

# Determinants of Foreign Trade in Nepal

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**ABSTRACT:** This study examines the determinants of foreign trade in Nepal. Exports and imports of Nepal are the dependent variables. The selected independent variables are GDP of Nepal, GDP of trading partners, real effective exchange rate, distance, regional economic integration, per capita GDP of Nepal, per capital GDP of trading partners, economic freedom of Nepal and economic freedom of trading partners. The study is based on secondary data of 21 trading partners of Nepal with 210 observations for the period of 2010 to 2019. The data are collected from the Direction of Trade Statistics (DOTS) dataset of International Monetary Fund (IMF), World Development Indicator database of World Bank, CEPII gravity data set and the Heritage Foundation. The regression models are estimated to test the impact of various variables on the exports and imports of Nepal. The study showed that GDP of Nepal has a positive impact on exports of Nepal. It indicates that increase in GDP of Nepal leads to increase in exports of Nepal. Similarly, GDP of trading partners has a positive impact on exports. It indicates that increase in GDP of trading partners leads to increase in exports of Nepal. Likewise, distance has a negative impact on exports. It indicates that greater the distance with the trading countries, lower would be the exports of Nepal to those trading partners. Moreover, real effective exchange rate has a positive impact on exports. It indicates that increase in real effective exchange rate leads to increase in exports. In addition, SAFTA membership has a positive impact on exports. It indicates that SAFTA membership leads to increase in exports of Nepal. **Furthermore**, the study revealed that economic freedom index of trading partners has a positive impact on exports. It indicates that increase in economic freedom index of trading partners leads to increase in exports of Nepal. In addition, the study shows that GDP of Nepal has a positive impact on imports of Nepal. It indicates that increase in GDP of Nepal leads to increase in imports of Nepal. Similarly, GDP of trading partners has a positive impact on imports. It indicates that increase in GDP of trading partners leads to increase in imports of Nepal. Likewise, distance has a negative impact on imports. It indicates that greater the distance with the trading countries, lower would be the imports of Nepal from those trading partners. Similarly, real effective exchange rate has a positive impact on imports. It indicates that increase in real effective exchange rate leads to increase in imports. The study also reveals that GDP per capita differential has a positive impact on imports. It indicates that higher the GDP per capita differential, higher would be the imports of Nepal.

**Keywords:** GDP, trading partners, real effective exchange rate, distance, regional economic integration, SAFTA, OECD, per capita GDP, and economic freedom index

## 1. Introduction

Due to worldwide liberalization and globalization policies which promote borderless flow of capital and goods, international trade is vital to the development of emerging nations in attracting investments and facilitating expansion. Foreign trade is defined as the country's trade with other countries and involves the exchange of capital, goods, and services across international borders or territories in a legal fashion (Kennedy, 2013). Foreign trade plays a pivotal role in the process of economic development of a country. Both export and import trades are equally important. A country must import required raw materials, intermediate and capital goods to expand its production base and to foster its export growth if these goods are not domestically available. Imports of consumer goods are also essential to meet the growing domestic demand. Further, export trade is vital for meeting the foreign exchange gap and to reduce dependence on foreign aid (Mete and Bozgeyik, 2017). Increased participation in world trade is considered as the single most important key to rapid economic growth and development. International flows of trade have not only increased but they have also been extensively liberalized, supporting many nations in their process of economic development. In addition, trade relationship acts as an important aspect of economic integration between countries, and the role of trade flows remains significant in the global economic growth. The patterns and compositions of bilateral trade flows might possibly describe how countries are integrating and flourishing in the world economy (Anaman and Atta-Quayson, 2009).

