RELATIONSHIP BETWEEN FOREIGN DEBT, REMITTANCE INFLOWS AND ECONOMIC GROWTH IN NEPAL

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LETTER OF RECOMMENDATION

This thesis entitled **"RELATIONSHIP BETWEEN FOREIGN DEBTS, REMITTANCE INFLOWS AND ECONOMIC GROWTH IN NEPAL"** has been prepared by **Mr. Suresh Chaudhary** under my supervision. I hereby recommend this thesis for examination by the Thesis Committee as Partial Fulfilment of the requirement for the Degree of Master of Arts in Economics.

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This thesis entitles **"RELATIONSHIP BETWEEN FOREIGN DEBTS, REMITTANCE INFLOWS AND ECONOMIC GROWTH IN NEPAL"** submitted by Mr. Suresh Chaudhary has been accepted as the partial fulfilment of the requirement for the Degree of Master of Arts in Economics has been found satisfactory in scope and quality. Therefore, we accept this thesis as a part of the said degree.

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ABSTRACT

Nepal is considered as one of the highest remittance-receiving countries where the inflow of remittance is more than 25 % of the total GDP. Previous researchers have shown the mix results where some studies showed a positive impact whereas some showed a negative impact of remittance on the GDP. Therefore, this study has been conducted to examine the long-term relationship between remittance, exports, foreign debt, inflation, and labor force participation with GDP. The data for the study was collected for the period 1993-2019 from various sources. The data were analysed using various analytical techniques such as Johansen- co-integration test, VECM model, correlation, and regression analysis. The findings from the study suggested that there exists long term relationship between GDP with remittance inflow, foreign debt, exports, inflation, and labor force participation. The individual co-integration also indicates that GDP and these variables have a long-term relationship except the relationship between inflation and GDP. Furthermore, the findings from the regression analysis suggested that remittance inflow, exports, inflation, and foreign debt have a negative impact on economic growth. Based on the findings it is recommended that the remittance-led growth should be closely monitored and the investment of the remittance on the productive sector should be promoted rather than only spending on consumption.

Keywords: **Economic growth, Remittance inflow, Foreign Debts, Johansen Co-integration and Regression**

ACRONYMS AND ABBREVIATION

ACF	Auto Correlation Function
ADF	Augmented Dickey Fuller
ADB	Asian Development Bank
BOP	Balance of Payment
CBS	Central Bureau of Statistics
ET	Export Trade
FDI	Foreign Direct Investment
FD	Foreign Debt
GDP	Gross Domestic Product
GNI	Gross National Income
IMF	International Monetary Fund
IR	Inflation Rate
LF	Labour Force
ILO	International Labour Organisation
MF	Ministry of Finance
NPC	Nepal Communist Party [Maoist]
NRB	Nepal Rastra Bank
PPT	Philip- Perron Test
RI	Remittance Inflows
SGMM	The System Generalised Methods of Moments
VAR	Vector Autoregressive
VECM	Vector Error Correlation Model
WB	World Bank

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CHAPTER I

INTRODUCTION

1.1 Background on Study

Economic growth is the basic matter in the world's economy. The matter of economic growth is very much indispensable in the developing countries like Nepal where the massive poverty and traditional farming exist. There are various factors which are affecting to economic growth; however foreign debts, remittance inflows, export trade, inflation rate and active labour force are taken as the main elements of development in developing countries. Since capital is an important factor of production, the capital coming in the form of foreign debts and remittance inflows can plays crucial role for magnifying the national output. But excess supply of these two factors has negative effects in long- term. Export trade indicates the prosperity of the economy; however, the import dominated trade may affects the balance of payment severely.

Similarly, effective management and utilization of active labour force is another key ingredient which have capability to enhance the positive impacts on economic growth in countries whereas increased in inflation rate has negative impacts on the economic growth of countries. Therefore, in order to optimize the contribution of foreign debts, remittance inflows, export trade and active labour force in the national economy, they must be deployed in balanced level and inflation rate must be controlled effectively.

Nepal is considered as one of the least developed countries in the world with a Gross Domestic Product of USD 30.69 billion in 2019 (Stastisa, 2020). Even though the GDP value has increased from USD 2.81 billion in 1985, other countries have grown at a much higher rate as compared to Nepal (Central Bureau of Statistics, 2019). There are various factors that led to fluctuations in the economic growth in the country. Apart from that the massive earthquake in 2015 and the blockade from India, which is the major trading partner for Nepal, negatively affect the country’s growth in the recent time (Basnett *et al.*, 2014; Ghimire *et al.*, 2020).

After 2017 the Nepalese economy shows significant growth. The GDP grew by more than 8 % in 2017 and more than 6 % in 2018 and 2019 respectively. It was expected that the Nepalese economy was on track with a stable government and increasing foreign investments, but the Covid -19 Pandemic and the recent political instability has put the growth on the back foot. The growth rate was slowed down to 0.2 percent in the fiscal year 2020 with the service sector growing at 0.2 percent which is the lowest in the 18 years. And it is projected the growth rate of Nepal at 2.1 percent for the fiscal year 2021(The World Bank, 2020).

Even though a gradual economic recovery is expected, the impact on tourism and the remittances, and lower agricultural and industrial output the growth remains subdued due to the impact of Covid-19.

The agricultural output is expected to be low due to delayed monsoon and outbreak of the armyworms. In the manufacturing sector, the tightening of the credit from the financial sector and an increased threshold for foreign investment, and delayed public investment projects are expected to slow down the output at least in the short run (The World Bank, 2020).

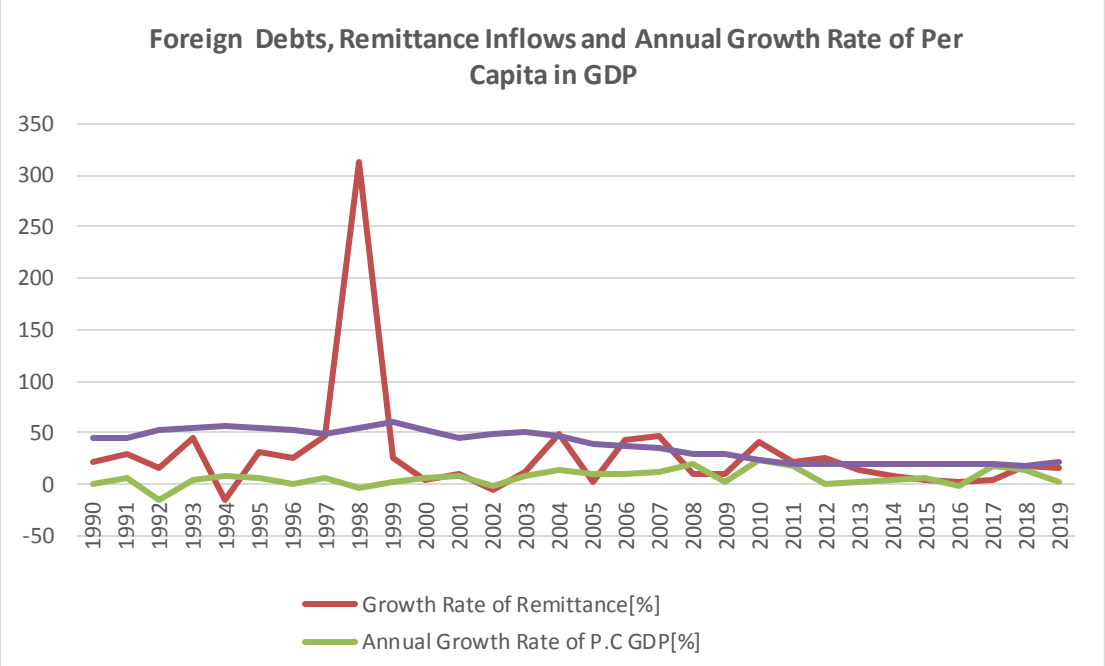
In terms of contribution to economic growth, the contribution of the agriculture sector has declined over the period, whereas that of the service sector has increased. In 2009 the contribution of agriculture was 31.32 % which has declined to 24.6 % in 2019. On the other, the service sector contributed more than 50 % of the GDP which was around 48 % in 2019(Central Bureau of Statistics, 2019). The contribution of the manufacturing sector has been steady and it varies between 13 and 15 in the last decade.

However, in terms of employment, most of the population is still dependent on agriculture for employment and livelihood and employment in the manufacturing and service sector is comparatively very less. Notably, active people's migration to abroad especially golf countries and the remittances sent by them has played significant role in economic growth of the Nepal in short term.

1.1.1 Remittance Inflows and Economic Growth in Nepal

The unemployment rate is very high and most of the employment is in the informal sector where the compensation is low and also lacks job security. Therefore, there has been an increasing migration of labourers from Nepal over the period. Apart from unemployment, the civil war and unstable political situations have also led to higher migration of the working population.

With increasing labour migration, the inflow of remittances in Nepal has also increased and Nepal is one of the highest remittances receiving countries in the South Asian region. The dependence of the Nepalese economy on remittance can be analysed from the contribution of remittance received to the Nepalese economy.



Source: Authors presentation on the data from World Bank, 2020

Figure1: Foreign Debts, Remittance Inflows and Annual Growth Rate of Per Capita in GDP

As the World Bank, the contribution of remittance to GDP was around 3 % in 2001 which has increased to 22 % in 2011 and 31.5 % in 2015. However, after 2015 the contribution has declined and in 2019, remittance contributed around 26 % of the

GDP. The remittance to GDP ratio is one of the highest in Nepal (The World Bank, 2019a).

There are various reasons for increasing remittance in Nepal. Firstly, the increasing migration of labour to gulf countries along with other developed countries where the income is comparatively higher due to Nepal Communist Party city focused armed struggle. Secondly, in recent times, the number of students who are going for foreign studies have increased. With foreign education and experience, the level of income for such migrants has also higher increased due to more exposure to the developed world where the economic status is higher than our country.

Apart from that the Nepalese government has increased tie-ups and contracts with other countries such as Japan, Korea which has also increased the labour migration, hence the inflow of remittance. However, even with a higher inflow of remittance, the Nepalese economy is still dependent on foreign debt and aids from the international organization for its development projects (Chhetri*et al.*, 4AD).

The relationship between economic growth and remittance inflow has been studied by various previous researchers. Studies by (Chami, 2008; Kumar, 2013) argued that that remittance provides three times more assistance compared to the development assistance projects. Also, remittance is the second largest source for foreign funds as argued by (Kumar, 2013; Uprety, 2017).

