RELATIONSHIP BETWEEN EXPORT AND ECONOMIC GROWTH IN NEPAL

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LETTER OF RECOMMENDATION

This thesis entitled **"RELATIONSHIP BETWEEN EXPORT AND ECONOMIC GROWTH IN NEPAL"** has been prepared by Mr. Dipendra Maharjan under my supervision. I hereby recommend this thesis for examination by the thesis committee as a partial fulfillment of the requirements for the Degree of **MASTER OF ARTS in ECONOMICS**.

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APPROVAL LETTER

We certify that this thesis entitled **"RELATIONSHIP BETWEEN EXPORT AND ECONOMIC GROWTH IN NEPAL"** submitted by Mr. Dipendra Maharjan to the Central Department of Economics, Faculty of Humanities and Social Sciences, Tribhuvan University, in partial fulfillment of the requirements 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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I am solely responsible for any mistake and flaws occurred in preparing this thesis.

Dipendra Maharjan

August, 2017 Kathmandu, Nepal

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LIST OF ABBREVIATIONS

ADF	Augmented Dicky Fuller
ARDL	Auto-Regressive Distributed Lag Model
AVAR	Augmented Vector Auto Regression
BIMSTEC	Bay of Bengal Initiative for Mulit-sectoral Technical and Economic Cooperation
CBS	Central Bureau of Statistics
D-W	Durbin-Watson
ECM	Error Correction Model
ECT	Error Correction Term
ELG	Export Led Growth
ELGH	Export Led Growth Hypothesis
GCT	Granger Causality Test
GDP	Gross Domestic Product
GON	Government of Nepal
IMF	International Monetary Fund
MOF	Ministry of Finance
NPR	Nepalese Rupees
NRB	Nepal Rastra Bank
RESET	Ramsey Regression Error Specification Test
SAFTA	South Asian Free Trade Agreement
VECM	Vector Error Correction Model
WB	World Bank

CHAPTER I

INTRODUCTION

1.1 Background

There is no country in the world which is completely self-reliant, nor can each country produce all goods equally and efficiently. This is because factors of production are not evenly distributed across the world. Countries specialize in the production of those goods for which they have necessary factors and facilities of production and export them, while they import those goods which they cannot produce or can produce only at a relatively higher cost.

The classical economist, father of economics science, Smith (1776), in his book called "The Wealth of Nations", states that that export is profitable if one can import goods that could satisfy better the necessities of consumers instead of producing them on the internal market.

Ricardo in his book, Principles of Political Economy and Taxation (1871) also called Theory of Comparative Advantage states that every country should specialize in production. It should export those goods in which it has greater comparative advantage and import those goods in the production which it has greater comparative disadvantage. It demonstrates that countries can gain from trade even if one of them is less productive.

The Neo classical economists believe that economic growth can be achieved by adopting Export Led Growth strategy (ELG), citing the example of East Asian countries which achieved tremendous growth with the introduction of the ELG strategy. Over the last three decades, new entrants like Malaysia and Thailand have approximately doubled their living standards after every ten years since 1980s (Giles & Williams, 2000). The experiences of these countries support the argument that, in order to achieve rapid and efficient growth through ELG, openness to trade and proper distribution of domestic resources should be encouraged (Giles & Williams, 2000).Todaro (2012) argues that international trade plays a key role towards the development of a nation. The export success of the East Asian Tiger countries that include Taiwan, Singapore, Hong Kong and Korea has gained much attention towards understanding issues on trade and

development. Thailand and Malaysia have successfully adopted the export led growth strategy pioneered by the above mentioned countries. The lessons learnt from these countries have been key in steering trade and development.

Export Led Growth is considered an economic strategy adopted by the developing countries aimed at finding a niche in the international market for their exports which include manufactured products and raw materials. The Governments that support this strategy offer subsidies to the industries producing the exportable goods and promotes accessibility to both the domestic and international markets. Countries stand to gain from this strategy through increased foreign reserves which in turn support import of manufactured products and other hi-tech products and thus sustains their balance of payment accounts.

Although many economists support the ELG strategy and acknowledge its importance, some economists are of different opinion. Dani (1994) argues that the export led growth is actually not what led to the growth of the East Asian tigers but it is the Government intervention which played a productive role and in turn was conditioned by a set of comparative advantages that include endowment of human capital and equitable distribution of resources.

The role of export to improve the growth potential of a country occupies the center stage in especially development literature where export promotion and increased openness gradually have replaced import substitution to enhance growth. Import substitution is a strategy the emphasizes the replacement of imports with domestically produced goods, rather than the production of goods for export to encourage the development of domestic industry. This shift from import substitution to export promotion and increased openness implies as well a shift in the trade and industry policy from being highly import substituting and government controlled to become more liberalized and deregulated. This shift in policies has also been central in policy recommendations to developing countries concerning improvements of their growth potential. An increased openness to trade will enhance competition for firms producing for the international market. Such an environment generates incentives for an increased productivity and incentives for innovations as well as the possibility to pay higher wages in line with the increased

productivity. Furthermore, an increased openness to trade is also central in international negotiations about trade and tariff barriers where trade theory suggests that all parties on aggregate will enhance their welfare position in relation to their autarky situation.

A number of empirical studies have documented a strong and positive relationship between export and economic growth including Michaely (1977), Balassa (1978), Tyler (1981), Balassa (1985), Chow (1987), Darrat (1987), Khan and Saqib (1993), Singupta and Espana (1994), McCarville and Nnadozie (1995), Thornton (1996), Panas and Vamvoukas (2002), Abual-Foul (2004) and Awokuse (2004) among others. The results reveal evidence in support of the export-led growth hypothesis for various countries. Furthermore, various studies have established a unidirectional causality from export to output while other studies as well have established evidence in support of a unidirectional causation from output growth to export.

After the restoration of democracy in Nepal in 1990, Nepal intensified the process of economic reform. Accordingly, Nepal changed the economic policy regime from inward looking and import substituting industrialization policy to outward and export-orientation. The focus of the shift in policy regime was on economic liberalization and privatization. Market-oriented, liberal economic policy, with limited government intervention in the private sector was introduced. Almost all sectors were opened up to foreign investment and policies were announced to lure foreign investments Further privatization of public enterprises (PEs) were done. Exporters were allowed to retain their foreign exchange earnings. Entry for private sectors' financial institutions were further liberalized. As a result, according to IMF world economic outlook database of 2015, Nepal's GDP, constant price in percentage change reached all time high of 8.219 in 1994 but also reached all time low of 0.12 in 2002 due to escalating Maoist insurgency. Afterwards, it has been in between 3.42 in 2011 and 6.105 in 2008.

1.2 Statement of Problem

Trade has been known as an engine of growth in many developing countries. In Nepal, the fluctuating and dwindling exports have had adverse effect on economic growth. The Nepalese exports, in the past mainly dominated by primary agricultural products and raw materials and now by iron and steel, knotted carpets, textiles, plastics, hollow tubes,

beverages and vegetables are characterized by low prices and market volatility, are not diversified hence not competitive in the international markets. Nepal has been adopting open and market oriented trade policy for the last two decades with expectations that such policy generates positive impacts on growth and export but did not happen as expected.

The growing and continued mismatch between import and export have resulted in an alarming level of trade deficit in Nepal. Over the years, export has almost been stagnated, and the import skyrocketed. Ghimire (2016) stated that compared to a decade ago, Nepal's import is now 9 times bigger than export. Available statistics show that the total export, which used to be 9.4% of the Gross Domestic Product (GDP) a decade ago, has squeezed to 5.2%, whereas import has swelled to almost 40 percent GDP- in fiscal year 2004/05 it was 35 percent. During the last decade, import increased by 4.8 folds to Rs. 775 billion whereas export went up just by 1.4 folds to Rs 85 billion. As a result, trade deficit swelled by 6 times in the last one decade and has reached to Rs. 689 billion. The Three Year Plan, ending on 15 July 2016, aimed at maintaining a trade deficit of 20 percent of the GDP, however, the preliminary estimates and the data indicate such deficit to be around 35 percent of the GDP.

India continued to command a major share in Nepal's foreign trade. With Indian economy's growth accelerating and manufacturing as well as industrial base enhanced further and strengthened, India's share in Nepal's total merchandise trade in the last fiscal year increased to 64 percent - in 2003-4, it was 58 percent. China's trading share with Nepal also doubled in the last 5 years to 12 percent - around one fifth of the trade with India. The share of other countries continued to decline to 26 percent of Nepal's total trade last year, with Nepal shifting its long-running dependency on other countries for the imports of vehicles and machinery, equipment, among others, to India. The slow growth in export compared to the robust growth in import remains a major concern for Nepal to benefit from trade. The average growth in export was 4.2% in the last decade whereas growth in import during the same period was 18.2 percent. India continued to be the largest export destination of Nepalese goods and services with absorbing 66 percent of Nepal's export. In terms of commodities exported, textiles is the largest export to India followed by zinc sheet, polyester yarn, juice and jute products. These five commodities

represented 42 percent of the total exports to India in the last fiscal year.

Despite being the second largest economy and northern neighbor, China absorbed only 2.8% of Nepal's total export on average in the last three years. Tanned skin, handicraft, woolen carpet and noodles are major commodities exported to China. Countries other than India and China absorbed almost a quarter of the total export in the last one decade. Woolen carpet, readymade garments, pashmina and pulses occupied almost half of the total exports to other countries. Similarly, import recorded a robust growth of over 18 percent, on average, over the last decade, also triggered and prompted by remittance supported consumption. Import from India was 64 percent of Nepal's total import. And, from China it was 12 percent. Nepal imported 24 percent from countries other than India and China. Oil and the petroleum products, imported from India accounted for 22 percent of import from India and 14 percent of total import of 2015. The value of oil and petroleum products in 2015 was Rs. 110 billion - 18 percent less than the previous year. This decline was due to a decline in price of petrol in the international market. Again, the value of oil and petroleum products import was more than the total value of goods and services Nepal exported. The other major items of import from India included are vehicles and spare parts, MS billet, and rice and paddy. Telecommunication equipment is the largest import from China followed by electrical goods, machinery parts and chemical fertilizer. With an import value of Rs. 24 billion, silver topped the list of goods imported from other countries last year. Aircraft's spare parts, crude soybean oil, polythene granules, silver and gold are other major imports from other countries.

Therefore, this study examines the validity of ELGH in Nepalese context, that is, if ELGH is valid for Nepal, then what should she do to enhance growth and if not what are the other alternatives to enhance growth Although most of the empirical studies support ELGH there is no overall consensus on the issue and the studies show mixed results, hence, there is dilemma on whether the export growth leads to economic growth or whether the economy has to grow so as the export growth can be experienced. This research paper aims at analyzing whether export has positive impact on GDP based on the available data of real export, real consumption and real GDP in case of Nepal.

1.3 Objectives of the Study

The main objective of this study is to examine the relationship between export and economic growth of Nepal. The specific objectives are:

i) To analyze the trend, pattern and structure of real GDPand trade

ii) To examine the relationship between GDP and export in Nepal with application of time series econometric analysis

1.4 Significance of the Study

This study is inspired by the existing controversy on the causality between economic growth and export growth. The economic growth rate for several decades has been sluggish at around 4% average annual growth despite Nepal exporting huge volumes of goods and services especially the primary products. Over the centuries, no consensus has been reached on the real effects of the exports on economic growth. The question of whether exports expansion determines economic growth or economic growth determine exports expansion has not been answered.

The study is significant because the government of Nepal has in the past decade employed techniques that would boost export, for example, entry into the World Trade Organization and regional trading arrangements of SAFTA and BIMSTEC, but still the annual economic growth rate averaged 4%. Therefore, the rationale behind this study is to study if there is positive relationship between export and economic growth and whether adopting ELG strategy would rescue Nepal from the slow economic growth rate or not and if not, then other policy recommendation would be advised.

1.5 Limitations of the Study

Economic growth occupies vast topic. Hence, it is difficult to summarize all the aspects in detail in this research paper which has limited area of coverage. This study has the following limitations:

a) Model used in the study does not consider all the variables that influence growth. The variables used are only real GDP, real export, and real consumption. It excludes the explicit variables like exporter's perception of politics, corruption, diseases and natural disasters in the study and macroeconomic factors of growth like policy, legislation are not taken in the model.

b) The study period covers from 1975 A.D to 2015 A.D only due to the availability of the required data.

1.6 Organization of the Study

This study is divided into six chapters. First chapter deals with the introduction of the study. It includes the general background of the study, statement of the problem, objectives of the study, significance of the study, limitations of the study and organization of the study. Second chapter covers the review of literature which consists of theoretical and empirical review. Third chapter describes methodology along with sub units – research design, source of data, data collection and data analysis that deal with setting hypothesis, specifying model, variables used and their description and econometric methodologies and this being followed by analysis of trend of GDP, export and import, in fourth chapter. Chapter fifth comprises of analysis of empirical results and finally chapter sixth includes Conclusions and recommendation followed by References and Appendices.

CHAPTER II

REVIEW OF LITERATURE

This chapter provides review of both theoretical and empirical studies related to economic growth and export. The nature of the relationship between exports and country's economic growth has been one of the most debated topic in the recent past, yet with little consensus. Central to this debate is the question of whether strong economic performance is export-led or growth driven. We will try to examine this issue in this review of literature chapter.

2.1 Theoretical Review

2.1.1 Classical Growth Theory

The classical growth theory was developed in the late 18th and early 19th century and primarily associated with Adam Smith, David Ricardo and Thomas Robert Malthus. Although it has little or no relevance today, it is crucial to understand the classical theory to conceptualize the literature of economic growth.The classical growth theory states that the amount of capital increases due to technological development and the marginal product of labor rises. This in turn increases GDP per capita which results in higher living standards. It then increases the population. As population increases, the labor productivity will fall as there will be more individuals to work but capital remaining constant. GDP per capita will fall again. When GDP per capita has fallen to a level just enough to keep the population from starving, the population growth will cease to grow.The gist of the model is that population growth will always eliminate the positive effects of technological development and GDp per capita will always return to the survival level.

Adam Smith's view on Economic Growth (Capitalist's Argument)

Adam Smith's (1976) "The Wealth of Nations" focuses on the market. Adam Smith saw that division of labor could create more productive processes. The mechanism for enhancing the nation's wealth therefore is through specialization and exchange. Adam Smith argued that under completion, private investors while pursuing their own interests guided by the "invisible hand" would maximize national output and thus promote public interests. The "invisible hand" doctrine has become the foundation for the working of the market economy or capitalism (Skousen 2007). In the system, government interferences is seen as inefficient in looking after economic

activities. At the same time, free trade, private property and competition are perceived as the foundations that would foster economic development, reduce poverty and bring on social and moral improvements in humankind. However, promoting capitalism is often criticized for making the rich even richer and the poor even poorer.