Martinez-Zarzoso (2003) applied the gravity model to identify the determinants of trade flow among 47 countries during the period 1980-1999. The study reported that the geographical distance, population of importing country and population of exporting country have a negative impact on the volume of trade. In contrast, exporter and importer income have a positive impact on the volume of trade. Batra (2006) concluded that geographical distance, the historical and cultural similarity, common language, borders with the trade partner and the economic size of the trading partner positively influences the volume of trade. Furthermore, the study used a dummy variable to capture the effect of the absence of ports on the flow of foreign trade which has a negative impact on the volume of foreign trade. Ekanayake *et al.* (2010) analyzed the trade creation and trade diversion effects of the regional trade agreements in Asia on intra-regional trade flows using annual trade data for the period 1980-2009. The study found that the real GDP of both importers and exporters positively influence the bilateral trade. The population of both importers and exporters and distance negatively influence the bilateral trade.

Bergstrand (1985) found that economic size of both countries (importer and exporter) has significant impact on the exports between two trading countries. Gani (2008) reported that imports and exports by Fiji from Asia are insignificantly but positively influenced by the Fiji's and its partners' GDP. Further, Roy and Rayhan (2011) stated that that Bangladesh's

trade flows are significantly determined by the size of Bangladesh's economy and its partners. Moreover, Dilanchiev (2012) reported that the trading partners' GDP has positive influence on trade volume of Georgia. The study also concluded that Georgia's trade is positively determined by the size of the economies, GDP per capita and common history. The results also confirmed that foreign direct investment (FDI) is positively correlated to trade. Alamet *al.* (2009) stated that the geographical distance of Bangladesh with its partner countries has significant negative impact on its import. Moreover, Kumar and Ahmed (2015) stressed that South Asia Free Trade Agreement (SAFTA) has produced significant trade creation among its members.

Mutana *et al.* (2018) reported that GDP, terms of trade, trade liberalization and FDI have significant and positive long-run relationship with trade balance. Furthermore, the study revealed negative long-run relationship between real exchange rate and trade balance. Similarly, Panda *et al.* (2016) concluded that India's trade flows are with the countries having higher GDP. However, China's trade is influenced by higher per capita income of the trading partner and common language. In addition, Husain and Yashmin (2015) reported that trade volume of Bangladesh is positively correlated to per capita GDP and distance of OECD and non-OECD trading countries. Furthermore, Alleyne and Lorde (2014) revealed that per capita GDP differential, trade to GDP and language have positive impact on trade. On the other hand, geographical distance, exchange rate and historical trade relationships have negative effects on trade. Moreover, Wang *et al.* (2010) reported that the levels and similarities of market size, domestic research, and development stock and inward FDI stocks are positively related to bilateral trade. Similarly, the distance, measured by both geographical distance and relative factor endowment, between trade partner countries has a negative impact on the trade.

Coe and Hoffmeister (1999) applied gravity model to determine whether Africa's bilateral trade with industrial countries is unusual compared to other developing country regions. The study concluded that GDP in developing countries and product of per capita GDP have positive impact on trade. Furthermore, the study reported that distance has negative impact on trade. Ozturk (2012) revealed that real effective exchange rate has a positive effect on the import. Further, Ray (2012) found that real effective exchange rate has a negative impact on balance of trade in India. Similarly, Hassan *et al.* (2017) concluded that real effective exchange rate has a positive and significant effect on trade deficit in India, Pakistan, and Bangladesh. Similarly, Faruquee (2004) revealed that European Economic and Monetary Union (EMU) has a positive impact on intra-area trade. Rahman (2003) concluded that Bangladesh's bilateral trade with SAARC countries is higher than non-SAARC countries. Moreover, Cerrere (2003) stated that regional trade agreements result in an increase in intra-regional trade. Mishra *et al.* (2015) revealed that there is a positive relationship between per capita GNP of the nation and its volume of trade.

Furthermore, Doumbe and Belinga (2015) stated that Cameroon's bilateral trade with the Twenty-Eight European Union countries is affected positively by per capita GDP.