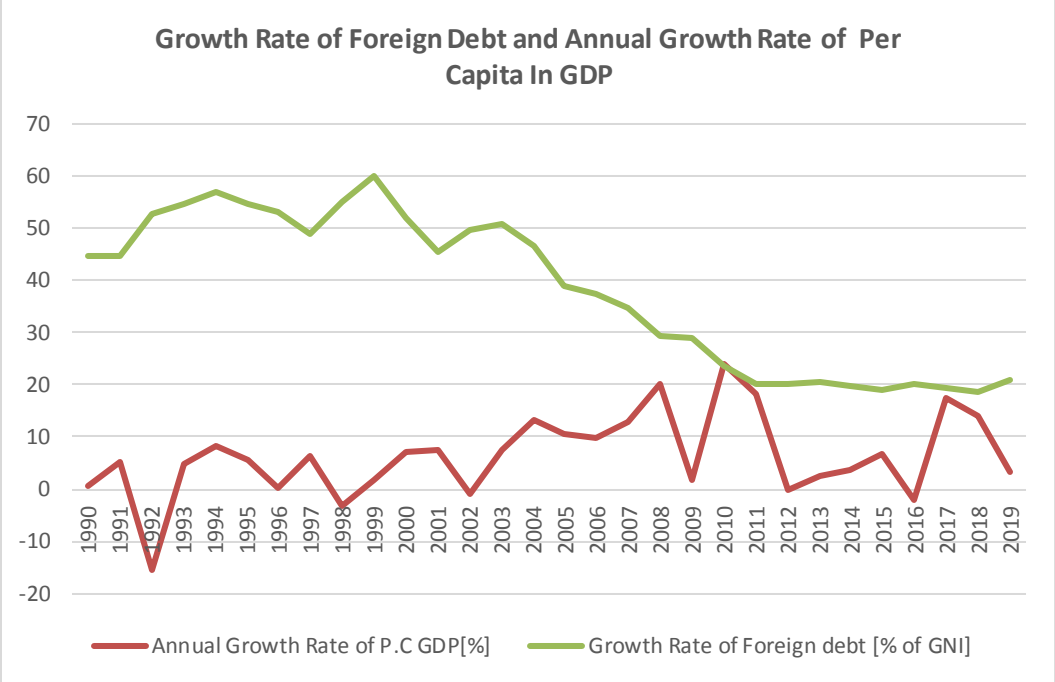
Similarly, a study by (Khan and Islam, 2013; Lopez *et al.*, 2007) showed that remittance has an impact on both at the macro level and micro level. The importance of remittance on poverty alleviation was argued by various researchers in their studies.

Furthermore, an empirical study by (Meyer and Shera, 2017) shows a positive relationship between remittance inflow and economic growth. Various other studies show a positive relationship between remittance and economic growth (Ajilore and Ikhide, 2012; Chhetri; Kumar, 2013; Meyer and Shera, 2017; Ratha, 2003; Sami, 2013).

However, on the other hand some studies have shown a negative relationship between remittance and economic growth (Chami, 2008; Khan and Islam, 2013; Lopez, 2007; Uprety, 2017). Remittance can bring balance of payment crisis with its more growth and development if that is used in productive activities (Sarkar & Datta, 2014).

1.1.2 Foreign debt and economic growth in Nepal

The analysis of the foreign debt in Nepal indicates that there has been an inverted U shape trend which indicates that the foreign debts (as a % of GNI) has increased at a very high rate, reached its peak, and then started declining over the period.



Source: Authors presentation on the data from World Bank, 2020

Figure 2 Growth Rate of Foreign Debt and Annual Growth Rate of Per Capita In GDP

As per the World Bank data, the foreign debt of Nepal was around 10 % of GNI in 1980 which has increased to 60 % in 1999. However, after 1999, it has started declining and in 2019, the foreign debt is around 21 % of the GNI (The World Bank,

2019b). Even though the foreign debt has declined as a percentage of GNI, the absolute value of foreign debt has increased.

The high dependence of the Nepalese economy on remittance and foreign debt is a big concern as it is not a sustainable way for high economic growth. Therefore, the current study is aimed to analyse the relationship between these three factors.

The relationship between foreign debt and economic growth has also been explored extensively by various previous researchers (Kharusi and Ada, 2018; Krugman, 1998). On one hand, some researchers have argued that external debt allows the countries (especially the developing countries) to spend on productive sectors and improve capital expenditure which in turn has positive economic growth (Presbitero, 2012; Shkolnyk and Koil, 2018; Tcherenie*t al.*, 2013).

However, on the other hand, the negative impact of foreign debt on economic growth has also been argued by some scholars (Kharusi and Ada, 2018; Presbitero, 2012). The negative impact was found significant in those countries where the foreign debt was not invested in productive sectors since there was not the circulation of money.

1.2 Statement of the Problem

The economic growth of Nepal has improved substantially in the last few years and the various studies have find many affecting factors which led to such economic growth in Nepal. Among them foreign debts and remittance inflows are the two key components that have a positive effect on economic growth as discussed in International Monetary Fund (IMF Country Report, April 2020).

However, the analysis of foreign debts servicing indicates that foreign debt should be used as only the supplement for the capital expenditure for the circulation of money and capital formation but not to reinstate the domestic savings in the long run.

Similarly, the remittance-based economy cannot sustain high economic growth in the long run, especially when the money is not invested in the productive

sector. Previous studies on Nepal have shown that an increase in remittance has increased the consumption level but not in saving, investment and capital formation.

Therefore, firstly this study has been conducted to examine the long-term relationship between the foreign debt, remittance inflows and economic growth in Nepal and secondly to examine the impact of Covid-19 on Nepalese economy.

1.3 Aims and Objectives of the Study

The main objective of the current study is to examine the relationship between the foreign debt, remittance inflows and economic growth in Nepal. Other specific objectives are as follows:

- To examine the trends of foreign debt, remittance inflows and economic growth in Nepal, and documented them systematically.
- To examine the long-term and short-term relationship between foreign debts and remittance inflows with economic growth in Nepal.

1.4 Study/Research Questions

Based on the study objectives mentioned above, the current research is expected to answer the following research questions:

- What is the trend of foreign debt, remittance inflow and economic growth in Nepal?
- What is the association of foreign debts and remittance inflows with economic growth of Nepal?

1.5 Significance of the Study

The findings from the previous researches have shown different results while examining the relationship of foreign debts and remittance inflows with economic growth in different countries. In the case of Nepal, the studies focused on economic growth have argued that the dependence of the Nepalese economy on foreign debts and remittance inflows has increased significantly.

The remittance-based economy cannot sustain high economic growth in the long run, especially when the money is not invested in the productive sector. Previous studies on Nepal have shown that an increase in remittance has increased the consumption level but not the investments (Ghimire*et al.*, 2020; Uprety, 2017).

Therefore, it is important to analyze the relationship between the inflow of remittance and economic growth in Nepal. Especially, after the Covid-19 pandemic, with increasing unemployment in the country, there is a high possibility of increasing labour migration. The employment generation sectors such as tourism and other informal sectors are badly hit by the pandemic and the dependence on remittance for livelihood is going to increase.

On the foreign debt part, the government's spending on health care has increased and with the economy growing at a very slow rate and decline in the revenue from tax collection, the government borrowing is also expected to increase. As result in long term, there is high possibility to have negative impacts on the economic growth of country. Thus, in this a scenario, it is important to study and analyse the relationship between these factors.

The relationship between foreign debts, remittance inflow and economic growth has been studied by previous researchers also but there is very limited research that incorporates the context of foreign debt. Also, the number of researches analysing the role of Covid-19 on remittance and foreign debt is limited.

1.6 Limitation of the Study

This study is mostly based on the secondary data. Thus, finding would be triangulated if some qualitative tools are used in this study. Although in academic journals ample of data series which are needed found, but data series which are reliable and authentic are not available in printed and digital newspapers and websites. Therefore, the reliability and authenticity depend on the facts written on journals, printed and digital newspapers and websites. As a result, as a direct consequence, this study faces limitation. However, relying on the data gathered and with the guidance of expert supervisor, study and analysis of this particular topic will be done on its best.

1.7 Organisation of the Study

The organisations of the current thesis for the rest of the chapters have been arranged as follows: In the second chapter, a detailed Literature review has been conducted. The literature review is expected to provide an overview of the existing literature on similar areas and also the existing literature with a specific focus on Nepal. The chapter is also the basis for the finding's literature gap for the current research. Furthermore, the third chapter has been devoted to the research methodology which includes all the processes starting from data collection to data analysis techniques used in the study. The fourth chapter includes the findings from the data analysis along with its interpretation and discussion. The comparison of the results from the previous studies with the current study has also been presented in this chapter. Lastly, the overall summary of the study along with recommendations and implications of the research has been presented in the Conclusion chapter.

CHAPTER II
LITERATURE REVIEW

2.1 Dutch Disease Theory

The Dutch Disease theory was introduced by (Corden and Neary, 1982) where the authors showed the implications of the export boom which led to the structural shift in the country's economy. As per the theory, the export boom in one sector leads to an adverse impact on the non-booming sector through two major effects namely the spending effects and the movement of the resources. As per the authors, the labor migrates from the non-booming to the booming sector as the marginal products of factors improve in the booming sector. Furthermore, with increased income due to booming export, people have more purchasing power which leads to higher demand and the non-booming sector cannot full fill the increased demand which leads to an increase in imports.

The Dutch Disease theory is applicable in the case of Nepal also in terms of remittance inflows. With the increasing inflows of remittances, the purchasing powers of the people have increased and the most of the remittance is used for the consumption purpose. However, the domestic production is not able to meet the demand for such high demand, and also the quality of the domestic production is also low. This has led to an increase in imports from other countries. On the other hand, the inflows of remittances have made people lazy and people do not want to work anymore. Both these factors might have adversely affected the economic growth of Nepal which needs to be further explored.

2.2 Relationship between Foreign Debts and Economic Growth

The relationship between foreign debt and economic growth has been explored by various scholars and researchers over the period. The majority of the studies their studies have investigated that one or more debt variables to be significantly and negatively correlated with the economic growth. The debt crisis, especially in developing countries has become a major concern. Researchers have identified various reasons for such an increase in debt.

Cordella, Ricci & Arranzi (2005) have mentioned that there is negative marginal relationship between foreign debt and economic growth in terms of level. They argued that foreign debt has positive relation on economic growth in intermediate level unlike high and low level. If the countries have good plans and policies with excellent institution faced overhang when foreign debts increase by 15-30 percent of GDP whereas the country with poor polices and institutions faced overhang with irrelevance threshold seems lower.

Krungman,(1985), the political and economic conditions of the developing countries have led to huge borrowings for capital expenditure as the countries were not able to generate enough revenue on their own. With increasing dependence on foreign debt for government financing scholars have studied both the positive and negative impact of foreign debt on the economy for different countries in different periods and contexts.

Schclarek (2004) examined both linear and nonlinear relationship between foreign debts and economic growth for developing countries and developed countries i.e. industrial countries. The study results indicates that there is significant negative relationship between foreign debts with economic growth in developing countries but same is not with developed countries i.e., industrial countries.

Ejigayehu (2013) examined the impact of foreign debt on economic growth in African countries. The main objective of the research was to examine whether the external debt was able to generate higher economic growth or it has made the economy's debt overhang. The author used the data from 1991 to 2010 for the analysis. The findings show that external debt affects the economic growth through the crowding-out effect and not through debt overhang. The crowding-out effect is the situation when the expansionary fiscal policy by the government led to an increase in the interest rate in the economy. This increase in interest rate affects the ability of private players to invest as borrowing becomes expensive.

