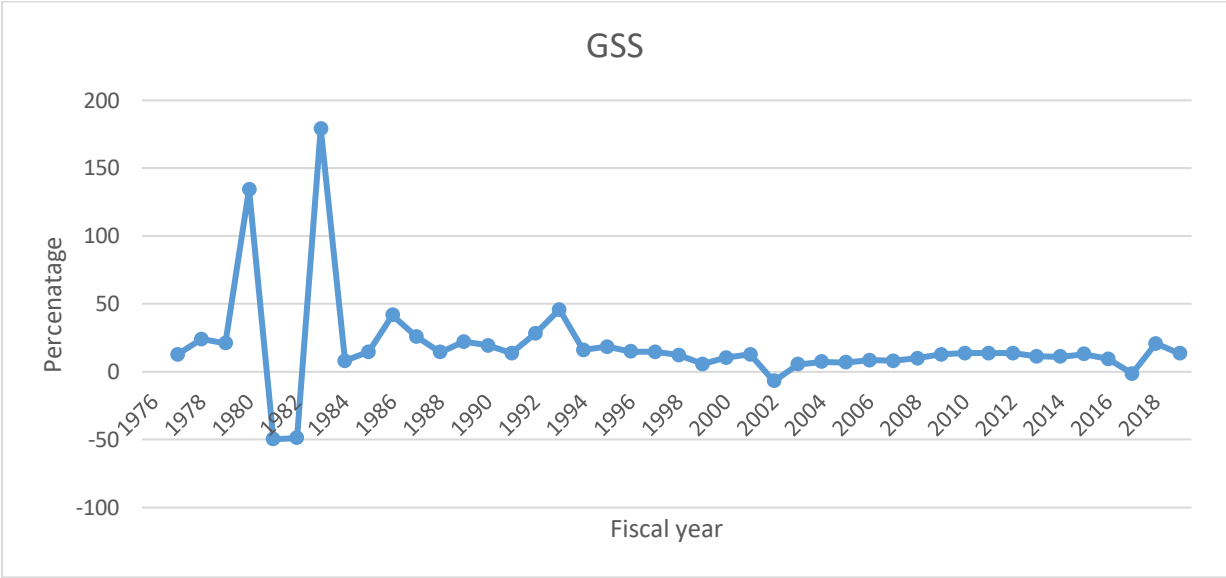
Table 4.2: Average Growth Rate of Secondary Sector

After Liberalization Period			Before Liberalization Period		
Year 1	NSS (in million) 2	GNSS 3	Year 4	NSS (in million) 5	GNSS 6
1991	19787		1975	1281	
1992	28832	45.71	1976	1446	12.88
1993	33479	16.12	1977	1795	24.14
1994	39645	18.42	1978	2174	21.11
1995	45510	14.79	1979	5096	134.41
1996	52157	14.61	1980	2566	-49.65
1997	58536	12.23	1981	1313	-48.83
1998	61853	5.67	1982	3667	179.28
1999	68231	10.31	1983	3964	8.10
2000	76874	12.67	1984	4550	14.78
2001	71744	-6.67	1985	6456	41.89
2002	75712	5.53	1986	8130	25.93
2003	81228	7.29	1987	9298	14.37
2004	86902	6.99	1988	11359	22.17
2005	94311	8.53	1989	13554	19.32
2006	101964	8.11	1990	15422	13.78
2007	112112	9.95	Average	5754.44	28.91
2008	126538	12.87			
2009	143816	13.65			
2010	163457	13.66			
2011	185889	13.72			
2012	207221	11.48			
2013	230253	11.11			
2014	260251	13.03			
2015	284703	9.40			
2016	281154	-1.25			
2017	339784	20.85			
2018	385733	13.52			
Average	132774.1	11.94			

Source: National Accounts of Nepal, Central Bureau of Statistics, Government of Nepal and
   Own Calculations.

The table 4.2 shows that the average output during liberalization period is NRs. 132,774.1 million and growth rate 11.94 percentage, similarly, the average output before liberalization is Rs. 5,754.44 million and growth rate is 28.91 percentage.

Figure 4.2: Trend Line and Growth Rates of Secondary Sector

Source: Based on Table 4.2

 Figure 4.2 shows that the growth rate of secondary sector is falling at slow rate during the study period. However, it is ups and down before liberalization period. The figure 4.2 shows the trend line of secondary sectors.