In the context of Nepal, Acharya (2012) found that export and import of Nepal is positively influenced by real GDP of trade partner countries. Further, the study reported that Nepal exports more to SAFTA (South Asian Free Trade Area) countries than non-SAFTA and imports less from the OECD (Organization for Economic Co-operation and Development) countries than non-OECD. The study also showed that distance to trade partner countries is highly significant with the trade. The country specific fixed effect analysis showed that time invariant factors is also significant to determine the trade balance of Nepal. Devkota and Panta (2019) empirically found that there exists no co-integrating relationship between exports, imports, and the USD exchange rate in Nepal. Further, Chaudhary *et al.* (2018) found that the income of the countries, exchange rate and the distance between the countries have a significant impact on trade pattern of Nepal with its trading partners. Paudel and Wagle (2017) stressed that partners' GDP and trade costs (measured by gravity variables like distance, contiguity, and common language) are two of the main determinants of Nepal's bilateral exports. Similarly, Prasai (2014) found that GDP, per capita GDP, and distance significantly affects the Nepal's trade with its trading partner countries.

The above discussion shows that empirical evidence varies greatly across the studies on the impact of determinants of foreign trade. Though there are above mentioned empirical evidence in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, to support one view or the other, this study has been conducted.

The main purpose of the study is to analyse the determinants of foreign trade of Nepal. Specifically, it examines the relationship of GDP of Nepal, GDP of trading partners, distance, GDP per capita differential, real effective exchange rate, regional economic integration (SAFTA and OECD), economic freedom of Nepal and economic freedom of trading partners with imports and exports of Nepal.

The remainder of this study is organized as follows: Section two describes the sample, data, and methodology. Section three presents the empirical results, and the final section draws conclusion and discusses the implications of the study findings.

## **2. Methodological Aspects**

The study is based on the secondary data which were gathered for 21 trading partners of Nepal for the period of 10 years from 2010 to 2019. The study is based on gravity model of international trade. The main sources of data include the Direction of Trade Statistics (DOTS) dataset of International Monetary Fund (IMF), World Development Indicator

database of World Bank, CEPII gravity dataset and the Heritage Foundation. Thus, the study is based on 210 observations.

### 2.1 The model

The econometric models employed in this study tries to analyze the determinants of foreign trade in Nepal. The dependent variables are exports and imports of Nepal. The selected independent variables are GDP of Nepal, GDP of trading partners, real effective exchange rate, distance, regional economic integration (SAFTA and OECD), per capita GDP of Nepal and trading partners, economic freedom of Nepal and economic freedom of trading partners. Thus, the following model equation is designed to test the hypothesis.

Foreign Trade =  $f(\text{GDP, DIST, REER, PCD, SAFTA, OECD, ECO})$

More specifically, the given model has been segmented into following models:

$$\ln \text{EXP}_{ijt} = \beta_0 + \beta_1 \ln \text{GDP}_{it} + \beta_2 \ln \text{GDP}_{jt} + \beta_3 \ln \text{DIST}_{ij} + \beta_4 \ln \text{REER}_{ijt} + \beta_5 \ln \text{PCD}_{ijt} + \beta_6 \text{SAFTA}_j + \beta_7 \text{OECD}_j + \beta_8 \ln \text{ECO}_{it} + \beta_9 \ln \text{ECO}_{jt} + e_{it} \quad (1)$$

$$\ln \text{IMP}_{ijt} = \beta_0 + \beta_1 \ln \text{GDP}_{it} + \beta_2 \ln \text{GDP}_{jt} + \beta_3 \ln \text{DIST}_{ij} + \beta_4 \ln \text{REER}_{ijt} + \beta_5 \ln \text{PCD}_{ijt} + \beta_6 \text{SAFTA}_j + \beta_7 \text{OECD}_j + \beta_8 \ln \text{ECO}_{it} + \beta_9 \ln \text{ECO}_{jt} + e_{it} \quad (2)$$

Where,

$\text{EXP}_{ijt}$  = Exports, defined as the total exports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars.

$\text{IMP}_{ijt}$  = Imports, defined as the total imports of Nepal 'i' from trade partner 'j', for year 't', in millions of US dollars.

$\text{GDP}_t$  = Gross domestic Product, defined as the market value of total production of goods and services in a country in time 't', in millions of US dollars.