Kasidi and Said (2013) examined the relationship between external debt and economic growth in Tanzania. The authors used secondary data from 1990 to 2003 and used regression analysis to examine the impact. The findings from the study suggested that (Senadza *et al.*, 2017) conducted a study to examine the impact of

foreign debt on the economic growth in Sub- Saharan Africa. The secondary data for the period 1990- 2013 was collected by the authors from 39 countries in the Sub-Saharan Africa region. The System Generalised Methods of Moments (SGMM) was used for the analysis purpose. Based on the analysis, the authors concluded that external debt has a negative impact on the economic growth in the SSA region. Also, the authors do not find any non-linear association between economic growth and external debt among the selected countries.

Gachunga and Kuso (2018) investigated the impact of external debt on economic growth. In this case, the authors collected the data for 38 SSA countries for the period 1990-2016 and used the Generalized Method of Moments for the analysis. The findings from the analysis suggested that external debt has a significantly negative impact on the economic growth in the selected countries. Furthermore, the impact of more severe in the middle-income countries as compared to the low-income countries.

Saxena and Shanker (2017) examined a similar relationship taking the case of India. According to the authors, the Indian economy was going through the balance of payment crisis in the late 1980s which led to the opening of the economy and also external borrowings. Even though the economy has achieved higher growth the amount of foreign debt also increased significantly. To examine the impact of foreign debt on the Indian economy authors conducted the study using the data from 1991-2016 using the ordinary least square model. The findings from the analysis suggested a negative relationship between economic growth and external borrowings.

Kharusi and Ada (2018) studied the relationship between foreign debt and economic growth. The authors used the secondary data collected between 1990 and 2015 for Oman. The ADL co-integration test was used for the analysis along with the error correction mechanism. The findings from the results suggested a significant and negative effect of foreign debt on economic growth. The authors also found that the gross domestic capital formation was positively and significantly related to economic growth.

Omodero and Alpheaus(2019) examined the relationship between external debt and economic growth in Nigeria. The authors used the data from 1997- 2017. For

the analysis purpose, the least square regression analysis was used. The findings from the study suggested that economic growth is significantly and negatively affected by external debt. However, the impact of foreign debt servicing on economic growth was found to be significantly positive.

Pattillo (2011) explored the proportion of the contribution of the external debt to GDP growth for both developing countries. The authors used the data from 93 developing countries and found that the contribution of foreign debt on the GDP is not linear and the relation is inverted U-shaped. This implies that with an increase in the foreign debt, the economic growth improves in the initial level, however after a certain threshold level, with an increase in external debt, the growth rate starts declining. As per the authors, the threshold level from which the growth rate declines when the proportion of external debt on GDP is 34% - 40 %. Furthermore, another study by (Clements *et al.*, 2003) studied the data from 55 low-income economies for the period 1970 to 1999 and found that foreign debt has an adverse impact on public investments which in turn affects the growth.

A Reinhart Rogoff (2010), the relationship between economic growth and public debt is weak for both the developed and developing economies till the ratio of public debt to GDP is lower than 90 %. However, with the ratio increasing more than 90 % the external debt has a negative impact on the growth. Another research by (Reinhart and Rogoff, 2010) identified different threshold levels for the developing economies when the authors conducted the study using the data from 1980-2008. As per the authors, the critical level for developing economies is 64 %. In other words, once the public debt to GDP ratio crosses 64 % the impact of external debt on economic growth is negative. Most of the researchers studying the relationship between the two factors have argued that at the initial level the foreign debt has a positive impact on the growth as it allows the government to spend more on productive sectors. However, with increasing reliance on foreign debt, the positive impact is outnumbered by the interest payment on the debt which adversely affects the economy.

2.3 Relationship between Remittance Inflows and Economic Growth

The relationship between remittance inflows and economic growth has been explored by various scholars over the period. The study has been conducted using data from various countries in different periods and also using different methodologies. The previous studies have shown a positive as well as a negative relationship between the two factors.

Adams (1991) examined the relationship between economic growth and inflow of remittance in Egypt. The authors used the data collected from a primary survey among 1000 respondents in rural Egypt. The findings suggested that the inflow of remittance has a positive impact on the overall development of the area.

Upadhyaya (2008) analyzed the impact of remittance inflow in economic growth in developing countries. The authors collected the secondary data from 39 developing countries for the period 1980 to 2004. For the analysis purpose author used the standard growth model which includes both the random effects and the fixed effects approaches. The findings from the study suggested a positive impact of remittance inflow on economic growth.

Fayissa and Nsiah (2010) interoperated that the impact of remittance on growth in Africa. Authors have argued that despite the important role played by the remittance, the relationship between growth and remittance has not been explored in much detail. The authors collected the secondary data for 36 countries in Africa for the period 1980 to 2004. The panel data models were used for the analysis. Based on the finding authors stated that remittance has a positive impact on economic growth. Also, remittance is the alternative source of funds to overcome the liquidity crunch in African countries.

Javid (2012) examined the impact of remittance on the remittance inflows on economic growth and poverty in Pakistan. Authors collected the data from 1973-2010 for the analysis and the ARDL method was used for examining the impact. The findings from the analysis indicate that economic growth is positively and significantly affected by the remittance inflow. Also, the remittance inflows show a positive and significant impact on poverty reduction. Therefore, the authors concluded

that remittance not only affects the economic growth but also helps to improve the overall welfare of the people in the remittance-receiving country.

Akinpelu (2013) explored the effect of the inflows of remittances on economic growth taking the case of Nigeria. The authors take into consideration other factors that affect economic growth such as capital formation, FDI, foreign exchanges, and openness. For the analysis purpose authors used the causality test and the co-integration test. The findings from the results suggested that uni-directional causality from GDP to inflow of remittance.

Meyer and Shera (2017) say that impact of remittance on economic growth. The authors used the data from six high remittance-receiving countries (Bulgaria, Albania, Romania, Bosnia, Moldova and Macedonia) from 1999-2013. Using the panel data regression models to examine the impact authors found that remittance has a positive impact on economic growth. The authors also conducted various diagnostic tests such as the heteroskedasticity, autocorrelation, and multicollinearity test to check the robustness of the results.

Dridi (2019) studied the impact of remittance on the economic activities in IMF working papers. The authors used an input-output model to explore the linkage between remittance inflow and economic growth. The data for the analysis was collected among the Sub-Saharan countries for the period 2011-2015. The findings from the analysis suggested that with an inflow of remittances the sartorial growth improves especially in the financial sector.

There were few studies where the authors argued that the inflow of remittance has a negative or no impact on economic growth.

Guha (2013) examined the impact of remittance on the economic growth in developing countries. The author used the Dutch Disease theory to examine the relationship. As per the author, the inflow of remittance has a direct impact on the decision-making of the household in terms of labor supply and consumption and such decisions lead to a decline in the output at the macro level. Therefore, the authors argued that the inflow of remittance has a negative impact on the economy, especially on the external sector.

Barajas (2009) examined whether the remittance has any impact on the economic growth in the long run in IMF working paper. The data of 84 countries were collected between the periods 1970 -2004. The findings from the study suggested that there is no impact of remittance on economic growth. The authors used the fixed effects models with an instrumental variable to conduct the analysis.

Jahjah (2003) studies that the remittance takes place under asymmetric information and an uncertain economy which leads to the popular problem of moral hazard. Therefore, the authors argued that remittance has a negative impact on the economy. The authors analyzed the data from 113 countries receiving remittances and used the panel data models for analysis. Based on the analysis authors concluded that remittance has a negative impact on economic growth.

Siddique (2012) examined the impact of remittances on economic growth for three South Asian countries namely India, Bangladesh, and Sri Lanka. The authors used the time series data for 25 years and used the Granger causality test to examine the relationship. The findings show three different types of relationships for each country. In the case of India, there was no causal relationship found between remittance and economic growth. For Sri Lanka, a two-way directional causality was found indicating the both the factors affect each other. However, in case of Bangladesh, negative relationship was found between remittance inflow and economic growth.

2.4 Relationship between Foreign Debt and Economic Growth in Nepal

The relationship between foreign debt and economic growth in the context of Nepal has not been explored much. Some studies focused on analysing such impact.

Sharma (2015) examined the trend of public debt and its impact on the Nepalese economy. As per the author, public debt allowed the Nepalese government to fill the gap in government expenditure and revenue collection. The author used the regression analysis to examine the impact of foreign debt on the Nepalese economy and found that the impact to be positive. However, the author also raised the concern that Nepal is slowly moving towards the debt trap as most of the sectors in Nepal are dependent on foreign aid and investments.

Siddique & Selvanathan (2015) where the authors investigate the impact of external debt on the economic growth in poor countries with high debt. The authors have also included the data from Nepal in their study along with other 39 countries. The data was collected for the period 1970- 2007. Based on the data analysis authors concluded that the economic growth would increase in both the short and long run with a reduction in the debt level.

Karki (2019) studied the impact of foreign aid on the Nepalese economy. The authors collected the time series data between 1983 and 2013 and used the Johansen co-integration test for the analysis. The findings suggested that foreign aid has a negative impact on per capita GDP in the short run whereas the impact is positive in the long run.

2.5 Relationship between Remittance Inflows and Economic Growths in Nepal

The important role played by the remittance in the Nepalese economy has been studied by various scholars in previous studies. A study by Dahal(2014) studied the impact of remittance on the growth of the Nepalese economy. The impact on the economy was measured in terms of productivity, trade, financial development, and human capital. The findings from the study suggested that the inflow of remittance has a positive impact on human capital accumulation and financial development. However, the association between the remittance inflow and international trade was found to be negative.

Dhungel (2015) examined the role of remittance in poverty reduction and economic growth in Nepal. The authors used secondary data from 2000-2011 for the analysis. As the methodology time series regression analysis was used. Findings from the study suggested that remittance inflow in Nepal has a positive impact on its economy. Also, the remittance has helped in the reduction of poverty through increasing investments, consumption, education, and health.

Uprety (2017) studied the impact of remittance on the growth of the Nepalese economy. The authors collected the secondary data from 1976-2013 and used the Johansen co-integration along with the error correction method to examine the long-

term association. The findings from the analysis suggested that remittance has a positive impact on consumption but not on investments which adversely affects the GDP per capita. The increase in remittance has led to an increase in imports and domestic production has also declined. Therefore, the authors state that "*remittances are a curse for the economic growth of Nepal*".

Kaphle (2018) investigated the association between the economic growth and inflow of remittance in Nepal. The author collected the secondary data from 1976-2017 and used the time series models for the analysis. The association between the two factors was analysed using the co-integration test along with the error correction mechanism. Based on the findings, author concluded that there is long term relationship between, economic growth and remittance. However, there was no strong evidence to justify the short-run association between the two factors.

Giri (2019) also examined the contribution of remittance to the Nepalese economy. The author tried to investigate the twin objectives in the research. Firstly, the overall trend of the remittance inflow in Nepal and secondly its contribution to the economy. The data for the analysis was collected for the period 1990-2016 and the time series regression analysis was used as the analysis techniques. The findings from the study suggested the significantly positive impact of remittance on the growth of the Nepalese economy. The authors also conducted various tests such as Unit root and heteroskedasticity to make the results more robust.