Adam Smith identified three major sources of growth:

a) Growth in the labor force and stock of capital.
b) Improvement in the efficiency with which capital is used in labor through greater division of labor and technological progress.
c) Promotion of foreign trade that widens the market.

   Adam smith identified the rate of capital formation as the strategic factor in the economic growth process. He stressed on the point that the rate of economic growth primarily depends on the excess of market rate of profit over minimum compensation for bearing risk. Since these factors mainly depend on the socio-economic framework in the country, institutions were his solution to the problem of economic growth. Adam Smith was firmly in favor of the policy of free trade and did not approve any kind of government intervention.

David Ricardo's Theory of Economic Growth

Ricardo was much less interested in economic growth. According to him production function considers only three factors of production: land, labor, and capital. His production function is characterized by diminishing marginal product unless it is monitored by technological progress as Smith was assuming. He argues that population increases at faster rate than economic growth. In Ricardo's growth theory, capital accumulation plays a strategic role. In his system, capital includes both fixed capital and circulating capital, which grows at a proportional rate to the fixed capital. It is an increase in this variety of capital which determines the increase in the demand of labor. He argues that capital accumulation is an increasing function of excess profit.

Malthusian Theory of Growth

Unlike both Smith and Ricardo, Thomas Robert Malthus was more interested in the problems of growth of an economy and population. According to him, no inquiry could be more important than one which identifies the causes of and differences between the potential and actual growth of a country. Marshal has given his views on human resources and capital accumulation,

identification of the growth retarding factors and interaction of different sectors of underdeveloped countries.

Malthusian model can be expressed as:

$Y = R+W$…….. (1)

Where,

Y represents national income

R represents profit

W denotes wages

Equation (1) can be rewritten as:

$R = Y-W$ …….. (1.1)

Thus, by deducing from above equation, we get profits which are equal to total output minus wages of labor.By earning subsistence wages, workers cannot save from their income which we can denote as Cw. Capitalists' earning is greater than they need for consumption. Hence, the save their excess income. Malthus argued that the total amount of capitalists saving are not invested, and saving only produce income to the extent they are invested. Equation (1.1) can be substituted as:

$R = (I + Cc + Cw) – Cw = I + Cc$……. (1.2)

Where,

Cc represents capitalist consumptions,

I denotes investments

The derivative equation of (1) as equation (1.2) helps in forming Malthusian argument.

According to him, national income (Y) is created by investment and consumption, which is divided into capitalist consumption (Cc) and workers consumption (Cw). As the wages of workers equals their consumption level, profits are equal to investment plus capitalist consumption. If saving cannot be converted into investment, it reduces effective demand and hence retards the possibility of growth.

2.1.2 Keynesian (Harrod-Domar) Growth Model

The Harrod-Domar model is an early post-Keynesian model of economic growth. It is used in development economics to explain an economy's growth rate in terms of the level of saving and productivity of capital. The model stresses the importance of savings and investment as key

determinants of growth. It suggests that there is no natural reason for an economy to have balanced growth. The models were developed independently by Roy F. Harrod in 1939 and EvseyDomar in 1946. It was the precursor to the exogenous growth model. The model gives some insights into the dynamics of growth. (Harrord 1939; Domar 1946)

Harrord Growth Model:

Harrod used dynamic approach in formulating the growth of an economy using accelerator principle and multiplier theory. It is the dynamic extension of the short run Keynesian static model which explains the process of equilibrium growth in the one sector one factor model of an economy. Through razor's edge balance of the equilibrium of a growing economy, the model concludes once the equilibrium of the economy is disrupted the economy persistently moves away from equilibrium violating the classical proposition of automatic adjustment to the equilibrium. (Harrod 1939).According to Harrod, saving in an economy at any time period 't' is proportional to the income at the same 't'.

Symbolically,

$S_t = {}_sY_t$(s=mps=constant; 0<S<1)

Ex-ante investment of an economy must be equal to the capital output coefficient (υ) times the difference between income (previous year and current year)

$I_t = v(Y_t - Yt_{-1})$

When an economy achieve equilibrium or when desired investment is fulfilled, then

$$I_t = S_t$$

Finally, $Y_{(t)} = Y_{(0)}\left(\frac{\upsilon}{\upsilon - s}\right)^t$

Or, $Y_{(t)} = Y_{(0)}e\left(\frac{s}{\upsilon}\right)^t$

The solution to Harrod basic equation suggests that if the economy is to remain in equilibrium, income must grow at an exponential rate of $\frac{s}{\upsilon}$. Since 0<S<1) and υ > 0, $\frac{s}{\upsilon}$> 0 implying that equilibrium income is monotonically increasing over time i.e. the absolute change in income must exceed the change in lagged income (Chitrakar, 2006). Thus, the model shows that

economic growth is the function of quantity of labor and capital; i.e. higher investment induce more capital accumulation that eventually promotes the growth.

Domar Growth Model

The Domar growth model is the dynamic analysis which combines the classical and Keynesian income determination model. Domar shows dual effect of investment both on demand and supply side of the economy. The demand side of an economy consists of income generating capacity which is based on Keynesian approach. Whereas, the supply side that consists of capacity generating force rely on Classical approach (Domar 1946 Cited in Dhungel and Bista, 2013).

Assumptions:

a) Demand side effect: An investment plays an important role to maintain aggregate demand in the economy, i.e. income/output increases through investment multiplier time level of investment according to Keynesian approach.

Mathematically,

$\frac{dy}{dt} = \frac{1}{s}\frac{dI}{dt}$; 0<S<1)…… (i)

Y = actual level of output, s = mps

I = Investment

$$\frac{1}{s} = investment\ multiplier$$

b) Supply-side effect: An investment helps to increase the stock of capital in order to utilize resources fully which increases the capacity of production through accelerator $^{\sigma}$times capital stock.

Mathematically,

$\frac{dYp}{dt}$= σI …….(ii)

Where, Y_P = potential level of output/income

.σ = capacity output ratio

c) Equilibrium condition: If an economy want to maintain full utilization of capacity output, then aggregate demand must be equal to the potential level of output.

i.e Demand side = Supply side

$$\frac{dy}{dt} = \frac{dYp}{dt} \ldots\ldots\ldots\ldots (iii)$$

Then, from (i), (ii), and (iii) we get the fundamental Domar equation as below:

$\frac{1}{s}\frac{dI}{dt} = \sigma I$…… (iv)

It shows that the growth rate of an economy depends on the growth rate of saving and investment. Similarly, the time path of investment in Domar model can be expressed as:

$I_t = I_{(0)}e^{(s\sigma)t}$……(v)

The equation (v) shows the time path of I that ensure the full capacity output level in an economy. Since, s>0 and σ >0m gives sσ> 0, thus the time path depicts a monotonically increasing function i.e. the absolute change in investment must excess the change in past investment. It predicts that investment must grow at an exponential rate of sσ to maintain a balance between capacity and demand over time. (Chitrakar, 2006)

The equilibrium of the Harrod-Domar model is razor-edge equilibrium. If the economy deviates from it either direction there will be an economy calamity. Neoclassical economists claimed shortcomings in the Harrod- Domar model particularly in the instability of its solution, and by the late 1950s, started an academic dialogue which led to the development of the Solow-Swan model.

2.1.3 Exogenous Growth Model

Neo-Classical (Solow) Growth Theory

Neo-classical growth theory explains that output is a function of growth in factor inputs, especially capital and labor, and technological progress. Contribution of increase in labor to the growth in output is the most important. Growth rate of output in steady-state equilibrium is equal to the growth rate of population or labor force and is exogenous of the saving rate, that is, it does not depend upon the rate of saving. Although saving rate does not determine the steady state level of per capita income (and therefore also total income) through raising capital per head.

Steady state rate of growth of per capita income, that is, long run growth rate is determined by progress in technology. If there is no technological progress, the output per capita will ultimately converge to steady state level. A significant conclusion of neoclassical growth theory is that if the two countries have the same rate of saving and same rate of population growth rate and access to the same technology (i.e. production function), their levels of per capita income will eventually converge, that is they will ultimately become equal. (Cited in Ahuja: 2013)

Expanding the Harrod-Domar formulation, Solow's neoclassical growth model stresses the importance of three factors of output growth: increases in labor quantity and quality (through population growth and education), increases in capital (through savings and investments) and improvements in technology (Solow 1956). Technological change in Solow's model is provided exogenously. Thus, with the same provided rate of technological progress, the growth rate would be expected to converge across countries. By opening up national markets, developing countries can draw additional domestic and foreign investments. Consequently, developing countries tend to converge to higher per-capita income levels (World Bank 2000).

The fundamental Solow's equation is expressed as:

$K^* = s\phi(K^*) - \lambda K^*$ .....(i)

Where,

K^* = rate of change of capital-labor ratio

$s\phi(K^*)$ = average saving/investment per worker,

λK^* = amount of investment that would be required to keep the capital-labor ratio constant given that labor force is growing at a constant proportional rate λ.

Neoclassical economists focused on the market to find a way out for the developing countries. Therefore, policies of liberalization, stabilization and privatization become the central elements of the national development agenda. Foreign trade, private international investments and foreign aid flowing into the developing countries are expected to accelerate economics efficiency and economic growth of these countries. Empirically, the models, however, did not bring about the expected results. The growth rates per capita have diverged among countries (Azariadis and Drazen 1990). Several African countries focusing on these issues achieved an average growth rate of only 0.5% per annum. With weak and inadequate legal and regulatory framework, not to

mention the different institutional, cultural and historical context of the developing countries, free market in these countries failed to stimulate economic development (World Bank 2000).

Recently, the Solow-Swan model has come under attack by the new growth theorists, who dismiss it in favor of "endogenous growth" models that assumes constant or increasing returns to capital. The critics alleged that the standard neoclassical model failed to explain observed differences in per capita income across countries. The different implications of the two growth models have led to renewed empirical work in recent years.

Kaldor Growth Theory

Kaldor growth model is extended verison of Solow growth model. Under Kaldor Growth model, MPC and MPS are not constant. Kaldor claimed that deviation of MPC and MPS also deviate income and employment. (Kaldor, 1961, Cited in Dhungel and Bista 2013).The main factors which changes value of MPC are fiscal policy, monetary policy, and unexpected changes in price of securities. For example: expansionary fiscal policy i.e. low tax rate that increases the level of disposable income.$Y_d = Y\text{-}T$

Similarly, stringent monetary policy i.e. high interest rate leads to fall in MPC or rise in MPS.

Assumptions:

a) Production function is based on multi-factors of production

$Y = f(L, K, T)$……(1)

For simplicity,

$Y = f(L, K)$……(2)

b) Perfect competition in the market

c) Saving is the part of income

S = sY ……(3)

Where,

S = total saving

Y = national income

s= mps

d) Investment is the change in stock of capital.

$K2^{*} = k/1$

Then, the fundamental equation of Kaldor model becomes:

$n = Y/k\, s_w + (s_p - s_w)\, p$

The basic conclusion of Kaldor growth model is that, wages and profits constitute the income where wages comprises salaries and earnings of manual labor and profit comprises income of entrepreneur as well as property owners further total savings consist the savings out of wages and savings out of profit, and he further opines that the technological progress depend on the rate of capital accumulation.

2.1.4 Endogenous (New Classical) Growth Model

The AK Model

The first version of endogenous growth theory is the so-called AK theory. AK models do not make an explicit distinction between capital formation accumulation and technological progress. In effect they just jump together the physical and human capital whose accumulation is studied by neoclassical theory with the intellectual capital that is accumulated when technological progress is made. When this aggregate of different kind of capital is accumulated, there is no reason to think that diminishing returns will drag its marginal product down to zero, because part of that accumulation is the very technological progress needed to counteract diminishing returns.

According to AK paradigm, the way to sustain high growth rates is to save a large fraction of GDP, some of which will find its way into financing a high rate of technological progress and will thus result in faster growth. Formally, the AK model is the neoclassical model without diminishing returns. The theory starts with an aggregate production function that is linear homogenous in the stock of capital:

$Y_t = AK_t$

If capital accumulates according to the equation

$K_t = sY_t - \delta K_t$

Where, sY_t denotes aggregate saving and δK_tdenotes aggregate depreciation of capital, the economy's long run and short run growth rate is simply

$g = sA - \delta$

which is increasing in the saving rate of 's'. AK theory presents a "one-size-fits-all" view of the growth process. It applies equally to advanced countries that have already accumulated capital and to countries that are far behind. Like the neoclassical model, it postulates a growth process that is independent of development in the rest of the world, except in so far as international trade changes the conditions for capital accumulation. Yet it is a useful tool for many purposes when the distinction between innovation and accumulation is of secondary importance. The starting point for ay study of economic growth is in the neoclassical growth model, which emphasizes the role of capital accumulation. The model, first constructed by Solow (1956) and Swan (1956) shows how economic policy can raise an economy's growth rate by inducing people to save more. But the model also predicts that such an increase in growth cannot last indefinitely. In the long run, the country's growth rate will revert to the rate of technological progress, which neoclassical theory takes as being independent of economic forces, or exogenous. (Cited in Freitas;2016)

New (Endogenous) Growth Theory

Endogenous growth or the new growth theory emerged in the 1990s to explain the poor performance of many less developed countries, which have implemented policies as prescribed in neoclassical theories. Unlike the Solow model that considers technological change as an exogenous factor, the new growth model notes that technological change has not been equal nor has it been exogenously transmitted in most developing countries (World Bank, 2000).

New growth theorists (Romer 1986 and Lucas 1988) linked the technological change to the production of knowledge. The new growth theory emphasizes that economic growth results from increasing returns to the use of knowledge rather than labor and capital. The theory argues that the higher rate of returns as expected in the Solow model is greatly eroded by lower level of complementary investments and in human capital (education), infrastructure, or research and development. Meanwhile, knowledge is different from other economic goods because of its possibility to grow boundlessly. Knowledge or innovation can be used at zero additional cost. Investment in knowledge creation therefore can bring about sustained growth. Moreover, the knowledge could create spillover benefits to other firms once they obtained the knowledge. However, markets failed to produce enough knowledge because individuals cannot capture all of

the gains associated with creating knowledge by their own investments. Policy interventions is thus considered necessary to influence growth in the long term. The new growth models therefore promote the role of government and public policies in complementary investments in human capital formation and the encouragement of foreign private investments in knowledge-intensive industries such as computer software, and telecommunications (Meier, 2000). Although the new growth theory helps to explain the divergence in growth rates across economies, it was criticized for overlooking the importance of social and institutional structures (Skott and Auerbach 1995). Its limited applicability lies in in its assumptions.