$\text{DIST}_{ij}$  = Distance, defined as the geographical distance between the capital city of Nepal 'i' and its trading partners 'j', in kilometers (km).

$\text{REER}_{ijt}$  = Real effective exchange rate, defined as the real exchange rate between the Nepalese Rupees (NPR) 'i' and the currency of the trading partners 'j' in time 't', in national currency of trading partners per NPR.

$\text{PCD}_{ijt}$  = Per capita GDP differential, defined as the absolute value of the difference between Nepal's GDP per capita 'i' and that of its partners 'j' in time 't', in US dollars.

$\text{SAFTA}_j$  = South Asian Free Trade Area, measured as  $\text{SAFTA} = 1$  if trading partner countries 'j' are the members of SAFTA otherwise  $\text{SAFTA} = 0$ .

OECD<sub>j</sub> = Organization for Economic Co-operation and Development, measured as OECD=1 if trading partner countries 'j' are the members of OECD otherwise OECD = 0.

ECO<sub>t</sub> = Economic freedom index, defined as the degree of economic freedom of a country in time 't'.

The following section describes the independent variables used in this study along with hypothesis formulation.

### **2.2 Gross domestic product**

Gross domestic product is the market value of total production of goods and services in a country during a period. Dutta and Ahmed (1999) stated that import volume is co-integrated with GDP and relative import prices. Anaman and Atta-Quayson (2009) found that GDP has a positive impact on the imports and exports of Ghana and ECOWAS countries. Further, Filippini and Molini (2003) stated that GDP has significant positive impact on the exports of East Asia. **Based on it, this study develops the following hypothesis:**

**H<sub>1</sub>: There is a positive relationship of GDP with imports and exports of Nepal.**

### **2.3 Distance**

Husain and Yashmin (2015) stated that the distances between Bangladesh and the capital cities of trading partners of Bangladesh have a negative effect on trade flows. Furthermore, Wang *et al.* (2010) found that distance, measured by both geographical distance and relative factor endowment, between trade partner countries has a negative impact in bilateral trade flows in OECD countries. Alam *et al.* (2009) found that the geographical distance of Bangladesh with the partner countries has a significant negative impact on its import. Jordan and Eita (2007) stated that distance has a negative and insignificant effect on export of wood products. Alleyne and Lorde (2014) found that distance between trading countries has negative impact on trade flows in commodities for CARICOM countries. Coe and Hoffmeister (1999) found that distance has a negative impact on the bilateral trade flows of Africa. **Based on it, this study develops the following hypothesis:**

**H<sub>2</sub>: There is a negative relationship of distance with imports and exports of Nepal.**

### **2.4 Real effective exchange rate**

Hassan *et al.* (2017) found that there is a positive and significant effect of real effective exchange rate on trade deficit in India, Pakistan, and Bangladesh. Similarly, Epaphra (2016) found that real exchange rate has a positive impact on export performance in Tanzania. Likewise, Pandey (2013) found that real exchange rate has positive impact on India's exports and negative impact on India's imports. Ozturk (2012) stressed that real

effective exchange rate has a positive effect on the import. Furthermore, Chaudhary *et al.* (2018) stressed that real exchange rate has a significant positive impact on the exports. **Based on it, this study develops the following hypothesis:**

**H<sub>3</sub>: There is a positive relationship of real effective exchange rate with imports and exports of Nepal.**

### ***2.5 Per capita GDP differential***

Kubendran (2020) stated that there is positive impact of per capita GDP on the volume of trade of BRICS. Similarly, Prasai (2014) stated that there is a positive and significant impact of GDP-per capita differential on the imports and exports of Nepal. This finding supports Linder's hypothesis. Doumbe and Belinga (2015) stressed that Cameroon's bilateral trade with the Twenty-Eight European Union countries is positively correlated to per capita GDP. Similarly, Chen *et al.* (2007) stated that per capita GDP of Xinjiang has a positive impact on Xinjiang's bilateral trade. **Based on it, this study develops the following hypothesis:**