4.3 Performance of Service Sector

The service sector consists of hotel, restaurants, defense, public administration, health, transportation, communication, etc. the service sector of Nepal is increasing day by day. The output of this sector is very low and unstable. The table 4.3 and figure 4.3 shows the performance of service sector before and after liberalization period of FY 1975 to FY 2018.
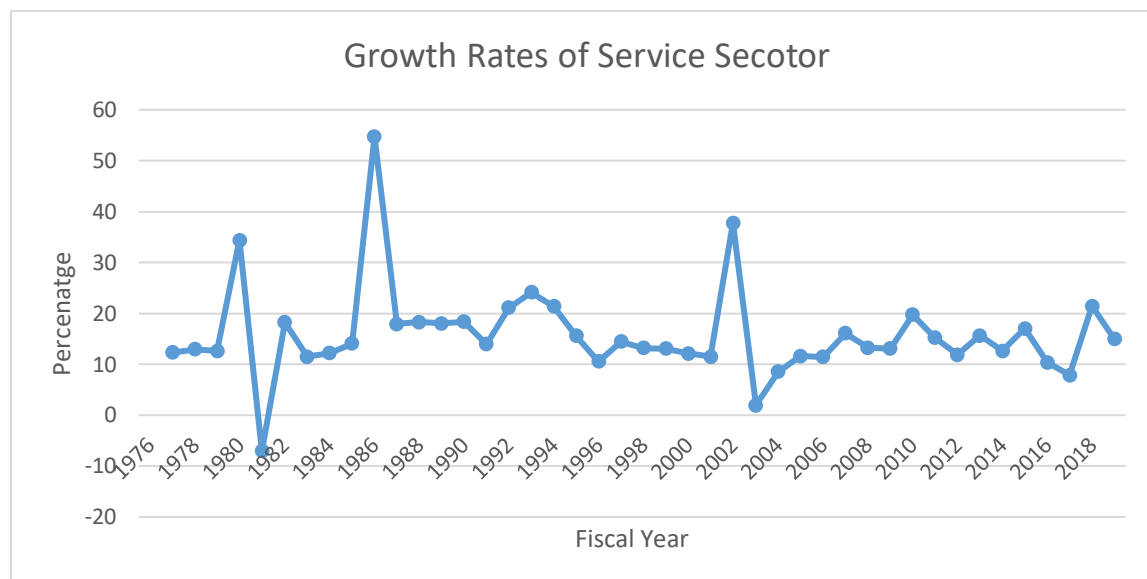
Table 4.3: Average Growth Rate of Service Sector

	Liberalization Period			Before Liberalization	
Year 1	NTSS(in million) 2	GTSS 3	Year 4	NTSS(in million) 5	GTSS 6
1991	40397		1975	3228	
1992	50150	24.14	1976	3625	12.30
1993	60878	21.39	1977	4095	12.97
1994	70372	15.60	1978	4611	12.60
1995	77778	10.52	1979	6197	34.40
1996	88993	14.42	1980	5758	-7.08
1997	100754	13.22	1981	6808	18.24
1998	113897	13.04	1982	7589	11.47
1999	127729	12.14	1983	8513	12.18
2000	142431	11.51	1984	9713	14.10
2001	196269	37.80	1985	15030	54.74
2002	200101	1.95	1986	17720	17.90
2003	217205	8.55	1987	20963	18.30
2004	242460	11.63	1988	24740	18.02
2005	270152	11.42	1989	29285	18.37
2006	313528	16.06	1990	33361	13.92
2007	355012	13.23	**Average**	12577.25	17.49
2008	401338	13.05			
2009	480436	19.71			
2010	553433	15.19			
2011	619148	11.87			
2012	715803	15.61			
2013	805989	12.60			
2014	943264	17.03			
2015	1041226	10.39			
2016	1122936	7.85			
2017	1363575	21.43			
2018	1567356	14.94			
Average	438664.6	14.68			

Source: National Accounts of Nepal, Central Bureau of Statistics, Government of Nepal and Own Calculations.

The table 4.3 shows that the average service sector output during liberalization period is NRs. 438,664.6 million and growth rate is14.68 percentage. Similarly, the average output before liberalization is NRs. 12,577.5 and growth rate is 17.4 percentage.

Figure 4.3: Trend Line of Growth Rate of Service Sector

Source: Based on table 4.3

The figure 4.3 shows the trend line of growth rates of service sectors which is ups and down during the study period. The growth rates of service sector is negative in FY 1981 and positive growth rates others years during the study period.