The new growth theory extends the neo-classical theory by making the rate of technological progress or rate of population growth or both as an endogenous factor. Three different approaches have been adopted to make technological change as endogenous factor in determining economic growth. First, to incorporate endogenous technological change, the production is modified as

$Y_t = f(K_t, N_t, A_t)$ …… (i)

It will be seen from the equation (i) that level of aggregate output depends on the quantity of capital (K_t), labor (N_t), and technology (A_t) which is treated as endogenous factor an therefore appears inside the production function as an output. This endogenous theory considers that whereas production function of a firm exhibits constant returns to scale (i.e. constant returns to scale to all factors) but there occur external increasing returns to scale. These external increasing returns are due to the technological improvements which results from rate of investment, size of capital stock and the stock of human capital.

Endogenous technological change can be incorporated into neoclassical growth model. Let λ stand for rate of technological change, then the view that technological change is the result of investment can be written as:

$\lambda = a + b\left(\frac{\Delta k}{Y}\right)$ … … … … … … … …. (ii)

Where, 'a' is exogenous component of technological progress, $b\left(\frac{\Delta k}{Y}\right)$is the endogenous component, $\frac{\Delta k}{Y}$is the rate of investment, since saving rate is exogenous and equal to $\frac{\Delta k}{Y}$, substituting 's' for $\frac{\Delta k}{Y}$in equation (ii), then

$\lambda = a + bs$ …… (iii)

Now fro neoclassical model,

$\Delta k = sf(k) - (n + d)k$…….. (iv)

Where, ‘n’ is the rate of population and ‘d’ is depreciation.

To simplify our analysis we ignore d, so

$\Delta k = sf(k) - (n)k$ ……..(v)

Substituting labor augmented labor force λ+n for n in equation (v)

$$\Delta k = sf(k) - (\lambda + n)k$$

For steady state equilibrium, we have

$$Sf(k) *= (\lambda + n)k *$$

From equation (iii), substituting a + bs for λ in steady state equilibrium, we have

$Sf(k) *= (\lambda + bs + n)k *$ …… (vi)

The above equation (vi) represents the steady growth rate equation of endogenous growth theory. According to this, output (income) per worker will grow at the rate of λ = a + bs. From this, it follows that the increase in the saving rate and therefore rise in investment will cause a permanently higher growth rate. (Ahuja, 2012)

2.1.5 Socialists' Views on Economic Growth

Marxist Economic Growth Theory

Karl Marx in "Capital" (1867) argued that the feasible system should be based on social or public ownership of property. Karl Marx emphasized that the wealth of the capitalists come from the exploitation of the surplus value created by the workers. Hence, private property and free market were seen as causes of poverty for the many millions of workers. Therefore, private property should be completely abolished. A nation's economy should be planned and managed by the state to serve the interests of the masses. Marx believed that a revolution would be inevitable to break down the increasing concentration of the capitalists, and to establish socialism. But the socialism philosophy was not viable either. The historical experience of socialist economies showed little or even no improvement in the living condition of the poor. The collapse of the Soviet Union in 1991 and the central planning paradigm appeared to demonstrate that the model would not provide the solution to poverty and inequality seen in human society (Cited in Schumpeter; 2008).

2.1.6 Neoclassical Counter-Revolution (Monetarist) Theory

In the 1980s, neoclassical counter-revolution economists used three approaches, namely the free market approach, the new political economy approach and the market-friendly approach, to counter the international dependence model. In contrast with the international dependence model, these approaches mainly argued that underdevelopment is not the result of the predatory activities of the developed countries and the international agencies but was rather caused by the domestic issues arising from heavy state intervention such as poor resource allocation, government induced price distortions and corruption. (Cited in Froyen& Greer, 1990)

2.1.7 Theories on International Trade

International trade theories are simply different theories to explain international trade. Trade is the concept of exchanging goods and services between two people or entities. *International trade* is then the concept of this exchange between people or entities in two different countries.

People or entities trade because they believe that they benefit from the exchange. They may need or want the goods or services. While at the surface, this many sound very simple, there is a great deal of theory, policy, and business strategy that constitutes international trade.

Classical or Country-Based Trade Theories

Mercantilism

Developed in the sixteenth century, mercantilism was one of the earliest efforts to develop an economic theory. This theory stated that a country's wealth was determined by the amount of its gold and silver holdings. In its simplest sense, mercantilists believed that a country should increase its holdings of gold and silver by promoting exports and discouraging imports. In other words, if people in other countries buy more from you (exports) than they sell to you (imports), then they have to pay you the difference in gold and silver. The objective of each country was to have a trade surplus, or a situation where the value of exports are greater than the value of imports, and to avoid a trade deficit, or a situation where the value of imports is greater than the value of exports.

A closer look at world history from the 1500s to the late 1800s helps explain why mercantilism flourished. The 1500s marked the rise of new nation-states, whose rulers wanted to strengthen their nations by building larger armies and national institutions. By increasing exports and trade, these rulers were able to amass more gold and wealth for their countries. One way that many of these new nations promoted exports was to impose restrictions on imports. This strategy is called protectionism and is still used today.

Nations expanded their wealth by using their colonies around the world in an effort to control more trade and amass more riches. The British colonial empire was one of the more successful examples; it sought to increase its wealth by using raw materials from places ranging from what are now the Americas and India. France, the Netherlands, Portugal, and Spain were also successful in building large colonial empires that generated extensive wealth for their governing nations.

Although mercantilism is one of the oldest trade theories, it remains part of modern thinking. Countries such as Japan, China, Singapore, Taiwan, and even Germany still favor exports and discourage imports through a form of neo-mercantilism in which the countries promote a combination of protectionist policies and restrictions and domestic-industry subsidies. Nearly every country, at one point or another, has implemented some form of protectionist policy to guard key industries in its economy. While export-oriented companies usually support protectionist policies that favor their industries or firms, other companies and consumers are hurt

by protectionism. Taxpayers pay for government subsidies of select exports in the form of higher taxes. Import restrictions lead to higher prices for consumers, who pay more for foreign-made goods or services. Free-trade advocates highlight how free trade benefits all members of the global community, while mercantilism's protectionist policies only benefit select industries, at the expense of both consumers and other companies, within and outside of the industry.

Absolute Advantage

Adam Smith (1776) questioned the leading mercantile theory of the time in his book "*The Wealth of Nations"*. Smith offered a new trade theory called absolute advantage, which focused on the ability of a country to produce a good more efficiently than another nation. Smith reasoned that trade between countries shouldn't be regulated or restricted by government policy or intervention. He stated that trade should flow naturally according to market forces. In a hypothetical two-country world, if Country A could produce a good cheaper or faster (or both) than Country B, then Country A had the advantage and could focus on specializing on producing that good. Similarly, if Country B was better at producing another good, it could focus on specialization as well. By specialization, countries would generate efficiencies, because their labor force would become more skilled by doing the same tasks. Production would also become more efficient, because there would be an incentive to create faster and better production methods to increase the specialization.

Smith's theory reasoned that with increased efficiencies, people in both countries would benefit and trade should be encouraged. His theory stated that a nation's wealth shouldn't be judged by how much gold and silver it had but rather by the living standards of its people.

Comparative Advantage

The challenge to the absolute advantage theory was that some countries may be better at producing both goods and, therefore, have an advantage in *many* areas. In contrast, another country may not have *any* useful absolute advantages. To answer this challenge, Ricardo (1817) reasoned that even if Country A had the absolute advantage in the production of *both* products, specialization and trade could still occur between two countries.Comparative advantage occurs when a country cannot produce a product more efficiently than the other country; however, it *can* produce that product better and more efficiently than it does other goods. The difference

between these two theories is subtle. Comparative advantage focuses on the relative productivity differences, whereas absolute advantage looks at the absolute productivity.

Heckscher-Ohlin Theory (Factor Proportions Theory)

The theories of Smith and Ricardo didn't help countries determine which products would give a country an advantage. Both theories assumed that free and open markets would lead countries and producers to determine which goods they could produce more efficiently. In the early 1900s, two Swedish economists, Eli Heckscher and Bertil Ohlin, focused their attention on how a country could gain comparative advantage by producing products that utilized factors that were in abundance in the country. Their theory is based on a country's production factors—land, labor, and capital, which provide the funds for investment in plants and equipment. They determined that the cost of any factor or resource was a function of supply and demand. Factors that were in great supply relative to demand would be cheaper; factors in great demand relative to supply would be more expensive. Their theory, also called the factor proportions theory, stated that countries would produce and export goods that required resources or factors that were in great supply and, therefore, cheaper production factors. In contrast, countries would import goods that required resources that were in short supply, but higher demand.

Leontief Paradox

In the early 1950s, Russian-born American economist Wassily W. Leontief studied the US economy closely and noted that the United States was abundant in capital and, therefore, should export more capital-intensive goods. However, his research using actual data showed the opposite: the United States was importing more capital-intensive goods. According to the factor proportions theory, the United States should have been importing labor-intensive goods, but instead it was actually exporting them. His analysis became known as the Leontief Paradox because it was the reverse of what was expected by the factor proportions theory. In subsequent years, economists have noted historically at that point in time, labor in the United States was both available in steady supply and more productive than in many other countries; hence it made sense to export labor-intensive goods. Over the decades, many economists have used theories and data to explain and minimize the impact of the paradox. However, what remains clear is that international trade is complex and is impacted by numerous and often-

changing factors. Trade cannot be explained neatly by one single theory, and more importantly, our understanding of international trade theories continues to evolve.

Modern or Firm-Based Trade Theories

In contrast to classical, country-based trade theories, the category of modern, firm-based theories emerged after World War II and was developed in large part by business school professors, not economists. The firm-based theories evolved with the growth of the multinational company (MNC). The country-based theories couldn't adequately address the expansion of either MNCs or intraindustry trade, which refers to trade between two countries of goods produced in the same industry. For example, Japan exports Toyota vehicles to Germany and imports Mercedes-Benz automobiles from Germany.

Unlike the country-based theories, firm-based theories incorporate other product and service factors, including brand and customer loyalty, technology, and quality, into the understanding of trade flows.

Country Similarity Theory

Swedish economist Steffan Linder developed the country similarity theory in 1961, as he tried to explain the concept of intraindustry trade. Linder's theory proposed that consumers in countries that are in the same or similar stage of development would have similar preferences. In this firm-based theory, Linder suggested that companies first produce for domestic consumption. When they explore exporting, the companies often find that markets that look similar to their domestic one, in terms of customer preferences, offer the most potential for success. Linder's country similarity theory then states that most trade in manufactured goods will be between countries with similar per capita incomes, and intraindustry trade will be common. This theory is often most useful in understanding trade in goods where brand names and product reputations are important factors in the buyers' decision-making and purchasing processes.

Product Life Cycle Theory

Raymond Vernon, a Harvard Business School professor, developed the product life cycle theory in the 1960s. The theory, originating in the field of marketing, stated that a product life cycle has three distinct stages: (1) new product, (2) maturing product, and (3) standardized product. The theory assumed that production of the new product will occur completely in the home country of its innovation. In the 1960s this was a useful theory to explain the

manufacturing success of the United States. US manufacturing was the globally dominant producer in many industries after World War II.

It has also been used to describe how the personal computer (PC) went through its product cycle. The PC was a new product in the 1970s and developed into a mature product during the 1980s and 1990s. Today, the PC is in the standardized product stage, and the majority of manufacturing and production process is done in low-cost countries in Asia and Mexico.

The product life cycle theory has been less able to explain current trade patterns where innovation and manufacturing occur around the world. For example, global companies even conduct research and development in developing markets where highly skilled labor and facilities are usually cheaper. Even though research and development is typically associated with the first or new product stage and therefore completed in the home country, these developing or emerging-market countries, such as India and China, offer both highly skilled labor and new research facilities at a substantial cost advantage for global firms.

Global Strategic Rivalry Theory

Global strategic rivalry theory emerged in the 1980s and was based on the work of economists Paul Krugman and Kelvin Lancaster. Their theory focused on MNCs and their efforts to gain a competitive advantage against other global firms in their industry. Firms will encounter global competition in their industries and in order to prosper, they must develop competitive advantages. The critical ways that firms can obtain a sustainable competitive advantage are called the barriers to entry for that industry. The barriers to entry refer to the obstacles a new firm may face when trying to enter into an industry or new market. The barriers to entry that corporations may seek to optimize include:

- research and development,
- the ownership of intellectual property rights,
- economies of scale,
- unique business processes or methods as well as extensive experience in the industry, and
- the control of resources or favorable access to raw materials.

Porter's National Competitive Advantage Theory

In the continuing evolution of international trade theories, Michael Porter of Harvard Business School developed a new model to explain national competitive advantage in 1990. Porter's theorystated that a nation's competitiveness in an industry depends on the capacity of the industry to innovate and upgrade. His theory focused on explaining why some nations are more competitive in certain industries. To explain his theory, Porter identified four determinants that he linked together. The four determinants are (1) local market resources and capabilities, (2) local market demand conditions, (3) local suppliers and complementary industries, and (4) local firm characteristics.

a) **Local market resources and capabilities (factor conditions).** Porter recognized the value of the factor proportions theory, which considers a nation's resources (e.g., natural resources and available labor) as key factors in determining what products a country will import or export. Porter added to these basic factors a new list of advanced factors, which he defined as skilled labor, investments in education, technology, and infrastructure. He perceived these advanced factors as providing a country with a sustainable competitive advantage.

b) **Local market demand conditions.** Porter believed that a sophisticated home market is critical to ensuring ongoing innovation, thereby creating a sustainable competitive advantage. Companies whose domestic markets are sophisticated, trendsetting, and demanding forces continuous innovation and the development of new products and technologies. Many sources credit the demanding US consumer with forcing US software companies to continuously innovate, thus creating a sustainable competitive advantage in software products and services.

c) **Local suppliers and complementary industries.** To remain competitive, large global firms benefit from having strong, efficient supporting and related industries to provide the inputs required by the industry. Certain industries cluster geographically, which provides efficiencies and productivity.

d) **Local firm characteristics.** Local firm characteristics include firm strategy, industry structure, and industry rivalry. Local strategy affects a firm's competitiveness. A healthy level of rivalry between local firms will spur innovation and competitiveness.

In addition to the four determinants of the diamond, Porter (1990) also noted that government and chance play a part in the national competitiveness of industries. Governments can, by their actions and policies, increase the competitiveness of firms and occasionally entire industries.Porter's theory, along with the other modern, firm-based theories, offers an interesting interpretation of international trade trends. Nevertheless, they remain relatively new and minimally tested theories.