**H<sub>4</sub>: There is a positive relationship of per capita GDP differential with imports and exports of Nepal.**

### ***2.6 Regional economic integration***

The formation of a regional economic agreement increases the market size of member countries and attracts non-member countries to transact business in the region. Kumar and Ahmed (2015) stated that South Asia Free Trade Agreement (SAFTA) has produced significant trade creation among its members. Likewise, Roy and Rayhan(2011) stated that membership of SAARC has a significant positive impact on Bangladesh's trade flows. Moreover, Ekanayake *et al.* (2010) stated that membership in regional trade agreements, namely ASEAN and SAARC, have statistically significant and positive impact on the trade flows of Asia. In addition, Sohn (2005) stated that Asia-Pacific Economic Cooperation (APEC) membership has a significant positive effect on Korea's trade volume. Similarly, Faruquee (2004) stated that European Economic and Monetary Union (EMU) has a positive impact on intra-area trade. **Based on it, this study develops the following hypothesis:**

**H<sub>5</sub>: There is a positive relationship of regional economic integration with imports and exports of Nepal.**

### ***2.7 Economic freedom index***

Ngoma (2020) found that trade openness for Zimbabwe and its trading partners has a positive impact on import demand. Similarly, Naanwaab and Diarrassouba (2013) concluded that exporter and importer economic freedom tends to induce more trade. Moreover, Acharya (2012) stated that economic freedom of Nepal is positively related to

trade balance. In addition, Kimura, and Lee (2006) stated that Economic freedom has a significant positive relationship with exports as well as imports. Furthermore, Depken and Sonora (2005) found that there is a positive relationship between economic freedom and the volume of trade. **Based on it, this study develops the following hypothesis: H<sub>6</sub>: There is a positive relationship of economic freedom index with imports and exports of Nepal.**

### 3. Results and Discussion

#### 3.1 Descriptive statistics

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2010 to 2019. This table shows the descriptive statistics of dependent and independent variables of determinants of foreign trade of Nepal with 21 trading partners of Nepal for the study period of 2010 to 2019. Dependent variables are EXP<sub>ijt</sub> (Exports, defined as the total exports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars) and IMP<sub>ijt</sub> (Imports, defined as the total exports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars). Independent variables are GDP<sub>t</sub> (Gross Domestic Product, defined as the market value of total production of goods and services in a country in time 't', in millions of US dollars), DIST<sub>ij</sub> (Distance, defined as the geographical distance between the capital city of Nepal 'i' and its trading partners 'j', in kilometres (km)), REER<sub>ijt</sub> (Real Effective Exchange rate, defined as the real exchange rate between the Nepalese Rupees (NPR) 'i' and the currency of the trading partners 'j' in time 't', in national currency of trading partners per NPR), PCD<sub>ijt</sub> (Per Capita GDP Differential, defined as the absolute value of the difference between Nepal's GDP per Capita 'i' and that of its partners 'j' in time 't', in US dollars), ECO<sub>t</sub> (Economic freedom index, defined as the degree of economic freedom of a country in time 't'), SAFTA<sub>j</sub> (The South Asian Free Trade Area, defined as SAFTA = 1 if trading partner countries 'j' are the members of SAFTA otherwise SAFTA = 0), OECD<sub>j</sub> (The Organization for Economic Co-operation and Development, defined as OECD=1 if trading partner countries 'j' are the members of OECD otherwise OECD = 0).