Chhetri (2020) also explored the impact of remittance on the Nepalese economy. According to the authors, Nepal is one of the top countries in terms of remittance inflow. It ranks 19th in terms of receiving remittance and in the top 5 countries when the remittance to GDP ratio is taken into consideration. Using the secondary data from various sources authors conducted a descriptive study and compare the trend of remittance with other countries where the inflow of remittance is high. The findings from the study suggested that the inflow of remittance has both positive as well as a negative impact on the economy. However, the authors did not conduct any inferential analysis to back the findings.

Paudel(2020) investigated the role of remittance, cooperatives, and infrastructures in the export performance of Nepal. The authors collected that time-

series data for 26 years between 1993 to 2018. For the analysis purpose, the ARDL and co-integration techniques were used. The findings from the study suggested that the impact of remittance on export growth is strong and positive. According to the authors, the positive impact of remittance is due to the quantity and quality of infrastructure. Also, the authors recommended that the country should make the policies more investment-friendly so that both the domestic and foreign players can invest.

2.6 Research Gap

The findings from the literature review suggested that there have been various studies conducted by various scholars to examine the relationship between remittance and economic growth. The findings from some studies show a positive impact on the economy as the inflow of remittance leads to more investments and an increase in the purchasing power of the people. However, on the other hand, some researchers have shown that with increasing dependence on remittance, domestic production declines, as people prefer products that are not produced in the country. Also, in the case of Nepal, the higher labour migration of the youths has led to a shortage of agricultural labourers to some extent.

Furthermore, the study to analyse the impact of foreign debt in the Nepalese economy has not been explored much. There are few studies that use only descriptive statistics or trend analysis to examine the impact. Therefore, it is important to analyse the relationship between remittance, foreign debt, and economic growth. The current research is expected to fill some gaps in the literature.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Background

In this chapter, the research methodology used in this research has been discussed. The research methodology includes all the processes used by the researcher starting from the data collection to the data analysis techniques used. It provides a complete overview of the data used by the researcher and the various statistical techniques used by the researcher. In this chapter the research methods used for the analysis has been discussed along with the models, variables used, data and sources, methodology and statistical techniques used and the software used for

There are majorly two different types of research methods used namely the quantitative research method and the qualitative research method. The qualitative research method is the first type of research method used. Unlike quantitative research, in this method, the data is mostly in the non-numerical form and the researcher interprets the collected information. The major techniques used for the qualitative research methods include one on one interview, focus group discussion, ethnographic research, case study, record keeping, process observation, etc. The data in the qualitative research method are in the form of texts, images, videos, audios, etc(Gray, 2014; Hancock, 2009; Methods and Time, 2000).

The second one is the quantitative research method which involves the process of collecting the data in numerical form and analyzes the data using various statistical techniques to get the information from the data. The data in this type of research method are in the form of numbers. Researchers whose objective is to get conclusive results use quantitative research as the results from the quantitative research are definitive. Data for the qualitative research is collected through a close-ended questionnaire or it can be collected through secondary sources like the books, journals, published research papers, or through international and government databases such as World Bank, IMF, etc(The World Bank, 2014; The World Bank Group, 2015).

In this research, the quantitative research method has been used as the previous researchers have also used similar methods. It is very difficult to establish a long-term relationship only based on the qualitative study.

3.2 Models and Variables

3.2.1 Models

An applicable consolidation of advisable flow of foreign debts, remittance inflows, highly productive labour force, controlled inflation rate and balanced trade can assist financial development and as result can have intricate positive effects in the national economy of Nepal. The literature survey in the prior sections signifies that a number of studies have investigated the role and impacts of foreign debts and remittance inflows in economic growth separately. Nevertheless, there is not a single study examining the impacts of these two variables in the economy in the integrated way. In this regard, this study tries to bridge this gap.

This study uses a log- log econometric model to test co-integration and causality from foreign debts, remittance inflows, export trade, inflation rate and active labour force on the economic growth. It is possible there may be unidirectional causality from independent variables to economic growth, equally it is also possible no dependency of GDP to independents variables. To this study gross domestic product (GDP) is used as proxy of economic growth. GDP is taken as dependent variable whereas foreign debts, remittance inflows, export trade, inflation rate and active labour forces are as the independent variables. To detect the significance effects of independent variables on the economic growth, the analysis yields a general model as;

$$GDP_{CG} = \alpha + \beta_1 FD_t + \beta_2 RI_t + \beta_3 ET_t + \beta_4 IR_t + \beta_5 LF_t + \varepsilon_1 \ldots (1)$$

Where,

GDP_{CG} = Per Capita Gross Domestic Product (a proxy for the economic growth)

FD= Foreign Debts

RI= Remittance Inflows

ET= Export Trade

IR=Inflation Rate

LF= Labour Force

The equation (1) summaries the association among the dependent and independent variables in natural log form as:

$$LGDP_{CGt} = \alpha + \beta_1 LFDt + \beta_2 LRIt + \beta_3 LET_t + \beta_4 LIRt + \beta_5 LLFt + \varepsilon_1 \ldots (2)$$

Where, α is a constant term, $\beta_{1.....}\beta_6$ are the coefficients of the variables of the model, ε is the error term, t refers to the time i.e. year we are using the annual data spanning from 1993-2019. This data series covers 26 years.

3.2.2 Variables used in this Study

3.2.2.1 Economic growth- There is various indicators which are used as the indicator of the economic growth. Some of the scholars have used the GDP values as the indicators whereas the growth rate is one of the most used indicators. Similarly, in some of the researches, the GDP per capita has also been used as the indicator. In this study, the GDP growth of the Nepalese economy has been taken into consideration to measure the economic growth. The data was collected from the database of World Bank for the period 1993- 2019.

3.2.2.2 Foreign debt- Another important variable for the study is foreign debt. In previous studies, foreign debt has been measured by various indicators such as total external debt, the ratio of external debt to GDP, external debt as the percent of GNI/GDP, etc. In this study, the foreign debt has been measured by the external debt as a percentage of GNI. The indicator was used as the data was easily available on the World Bank database. Also, the economic growth and other variables are measured in percentage, therefore using the external debt as a percentage of GNI was considered to be more suitable for this study.

3.2.2.3 Remittance Inflow- The third variable for the study is the inflow of remittance in Nepal. The data for the remittance inflow was also collected from the database of the World Bank for the period 1993-2019. Instead of taking the actual value of the remittance inflow, researchers have used the remittance inflow as a percentage of GDP. Since the objective of the research is to examine the relationship between economic growth and remittance, taking the percentage is more appropriate rather than the actual value. Also, the absolute value of the remittance has increased over the period, however, its relevance and importance in the Nepalese economy can be measured correctly by comparing it with its contribution to GDP.

3.2.2.4 Inflation Rate- The fourth variable for this study is inflation rate in Nepal. The data for the inflation rate has been collected from the Nepal Rastra Bank, MOF, and CBS 2018/19 for the period of 1993-2019. The data has been taken in the form of inflation growth rate in percentage since its effects on the GDP and simultaneously impacts on the economic growth of Nepal can be examine more minutely. Economists believed that galloping and hyperinflation have quite few serious and harmful consequences for the economy. However, mild degree of inflation activates the economy by increasing investment, production and employment.

3.2.2.5 Labor Force- The fifth variable for this study is active participation of the labor force. Mortensen (2004) has focused on the role of active labor forces and stated that the reforms efforts to improve the labor performance helps to reduce unemployment, equally encourages the investment in research and development required for the short- term and long-term impact on economic growth. To examine the role of labor force participation in economic growth, the data for the labor forces has been abstracted from the CIEC Data (2020) for the time period of 1993-2019 in the form of percentage. It's difficult to find out the relationship between in the actual value form. So, data series is taken in the form of percentage.

3.2.2.6 Export Trade – The sixth variable for this study is export trade. Ram (1985) argues that export can be taken as an input in the production function that have a great impact on aggregate for a given level of labor and capital. The reason behind this is that a high level of exports may lead to a more efficient allocation of resources in terms of comparative advantages and production efficiency. Therefore, to examine the

impacts of export on GDP of Nepal, the data from World Bank (2020) has obtained in the form percentage from time period of 1993-2019.

3.2.2.6 Gross Domestic Product Growth Rate- The last but not the least variable for this study is gross domestic growth rate. In some studies GDP value is consider as the major indicator to whereas in some studies growth rate is considered as the indicator. Also, in few studies GDP per capita is also considered as the indicator. In this study, GDP growth rate has deployed as the independent variable to examine its effects on the economic growth of Nepal. To find the short-term and long-term impacts of GDP growth rate in Nepalese economy the data from the World Bank (2020) is taken in the form of percentage from the time period of 1993-2019.

3.3 Data and Sources

The data used in the research are majorly two types. The first one is the primary data which is also called the first-hand data. This data is collected by the researcher as per the research requirements. Some of the popular methods of primary data collection include primary surveys, personal interviews, focused group discussions, and case studies. For the survey, one can use a closed-ended or open-ended questionnaire. The primary data has both the advantages and disadvantages associated with it. The researcher can collect the data on any topic or area and the problem of unavailability of the data and missing data are addressed. Also, the researcher can understand other aspects of the research while directly interacting with the participants which might not be possible if only the desk research was conducted. Also, where the fieldwork is required for the data collection research can collect extra information which might help the researcher in future analysis. However, primary data collection is often time-consuming and expensive. In some cases, only a small sample size is possible which might affect the robustness of the results.

The second type of data is the secondary data which is the data collected already collected by someone else. Some of the major sources of secondary data include the published journals, articles, and books, data collected by national and international organizations. The secondary data are available for free in most cases which makes it a preferred choice for the researchers. However, the unavailability of

the required data and missing data are some of the major disadvantages associated with secondary data.

For this study to examine the relationship between economic growth, foreign debt, inflow of remittance and labour force participation, secondary data sources have been used. The data was collected from the database of the World Bank (2020) and CEIC Data (2020) respectively. The data was collected for the period 1993- 2019. The data for 27 years is considered to be a decent period for the analysis purpose. Other studies which researched similar areas have also considered the secondary data and in the case of Nepal, most of the data are either collected from the database of international organizations such as World Bank, IMF, ADB, ILO (2020) or the domestic sources such as Nepal Rastra Bank, Ministry of Finance Central Bureau of Statistics (2020).

3.4 Methodology

3.4.1 Descriptive Statistics

Descriptive statistics is one of the most used analysis techniques used in research, especially in the social sciences. This technique helps the researcher and the reader to get an overview of the collected data and the variables. The graphical and tabular analyses are easy to read and analyze. Various descriptive statistics such as measures of central tendencies (mean, median, and mode), standard deviation, Skewness, Kurtosis, and variance have been performed. Apart from that the graphical representation of the collected time series data has also been performed.

3.4.2 Normality Test

One of the tests that have been conducted in the normality test to examine whether the series follows the normal distribution or not. A series is considered to follow the normal distribution if the data points near the mean value are more frequent as compared to the data far from the series mean. The normality test is conducted to identify the outliers also(Elder and Kennedy, 1999; Oskooe, 2011; Roots and Roots, 2004). Even though the assumption of normality is not compulsory for the cointegration test, it has been conducted to check if any extreme values might

influence the results. The Jaque Bera test for normality has been conducted in this research.