2.1.8 Export and Export Led Growth

Exports are the goods and services produced in one country and purchased by another country. It doesn't matter what the good or service is. It doesn't matter how it is sent. It can be shipped, sent by email, or carried in personal luggage on a plane. If it is produced domestically and sold to someone from a foreign country, it is an export. The sale of such goods adds to the producing nation's gross output or GDP.

Exports are one of the oldest forms of economic transfer and occur on a large scale between or among nations that have fewer restrictions on trade, such as tariffs or subsidies. Most of the largest companies operating in advanced economies derive a substantial portion of their annual revenues from exports to other countries. The ability to export goods helps an economy to grow, by selling overall goods and services. One of the core functions of diplomacy and foreign policy within governments is to foster economic trade in ways that benefit both parties involved. Exports are crucial component of a country's economy. Not only does export facilitate international trade, they also stimulate domestic economic activity by creating employment, production and revenues.

There are many contributors to economic growth. One of the elementary economic questions is how countries can accomplish economic growth. One of the answers to this question relies on the export-led growth (ELG) hypothesis which claims that export growth is a key factor in promoting economic growth. There exist a vast literature that discovers the link as well as direction of causation between country's exports and country's economic growth.

The relationship of causality from exports to economic growth is called export-led growth. It could be interpreted as unidirectional causality from exports to economic growth but not vice versa. The export-led growth hypothesis (ELGH) assumes that export advancement is one of the key indicators of growth. It encourages that the overall progress of countries can be achieved not

only by mounting the quantity of manpower and investment within the economy, but also by increasing exports. According to its advocates, country's exports can act as an "engine of progress". Another relationship of causality from growth to export is called growth-led exports and it tells that there is unidirectional causality from economic growth to exports but not vise versa. There is also a possibility of two way causality link from exports to growth and from growth to exports

Export Led Growth is one of the most important economic strategies which are used by many developing countries. This strategy facilitates in seeking a niche in the world economy for a certain type of export. Industries generating this export may secure governmental subsidies and easy access to the domestic markets. By applying this strategy, many countries wish to gain enough hard currency to import goods manufactured less costly somewhere else.

Export-led growth is significant for mostly two reasons. Firstly, the export-led growth strategy can generate profit, enabling a country to balance their investments, as well as surpass their liabilities as long as the schemes and materials for the trade items exist. Secondly, the much more arguable reason is that increased export growth can help to attain greater productivity, thus bringing ahead more exports in a higher spiral cycle.

2.2 Empirical Review

2.2.1 International Context

There are several empirical researches to test the importance of exports in the process of economic development. In the context of East Asian countries, time series analyses that tested the ELG hypothesis, showed mixed results. For example, a study by Ahmad and Harnhirun (1996) tested the ELG hypothesis for five ASEAN economies (i.e., Malaysia, Indonesia, Singapore, Thailand, and the Philippines) over the period 1966-1986. They did not detect a co integrating relationship between the countries' exports and their economic development. In fact, Ahmad and Harnhirun's (1996) empirical findings indicated that economic growth had been causing the expansion of exports, and not vice versa. Chen (2007) tried to assess the validity of the Export-led Growth (ELG) and the Growth-driven Export (GDE) hypotheses in Taiwan by testing for Granger causality supported by the model called Vector Error Correction (VECM) and the bounds testing methodology developed by Pesaran (2001). The empirical results substantiate that a long-run level equilibrium relationship exists among exports, output, terms of

trade and labor productivity of the model and that Granger causal flow between real exports and real output is reciprocal. Thus, the results attest to the advantage of the export-led growth strategy for continuous growth in Taiwan.

Furuoka (2007) examined the relationship between exports and economic development in Malaysia. According to him, the results of the analysis do not sustain the "export-led growth" strategy. Rather, they lead to a conclusion that there exists a "virtuous cycle" or mutually reinforcing relationship between Malaysia's exports and GDP in the long run. He also argued that the findings detected unidirectional short run causality from GDP to exports, but not vice versa. This means that the increase in Malaysia's export tends to be an effect, and not the cause, of the country's output expansion. Furuoka and Munir (2010) chose Singapore as a case study to examine the relationship between the origin of the East Asian Miracle (i.e. export dependency) and the economic growth. For this purpose, they employed causality test developed by Toda and Yamamoto (2005). The empirical findings indicated that despite a negative long run relationship between export dependency and economic growth, Singapore's heavy reliance on exports does not seem to have produced negative effects on the nation's economic growth. This was because the increase in export dependency was an effect, and not a cause, of the country's output expansion.

All these theoretical complications could be sidestepped if there were convincing evidence that in practice trade liberalization systematically produces improved economic performance. But even for this relatively uncontroversial policy, it has proved difficult to generate unambiguous evidence (Yanikkaya, 2003). Siliverstovs and Herzer (2006) supported the export-led growth hypothesis for Chile in their study. Recently, Huang and Wang (2007) contributed an attractive discussion by examining the validity of export-led growth for the Newly Industrialized Economics (NIEs). Using the Johansen's maximum likelihood cointegration procedures, the authors found evidence of cointegration at the 10% level for all the four economies. For developed countries, Martin (1992) used causality test and found that the ELG hypothesis is valid for Germany, United Kingdom, Japan, and the United States. Boltho (1996) investigated the strategy for Japan's growth as twice as compared to other major industrialized countries in three periods of modern economic history (1913-37, 1952-73, and 1973-90). Five different tests were applied to investigate whether Japan's growth in these years was export-led or not, and found that domestic market forces rather than foreign market forces drew longer-run progress.

Harrison (1996) affirmed that the conception of openness, applied to trade policy, could be identical with the idea of neutrality.

Neutrality means that inducements are unbiased between saving a unit of foreign exchange through import substitution and securing income of a unit of foreign exchange through international trade. Clearly, a highly export leaning economy may not be impartial in this regard, specially if it shifts incentives in support of export production with the help of ways such as export subsidies. It is also feasible for a government to be neutral on common, and yet get involved in particular sectors. A good measure of trade policy would capture differences between neutral, inward oriented and export-promoting regimes. Recently, the meaning of ‘‘openness’’ has become similar to the notion of ‘‘free trade’’, that is a trade system where all trade hurdles are terminated. That’s why, it is essential to understand this definition problem because various openness measures have different theoretical implications for growth and different linkages with growth. However, empirical studies are not usually clear on this issue as Edwards (1993) stated, the literature onto the issue has not always been successful in dealing with exact explanation of trade regimes, neither has it been competent to handle effectively the difficult issue of assessing the type of trade orientation pursued by a particular country.

Khilifa (1997) analyzed the relationship between exports and economic growth and endorsed the hypothesis by confirming a positive and significant relation between the two variables for the period of 1973 to 1993. This studyis an attempt to find out the presence and direction of causality between two factors, export growth and economic growth. The method used was Granger causality. Onafowaro and Owoye (1998) examined the effects of trade policies (trade orientations) on exports, and investment rate on economic growth in 12 sub-Saharan African (SSA) countries over 1963-93. Using a vector error correction model (VECM) results indicated that trade policies, exports, and investment rate shocks have a significant impact on economic growth in 10 of the 12 SSA countries. This suggests that it is possible to stimulate economic growth in some African countries through an outward-looking strategy of export expansion. More significantly, the results further suggest the importance as well as the requirement for African countries to embark on trade liberalization policies in order to enhance economic growth in the current world economy. Lim, Chia and Mun (2009) were able to expose long run co integration association for South Korea and Singapore which is based on the Breitung (2001) rank test measures.

Breitung (2001) rank test can help in detecting both cointegration relationships whether linear or non-linear, which indeed added value to the literature with strong support of cointegration (non-linear) on GDP growth and export. Awokuse (2003) re-examined the export-led growth (ELG) hypothesis for Canada by testing for Granger causality from exports to national output growth based on vector error correction models (VECM) and the vector autoregressive (VAR) methodology developed in Toda and Yamamoto (1995). The empirical results suggested that a long-run steady state exists among the model's six variables and that Granger causal runs in unidirectional from real exports to real GDP. Panas and Vamvoukas (2002) investigated the causal links between exports and output growth in the empirical framework of the Greek economy, using error-correction modeling and multivariate Granger causality. A sensitivity analysis based on impulse responses is implemented to check the robustness of the results. The estimation procedure generates robust results, indicating that the ELGH is not valid in the case of Greece. Furthermore, the empirical findings suggest a strong and consistent causation from output growth to export performance in the long-run. Ramos (2000) investigated the Granger-causality between exports, imports, and economic growth in Portugal over the period 1865-1998. The role of the import variable in the investigation of exports output causality is emphasized, enabling one to test for the cases direct causality, indirect causality, and spurious causality between export growth and output growth.

The empirical results do not confirm a unidirectional causality between the variables considered. There is a feedback effect between exports output growth and imports output growth. More interestingly, there is no kind of significant causality between import export growth. Both results seem to support the conclusion that the growth of output for the Portuguese economy during that period revealed a shape associated with a small dual economy in which the intra-industry transactions were very limited. There are also many studies analyzing the importance of exports in the economic growth specifically for developing countries. Most of these studies conclude that there is an affirmative link between exports and economic growth.

2.2.2 Nepalese Context

In the context of Nepal, Dodaro (1993), while observing data form 1967-86 for various 87 countries, has found no casual direction. Same was true with data from 1961-87 considered by Arnade and Vasavada (1995). Riezman et al. (1996) detected ELG true for Nepal while he consider the data from 1950-90 for various 126 countries. Islam (1998), with the data for Nepal

1967-91, found contradictory result: bivariate model showed ELG whereas multivariate model showed no causality. Interestingly, Reppas and Christopoulos (2005) showed GLE applies for Nepal with data from 1969–1999 on panel data set. In chronological order, it appears till 1980s there was non-causality, but ELG evolved in the mid of 1990s and later joint effects of GLE and ELG were seen.

To investigate the relation of import, export and growth for six South Asian nation: Pakistan, Bangladesh, India, Sri Lanka, Nepal and Bhutan, Hye et al. (2013) incorporated autoregressive distributed lag (ARDL) approach to identify a long-run relationship along with the modified Granger causality test to determine the short-run and long-run direction of causality. They found: ELG model is relevant for all countries except Pakistan; GLE applies to all countries except Bangladesh and Nepal and; growth-led import (GLI) and import-led growth (ILG) models are relevant to all countries. They also illuminated possibilities that joint coalitions for domestic demand through south–south can expand the trade. Tang and Chea (2013) examined the export-led growth (ELG) hypothesis for Cambodia during 1972 and 2008. The Granger's non-causality tests supported both ELG and performed innovation accounting using impulse response functions and variance decomposition.

Shakya (2015) while observing data from 1975 to 2015 found the uni-directional causality from export to growth that implied GLE hypothesis. The study showed insignificant negative export elasticity of growth. Shakya concluded that discrimination against exports and import substitution strategy can be worthy to implement in the context of Nepal to affect exports and growth. Probably, a certain threshold of manufactured exports woudbe required as a prerequisite for validation of ELG hypothesis as specified by Abu-Qarn and Abu-Bader (2001).

CHAPTER III

RESEARCH METHODOLOGY

The chapter presents details of the research methods used and followed in this study. It discusses on research design, nature and sources of data, processing procedures and statistical tool analysis.

3.1 Research Design

This research is both quantitative and qualitative in nature. A descriptive approach has been followed in examining the trend, structure, and growth of GDP and Export in the country during the study period. Further, time series econometric tools have been applied on examining the nexus between export and GDP in the country. For this purpose, unit root test, Engle-Granger co-integration test and ECM have been used. To calculate these tests, STATA software has been used. On the quantitative aspect, major econometric tools were used in time-series framework to study the causal relationship between GDP and export. The required data consists secondary time-series data covering the period of 40 years from 1975 to 2015 collected from various sources. In the qualitative research design, descriptive analysis is used to show the trend and pattern, composition of export and GDP in the form of table and graph.

3.2 Nature and Sources of Data

The study is based only on secondary data source. The annual time series data covering the duration of 40 years from 1975 to 2015 were obtained from various publications of CBS, NRB, MoF and other reliable sources such as annual report, survey, working paper, thesis and research article relating to the study of export and GDP relationship.

3.3 Data Analysis

The goal of analyzing the data is to handle the evidence fairly, to produce convincing logical conclusion and to rule out alternative interpretations. Therefore, after the data is collected from different sources, the next step is to process, analyze and interpret them to derive meaningful conclusion. The various data collected from different sources is compiled, condensed, analyzed quantitatively and qualitatively and presented in graphical, mathematical and descriptive form with the help of computer applications including Microsoft Excel, and STATA.

The first step of the study analyses the trend and structure of export, import, consumption and GDP annually from the Year 1975 to our end of study period 2015. This study is conducted by analyzing the tabular and graphical presentations between the variables export, and GDP.

The second step of time-series analysis is conducted by using various econometric tools including Augmented Dickey-Fuller test to test for the existence of unit root, Engle-Granger Co-integration test and Error Correction model to examine the long run and short run relationship among the variables and to find the speed of adjustment and dynamics of relationship.

3.3.1 Variables Description

Real Gross Domestic Product (RGDP): It is the instrument of measuring the size of the specific country's economy. GDP is defined as the total market value of all final goods and services produced within a given country or region in a given period of time. GDP is considered as proxy of economic growth. When nominal GDP is adjusted with inflation or deflation, it becomes real GDP.

Real Export (RX): Export represents the value of all goods and services provided to the rest of the world. The exports include agricultural products, raw material products and manufactured exports. Export growth would help earn foreign exchange therefore facilitating import of capital goods. Export is considered as major factor for economic growth. When nominal export is adjusted with inflation or deflation, it becomes real export.

Real Consumption (RC): Consumption is value of goods and services bought by people. Consumption is normally the largest GDP component. The economic performance of a country is measured mainly in terms of consumption level. When nominal consumption is adjusted with inflation or deflation, it becomes real consumption.

3.3.2 Model Specification

The study applied an econometric multivariate regression model to test the significance of export and consumption on growth. A flourishing body of empirical work aiming at testing the positive relationship between export and growth find that export explains a significant portion of economic development. Therefore, in order to explain possible association between the export and consumption on GDP based on the Nepalese data, the study has postulated the following specification:

$GDP = f(X)$ …….. (A)

Here, we are taking consumption as a control variable, hence equation (A) becomes

$GDP = f\{X, C\}$……..(i)

Where, GDP stands for gross domestic product, X stands for export, and C stands for total consumption.