**Table 2: Descriptive Statistics**

Variables	Minimum	Maximum	Mean	Std. Deviation
EXP	0.01	7343.39	315.87	1028.62
IMP	0.50	8619.53	355.06	1212.05
GDP <sub>i</sub>	16002.66	30641.38	22063.41	4528.09
GDP <sub>j</sub>	49540.81	21433226.00	2637192.69	4214500.92
DIST	670	12395	5328.33	3184.64
REER	0.0044	301.0582	11.48	47.95
PCD	162.33	87716.20	32386.58	22866.58



ECO <sub>i</sub>	50.10	55.10	51.87	1.80
ECO <sub>j</sub>	36.70	90.20	68.97	12.15
SAFTA	0	1	0.10	0.29
OECD	0	1	0.57	0.49

### 3.2 Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed, and the results are presented in Table 3. This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of determinants of foreign trade of Nepal with 21 trading partners for the study period of 2010 to 2019. Dependent variables are EXP<sub>ijt</sub> (Exports, defined as the total exports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars) and IMP<sub>ijt</sub> (Imports, defined as the total imports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars). Independent variables are GDP<sub>t</sub> (Gross Domestic Product, defined as the market value of total production of goods and services in a country in time 't', in millions of US dollars), DIST<sub>ij</sub> (Distance, defined as the geographical distance between the capital city of Nepal 'i' and its trading partners 'j', in kilometers (km)), REER<sub>ijt</sub> (Real Effective Exchange rate, defined as the real exchange rate between the Nepalese Rupees (NPR) 'i' and the currency of the trading partners 'j' in time 't', in national currency of trading partners per NPR), PCD<sub>ijt</sub> (Per Capita GDP Differential, defined as the absolute value of the difference between Nepal's GDP per Capita 'i' and that of its partners 'j' in time 't', in US dollars), ECO<sub>t</sub> (Economic freedom index, defined as the degree of economic freedom of a country in time 't'), SAFTA<sub>j</sub> (The South Asian Free Trade Area, defined as SAFTA = 1 if trading partner countries 'j' are the members of SAFTA otherwise SAFTA = 0), OECD<sub>j</sub> (The Organization for Economic Co-operation and Development, defined as OECD=1 if trading partner countries 'j' are the members of OECD otherwise OECD = 0).

**Table 3: Pearson's Correlation Coefficients Matrix**

Variable	lnEXP	lnIMP	lnGDP <sub>i</sub>	lnGDP <sub>j</sub>	lnDIST	lnREER	lnPCD	SAFTA <sub>j</sub>	OECD <sub>j</sub>	lnECO <sub>i</sub>	lnECO <sub>j</sub>
lnEXP	1										
lnIMP	0.758**	1									
lnGDP <sub>i</sub>	0.192**	0.211**	1								
lnGDP <sub>j</sub>	0.423**	0.401**	0.059	1							
lnDIST	-0.203**	-0.290**	0.000	0.520**	1						
lnREER	-0.091	0.120	-0.036	-0.384**	-0.626**	1					
lnPCD	0.067	-0.179**	0.034	0.456**	0.848**	-0.682**	1				
SAFTA <sub>j</sub>	0.340**	0.398**	0.000	-0.118	-0.737**	0.264**	-0.638**	1			
OECD <sub>j</sub>	-0.261**	-0.279**	0.000	0.549**	0.805**	-0.441**	0.628**	-0.375**	1		
lnECO <sub>i</sub>	0.139*	0.173*	0.677**	0.028	0.000	-0.021	0.013	0.000	0.000	1	
lnECO <sub>j</sub>	0.168*	-0.164*	0.089	0.215**	0.597**	-0.538**	0.842**	-0.392**	0.376**	0.066	1

Note: The asterisk signs (\*\*) and (\*) indicate that the results are significant at one percent and five percent levels respectively.