3.4.3 Unit Root Test

Unit root test is one of most important tests which needs to be conducted before the co-integration test, as the series should be non-stationary to conduct the co-integration test. The unit root test examines whether the series is stationary or not. It is a stochastic trend which is also called the random walk with drift. The series which has unit root are not easy to predict. There is various test proposed by different scholars for the unit root test such as Dickey-Fuller test, Philip-Perron (PP) test, Schmidt-Phillips test, etc(Elder and Kennedy, 1999; Oskooe, 2011; Roots and Roots, 2004). Different scholars have taken different assumptions to examine the unit root. For this analysis, the Augmented Dickey-Fuller (ADF) has been conducted.

The ADF unit root test the following hypothesis:

Null hypothesis: Series has a unit root.

Alternative hypothesis: Series is stationary.

In the Augmented Dickey-Fuller test having the unit root means that, in the equation,

$$y_t = p_1\, y_{t-1} + p_2 \Delta y_{t-2} + \varepsilon_t$$

$$p_1 = 1$$

Or $p_1 - 1 = 0$

Or $\Delta y_t = (p_1) y_{t-1} + \sum_{j=2}^{p} p_j (\Delta y_{y-j+1} + \varepsilon_t$

This is the ADF test, which is used to test the unit root in the time series.

3.4.4 Co-integration Test

The co-integration test is used to examine the long-term relationship between the time series variables. The test was first introduced in 1987 by Robert Engle and Clive Granger. The concept of the co-integration is to test whether the two non-

stationary series, in the long run, are integrated in such a way that the series does not deviate from the equilibrium. Apart from the Engle and Granger, there are other co-integration tests proposed by other scholars also (HJalmarsson and Osterholm, 2007; Mehra, 1989).

3.4.4.1 Engle-Granger Co-integration test

In this co-integration test, first, the residuals are constructed using the static regression and the then unit root of the residuals are examined. If the residuals are stationary, then it can be said that the time series are co-integrated. The null and alternative hypothesis of the Engle-Granger co-integration test is as follows:

Null hypothesis: There is no co-integration between the time series.

Alternative hypothesis: Co-integration exists between the time series.

One of the limitations of this co-integration is that, if there are more than two variables, the choice of the dependent variable changes the results.

3.4.4.2 Johansen Co-integration test

Another popular co-integration test is the Johansen test which is used to test the relationship between the multiple non-stationary time series. There are two different forms that have been used to test the co-integrations in this study.

- **Trace tests**

  This test used the number of linear combinations in the data. In this case, if the number of the linear combination (K) is greater than zero, then the null hypothesis is rejected.

  Null hypothesis: $K = K_0$

  Alternative hypothesis: $K > K_0$

- **Maximum Eigenvalue test**

  Another method for the Johansen co-integration test is the maximum Eigen value test which used the Eigenvalue as the parameter. The Eigenvalue is defined as the non-zero vector and if the non-zero transformation is applied, it changes by the scale factor. In this case, the null hypothesis and alternative hypothesis test are as follows:

  Null hypothesis: $K = K_0$

  Alternative hypothesis: $K > K_0$

  (Hassler, 2006; HJalmarsson and Osterholm, 2007; Mehra, 1989)

3.4.5 Error Correction Model

After the co-integration test, the error correction model has been examined in this study. The Vector Error Correction Model (VECM) has been used, as cointegration tests detailed in pervious section revealed that variables in our analysis are cointegrated in order of one i.e., the long run causality. The VECM model allows the researcher to interpret the short and long-term equations(Imbens and Wooldridge, 2009; Wooldridge, 2002). Engle-Granger critical value indicates that there exists long run association in the model, based on that, equilibrium-correction model (ECM) is used to test the relationship in equation (2).

3.4.6 Granger Causality test

The last test in this research is the granger causality test which is used to examine the causality between the two-time series variables. This test allows the researcher to examine whether a variable comes before another in the time series. However, the granger causality test does not determine the true cause and effect relationship between the two variables(Akhtar, 2005).

CHAPTER IV

Results and Discussion

This research is aimed to examine the long-term relationship between economic growth, foreign debt, and remittance inflow in Nepal. The research is expected to provide an overview of the relationship between these variables and also compare the results with the findings from the previous researches who have conducted similar studies. Apart from these variables, the researcher has collected the data for three more variables namely, inflation, labor force participation, and exports. The data for all the variables have been collected for the period 1993 to 2019. The current chapter has been devoted to present and interpret the results from the data analysis. In the first section, the findings from descriptive statistics have been discussed. In the second section, the findings from co-integration have been shows along with the unit root test results. The third section has been devoted to the correlation and regression analysis. In the last section, the summary of the results has been presented.

4.1 Descriptive Statistics

Descriptive statistics is one of the most common and most used analysis techniques, especially in the social sciences. The descriptive statistics allow the researcher to present the collected data in a more meaningful and simple way. For this research, both the graphical and the tabular form of the descriptive statistics for all the variables have been presented. The descriptive statistics include various measures of central tendencies such as mean, standard deviation, minimum and maximum values, etc.

Variable	Observation	Mean	Std. Dev.	Min	Max
GDP	27	4.552593	1.882512	.12	8.22
Remittance	27	15.34185	11.45674	.98	31.43
Foreign Debts	27	36.99704	15.15499	18.75	60.01
Exports	27	15.46926	5.770088	8.67	26.33
Inflation	27	7.142222	2.727634	2.48	12.59
Labour force	27	84.43815	1.245107	83	86.4

Table 1: The descriptive statistics for the collected variables

As shown in the above table, the first variable is GDP, and the average GDP growth of Nepal between 1993 and 2019 was 4.55 % with a standard deviation of 1.88. The standard deviation is used to measure the distribution of the variable. Lower the value of the standard deviation, more data points are near its mean value whereas the high value of the standard deviation indicates that some data points are far from the mean value. It is also used to identify the outliers in the series. Furthermore, the minimum GDP is 0.12 % and the maximum GDP was 8.22 %, which was achieved in 1994. In 2002, it was the peak period for the civil war in Nepal, which might have led to slow economic growth.

The second variable in the study is the inflow of remittance in the country and in the current case, the inflow of remittance as a % of GDP was taken into consideration which is considered a more logical variable as compared to the absolute value of the remittance inflow. The findings from the descriptive statistics show that on average, the remittance inflow in Nepal has been 15 of the GDP. The standard deviation, in this case, is 11.45 which is very high. The trend of the remittance also clearly shows the variation. The remittance which was below 2 % before 2000 has increased to as much as 30 % of the GDP. This indicates the dependency of the Nepalese economy on the remittance inflow.

Furthermore, the findings from the foreign debt show that the average foreign debt of Nepal is 36% of the GDP with a minimum value of 18.75% and a maximum of 60%. The trend line of the foreign debt has shown that the percentage of foreign debt as a percentage of GDP has declined continuously, even though the absolute value has increased over the period.

Similarly, the inflation data shows that the average inflation rate in Nepal for the selected period has been 7.14 % which is considered to be high. The minimum inflation was 2.48 whereas the maximum inflation was 12.59 % indicating high variability in the inflation rate over the period.

The export value shows that the average exports of Nepal (as a percentage of GDP) have been 15.4 % over the period. The standard deviation, in this case, is also high indicating that in some years the exports were very high and in some years the exports were low. Lastly, the findings for the labor force participation show that on

average the labor force participation is 84 % and the standard deviation for this variable is low indicating that the value has not changed a lot over the period.

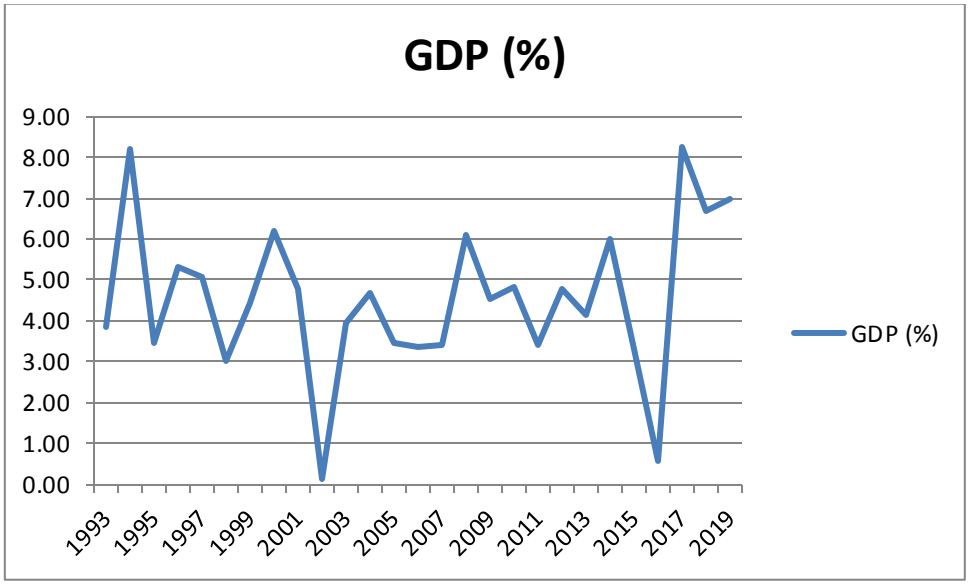


Figure 3: Time series for the GDP of Nepal between 1993 and 2019 in%

The trend line for the GPD growth rate of Nepal has been shown in the figure above. The figures show high fluctuations in the growth rate over the period. The GDP growth can be linked to the political-economic situation of any country and in the case of Nepal also it can be seen. The growth rate has declined in the period when there was a civil war in Nepal and it starts to increase once the civil war was over. Also, the graph indicates the GDP declined after the heavy earthquake in Nepal in 2015. Therefore, the GDP growth can be linked to the major events in Nepal. The growth rate declined further during the Covid-19 period, however, the data has not been included in the study, the growth rate turned negative in 2020 as the nation was under lockdown for almost four-month.

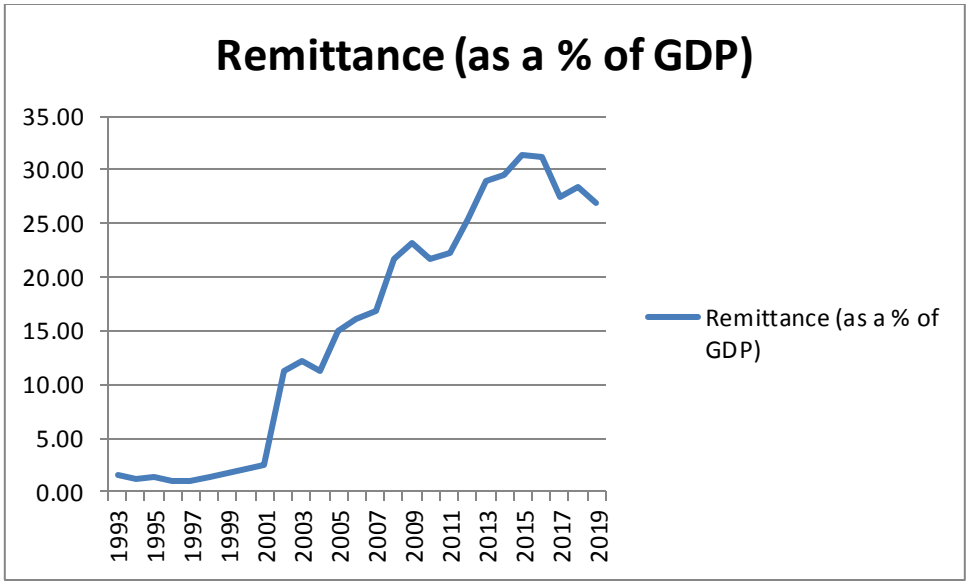


Figure 4: Time series of Remittance inflow in Nepal for the period 1993 to 2019

The inflow of the remittance as a percentage of GDP has been continuously increasing in Nepal, as shown in the figure above. In the late 1990s, the inflow of remittance was less than 2 %, however, it has increased to more than 30 % in 2015/2016 and dropped down to below 30 % after that period. Nepal is considered to be one of the high remittances receiving countries in South Asia and much of the economic growth in the country can be contributed to the inflow of remittance. However, the impact of remittance on economic growth has been a great debate for a long period among scholars. To examine the impact of the remittance in Nepal, the regression analysis has been conducted and the results are discussed in the later section of the current research.