Similarly, the econometric multivariate regression model for equation (i) is:

$LNRGDP = \alpha + \beta_1 LNRX + \beta_2 LNRC + \varepsilon$ ……..(ii)

Where, LNRGDP = natural logarithm of real gross domestic product,

LNRX = natural logarithm of real export

LNRC = natural logarithm of real total consumption

α = intercept (constant)

β_i = Coefficient of independent variables

ε = error term

3.3.3 Setting the Hypothesis

This research is based on the following hypothesis which defines the research criterion.

- H0 (Null Hypothesis): Real export does not have effect on real GDP
- H1(Alternative Hypothesis): real export has effects on real GDP

3.3.4 Unit Root Test

The first step in building dynamic econometric model entails a thorough investigation of the characteristics of the individual time series variables involved. Such an analysis is essential as the properties of the individual series have to be taken into consideration in modeling the data generation process of a system of potentially related variables.

When discussing stationary and non – stationary time series, there need to test for the presence of unit root in order to avoid the problem of spurious regression and it should be stressed. Unit root test should be conducted in order to determine whether individual variables are stationary or not. As many macroeconomic time series contain unit roots dominated by stochastic trends, as developed by Nelson and Plosser (1982). Unit root tests are important in examining the

stationary of a time series because a non-stationary regressor invalidates many standard empirical results and thus require a special treatment. To this end, Augmented Dickey Fuller Test can be used.

$$\Delta Y_t = \alpha_0 + \alpha_1 .t + \varphi Y_{t-i} + \Sigma\psi\Delta Y_{t-1} + \varepsilon t \quad \text{.....(iii)}$$

Where, Y is the variable under consideration, Δ is the first difference operator, t captures time trend, εt is random error. $\alpha_{0,}\ \alpha_{1,}\ \psi$ are the parameters to be estimated. If we cannot reject the null hypothesis $\varphi = 0$ then we conclude that the series under consideration has a unit root and is therefore non-stationary. (Cited in Gujarati, 2014)

3.3.5 Engle-Granger Co-integration Test

Engle and Granger (1987) formulated one of the first tests of co-integration. This test has the advantage that is is intuitive and easy to perform. The first step starts by estimating called co-integrating regression of the variables.

$$LNRGDP,\ t = \beta_1 + \beta_2 LNRGDP,t + \beta_3 LNRX,t + \beta_4\ LNRC,\ t + ut \quad \text{.....(iv)}$$

In this regression we assume that all variables are integrated of oreder one I(1) and might co-integrate to form a stationary relationship, and thus a stationary residual term,

$$\hat{U}t = LNRGDP,\ t - \beta_1 - \beta_2 LNRGDP,t - \beta_3 LNRX,t - \beta_4\ LNRC,\ t - ut \quad \text{.....(v)}$$

This equation represents the assumed economically meaningful steady state or equilibrium relationship among the variables. If the variables are co-integrated, they will show the common trend and also form a stationary relationship in the long run between the variables. Furthermore, under the co-integration approach, due to the properties of super converge, the estimated parameters can be viewed as correct estimates of the long –run steady state parameters, and the residual series can be used as an error correction term in an error correction model (ECM). The second step is to do a unit root test of the residual series obtained from the co-integrating regression above. For this purpose we set up a unit root test (ADF test) of residual series as:

$$\Delta\hat{U}t = \alpha + \pi\hat{u}_{t-1} + \Sigma_i^k{}_{=1}\gamma_i \Delta\ \hat{u}_{t-1} + vt \quad \text{.....(vi)}$$

Where, the constant term α is to improve the efficiency of the estimate results. Under the assumption of nully hypothesis of no co-integration among the variables, the estimated residual is I(1) because x1,t is I (1), and all parameters are zero in the long run. The empirical t-

distribution is not identical to the Dickey-Fuller, though the tests are similar. The reason is that the unit toot test is now applied to a variable derived from regression i.e. the estimated residual from an integrated regression. Thus, new critical values must be tabulated through simulation. The assumed hypothesis is no co-integration among variables. Thus, finding a significant π implies co-integrating between variables. The alternative hypothesis is that the equation is a co-integrating equation, meaning that the integrated variable x1,t co-integrates at least with one of the variables. If the dependent variable is integrated with $d > 0$, and at least one regressor is also integrated of the same order, co-integration leads to a stationary I (0) residual. But, the test does not tell us if x1,t is co-integrating with all, some or only one of the variables. The lack of co-integration means that the residual has the same stochastic trend as the dependent variable. The integrated properties of the dependent variable will if there is no co-integration pass through the equation to the residual. The test statistics for H0: $\pi = 0$ (no co-integration) against Ha: $\pi < 0$ (co-integration), changes with the number of variables in the co-integrating equation, and in a limited sample also with the number of lags in the augmentation ($K > 0$). Asymptotically, the test is independent of which variable occurs on the left hand side of the co-integrating regression. By choosing one variable on the left hand side the cointegrating vector are said to be normalized around that variable, implicitly we are assuming that the normalization corresponds to some long-run economic meaningful relationship. But, this is not always correct in limited samples, there are evidence that normalization matters (Ng and Perron 1995). If the variables in the co-integrating vectors have large differences in variances, some might be near integrated; such factors might affect the outcome of the co-integration test.

3.3.6 Error Correction Model (ECM)

The existence of co-integrating relationship indicates that there is long run relationship among the variables, and thereby Granger Causality among them in at least one direction as shown by Engle –Granger co-integration test. It means when two variables are co-integrated, there is long run relation between them or there may be disequilibrium in the short run. So, to correct this disequilibrium with the rate of adjustment and to reveal the short-run relationship among the variables the co-integration term called error correction term is used under ECM framework since the deviation from long run equilibrium is corrected gradually through a series of partial short run adjustments.

The error term in the co-integrated regression equation is called equilibrium error term. This

error term is used to tie the short run behavior of the dependent variable to its long run value. The ECM was introduced by Sargan (1964), and later popularized by Engle and Granger (1987). It is used for correcting disequilibrium and testing for long and short-run causality among co-integrated variables.

In our model if all the variables LNRGDP, LNRX , and LNRC are co-integrated then there is a long run relationship among the variables . Short run relationship between these variables is conducted by using the ECM under the framework of co-integrating relationship.

The ECM used in this study can be specified explicitly as follow:

$$\Delta LNRGDP_t = \alpha_0 + \sum^{m}_{i=0} \beta_{1i} \Delta LNRGDP_{t-1} + \sum^{n}_{i=0} \beta_{2i} \Delta LNRX + \sum^{n}_{i=0} \beta_{3i} \Delta LNRC + wECM_{t-1} \ldots . \text{(vii)}$$

Where, β_1, β_2, β_3 are the coefficient of the lagged first difference variables provide the short dynamics of the model. w is the speed of adjustment parameter of ECM and shows the divergence or convergence towards the long run equilibrium. Positive value of w indicates divergence and negative value indicates convergence.

CHAPTER IV

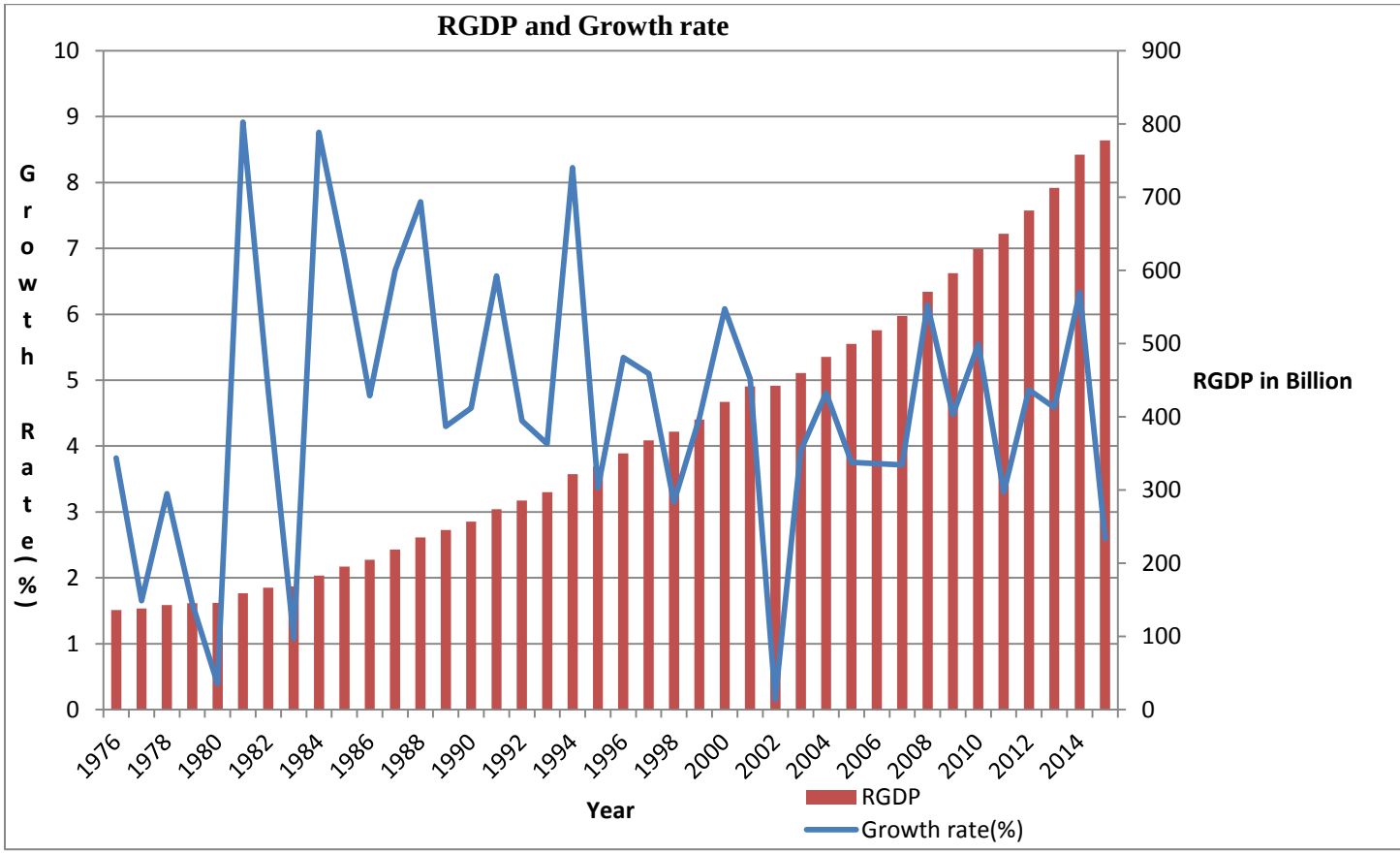
TREND OF GDP, EXPORT, AND IMPORT

This chapter provides the status, trend and pattern in real GDP growth and in real export, import in base of 2000/2001 GDP deflator price. As the GDP is the proxy for economic growth, it includes the trend and pattern of real GDP and growth rate with contribution of main sectors. The export includes total export with rest of the world and similarly import includes the total import from rest of the world from 1974/75 to 2014/15

4.1 Trend of GDP growth in Nepal

The scenario of economic growth in Nepal is quite stagnant in the past several decades with the annual average real economic growth rate remaining at around 5% in 1990s and further below at 4% during 2000s (MOF 2015/2016). During the study period , GDP growth rate reaches peak with 8.9% in 1981 with NPR 158.76 Billion which could be due to stable government with their effective reform programs. The economic growth rate reached the all time low in 2002 at just 0.15% with NPR 442.19 Billion which was due escalating Maoist conflict, low investment by private sector, unfriendly political environment for investors in that year. At the end of the study period i.e year 2015, the growth rate was considerably low at 2.59% with NPR 777.58 Billion. It was due to devastating earthquake of 25th April with 7.8 magnitudes that claimed 8,790 deaths, and more than 22,300 injuries. The earthquake affected manufacturing, production and trade in agriculture as well as tourism and other areas of service sector, thereby weakening the national economy. According to initial estimates arrived at during the Post-Disaster Needs Assessment (PDNA), NPR 669 billion would be required to reconstruct damaged properties and infrastructure and to support recovery in affected sectors of the economy.

Figure 4.1: Trend of Real GDP growth rate in Nepal

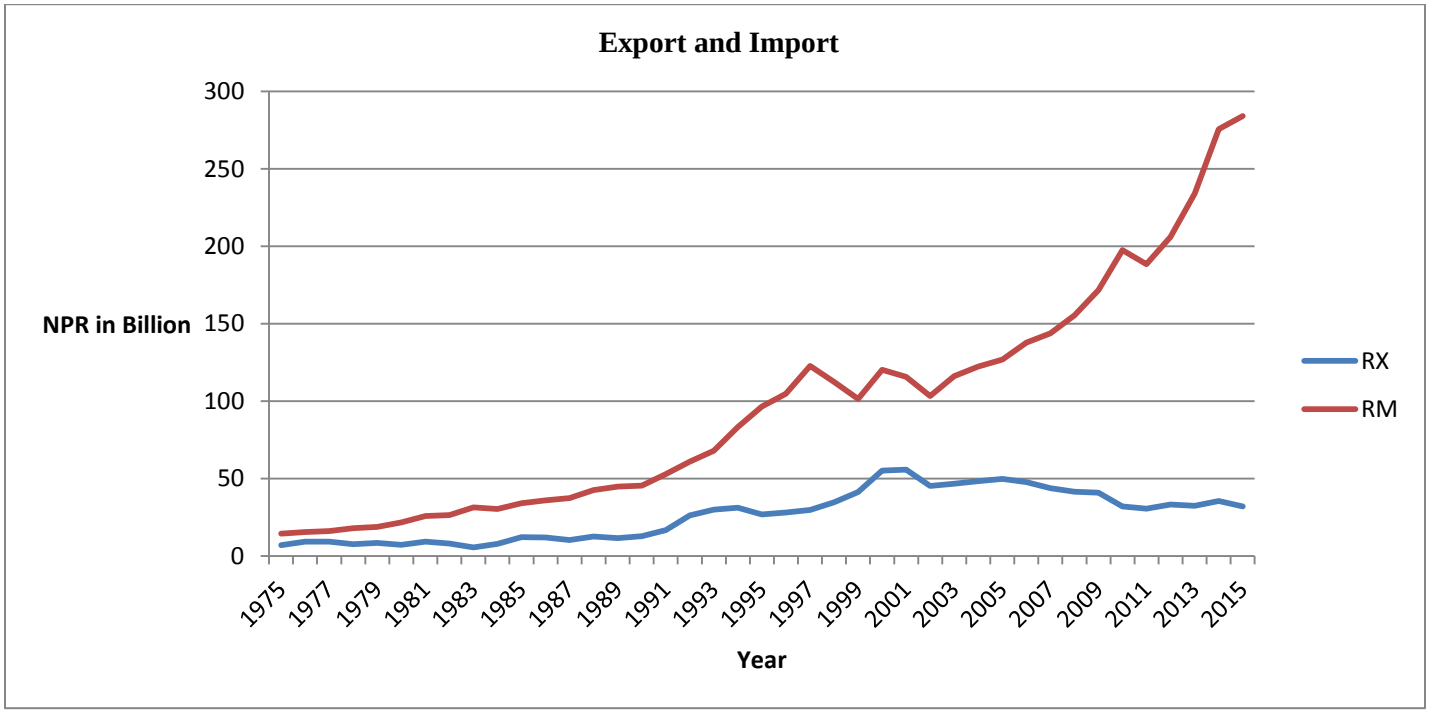


Source: From Appendix 1

4.2 Trend of Export and Import

Nepal is an agricultural country with more than 70% of total population engaged in agricultural activities. The Nepalese exports, in the past mainly dominated by primary agricultural products and raw materials and now by iron and steel, knotted carpets, textiles, plastics, hollow tubes, beverages and vegetables are characterized by low prices and market volatility, are not diversified hence not competitive in the international markets. Therefore, the value of export has always been low compared to imports which are petroleum products, machinery goods, automobiles, electronics, which are of higher value. Hence, Nepal has been facing the widening trade deficit as evidenced and shown in figure 4.2. From 1975 to 1994, the gap was not so high. After 1994, the gap between export and import have been always widening. There is a huge gap between export and import. That is why Nepal has always faced huge trade deficit.