Table 3 shows that GDP of Nepal has a positive relationship with exports of Nepal. It indicates that increase in GDP of Nepal leads to increase in exports of Nepal. Similarly, GDP of trading partners has a positive relationship with exports. It indicates that increase in GDP of trading partners leads to increase in exports of Nepal. Likewise, distance has a negative relationship with exports. It indicates that greater the distance with the trading countries, lower would be the exports of Nepal to those trading partners. Similarly, real effective exchange rate has a positive relationship with exports. It indicates that increase in real effective exchange rate leads to increase in exports. The study also reveals that GDP per capita differential has a positive relationship with exports. It indicates that higher the GDP per capita differential, higher would be the exports of Nepal. Likewise, SAFTA membership has a positive relationship with exports. It indicates that the SAFTA membership leads to increase in exports of Nepal. **Furthermore**, the study reveals that economic freedom index of trading partners has a positive relationship with exports. It indicates that increase in economic freedom index of trading partners leads to increase in exports of Nepal. In addition, the study shows that GDP of Nepal has a positive relationship with imports of Nepal. It indicates that increase in GDP of Nepal leads to increase in imports of Nepal. Similarly, GDP of trading partners has a positive relationship with imports. It indicates that increase in GDP of trading partners leads to increase in imports of Nepal. Likewise, distance has a negative relationship with imports. It indicates that greater the distance with the trading countries, lower would be the imports of Nepal from those trading partners. Similarly, real effective exchange rate has a positive relationship with imports. It indicates that increase in real effective exchange rate leads to increase in imports. The study also reveals that GDP per capita differential has a positive relationship with imports. It indicates that higher the GDP per capita differential, higher would be the imports of Nepal. Likewise, SAFTA membership has a positive relationship with imports. It indicates that the SAFTA membership leads to increase in imports of Nepal. **Furthermore**, the study reveals that economic freedom index of country has a positive relationship with imports. It indicates that increase in economic freedom index of the country leads to increase in imports.

### ***3.3 Regression analysis***

Having indicated the Pearson's correlation coefficients, the regression analysis has been computed and results are presented in Table 4. More specifically, it shows the regression results of GDP of Nepal, GDP of trading partners, real effective exchange rate, distance, regional economic integration (SAFTA and OECD), per capita GDP of Nepal and trading partners, economic freedom of Nepal and economic freedom of trading partners on exports of Nepal.

The results are based on panel data of 21 trading partners of Nepal with 210 observations for the period of 2010-2019 by using the linear regression model and the model is

$$\ln \text{EXP}_{ijt} = \beta_0 + \beta_1 \ln \text{GDP}_{it} + \beta_2 \ln \text{GDP}_{jt} + \beta_3 \ln \text{DIST}_{ij} + \beta_4 \ln \text{REER}_{ijt} + \beta_5 \ln \text{PCD}_{ijt} + \beta_6 \text{SAFTA}_j + \beta_7 \text{OECD}_j + \beta_8 \ln \text{ECO}_{it} + \beta_9 \ln \text{ECO}_{jt} + \text{eit}$$

where the dependent variables are EXP<sub>ijt</sub> (Exports, defined as the total exports of Nepal 'i' to trade partner 'j', for year 't', in millions of US dollars). Independent variables are GDP<sub>t</sub> (Gross Domestic Product, defined as the market value of total production of goods and services in a country in time 't', in millions of US dollars), DIST<sub>ij</sub> (Distance, defined as the geographical distance between the capital city of Nepal 'i' and its trading partners 'j', in kilometers (km)), REER<sub>ijt</sub> (Real Effective Exchange rate, defined as the real exchange rate between the Nepalese Rupees (NPR) 'i' and the currency of the trading partners 'j' in time 't', in national currency of trading partners per NPR), PCD<sub>ijt</sub> (Per Capita GDP Differential, defined as the absolute value of the difference between Nepal's GDP per Capita 'i' and that of its partners 'j' in time 't', in US dollars), ECO<sub>t</sub> (Economic freedom index, defined as the degree of economic freedom of a country in time 't'), SAFTA<sub>j</sub> (The South Asian Free Trade Area, defined as SAFTA = 1 if trading partner countries 'j' are the members of SAFTA otherwise SAFTA = 0), OECD<sub>j</sub> (The Organization for Economic Co-operation and Development, defined as OECD=1 if trading partner countries 'j' are the members of OECD otherwise OECD = 0).