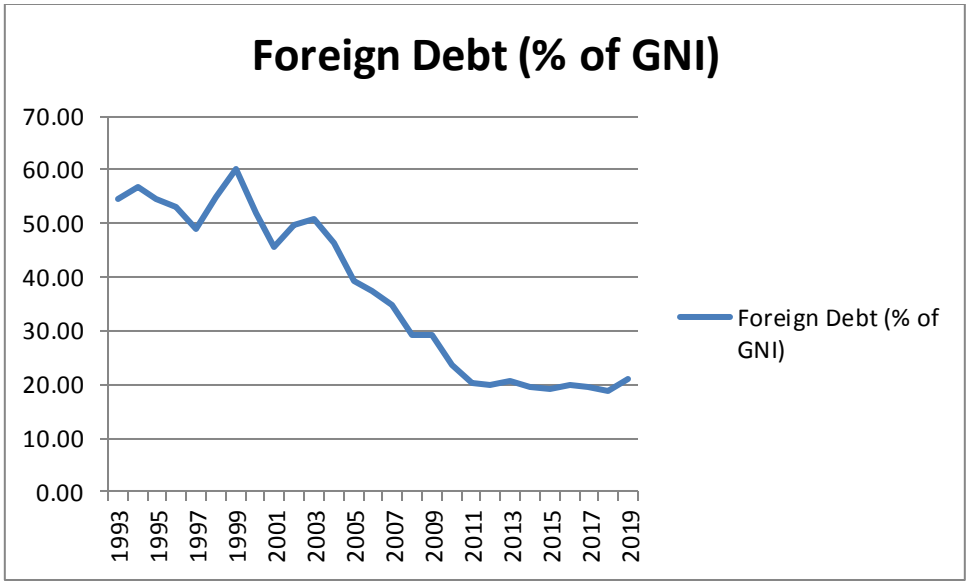


Figure 5 Foreign debts in Nepal (as a percentage of GDP) for the period 1993 to 2019

Foreign debt has been one of the major sources for government spending in Nepal as the government revenue in the country has been much lower in the country as compared to its spending. Even though the foreign debt as a percentage of GDP has declined continuously over the period, the absolute number has been increasing which is an area of concern the government should focus on. As per the economic theory, if the return from the investment by the borrowed amount is higher than the interest rate paid on the borrowing, then only the external borrowing is beneficial for the economy.

However, in the case of Nepal, most of the government spending is for the nonproductive sectors with less or no return. This has led to the continuous increase in borrowing and the interest on the borrowings has also increased rapidly. If the government does not find a sustainable way to reduce the foreign debt it could lead Nepal to a debt trap where the country has to borrow more to repay the previous borrowing.

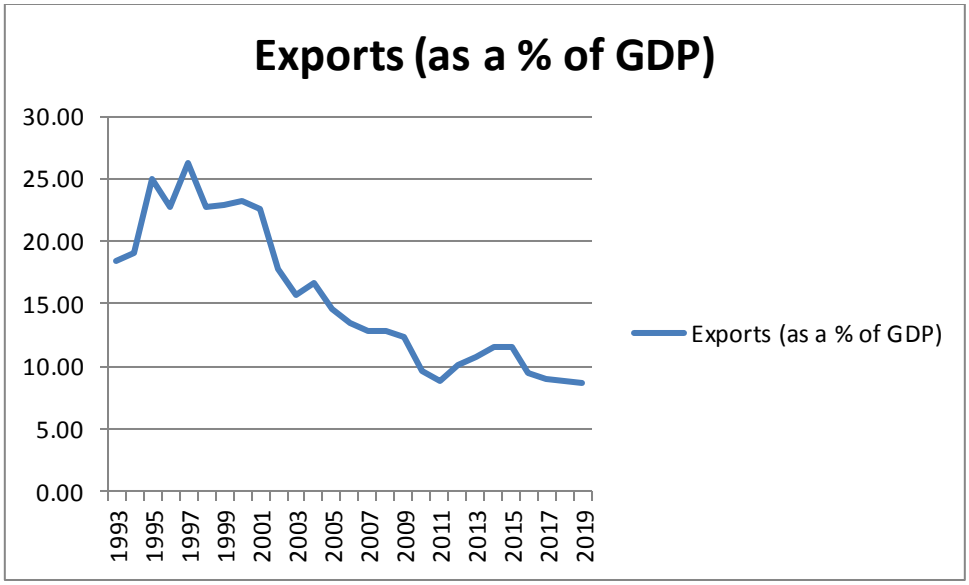


Figure 6 Exports from Nepal (as a percentage of GDP) for the period 1993- 2019

The exports from Nepal as a percentage of GDP have been declining continuously over the period. Most of the products in Nepal are imported and mostly from the neighboring countries India and China. The manufacturing sector in Nepal is still developing and only a few products are produced in the country. It might be economically correct to import the products on which Nepal does not have a comparative advantage, however, Nepal should focus more on self-sufficiency. The problems such as the border blockade (by India, in 2015) and the pandemic like Covid-19 may affect the trade, therefore the manufacturing sector should be promoted in Nepal. One of the major reasons for less investment in the manufacturing sector in Nepal is the lack of proper infrastructure and the unstable political economy. Since the investment in the manufacturing sector is high, private investors hesitate to invest in Nepal without the assurance of a safe and fair business environment. Also, the cheap availability of the products in neighboring countries has discouraged the domestic producers to invest heavily in this sector. Therefore, the government should work on making the business environment suitable for the investment and also an investment in the basic infrastructure such as road and electricity which are prerequisites to set up strong manufacturing units in the country.

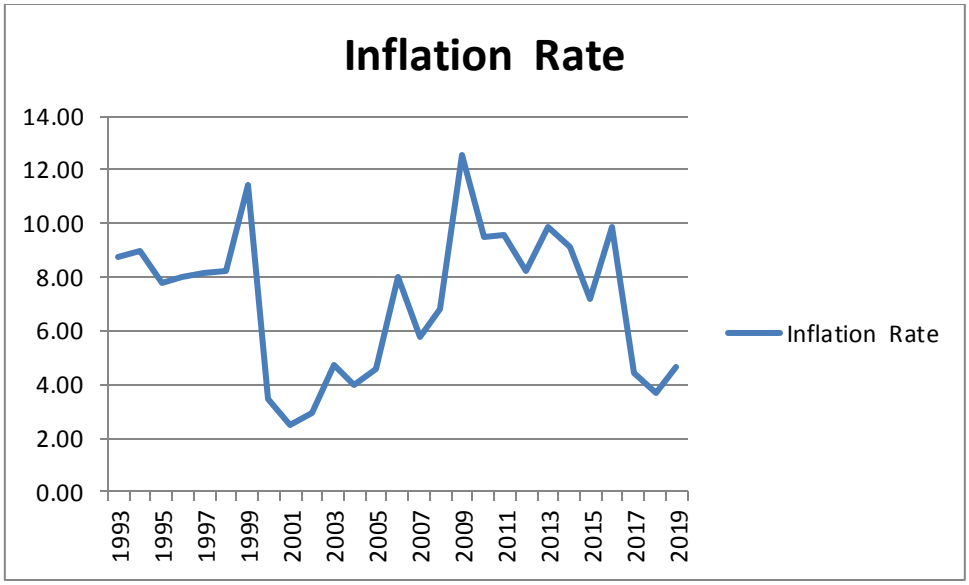


Figure 7 Inflation rate in Nepal for the period 1993- 2019 in %

The trend of the inflation rate in Nepal has been shown in the figure above. As the figure suggests, the inflation rate was low in early 2000 and one of the reasons for low inflation could below demand in the economy. This was the period of civil war in Nepal and the purchasing power of Nepalese was comparatively lower which led to low demand in the economy. There can be other factors that led to low inflation in the period, which needs to be further investigated. The inflation rate starts increasing in late 2000 it reached around 12 which was also its peak. The inflation came down after 2010. The central bank of Nepal always has a close look at the inflation rate in the economy and it uses its interest rates to keep the inflation rate control. If the inflation rate is low, the central bank reduces the interest rate, which leads to an increase in liquidity in the economy and creates more demand which pulls the inflation upwards. On the other hand, when the inflation rate is high, the central bank increases the interest rate which absorbs the excess liquidity in the economy and reduces the inflation rate.

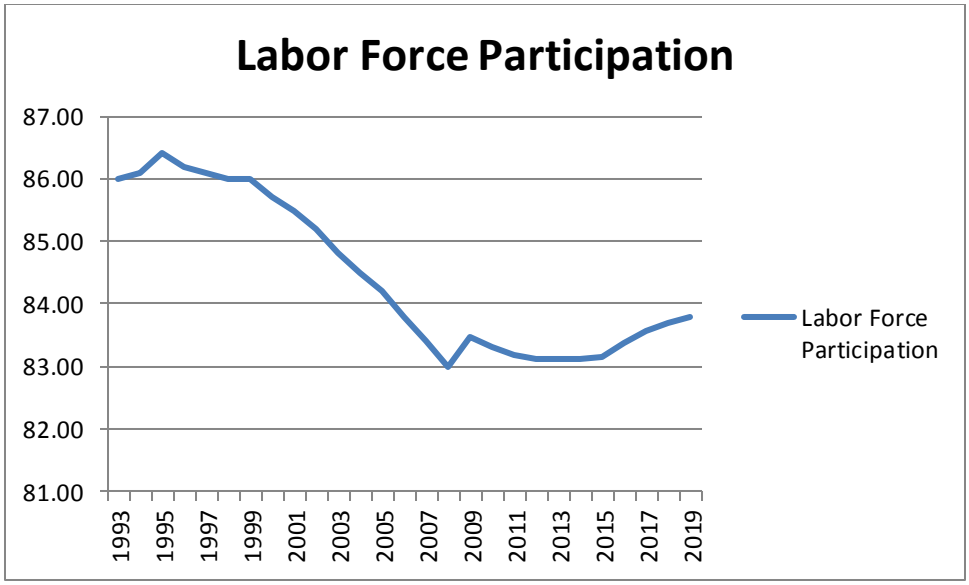


Figure 8 Labor force participation in Nepal for the period 1993-2019 in %

The last variable for the descriptive statistics is the labor force participation in Nepal and as the figure indicates, the participation has been declining till late 2010 and after 2010 it tries to become stable and it shows an increasing trend in the last few years. However, there has not been a significant change in labor participation.