Figure 4.2: Trend of Export and Import



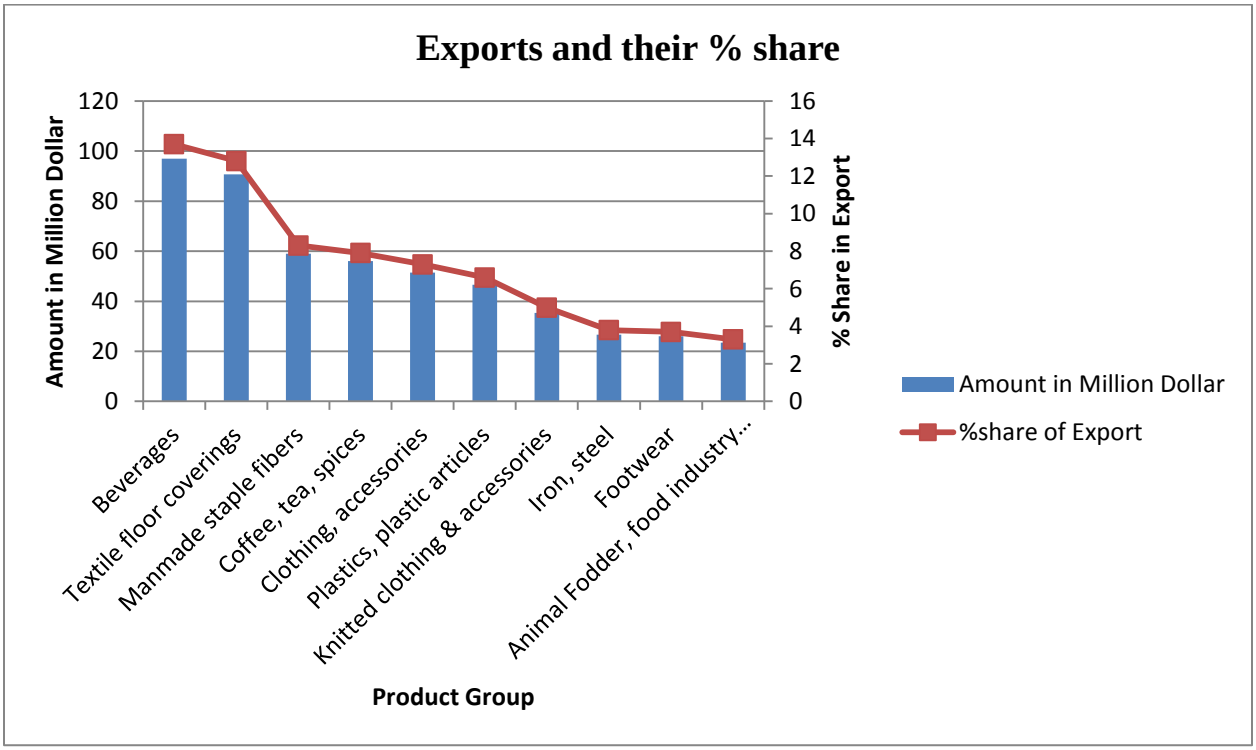
Source: From Appendix: 2

4.3 Top Ten Exports of Nepal and their % share in Export

The figure 4.4 shows the top ten exports of Nepal and their percentage share in export as of 2016 according to worldstopexports.com. Beverages occupies the first spot with 96.9 million dollar worth of it exported in 2016 accounting for 13.7 % of total export. Second is textile floor coverings with 90.7 million dollar worth of it exported in 2016 accounting for 12.8% of total exports. Third is Manmade staple fibers with 59 million dollar worth of it being exported accounting for 8.3% of total exports. Fourth is coffee, tea, and spices with 56 million dollar worth of it being exported accounting for 7.9% of total exports. Fifth is Clothing and accessories with 51.5 million dollar worth of it being exported accounting 7.3% of total exports. Sixth is plastics, and plastic articles with 46.6 million dollar worth of it being exported accounting for 6.6% of total exports. Likewise, seventh is knitted clothing and accessories with 35.3 million dollar worth of it being exported accounting for 5% of total exports. Eighth is Iron and steel with 26.7 million dollar worth of it being exported accounting for 3.8% of total exports. Ninth is Footwear with 26 million dollar worth of it being exported accounting for 3.7% of total exports.

Lastly tenth is Animal Fodder and food industry waste with 23.5 million dollar worth of it being exported accounting for 3.3% of total exports.

Figure 4.3 Top Ten Exports of Nepal and their % share in Export



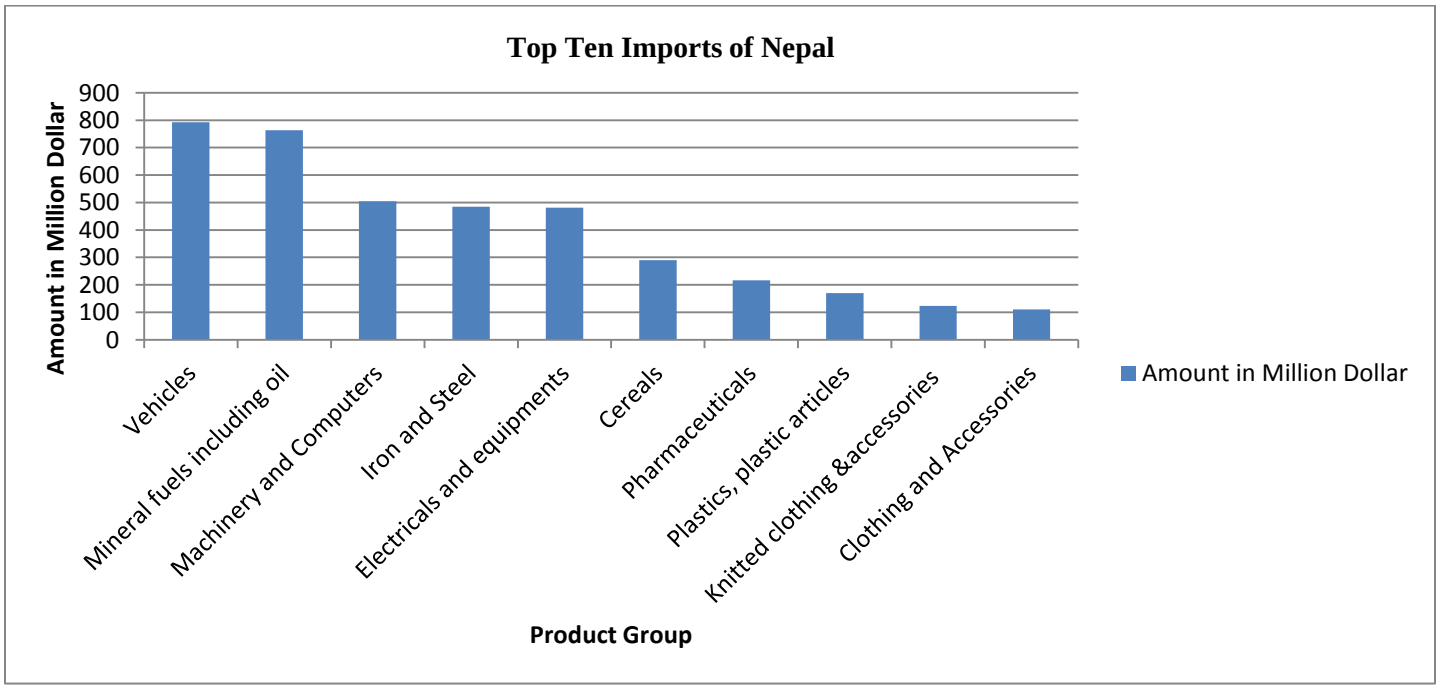
Source: From Appendix: 3

4.4 Top Ten Imports of Nepal

The figure 4.5 shows the top ten imorts of Nepal as of 2016 according to worldstopexports.com.The figure shows that vehicles are the most imported product in Nepal as 792.8 million dollar worth of vehicles were imported in 2016. Second most imported product includes mineral fuels and oil which accounts for 763.4 million dollar. Third most imported item is Machinery and Computers which accounts for 504.5 million dollar. Forth is Iron and Steel with 484.4 million dollar worth of it being imported. Fifth is Electricals and equipment with 481.3 million dollar worth of it being imported. Likewise, sixth is cereals with 290.2 million dollar worth of it being imported. Similarly, seventh is pharmaceuticals with 216.9 million dollar worth of it being imported. Plastic and plastic articles come eighth as 169.3 million dollar worth of it being imported in 2016. Ninth is Knitted Clothing and Accessories with 122.9 million

dollars worth of it being imported in 2016. Finally, tenth is Clothing and Accessories as 110.5 million dollar worth of it being imported in 2016.

Figure 4.4: Top Ten Imports of Nepal



Source: From Appendix:4

CHAPTER V

RELATIONSHIP BETWEEN EXPORT AND ECONOMIC GROWTH IN NEPAL

This chapter provides the analysis of export and economic growth nexus with results obtained from application of various econometric tools like unit root test, co-integration test, error correction model of the time series data. STATA has been used to conduct the tests using the data available in appendix 5 and 9 which were calculated with the help of data shown in appendix 2 which consists of annual data of GDP,X , and TC from FY 1975 to 2015. Natural logarithm of all the variables are taken before conducting the test in order to simplify a model as logarithm can simplify the number and complexity of interacting terms. Then variables RGDP, RX, RC are defined as LNRGDP, LNRX, LNRC after taking logs

5.1 Time Series Properties of Variables

The study of socio-economic relations generally suffers from the issue of spurious regression. By using the co-integration method to show the long run association between variables this problem can be resolved. In doing so, the preliminary step involves the identification of order of integration which can be computed through unit root test such as: Phillips-Perron (PP), Dickey Fuller (DF), Augmented Dickey-Fuller, Dickey-Fuller GLS, Ng-Perron test. In this study, Augmented Dickey-Fuller (ADF) unit root test has been applied.

5.1.1 Unit Root Test: Augmented Dickey Fuller Test

After analyzing time series, unit root test has been applied which is important in assessing the stationary of a time series data because a non-stationary regressor invalidates many standard empirical results and thus require special treatment. The presence of a stochastic trend is determined by testing the presence of unit roots in time series data. For this purpose, Augmented Dickey Fuller test has been used which show following results:

Table 5.1 : Unit Root Test (Augmented Dickey Fuller Test) with Intercept only

Variable	Test statistics	5% critical value	P value	Comment
LNRGDP	0.025	-2.958	0.9906	Non Stationary
DLNRGDP	-6.245	-2.961	0.0000	Stationary
LNRX	-1.438	-2.958	0.5641	Non Stationary
DLNRX	-5.575	-2.961	0.0000	Stationary
LNRC	0.713	-2.958	0.9901	Non Stationary
DLNRC	-7.589	-2.961	0.0000	Stationary

Table 5.2 : Unit Root Test (Augmented Dickey Fuller Test) with Trend and Intercept

Variable	Test statistics	5% critical value	P value	Comment
LNRGDP	-1.804	-3.540	0.7030	Non Stationary
DLNRGDP	-6.150	-3.544	0.0000	Stationary
LNRX	-1.036	-3.540	0.9391	Non Stationary
DLNRX	-5.565	-3.544	0.0000	Stationary
LNRC	-3.286	-3.544	0.0685	Non Stationary
DLNRC	-7.588	-3.544	0.0000	Stationary

H0: has a unit root (non-stationary)

H1: does not have a unit root (stationary)

The unit root tests in levels and first differences were computed to determine the stationary of the variables used in this study. Three different variables including logarithm of real gross domestic product (LNRGDP) as a dependent variable, and logarithm of real export (LNRX), real total consumption (LNRC) as independent variables have been used. From the results, at intercept form, LNRGDP accepts the null hypothesis of non-stationary as the absolute test statistics (-0.025) is less than its 5% critical value of (2.958), also the corresponding p-value of (0.9906) is

greater than 0.05, which means the p-value is not significant. However, after the first difference, DLNRGDP rejects the null hypothesis and accepts the alternative hypothesis of stationary as the absolute test statistics (-6.245) is higher than its corresponding 5% critical value of (-2.961). Also p value is significant as it is (0.0000) which is much lesser than 0.05. Similarly, at intercept and trend form, LNRGDP accepts the null hypothesis of non-stationary as the absolute test statistics (-1.804) is less than its 5% critical value of (3.540), also the corresponding p-value of (0.7030) is greater than 0.05, which means the p-value is not significant. However, after the first difference, DLNRGDP rejects the null hypothesis and accepts the alternative hypothesis of stationary as the absolute test statistics (-6.150) is higher than its corresponding 5% critical value of (-3.544). Also p value is significant as it is (0.0000) which is much lesser than 0.05. Same is the case of LNRX and LNRC in both the cases i.e. with intercept only and with including trend and intercept. The tables 5.1 and 5.2 both show that the variables are non-stationary at level but are stationary at first difference. All the variables are stationary in first difference which is known as integrated of order one i.e. I(1). Since all variables are being integrated of order one or same order, we are eligible to move forward for co-integration test.