4.4 Performances of per capita income of Nepal.

Per capita is also termed as average income of people. It is ratio between national income and total number of population. The PCI indicate that productivity and performance of nation as well as individual person. It also related with living standard people. Higher the PCI higher will be the living standard of the people and vice versa. The following table 4.4 and figure 4.4 show the performance of PCI of Nepal before and after liberalization period of Nepal.

Table 4.4 Performance of Per Capita Income of Nepal

After Liberalization			Before Liberalization		
Year 1	Real Per Capita GDP 2	Growth Rates 3	Year 4	Real Per Capita GDP 5	Growth Rates 6
1990	14169.16		1975	10233.04	
1991	14794.59	4.41	1976	10329.82	0.95
1992	15113.95	2.16	1977	10228.46	-0.98
1993	15366.78	1.67	1978	9244.332	-9.62
1994	16248.31	5.74	1979	11979.91	29.59
1995	16439.86	1.18	1980	9960.633	-16.86
1996	17600.12	7.06	1981	9880.305	-0.81
1997	17396.75	-1.16	1982	10853.79	9.85
1998	17529.86	0.77	1983	10760.83	-0.86
1999	17906.42	2.15	1984	11413.63	6.07
2000	18565.08	3.68	1985	12555.39	10.00
2001	19070.92	2.72	1986	12871.39	2.52
2002	18837.08	-1.23	1987	12839.58	-0.25
2003	19318.11	2.55	1988	13536.78	5.43
2004	19950.6	3.27	1989	13825.67	2.13
2005	20294.32	1.72	1990	14169.16	2.48
2006	20930.35	3.13	Average	11542.67	2.64
2007	21416.54	2.32			
2008	22427.06	4.72			
2009	23116.96	3.08			
2010	24090.36	4.21			
2011	24376.98	1.19			
2012	25376.01	4.10			
2013	26228.58	3.36			
2014	27386.15	4.41			
2015	28452.28	3.89			
2016	28163.12	-1.02			
2017	28892.87	2.59			
2018	30300.67	4.87			
Average	21026.20	2.77			

Source: National Accounts of Nepal, Central Bureau of Statistics, Government of Nepal and Own Calculations.

The table 4.4 shows that growth rate of PCI in 1975 was 0.95 percentage and 2.3 percentage in 1990. The average growth rate during before liberalization period is 2.64 percentage. The growth rate in 1992 was 4.1 percentage and 4.8 in 2018. The average growth rates after liberalization is 2.7 percentage. The average growth rate of PCI in liberalization period is greater than before liberalization period.

Figure 4.4 Trend Line growth rate of Per Capita of Nepal
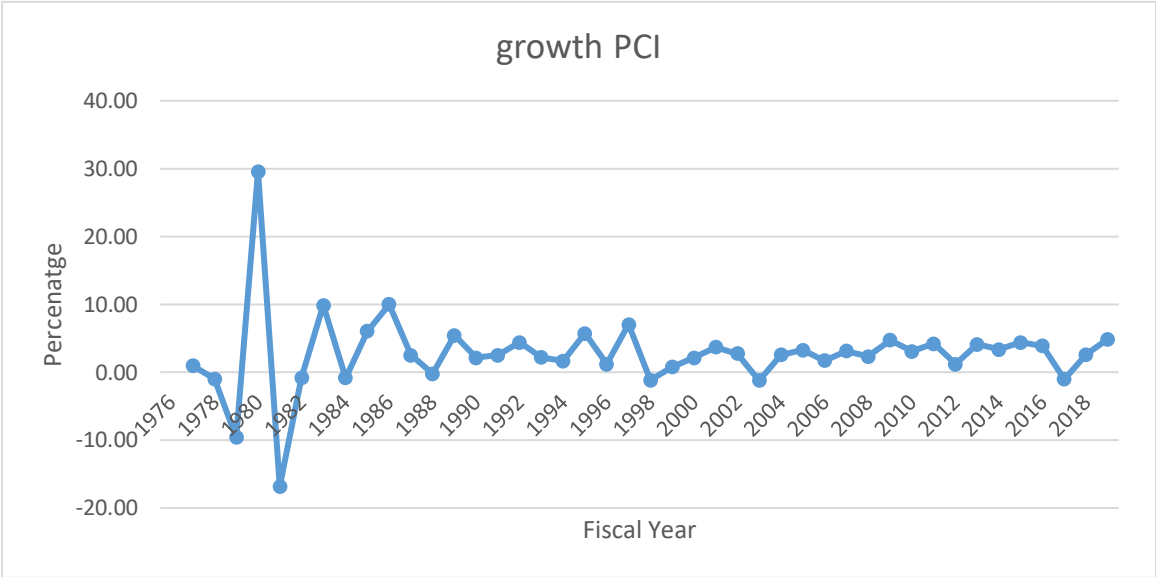

Figure 4.4 shows that the trend line of growth rates of PCI of Nepal. The growth rates are ups and down during the study period. Growth rate was negative in 1978, 19982, 1998.