4.2 Unit Root Tests

The first test conducted, for the collected data in this study is the unit root test. The test is done to examine the series is stationary or not and, in this case, the Augmented Dickey-Fuller test has been conducted to examine the unit root.

GDP

Augmented Dickey-Fuller test for unit root Number of obs = 24

Interpolated Dickey-Fuller

	Test	**1% Critical**	**5% Critical**	**10% Critical**
	Statistic	Value	Value	Value
Z(t)	-2.467	-4.380	-3.600	-3.240

MacKinnon approximate p-value for Z(t) = 0.3445

Table 2 Unit root test for GDP

The result of the unit root test for the GDP is shown in the table above and the results show that the test statistics is -2.46. In this case, the null hypothesis is that the series has the unit root and the alternative hypothesis is that series is stationary. In this case, since the absolute value of the test statistics is lower than the critical values, the null hypothesis cannot be rejected which indicates that the series is not stationary. The requirement for the co-integration is that the series should be non-stationary at level and stationary at first difference. Therefore, the criteria for co-integration are fulfilled.

Dickey-Fuller test for unit root Number of observation = 26

Interpolated Dickey-Fuller

	Test	**1% Critical**	**5% Critical**	**10% Critical**
	Statistic	Value	Value	Value
Z(t)	-1.683	-4.371	-3.596	-3.238

MacKinnon approximate p-value for Z(t) = 0.7581

Table 3 Findings from the unit root test-remittance inflow

The unit root test for the remittance inflow is shown in the table above and the test statistics is -1.63 which is lower than the critical values at all significance levels. Therefore, in this case also, the null hypothesis cannot be rejected which implies that the series is non-stationary.

Foreign Debt

Dickey-Fuller test for unit root Number of observation = 26

Interpolated Dickey-Fuller

	Test	**1% Critical**	**5% Critical**	**10% Critical**
	Statistic	Value	Value	Value
Z(t)	-1.887	-4.371	-3.596	-3.238

MacKinnon approximate p-value for Z(t) = 0.6612

Table 4 Findings from the unit root test-foreign debt

Furthermore, the results for the foreign debt also show that the absolute value of the test statistics is lower than the critical values given. Therefore, the null hypothesis of unit root cannot be rejected. This implies that the series is non-stationary and the co-integration test can be conducted.

Dickey-Fuller test for unit root Number of observation = 26

Interpolated Dickey-Fuller

	Test	**1% Critical**	**5% Critical**	**10% Critical**
	Statistic	Value	Value	Value
Z(t)	-2.914	-4.371	-3.596	-3.238

MacKinnon approximate p-value for Z(t) = 0.1577

Table 5 Findings from the unit root test-foreign debt

Furthermore, the ADF test results for exports are presented above and the absolute value of t-statistics is lower than the critical values in this case also. So, the null hypothesis cannot be rejected which implies that the series is non-stationary.

Inflation

Dickey-Fuller test for unit root Number of observation = 26

Interpolated Dickey-Fuller

	Test	**1% Critical**	**5% Critical**	**10% Critical**
	Statistic	Value	Value	Value
Z(t)	-2.712	-4.371	-3.596	-3.238

MacKinnon approximate p-value for Z(t) = 0.2312

Table 6 Findings from the unit root test-Exports

The unit root for the inflation also shows that the value of t-statistics is -2.71 whereas the critical values are 10 % level is also -3.2 which implies that the null hypothesis of unit root cannot be rejected in this case also. This indicates that the inflation series is also non-stationary.

4.3 Co-integration test

To examine the long-term relationship between the variables included in the research, the Johansen co-integration has been conducted and the results are shown in the table below.

Johansen tests for cointegration					
Trend: constant				**Number of observations = 25**	
Sample: 1995 - 2019					**Lags = 2**
Maximum rank	**parms**	**LL**	**eigen value**	**trace statistic**	**5% critical value**
0	42	– 249.80523	–	136.7525	94.15
1	53	– 221.3846	0.89706	79.9113	68.52
2	62	– 202.18357	0.78478	41.5092*	47.21
3	69	– 193.46685	0.50209	24.0758	29.68
4	74	– 185.56071	0.46873	8.2635	15.41
5	77	– 182.08701	0.24262	1.3161	3.76
6	78	– 181.42898	0.05128		
Maximum rank	**parms**	**LL**	**eigen value**	**max statistics**	**5% critical value**
0	42	– 249.80523	–	56.8413	39.37
1	53	– 221.3846	0.89706	38.4021	33.46
2	62	– 202.18357	0.78478	17.4334	27.07
3	69	– 193.46685	0.50209	15.8123	20.97
4	74	– 185.56071	0.46873	6.9474	14.07
5	77	– 182.08701	0.24262	1.3161	3.76
6	78	– 181.42898	0.05128		

Table 7 Findings from the Johansen Co-integration test

As shown in the table above, both the trace statistics and the max statistics have been calculated. The rank on the left-hand side shows the rank which shows a number of co-integrations among the variables. The rank zero means that there is no co-integration among variables and 1 means there is one co-integration and so on.

The null hypothesis in the case of 0 ranks is that there is no cointegration, whereas the alternative hypothesis is that there is at least one cointegration. The null hypothesis can be rejected if the trace statistics are higher than the 5 % critical value. The results from the trace statistics show that the value is higher than the 5 % critical value till rank 1. Therefore, the null hypothesis of 2 co-integration cannot be rejected. In other words, it can be concluded that there is co-integration among the selected variables in the study which implies that there is long term relationship between the variables.

The co-integration between the GDP and other variables was also tested individually and the findings show that co-integration exists between GDP and remittance, GDP and foreign debt, GDP and exports, GDP, and labor force participation whereas the results do not show co-integration between GDP and the Inflation rate. The tables of this co-integration are included in the Appendix.

4.4 VECM model

After the co-integration test, the next step is to perform the VECM model and the results from the VECM model are shown in the following table. Apart from the VECM model, the lag selection procedure was also conducted and the findings from the lag selection show that the lag of 2 is the most suitable for the current model, therefore 2 lags were taken for the VECM model. The results Ce1 coefficient of D_gdp is negative and statistically significant (see Appendix for the table) as the p-value is less than 0.05. Therefore, it can be concluded that the long-term relationship exists and the causality runs from remittance, exports, foreign debt, inflation, and labor force to GDP.

Vector error-correction model

Sample: 1995 - 2019 **Number of obs = 25**

AIC = 20.76486

Log likelihood = -185.5607 **HQIC = 21.76553**

Det (Sigma_ml) = .1127699 **SBIC = 24.37273**

Equation	Parms	RMSE	R-sq	Chi^2	$P>Chi^2$
D_gdp	11	1.94336	0.6860	28.39491	0.0028
D_remittance	11	1.66755	0.7666	42.69721	0.0000
D_foreign_debt	11	2.4857	0.7686	43.17417	0.0000
D_exports	11	1.27991	0.8025	52.82987	0.0000
D_inflation	11	2.54271	0.5226	14.23079	0.2205

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_gdp						
_ce1						
L1.	-1.539314	.4918812	-3.13	0.002	-2.503383	-.5752444

Table 8 Findings from the VECM mode

The findings from the vector error correction model are shown in the table above. The first difference of all the variables included in the model is represented in the above model. The findings from the short-term causality (results are shown in the Appendix) also indicate that there is no short-term causality from remittance to GDP, foreign debt to GDP. However, the results show the short-term causality of exports on the GDP. Furthermore, the diagnostic test of Lagrange-multiplier showed, there is no problem of autocorrelation in the model. Lastly, the finding from the Jaquebera test indicates that the residuals are normally distributed.

4.5 Correlation analysis

Apart from the co-integration, the correlation analysis was also conducted for the selected variables in the study and the results are shown in the table below.

Correlation Results

	GDP	Remittance	Foreign Debt	Exports	Inflation	Labour Force
GDP	1.0000					
Remittance	0.0171	1.0000				
Foreign debt	– 0.1059	– 0.9606*	1.0000			
Exports	– 0.0667	– 0.9333*	0.9022*	1.0000		
Inflation	– 0.1188	0.0924	– 0.0955	– 0.0713	1.0000	
Labour force	0.0023	– 0.9421*	0.9258*	0.9263*	– 0.0977	1.0000

Table 9Findings from the Correlation analysis

As the results show the GDP is positively correlated with remittance and labor force, whereas GDP is negatively correlated with foreign debt, exports, and inflation. The results were as expected except for the exports. This is because, with exports, the GDP should also increase. However, the correlation only shows the direction and it does not causality. The correlation coefficient value lies between -1 & 1 and closes the coefficient to its extreme values stronger the relation. In this case, the correlation does not seem strong, and also the correlation is not statistically significant at a 95 % significance level.

4.6 Regression Analysis

Source	SS	df	MS	Number of obs	=	27
Model	15.633314	5	3.1266628	Prob> F	=	0.5249
Residual	76.5068021	21	3.64318105	R-squared	=	0.1697
				Adj R-squared	=	-0.0280
Total	92.1401161	26	3.54385062	Root MSE	=	1.9087

gdp	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
remittance	-.1883164	.147339	-1.28	0.215	-.4947265	.1180937
foreign_debt	-.1611903	.0912906	-1.77	0.092	-.3510395	.028659
exports	-.1799836	.1967548	-0.91	0.371	-.5891575	.2291903
inflation	-.0794195	.1381548	-0.57	0.571	-.3667281	.2078892
labour force	.9430381	.9994115	0.94	0.356	-1.135352	3.021428
_cons	-62.87167	83.38082	-0.75	0.459	-236.2716	110.5282

Table 10 Findings from the regression analysis

The last analysis conducted in this research is the regression analysis and the results from the regression analysis are shown in the table above. In this model, the GDP has been used as the dependent variable and other variables as the independent variables. The R squared for the model is 0.16 which implies that only 16 % of the variation in the GDP is being explained by the factors included in the model and other variation is due to some other factors. Since the GDP of a country is affected by many factors, a low R squared was expected. Furthermore, the cumulative impact is measured by F statistics and the F statistics are not statistically significant.

In terms of the regression coefficient, except for the labor force, all other variables show a negative coefficient. A negative coefficient implies that there is a negative impact on the dependent variable. For example, the coefficient of remittance is -0.18 which can be interpreted as a one-unit increase in the remittance, the GDP declines by 0.18 percentage point, keeping all other factors constant. All other variables can also be interpreted similarly.

CHAPTER V
SUMMARY, CONCLUSION AND FURTHER STUDY

5.1 Summary

The detail documentation of foreign debts, remittance inflows, inflation rate, active participation of labor force and exports, and their relationship with economic growth in the context of Nepal was done. In this process, first secondary data was collected for the period 1993 to 2019 from various sources. The collected data were analyzed using various statistical techniques.