5.1.2 Engle-Granger Co-integration Test

In first step of co-integration test, ordinary least square regression of the equation is applied to predict the relationship between the variables. It also shows the long-run relationship between export and GDP

Table 5.3 Regression Result (OLS) (Long run relationship between GDP, Export and Consumption)

Dependent Variable: LNRGDP				
Method: Ordinary Least Square				
Number of Observations: 41				
Variable	Coefficient	Standard Error	t-statistics	Probability
LNRX	0.043	0.009	4.72	0.000
LNRC	0.942	0.011	78.88	0.000
C	0.172	0.035	4.82	0.000
R-Square		0.9987		
Adjusted R-Square		0.9987		
Prob.(F-stat)		0.0000		
Durbin-Watson Test		1.1421		

Now, the regression equation in equation (ii) can be expressed as:

$$LNRGDP = 0.172 + 0.043LNRX + 0.942\ LNRC + \varepsilon$$

The two independent variables (LNRX and LNRC) show a very small p-value which means that the regression coefficients are statistically significant at 5% level. To confirm this result the R^2 and adjusted R^2 both have a higher value of 0.99 and 0.99 respectively which implies that the variation in GDP is well explained by changes in real export and real consumption. Further it signifies that the model is best fit. From the regression result shown in Tabel 5.2, two major outcomes can be specified. As the coefficients of RX and RC both have positive signs, it implies the existence of a positive long run relationship of real GDP with real export and real consumption.

The positive coefficient of RX suggests that if the real export increases by 1%, the rate of real GDP will increase by 0.043%. Likewise, the coefficient of RC predicts that if there is 1%

increase in real consumption, the rate of real GDP will increase by 0.94%. From the result given in Table 5.2, it is estimated that our model is explained by the values of coefficients of the independent variables and the constant. The results show that 4% variations in RGDP are explained by changes in RX and 94% variations in RGDP are explained by RC. To conclude, since the explanatory power of RC is sufficiently higher than that of RX, it suggests that Nepalese government should prioritize consumption over export.

After estimating our model, R^2 value is observed at 0.99 while D-W statistic stood at 1.1421. So, our estimated model also does not suffer from spurious regression.

In the second step of Engle-Granger co-integration test, the unit root test is applied on the residual series obtained from the regression. It also shows the co-integrating relationship of GDP with export and consumption.

Table 5.4 Unit Root Test (ADF Test) of Residual Series.

Variable	Test Statistics	5% critical value	p-value	Order of integration
ECT_t	(-3.859)	(-2.958)	0.0024	I(0)

H0: has a unit root (non-stationary)

H1: does not have a unit root (stationay)

The result in table 5.4 reveals that the residual series (ECT_t) is stationary at level as it reject the null hypothesis of unit root in intercept since it has a significant p-value of 0.0024 which is less than 0.05. Thus, the null hypothesis of unit root is rejected which implies the residual term to be stationary at level or integrated of order zero I(0) showing the existence of co-integration among the variables. It also implies that the dependent and independent variables have an equilibrium relationship between them, so our model is a long-run model.

5.1.3 Short Run Relationship between GDP, Export and Consumption_ Error Correction Model (ECM)

As unit root test of residual series showed real GDP, and export and consumption are co-integrated which proves the long run association between the variables. The error correction model shows the short run relationship between GDP, and export and consumption with speed of adjustment to correct the disequilibrium. For the analysis of short run adjustment of real GDP

towards equilibrium, the error correction model given in equation(vii) is estimated which differs from co-integration model given in equation (V) because it takes the first difference of dependent and independent variables in the classical linear regression model. In addition, the one term lagged value of the residual at level in equation (V) is included in the error correction model as one of the explanatory variable in the model.

From the ECM estimation result, the study observes the coefficient of the one term lagged error correction term (ECT_{t-1}) has a negative sign which is in accordance with the theoretical principle that in short-run the rate of GDP converges to its equilibrium point. In other words, the negative coefficient of ECT_{t-1} implies that in case of any disequilibrium, the GDP rate will converge backward towards its long-run equilibrium path. However, the speed of adjustment (time to converge back to equilibrium) is determined by the magnitude of the coefficient.

The error correction model shows the following results:

Table 5.5 Result of Error Correction Model (ECM)

Dependent Variable: D(LNRGDP)				
Method: Ordinary Least Square				
Number of Observations: 40				
Variable	Coefficient	Standard Error	t-statistics	Probability
D(LNRX)	0.0426	0.0129	3.28	0.002
D(LNRC)	0.4264	0.1009	4.23	0.000
C	0.0102	0.0021	4.69	0.000
ECT_{t-1}	-0.2823	0.1280	-2.20	0.034
R-Square		0.5142		
Adjusted R-Square		0.4737		
Prob.(F-stat)		0.0000		
Durbin-Watson Test		1.8960		

Now, the Error correction model in equation (vii) can be expressed as:

$DLNRGDP = 0.0102 + 0.0426\ DLNRX + 0.4246\ DLNRC + (-0.2823)\ ECT_{t-1} + \varepsilon$

From the result of table 5.5, the value of the coefficient for the error correction term ECT_{t-1} is -0.2823 implying 28.23% of the shock/changes in the rate of GDP is adjusted annually. This speed of adjustment process is also evidenced from the significance p-value of 0.034 which validates the statistical significance of the adjustment coefficient (ECT_{t-1}) in the model. This also further guarantees the existence of long run relation among the variables. Similarly the positive sign of coefficient of independent variables DLNRX and DLNRC reveals the positive effect of export and consumption on GDP. The significant p-value of 0.002 and 0.0000 show the statistically significant result and shows that the both export and consumption have short run impact on GDP

All the independent variables are statistically significant and also the model is not spurious since D-W statistic of 1.8960 is greater than R^2 of (0.5142) also the residual diagnostic test showing no autocorrelation as the D-W statistic value lies near to 2. Further it is also proved from Breusch Godfrey LM test for autocorrelation where the probability value of 0.8536 was found which is higher than 0.05 accepting the null hypothesis of no serial autocorrelation. There is no problem of multicollinearity as VIF of all the independent variables are found less than 10. There is normal distribution of error term as link test showed the p-value of coefficient of hatsq was found 0.897 which is higher than 0.05 accepting the null hypothesis of normal distribution of error term. Hence the study accepts the present model as it satisfied the BLUE properties of OLS estimation.

The co-integration relation between variables shown in Engle-Granger co-integration test was also further supported by the significance coefficient of term (ECT_{t-1}) in ECM. It means there exists the strong co-integration between the variables GDP, RX, RC. The Engle-Granger co-integration technique shows long run relationship among the variables and also accepts the short run relationship among them as p value of DLNRX and DLNRC are statistically significant. It shows that in the short run the changes is RX and RC will have a significant impact on RGDP. It also signifies that model also applies in the short run. Another major economic interpretation in the ECM is the explanation of the coefficient of the error correction term (ECT_{t-1}) which reveals that in case of shock and disequilibrium, the model converges to its equilibrium position in the

long run. In our ECM estimation result, it is revealed that 28.23% of the disequilibrium is adjusted annually.

CHAPTER VI

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

6.1 Summary of Findings

The objective of the study is to analyze the trend, pattern, and structure of GDP and export and to examine the relationship between GDP and export in Nepal with application of time series econometric analysis. The Engle-Granger Co-integration technique is used to explore the second objective of the study for the period 1975-2015. Hence, the summary of major findings can be concluded as objectively in following ways.

First, the study showed the trend analysis of real GDP. It was found that during the study period that GDP growth rate reached peak with 8.9% in 1981 with NPR 158.76 billion which could be due to stable government with their effective reform programs. The economic growth rate reached the all time low in 2002 at just 0.15% with NPR 442.19 Billion which was due escalating Maoist conflict, low investment by private sector, unfriendly political environment for investors in that year. It was due to devastating earthquake of 25th April with 7.8 magnitudes that caused 8,790 deaths, and more than 22,300 injuries. Likewise, it was found that Nepal has been facing the widening trade deficit as evidenced and shown in figure 4.2. From 1975 to 1994, the gap was not so high. After 1994, the gap between export and import have been always widening.

Secondly, the study showed the relationship by using econometric tools and techniques. In doing so, first, the study checked the stationary of the study variables using ADF test and found that in the level form all the variables have a unit root and after first differencing all the variables become stationary. So, the study moved on to the co-integration test for long run relationship. For co-integration test, the study used the famous Engle-Granger co-integration test. The positive sign of coefficient of export and consumption showed that there is a long run relationship among realGDP, real export and real consumption. The estimated coefficient of RX shows that if export increased by 1%, then the GDP will increase by 0.043%. Similarly, the estimated coefficient of RC suggested that if consumption increased by 1%, then RGDP will increase by 0.94%.

The rejection of null hypothesis of unit root of residual series ECT_tas its absolute test statistics greater than 5% critical value and with significant p-value of 0.0024 implies that the residual term is stationary at level showing the existence of co-integration among the variables GDP, RX, and RC

Lastly, to check the short-run relationship and short run dynamics, error correction model is used. The error correction model showed that variables LNRX and LNRC have statistically significant p-values and conclude that there is a short run relationship between the variables and GDP. It also signifies that the model applies in the short run also. Further, the significance of the term (ECT_{t-1}) in ECM strengthens the co-integration relation found in Engle-Granger co-integration test. In final, regarding the dynamics of negative sign (-0.28) on the lagged error correction term (ECT_{t-1}) shows that in cases of any deviation in the short run, it will be adjusted to its long run equilibrium path and regarding the speed of adjustment based on Engle- Granger approach, 28% of the deviation of the GDP from its long run path is adjusted every year.

6.2 Conclusion

This study is motivated in time series analysis of GDP, export, and consumption. The unstable macroeconomic historical condition of the country has made economic researchers and policy makers give much concern to the study of relationship between these variables. Due to this reason, although relationship between export and economic growth is extensively assessed in international literature, a literature gap exists in this area in Nepal. To address this issue, the present thesis is objected to fill the existing research gap in Nepalese context. The study examined the relationship among GDP, export, and consumption in short run as well as in long run. Furthermore, the study performs various multivariate time series model, such as OLS, Engle-Granger co-integration test, ECM to derive feasible policy implications. This study can be concluded in following ways:

a) The trend analysis of present study shows that economic growth rate reached the highest point of 8.9% with NPR 158.76 billion in the year 1981 and reached all time low of 0.15 % with NPR 442.19 Billion in the year 2002. Similarly, the trade deficit is found to be widening. From 1975 to 1994, the gap was not so high. After 1994, the gap export and import have been always widening which show that import far exceeds exports.

b) From the results of OLS, Engle-Granger co-integration and ECM test, it is revealed that export is statistically significant and had a positive relation with economic growth which means exports positively contributed to economic growth. It means export led growth hypothesis is found to be true in case of Nepal. Similarly, consumption is also statistically significant and had a positive relation with economic growth. The higher value of coefficient of consumption shows the high marginal propensity to consume of developing country like Nepal.

6.3 Recommendations

From the findings of the research where exports contributed positively in economic growth, proper planning and adoption of strategies that would enhance export growth can be recommended.

In the bid to achieve economic growth, diversification of export commodities must be looked in to. It is clear that Nepali exports are mostly primary agricultural products, textile floor coverings, and beverages, and the revenue obtained is not substantial in making any meaningful economic growth, yet we see that the export growth can lead to economic growth in Nepal. Hence diversification of the export products is highly recommended.

Value addition to the primary goods exported can also be used as a strategy to enhance economic growth. Some of the products produced in Nepal are exported as raw materials and later imported as finished products or refined products, Nepal can take advantage of this through industrialization and add value on their products before exporting them.

The higher value of the coefficient of the consumption suggests that marginal propensity to consume is very high in Nepal and the general saving is low. This is also the character of developing countries where people struggle to make a living from their income. Huge proportion of the income earned is spent on daily necessity commodities. Therefore to decrease marginal propensity to consume, income should be increased. One way to increase the income is by increasing export.

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APPENDICES

Appendix -1 : Status of Real GDP and Growth rate (NPR in Billion)

Year	Real GDP	Growth rate(%)
1975	131.0997	
1976	136.1033	3.816639907
1977	138.3507	1.651241656
1978	142.882	3.275219916
1979	145.1961	1.619594726
1980	145.7615	0.389452415
1981	158.7616	8.918730636
1982	166.4232	4.82583421
1983	168.2162	1.077399233
1984	182.954	8.761207732
1985	195.5169	6.866709176
1986	204.8306	4.763628708
1987	218.4879	6.667564999
1988	235.3305	7.70872249
1989	245.4495	4.299939849
1990	256.6791	4.575087032
1991	273.5682	6.579852687
1992	285.553	4.380928622
1993	297.079	4.036376132
1994	321.5102	8.223793105
1995	332.3351	3.366903748
1996	350.0886	5.342049371
1997	367.9342	5.097437425
1998	379.5194	3.148717979
1999	396.2878	4.418334656
2000	420.3922	6.082538267
2001	441.519	5.025508396
2002	442.1973	0.153629878
2003	459.5565	3.925674211
2004	481.6485	4.807238776
2005	499.7132	3.750592549
2006	518.3738	3.734271598
2007	537.6178	3.712375959
2008	570.6298	6.140413729
2009	596.1706	4.475900876
2010	629.233	5.545788881
2011	650.0019	3.30067603
2012	681.5457	4.852883717
2013	712.7885	4.584100147
2014	757.9244	6.332300032
2015	777.5834	2.593799954

Source: Author's calculation based on Economic Survey various editions using STATA

Appendix -2: Trend of Export and Import (NPR in Billion)

Year	RX	RM
1975	7.037975	14.35601
1976	9.27856	15.50626
1977	9.32506	16.07686
1978	7.57567	17.88269
1979	8.475817	18.85425
1980	7.181648	21.72347
1981	9.352907	25.74535
1982	8.010204	26.47852
1983	5.640259	31.45989
1984	7.914073	30.25685
1985	12.05719	34.06115
1986	11.84758	35.95535
1987	10.23401	37.30825
1988	12.59027	42.44064
1989	11.53506	44.71735
1990	12.79772	45.4825
1991	16.78977	52.7875
1992	26.18243	61.01242
1993	29.91424	67.92377
1994	31.12843	83.20555
1995	26.74632	96.55724
1996	27.96217	104.718
1997	29.69111	122.7091
1998	34.70859	112.277
1999	41.33507	101.4081
2000	55.19298	120.2004
2001	55.6541	115.6872
2002	45.18268	103.358
2003	46.61619	116.0976
2004	48.37644	122.2874
2005	49.77168	126.7262
2006	47.73665	137.7241
2007	43.86401	143.8134
2008	41.4625	155.2663
2009	40.83821	171.605
2010	32.08694	197.4758
2011	30.59368	188.3859
2012	33.13744	206.0097
2013	32.34529	234.1212
2014	35.49051	275.6041
2015	32.07697	284.0792