4.5 Summary Statistics

Summary statistics of inflation rates includes mean, median, and maximum, minimum, and standard deviation, coefficient of variation, skewness and kurtosis of each variable under study. The whole study period consists of 44 observations. The positive values of kurtosis for all variables suggest that these variables frequency curves are peaked. The positive values of skewness all variables further indicate that they positively skewed. The JB statistics for each observations show that individual variables heterogeneous in the sense that some of the variables are normal and some are not normal. The overall summary statistics infer that all variables show

somewhat similar characteristics. The summary statistics of variables are calculated in arithmetic scale (Table 4.5).

Table 4.5: Summary Statistics

	NPRIS	NSS	NTSS	PCI
Mean	194124.4	86585.16	283723.8	17733.49
Median	104259.0	55346.50	94873.50	17463.31
Maximum	767633.0	385733.0	1567356.	30300.67
Minimum	10415.00	1281.000	3228.000	9244.332
Std. Dev.	222116.2	101200.8	398388.8	6066.734
Skewness	1.280746	1.370507	1.701586	0.431093
Kurtosis	3.337516	3.976972	5.028118	2.109075
Jarque-Bera	12.23780	15.52399	28.77387	2.818040
Probability	0.002201	0.000426	0.000001	0.244383
Sum	8541473.	3809747.	12483846	780273.4
Observations	44	44	44	44

Sources: self-calculation Eviews

4.6 Correlation Analysis

The correlation coefficient shows that the degree and directional relationship between variables. Values of partial correlation lie between +1 to -1. Correlation coefficient +1 shows high degree positive correlation and -1 indicates higher and negative correlation between variables. Table 4.6 shows the correlation.

Table 4.6 Correlation Coefficients

	LNPCI	LNPRI	LNSS	LNTS
LNPCI	1	0.99	0.98	0.99
LNPRI	0.99	1	0.98	0.99
LNSS	0.98	0.98	1	0.98
LNTS	0.99	0.99	0.98	1

Sources: self-calculation Eviews

The correlation between primary, secondary, service sector and PCI of Nepal are positive and higher degree correlation. The correlation coefficient between PCI and primary sector is 0.99 which positive and higher degree correlation between two variables. The correlation coefficient

between PCI and secondary sector is 0.98 which positive and higher degree correlation between two variables. The correlation coefficient between PCI and service sector is 0.99 which positive and higher degree correlation between two variables.

4.7 Regression Analysis

Regression analysis shows the effect of independent variables on dependent variables. In given study PCI is dependent variables and primary, secondary and service sector output are independent variables. To analysis of percentage effect of independents variables on dependent variables all variable are converted in log values. Regression result is given below table 4.7

Table 4.7: Regression Result

Dependent Variable: LNPCI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPRI	0.169661	0.064676	2.623264	0.0123
LNSS	0.020131	0.024048	0.837101	0.0075
LNTS	0.041879	0.055333	0.756857	0.4536
C	7.108012	0.216260	32.86784	0.0000

R-squared	0.987920	Mean dependent var		9.725357
Adjusted R-squared	0.987014	S.D. dependent var		0.346387
S.E. of regression	0.039473	Akaike info criterion		-3.539905
Sum squared resid	0.062324	Schwarz criterion		-3.377706
Log likelihood	81.87792	Hannan-Quinn criter.		-3.479754
F-statistic	1090.433	Durbin-Watson stat		1.740311
Prob(F-statistic)	0.000000			

Sources: self-calculation Eviews

The coefficient of LNPRI and LNSS are statistically significant at five percentage and LNTS is insignificant. The value of R squared is 0.9879 indicates that dependent variables LNPCI is explained by independent variables by 98.78 percentage which is very high indicates that model is good fit. The value of F-Statistic is very high 1090.433 and its p value is significant at one percentage indicates that model is overall fit.