The main objective of this study is to detect the long-term and short term relationship among the dependent and independent variables in the model. For this, Johansen co integration test was deployed along with the VECM model and, followed by correlation and regression analysis. Besides it, the unit root test was also employed to detect the stationary of the variables,

The empirical analysis of this study suggested that there is a long-term relationship of GDP with the remittance, exports, inflation, and labor force as suggested by the Johansen cointegration test. Also, when the variables were examined individually and their relationship with the GDP, it showed that co-integration exists between GDP and remittance, GDP and foreign debt, GDP and exports, GDP and labor force participation. But the results do not show co-integration between GDP and the Inflation rate.

Similarly, the results from the regression analysis were very interesting, as the remittance shows a negative on the GDP. Similar results were shown by (Barajas *et al.*, 2009; Guha, 2013; Jahjah*et al.*, 2003). However, on the other hand some researchers have shown the positive impact of the remittance on GDP (Adamas, 1991; Meyer and Shera, 2017; Upadhyaya*et al.*, 2008).

In the case of Nepal, some studies such as (Dhungel, 2015; Giri, 2019; Paudel *et al.*, 2020) showed the positive impact of remittance on the GDP, whereas a study by (Uprety, 2017b) showed a negative impact. Therefore, this study is in line

with other studies which show a long-term relationship with the GDP. However, the negative impact was not found on many previous researches.

The increase in the remittance inflow leads to more imports for Nepal since the manufacturing sector in Nepal is not very well developed; therefore, the increase in demand means more imports which in return decline in domestic production. Besides it, the remittance is directly related to the migration of the labor force, which leads to the problem of brain drain which also has a negative impact on the economy.

Nevertheless, the negative impact of the foreign debts which was shown in these results has also been found in many earlier studies such as (Clements *et al.*, 2003; Pattillo*et al.*, 2011). In the case of Nepal studies by (Karki, 2019; Siddique and Selvanathan, 2015) also showed the negative impact of the foreign debts. The results for the exports and inflation are also similar to some of the previous studies. However, there are very fewer studies that focused on the impact of the labor force on the GDP in Nepal which needs to be further explored.

5.2 Conclusions

The economic growth in Nepal has seen many fluctuations in the last few decades from the internal civil war to the removal of the Monarchy system and the devasting earthquake in 2015. Also, Nepal is considered as one of the highest remittance-receiving countries where the inflow of remittance is more than 25 % of the total GDP. There have been many studies conducted to analyze the relationship between remittance and economic growth in Nepal and the results from those studies have shown both the positive and negative impact of remittance on GDP. However, the previous researchers have not taken into consideration the other factors which might have a long-term relationship with GDP in most of their studies. Therefore, the researcher has conducted this study and has taken into consideration five major factors which might be closely related to the economic growth of Nepal. The variables include inflow of remittance, foreign debt, exports, inflation, and labor force participation.

For the analysis purpose, secondary data was collected for the period 1993 to 2019 from various sources. The collected data were analyzed using various statistical

techniques and the main objective of the research was to examine the long-term relationship between these factors with GDP. Therefore, the Johansen co integration test was conducted to test the relationship along with the VECM model. The unit root test has been deployed to examine the stationary of the variables and, the correlation and regression analysis used to calculate the degree of relationship between dependent variable with independent variables.

The results from the unit root test suggested that the variables are not stationary at a level which was the required condition for the co-integration test. The findings from the co-integration test showed that the co-integration exits between GDP and all other variables included in the study when all the variables were tested in a single model. As per the results, the long-term relationship exists and the causality runs from remittance, exports, foreign debt, inflation, and labor force to GDP.

When the individual variables were used for the integration test, the results showed that co integration exists between GDP and remittance, GDP and foreign debt, GDP and exports, GDP, and labor force participation but the results do not show co-integration between GDP and the Inflation rate. Furthermore, results from the short-term causality showed that there is no short-term causality from remittance to GDP, foreign debt to GDP. However, the results show the short-term causality of exports on the GDP.

Besides it, the diagnostic test of Lagrange-multiplier showed, there is no problem of autocorrelation in the model. Lastly, the finding from the Jaquebera test indicates that the residuals are normally distributed. The findings from the regression analysis suggested that remittance, foreign debt, exports, inflation, shows a negative impact on the GDP. Only the labor force showed a positive impact on the GDP. The negative impact of remittance on the GDP is very interesting even though the coefficient is not statistically significant. The only significant coefficient is of foreign debt, which is also when the 90 % confidence interval is taken into consideration.

The negative impact of remittance was also found by some of the researchers in Nepal and the Dutch Disease theory seems to be applicable. With a higher inflow of remittance, most of the received amount is used for consumption and the high

consumption leads to higher import which also adversely affects the domestic industries. Thus, based on the results researchers recommend that the remittance-led consumption growth should be closely monitored and the investment of the remittance on the productive sector should be promoted. This would help the Nepalese economy to lower the dependency on remittance and also help to create more employment inside the countries. With employment opportunities inside the country, the labor migration will decrease over the period and the problem of brain drain would also be minimized.

5.3 Further Study

Further study could be conducted taking into consideration other factors which might affect the GDP of Nepal. Also, a similar study can be conducted using the longer data set which might provide more detailed results. Apart from that the comparison of Nepal and other developing countries can be conducted to examine how remittance and other variables affect the economy.

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Appendix A: VECM Model

Vector error-correction model

Sample: 1995 - 2019 Number of obs = 25

AIC = 20.76486

Log likelihood = -185.5607 HQIC = 21.76553

Det (Sigma_ml) = .1127699 SBIC = 24.37273

Equation	Parms	RMSE	R-sq	chi^2	P>chi^2
D_gdp	11	1.94336	0.6860	28.39491	0.0028
D_remittance	11	1.66755	0.7666	42.69721	0.0000
D_foreign_debt	11	2.4857	0.7686	43.17417	0.0000
D_exports	11	1.27991	0.8025	52.82987	0.0000
D_inflation	11	2.54271	0.5226	14.23079	0.2205
D_lab_force	11	.233841	0.5134	13.71867	0.2490

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_gdp						
_ce1						
L1.	-1.539314	.4918812	-3.13	0.002	-2.503383	-.5752444
_ce2						

L1.	.0284132	.2384786	0.12	0.905	-.4389963	.4958227
_ce3						
L1.	.0286809	.1430864	0.20	0.841	-.2517632	.309125
_ce4						
L1.	-.3250392	.2849782	-1.14	0.254	-.8835862	.2335078
gdp						
LD.	.324137	.3220905	1.01	0.314	-.3071487	.9554227
remittance						
LD.	.0153013	.2485266	0.06	0.951	-.4718018	.5024044
foreign_debt						
LD.	-.0002841	.1869023	-0.00	0.999	-.3666059	.3660377
exports						
LD.	.1540915	.2652576	0.58	0.561	-.3658039	.6739869
inflation						
LD.	-.0584298	.2070795	-0.28	0.778	-.4642982	.3474386
lab_force						
LD.	2.122734	3.550061	0.60	0.550	-4.835257	9.080725
_cons	-.4169638	.6074988	-0.69	0.492	-1.60764	.7737119

Appendix B : Co-integration tests

GDP & Remittance

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1995 - 2019 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	6	-110.55848	.	19.3111	15.41
1	9	-101.25769	0.52482	0.7095*	3.76
2	10	-100.90294	0.02798		

maximum rank	parms	LL	eigen value	max statistic	5% critical value
0	6	-110.55848	.	18.6016	14.07
1	9	-101.25769	0.52482	0.7095	3.76
2	10	-100.90294	0.02798		

GDP and Foreign Debt

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1995 - 2019 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	6	-118.34315	.	16.0214	15.41
1	9	-111.47695	0.42264	2.2890*	3.76
2	10	-110.33244	0.08749		

maximum rank	parms	LL	eigenvalue	max statistic	5%critical value
l 0	6	-118.34315	.	13.7324	14.07
1	9	-111.47695	0.42264	2.2890	3.76
2	10	-110.33244	0.08749		

GDP and Exports

vecrankgdp exports, trend(constant) max

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1995 - 2019 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	6	-104.53839	.	15.8366	15.41
1	9	-96.645893	0.46815	0.0516*	3.76
2	10	-96.620089	0.00206		

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	6	-104.53839	.	15.7850	14.07
1	9	-96.645893	0.46815	0.0516	3.76
2	10	-96.620089	0.00206		

GDP and Inflation

. vecrankgdp inflation , trend(constant) max

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1995 - 2019 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5%critical value
0	6	-113.03775	.	18.9824	15.41
1	9	-105.7815	0.44038	4.4699	3.76
2	10	-103.54656	0.16372		

maximum rank	parms	LL	eigenvalue	max statistic	5%critical value
0	6	-113.03775	.	14.5125	14.07
1	9	-105.7815	0.44038	4.4699	3.76
2	10	-103.54656	0.16372		

GDP and Labour Force

vecrankgdplab_force , trend(constant) max

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1995 - 2019 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	6	-51.515955	.	23.6696	15.41
1	9	-41.199949	0.56189	3.0375*	3.76
2	10	-39.681176	0.11441		

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	6	-51.515955	.	20.6320	14.07
1	9	-41.199949	0.56189	3.0375	3.76
2	10	-39.681176	0.11441		

Appendix C: Short term causality

Short term Causality of Remittance

Null hypothesis: There is no short run causality running from remittance to GDP

```
. test ([D_remittance]: L2D.remittance L3D.remittance LD.remittance)

 ( 1)  [D_remittance]L2D.remittance = 0
 ( 2)  [D_remittance]L3D.remittance = 0
 ( 3)  [D_remittance]LD.remittance = 0

           chi2(  3) =    3.11
         Prob> chi2 =    0.3749
```

Since the P is more than 0.05, we cannot reject the null hypothesis. Therefore there is no short run causality from remittance to GDP

Short term Causality of Foreign Debt

```
test ([D_foreign_debt]: LD.foreign_debt L2D.foreign_debt L3D.foreign_debt)

 ( 1)  [D_foreign_debt]LD.foreign_debt = 0
 ( 2)  [D_foreign_debt]L2D.foreign_debt = 0
 ( 3)  [D_foreign_debt]L3D.foreign_debt = 0

           chi2(  3) =    2.21
         Prob> chi2 =    0.5300
```

Short term Causality of Exports

```
. test ([D_exports]: LD.exports L2D.exports L3D.exports)

 ( 1)  [D_exports]LD.exports = 0
 ( 2)  [D_exports]L2D.exports = 0
 ( 3)  [D_exports]L3D.exports = 0

           chi2(  3) =   29.68
         Prob> chi2 =    0.0000
```

There is short term causality as the p value is significant

Diagnostic of VECM model - autocorrelation

. veclmar

Lagrange-multiplier test

lag	chi^2	df	Prob> chi^2
1	19.3120	16	0.25281
2	16.8871	16	0.39294

H0: no autocorrelation at lag order

At lag 2 also there is no autocorrelation

Normality
Null hypothesis: residuals are normally distributed
vecnorm, jbera

Jarque-Bera test

Equation	chi2	df	Prob> chi^2
D_gdp	0.296	2	0.86236
D_remittance	1.179	2	0.55449
D_foreign_debt	0.681	2	0.71153
D_exports	0.883	2	0.64323
D_inflation	0.429	2	0.80706
D_lab_force	0.706	2	0.70245
ALL	4.174	12	0.98009