Source: Author's calculation based on Economic Survey various editions using STATA

Appendix -3: Top Ten Exports of Nepal

Product Group	Amount in Million Dollar	% share of Export
Beverages	96.9	13.7
Textile floor coverings	90.7	12.8
Manmade staple fibers	59	8.3
Coffee, tea, spices	56	7.9
Clothing, accessories	51.5	7.3
Plastics, plastic articles	46.6	6.6
Knitted clothing &	35.3	5
Iron, steel	26.7	3.8
Footwear	26	3.7
Animal Fodder, food	23.5	3.3

Source: www.worldstopexports.com

Appendix -4: Top Ten Imports of Nepal

Product Group	Amount in Million Dollar
Vehicles	792.8
Mineral fuels including oil	763.4
Machinery and Computers	504.4
Iron and Steel	484.4
Electricals and equipments	481.3
Cereals	290.2
Pharmaceuticals	216.9
Plastics, plastic articles	169.3
Knitted clothing &accessories	122.9
Clothing and Accessories	110.5

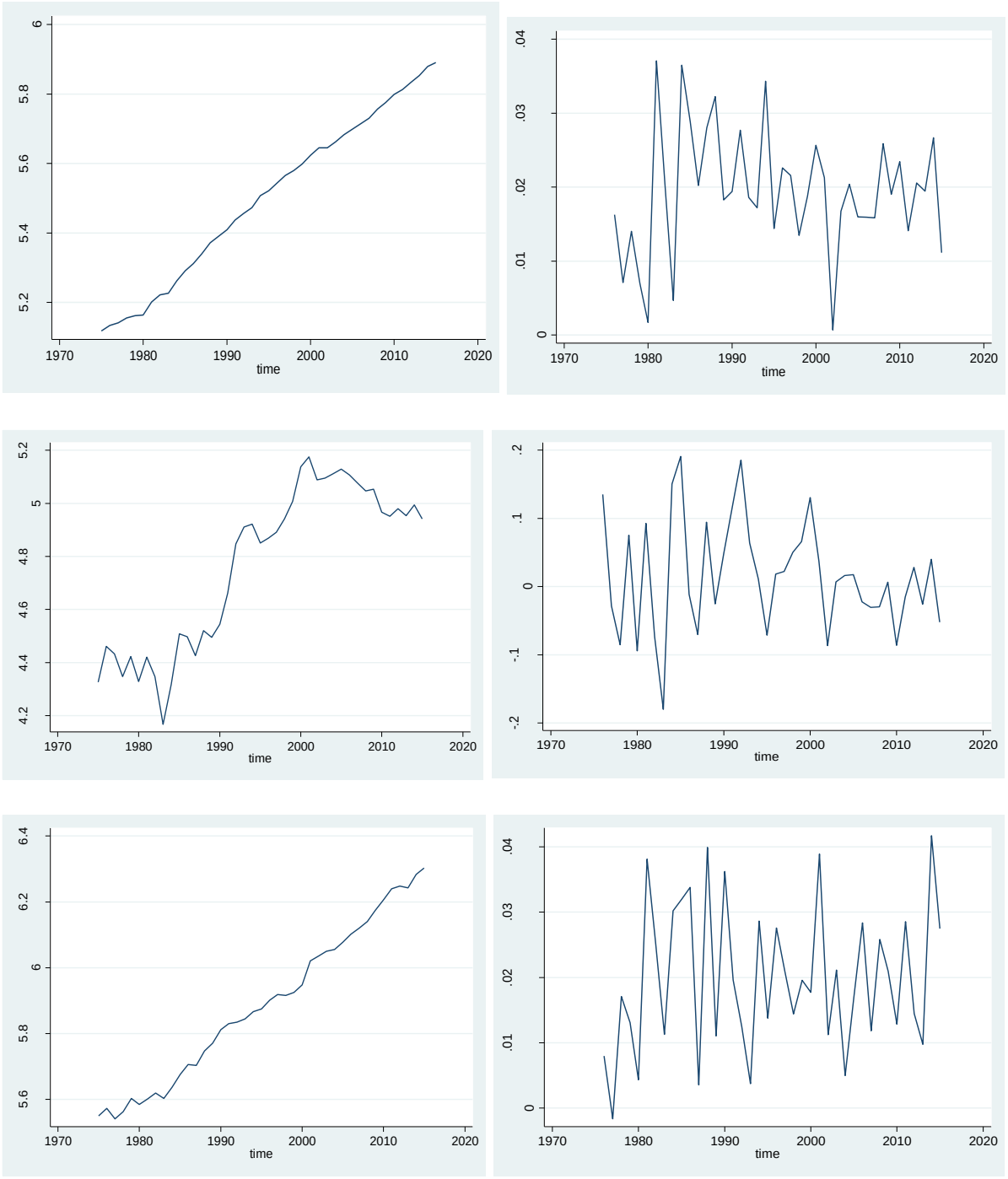
Source: www.worldstopexports.com

Appendix 5: Data Used in Regression Analysis

Years	LNRGDP	LNRX	LNRC
1975	5.1176016	3.2955671	5.0717014
1976	5.1338686	3.2957869	5.0796907
1977	5.1409813	3.2960067	5.0780497
1978	5.1549774	3.2962263	5.0951327
1979	5.1619549	3.2964458	5.1082289
1980	5.163643	3.2966652	5.1125648
1981	5.2007455	3.2968845	5.1506672
1982	5.2212139	3.2971037	5.1757802
1983	5.2258679	3.2973227	5.1870455
1984	5.262342	3.2975417	5.2172333
1985	5.2911844	3.2977605	5.2492226
1986	5.3113949	3.2979792	5.2829999
1987	5.3394273	3.2981979	5.28655
1988	5.3716782	3.2984164	5.3264637
1989	5.3899622	3.2986348	5.337543
1990	5.4093905	3.2988531	5.3737726
1991	5.4370656	3.2990713	5.3933997
1992	5.4556867	3.2992893	5.4058385
1993	5.472872	3.2995073	5.4095629
1994	5.5071947	3.2997252	5.4381871
1995	5.5215762	3.2999429	5.4519528
1996	5.544178	3.3001605	5.4795314
1997	5.5657701	3.3003781	5.5004662
1998	5.5792339	3.3005955	5.514873
1999	5.5980107	3.3008128	5.5344566
2000	5.6236546	3.30103	5.5521924
2001	5.6449494	3.3012471	5.5910836
2002	5.6456161	3.3014641	5.602314
2003	5.6623389	3.3016809	5.6234695
2004	5.6827302	3.3018977	5.6284488
2005	5.6987208	3.3021144	5.6453908
2006	5.7146431	3.3023309	5.6737652
2007	5.7304737	3.3025474	5.6855971
2008	5.7563544	3.3027637	5.7114111
2009	5.7753706	3.3029799	5.7323375
2010	5.7988115	3.3031961	5.7451875
2011	5.8129146	3.3034121	5.7737163
2012	5.833495	3.303628	5.7881797
2013	5.8529607	3.3038438	5.7979366
2014	5.8796259	3.3040595	5.8396207
2015	5.890747	3.3042751	5.867097

Source: Author's calculation based on Economic Survey various editions using STATA

Appendix -6: Time series plot of Variables (Level and 1st Difference form)



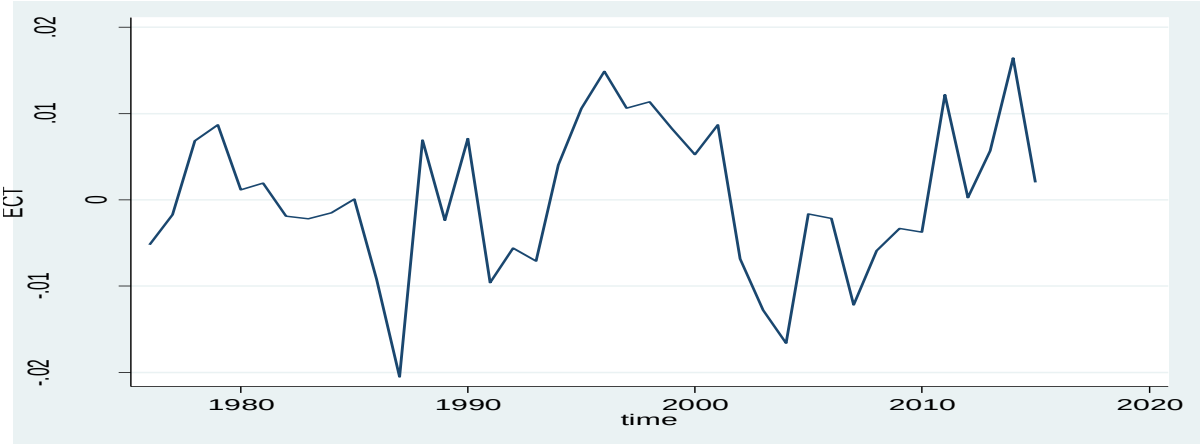
Source: From appendix 5 and 9

Appendix – 7: Residual Series Obtained from OLS

Years	Series	Years	Series
1975	-0.005204	1996	0.010636
1976	-0.0017161	1997	0.0113494
1977	0.0068491	1998	0.0082652
1978	0.0086805	1999	0.0052599
1979	0.0011783	2000	0.0086928
1980	0.0019226	2001	-0.0068419
1981	-0.0019162	2002	-0.0128085
1982	-0.0021862	2003	-0.0166265
1983	-0.0014967	2004	-0.0016337
1984	0.0000839	2005	-0.0021579
1985	-0.0092281	2006	-0.0121982
1986	-0.0205341	2007	-0.0059185
1987	0.0069295	2008	-0.0033097
1988	-0.002388	2009	-0.0037376
1989	0.0071105	2010	0.012164
1990	-0.0095946	2011	0.0002711
1991	-0.0055795	2012	0.0056977
1992	-0.0071202	2013	0.0164226
1993	0.0040242	2014	0.0020215
1994	0.0106013	2015	-0.0108461
1995	0.0148825		

Source: From OLS Regression in Appendix 5

Appendix -8 Graph of Residual Series (ECT)



Source: From residual series of appendix: -7

Appendix – 9 Data Used in Error Correction Model

Year	DRGDP	DRX	DRC	ECT_{t-1}
1976	0.016266969	0.120032892	0.007989242	-0.005204
1977	0.007112688	0.002171045	-0.001640979	-0.0017161
1978	0.013996128	-0.0902306	0.01708302	0.0068491
1979	0.006977459	0.048760534	0.013096145	0.0086805
1980	0.001688085	-0.07195746	0.004335969	0.0011783
1981	0.037102571	0.114722504	0.038102372	0.0019226
1982	0.020468327	-0.067303034	0.025112951	-0.0019162
1983	0.004654059	-0.152344527	0.011265367	-0.0021862
1984	0.036474022	0.147101019	0.030187728	-0.0014967
1985	0.028842436	0.182846145	0.031989321	0.0000839
1986	0.020210533	-0.007616749	0.033777303	-0.0092281
1987	0.028032381	-0.063583795	0.003550153	-0.0205341
1988	0.032250875	0.089989345	0.039913689	0.0069295
1989	0.018284058	-0.038015298	0.011079257	-0.002388
1990	0.019428235	0.045112766	0.036229596	0.0071105
1991	0.027675116	0.11791233	0.019627122	-0.0095946
1992	0.018621156	0.192965067	0.012438827	-0.0055795
1993	0.017185216	0.057868106	0.003724383	-0.0071202
1994	0.034322751	0.017279206	0.028624225	0.0040242
1995	0.014381508	-0.065893112	0.013765648	0.0106013
1996	0.022601763	0.019306724	0.027578595	0.0148825
1997	0.021592127	0.026055581	0.020934841	0.010636
1998	0.013463835	0.067810592	0.014406767	0.0113494
1999	0.018776762	0.075881708	0.019583618	0.0082652
2000	0.025643903	0.125565126	0.017735775	0.0052599
2001	0.021294792	0.003613347	0.038891222	0.0086928
2002	0.000666694	-0.090525218	0.011230452	-0.0068419
2003	0.016722851	0.01356482	0.021155482	-0.0128085
2004	0.020391279	0.016097102	0.004979221	-0.0166265
2005	0.015990586	0.012348458	0.016942056	-0.0016337
2006	0.015922262	-0.018130423	0.028374389	-0.0021579
2007	0.015830584	-0.036743547	0.011831942	-0.0121982
2008	0.025880776	-0.024452853	0.025813976	-0.0059185
2009	0.019016125	-0.006588809	0.020926358	-0.0033097
2010	0.02344091	-0.104738416	0.012850057	-0.0037376
2011	0.014103164	-0.020696619	0.028528818	0.012164
2012	0.020580379	0.034687278	0.014463338	0.0002711
2013	0.019465664	-0.010507885	0.009756869	0.0056977
2014	0.026665208	0.04030118	0.041684164	0.0164226
2015	0.011121116	-0.043918879	0.027476259	0.0020215

Source: Author's Calculation based on economic surveys of various editions using STATA (Based on Appendix 5 and 7)

Appendix -10 Diagnostic Test for Error Correction Model

I. Autocorrelation Test

```
. estat dwatson

Durbin-Watson d-statistic(  4,    40) =  1.896025
```

II. Serial Correlation LM Test

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	0.034	1	0.8536

H0: no serial correlation

III. Multicollinearity Test

Variable	VIF	1/VIF
DRC	1.32	0.758318
ECT	1.23	0.809956
DRX	1.08	0.926319
Mean VIF	1.21	

IV. Noramality Test

```
. linktest
```

Source	SS	df	MS
Model	.001456689	2	.000728344
Residual	.001375271	37	.000037169
Total	.002831959	39	.000072614

```
Number of obs =      40
F(  2,    37) =   19.60
Prob > F      =  0.0000
R-squared     =  0.5144
Adj R-squared =  0.4881
Root MSE      =   .0061
```

DRGDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	.8780894	.9532704	0.92	0.363	-1.05342	2.809599
_hatsq	3.065429	23.63081	0.13	0.897	-44.81513	50.94599
_cons	.0010995	.0090726	0.12	0.904	-.0172833	.0194824