The coefficient of LNPRI is 0.169 indicates that one percentage increase in output of primary sector causes increase in per capita income by 0.169 percentage. There is positive association between primary sector output and PCI of Nepal.

The coefficient of LNSS is 0.020 indicates that one percentage increase in output of secondary sector causes increase in per capita income by 0.020 percentage. There is positive association between secondary sector output and PCI of Nepal.

The coefficient of LNTS is 0.040 indicates that one percentage increase in output of service sector causes increase in per capita income by 0.040 percentage. There is positive association between service sector output and PCI of Nepal.

The value of DW test is 1.74 which is near to two; it indicates that there is no autocorrelations among the error terms. It also confirmed that value of Breusch Godferry LM test is 2.09 ant its P value is 0.35 at Chi-square two degree freedom which is more than five percentage indicates that there is no autocorrelation among the error terms. The value of Breusch-Pagan-Godfrey is 0.09 which is more than five percentage indicates that the variance of error terms are constant.

CHAPTER – V

Summary, Conclusion and Recommendations

5.1 Summary of Major Findings

GDP comprises of sector wise production in an economy. Similarly total growth rate of an economy depends on sectors wise growth performance. System of National Accounting of Nepal manages three major sectors, namely agriculture, manufacturing and service sectors synonymously as primary, secondary and tertiary sectors. The primary sectors consist of agriculture and forestry, mining, fishery and animal husbandry.

The secondary sector consists of construction, air, water supply, electricity. It has significant role in GDP of an economy. The output of this sector is very low and unstable. The output and performance of this sector boosts up and activates economy.

The service sector consists of hotel, restaurants, defense, public administration, health, transportation, communication, etc. the service sector of Nepal is increasing day by day. The output of this sector is very low and unstable. The table shows the performance of service sector before and after liberalization period.

Per capita income is also termed as average income of people. It is ratio between national income and total number of population. The PCI indicate that productivity and performance of nation as well as individual person. It is also related with living standard people. Higher the PCI higher will be the living standard of the people and vice versa. The above 4.4 table shows that the performance of PCI of Nepal before and after liberalization period of Nepal.

Major findings are listed as below:

- The output of primary sector is increasing continuous in very slow rate. The above table 4.1 shows performance of primary sector output.
- Table 4.1 shows that the average output of primary sector after liberalization period is Rs. 292,218.11million and growth rate is 10.35 percentages. Average output after liberalization period is NRs 22,460.38 million. Average growth rate before liberalization period is 10.79 percentage. The average growth rates before liberalization period is greater than after

liberalization period. Hence, liberalization period has not significant impact in economy.

- The table 4.2 shows that the average output during liberalization period is NRs. 132,774.1 million and growth rate 11.94 percentages. Similarly, the average output before liberalization is NRs 5,754.44 million and growth rate is 28.91 percentages. The output of this sector is very low and unstable.

- The table 4.3 shows that the service sector output during liberalization period is NRs. 438,664.6 million and growth rate is14.68 percentage. Similarly, the output before liberalization is NRs. 12,577.5 and growth rate is 17.4 percentages.

- The table 4.4 shows that the growth rate of PCI in 1975 was 0.95 percentages and 2.3 percentages in 1990. The average growth rates during before liberalization period is 2.64 percentages. The growth rate in 1992 was 4.1 percentage and 4.8 in 2018. The average growth rate after liberalization is 2.7 percentages. The average growth rate of PCI in liberalization period is greater than before liberalization period.

- The correlation between primary, secondary, service sector and PCI of Nepal are positive and higher degree correlation. The correlation coefficient between PCI and primary sector is 0.99 which positive and higher degree correlation between two variables. The correlation coefficient between PCI and secondary sector is 0.98 which positive and higher degree correlation between two variables. The correlation coefficient between PCI and service sector is 0.99 which positive and higher degree correlation between two variables.

- The coefficient of LNPRI and LNSS are statistically significant at five percentages and LNTS is insignificant. The value of R squared is 0.9879 indicates that dependent variables LNPCI is explained by independent variables by 98.78 percentage which is very high indicates that model is good fit. The value of Statistic is very high 1090.433 and its p value is significant at one percentage indicates that model is overall fit.

- The coefficient of LNPRI is 0.169 indicates that one percentage increase in output of primary sector causes increase in per capita income by 0.169 percentage. There is positive association between primary sector output and PCI of Nepal.

- The coefficient of LNSS is 0.020 indicates that one percentage increase in output of secondary sector causes increase in per capita income by 0.020 percentage. There is positive association between secondary sector output and PCI of Nepal.

- The coefficient of LNTS is 0.040 indicates that one percentage increase in output of service

sector causes increase in per capita income by 0.040 percentage. There is positive association between service sector output and PCI of Nepal.

- The value of DW test is 1.74 which is near to two indicates that there is no autocorrelations among the error terms. It also confirmed that value of Breusch Godferry LM test is 2.09 ant its P value is 0.35 at Chi-square two degree freedom which is more than five percentage indicates that there is no autocorrelation among the error terms. The value of Breusch-Pagan-Godfrey is 0.09 which is more than five percentage indicates that the variance of error terms are constant.

5.2 Conclusion

This study examined causal relationship among primary, secondary, and tertiary sectors and real per capita GDP in Nepal. The study finds the existence of positive relationship between primary, secondary, tertiary sectors and real per capita GDP by applying OLS method over the period FY 1975-2018. Even though there is positive relationship between secondary sector and real per capita GDP, its contribution is too small. This may be due to lack of competiveness in this sector. The result guides to conclude that the relationship all three major sectors to real per capita GDP is significant. Thus, it can be concluded that sectoral contribution to real per capita GDP is positive but the contribution of manufacturing is negligible which sector is considered as major source to increase real per capita GDP.

5.3 Recommendations

From the literature review, data analysis and major findings it is found that contribution of primary, secondary and tertiary sectors in real per capita is positive but the contribution of manufacturing is not so satisfactory. So, to make these sectors contribution to increase real per capita, the following recommendations are prescribed.

i.   The contribution of primary sector to PCI is positive and significant. So, investment in agriculture sector would be friendlier to induce per capita.

ii. The contribution of secondary to real per capita is very small. So, there is need of revision of current industrial policy so that more capital is invited to secondary sector and secondary

sector output would be boosted so that employment opportunities and per capita real would be boosted.

iii.   The contribution of tertiary sector to real per capita income is very remarkable. So, investment policies toward service sectors such as tourism, banking, and communication and transportation are in right direction and more investment in these sectors would be fruitful to boost real per capita in Nepal.

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Annex-I

Eview Calculation Tabale-1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.948342	Prob. F(2,38)	0.3964
Obs*R-squared	2.091756	Prob. Chi-Square(2)	0.3514

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/07/19   Time: 13:06
Sample: 1975 2018
Included observations: 44
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPRI	0.002933	0.064796	0.045263	0.9641
LNSS	0.018198	0.027578	0.659892	0.5133
LNTS	-0.018083	0.056969	-0.317418	0.7527
C	-0.017507	0.216914	-0.080710	0.9361
RESID(-1)	0.110155	0.171351	0.642861	0.5242
RESID(-2)	0.229099	0.180661	1.268112	0.2125

R-squared	0.047540	Mean dependent var	-1.96E-15
Adjusted R-squared	-0.077784	S.D. dependent var	0.038071
S.E. of regression	0.039524	Akaike info criterion	-3.497703
Sum squared resid	0.059361	Schwarz criterion	-3.254405
Log likelihood	82.94947	Hannan-Quinn criter.	-3.407477
F-statistic	0.379337	Durbin-Watson stat	1.892534
Prob(F-statistic)	0.859754		

Eview Calculation Table-2

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.296732	Prob. F(3,40)	0.0923
Obs*R-squared	6.465502	Prob. Chi-Square(3)	0.0910
Scaled explained SS	10.25322	Prob. Chi-Square(3)	0.0165

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/07/19   Time: 13:29
Sample: 1975 2018
Included observations: 44

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009261	0.014727	0.628880	0.5330
LNPRI	-0.000477	0.004404	-0.108280	0.9143
LNSS	0.000694	0.001638	0.423795	0.6740
LNTS	-0.000851	0.003768	-0.225729	0.8226

R-squared	0.146943	Mean dependent var	0.001416
Adjusted R-squared	0.082964	S.D. dependent var	0.002807
S.E. of regression	0.002688	Akaike info criterion	-8.913557
Sum squared resid	0.000289	Schwarz criterion	-8.751357
Log likelihood	200.0982	Hannan-Quinn criter.	-8.853405
F-statistic	2.296732	Durbin-Watson stat	1.611826
Prob(F-statistic)	0.092271		