**Table 4: Estimated Regression Results**

Model	Intercept	Regression coefficients of								Adj. R <sup>2</sup>	SEE	F-value	
		lnGDP <sub>i</sub>	lnGDP <sub>j</sub>	lnDIST	lnREER	lnPCD	SAFTA <sub>i</sub>	OECD <sub>i</sub>	lnECO <sub>i</sub>				lnECO <sub>j</sub>
1	-17.798 (2.36)*	2.129 (2.820)**									0.032	2.138	7.95
2	-5.625 (4.143)**		0.655 (6.725)**								0.175	1.973	45.22
3	8.232 (5.124)**			-0.572 (2.984)**							0.036	2.133	8.91
4	3.272 (15.945)**				-0.068 (1.320)						0.004	2.169	1.75
5	2.632 (3.021)**					0.086 (0.963)					0.001	2.17	0.93
6	3.219 (21.66)**						2.512 (5.215)**				0.111	2.048	27.19
7	4.111 (18.544)**							-1.142 (3.896)**			0.064	2.103	15.18
8	-31.264 (1.83)								8.794 (2.029)*		0.015	2.157	4.12
9	-4.785 (1.42)									1.955 (2.457)*	0.024	2.147	6.04
10	-23.983 (3.465)**	1.86 (2.70)**	0.64 (6.655)**								0.199	1.945	26.95
11	16.154 (8.948)**			-2.692 (8.352)**	-0.126 (2.05)*	0.974 (6.24)**					0.248	1.883	24.03
12	3.648 (15.040)**						2.082 (4.047)**	-0.680 (2.227)*			0.128	2.03	16.34
13	-36.47 (2.136)*								8.132 (1.892)	1.856 (2.342)*	0.035	2.134	4.84
14	-36.562 (3.579)**	1.046 (1.864)	1.103 (12.45)**	-0.907 (1.923)	0.057 (1.141)	0.765 (4.01)**	2.597 (3.32)*	-2.825 (6.95)**	2.616 (0.827)	1.342 (1.178)	0.717	1.55	56.85

Notes: 1. Figures in parenthesis are t-values. 2. The asterisk signs (\*\*) and (\*) indicate that the results are significant at one percent and five percent level respectively. 3. Exports is the dependent variable.

Table 4 shows that the beta coefficients for GDP of Nepal are positive with exports of Nepal. It indicates that the GDP of Nepal has a positive impact on exports of Nepal. This finding is consistent with the findings of Anaman and Atta-Quayson (2009). Similarly, the beta coefficients for GDP of trading partners are positive with exports. It indicates that the GDP of trading partners has a positive impact on exports. This finding is consistent with the findings of Filippini and Molini (2003). Likewise, the beta coefficients for distance are negative with exports. It indicates that the distance has a negative impact on exports. This finding is consistent with the findings of Coe and Hoffmeister (1999). Similarly, the beta coefficients for real effective exchange rate are positive with exports. It indicates that the real effective exchange rate has a positive impact on exports. This finding is consistent with the findings of Epaphra (2016). The study also reveals that the beta coefficients for GDP per capita differential are positive with exports. It indicates that the GDP per capita differential has a positive impact on exports. Likewise, the beta coefficients for SAFTA are positive with exports. It indicates that the SAFTA membership has a positive impact on exports. This finding is consistent with the findings of Roy and Rayhan (2011). **Furthermore**, the study reveals that the beta coefficients for economic freedom index of trading partners are positive with exports. It indicates that economic freedom index of trading partners has a positive impact on exports. This finding is consistent with the findings of Depken and Sonora (2005).

Estimated regression results of GDP of Nepal, GDP of trading partners, real effective exchange rate, distance, regional economic integration (SAFTA and OECD), per capita GDP of Nepal and trading partners, economic freedom of Nepal and economic freedom of trading partners on imports of Nepal are presented in Table 5. The results are based on panel data of 21 trading partners of Nepal with 210 observations for the period of 2010-2019 by using the linear regression model and the model is

$$\ln \text{IMP}_{ijt} = \beta_0 + \beta_1 \ln \text{GDP}_{it} + \beta_2 \ln \text{GDP}_{jt} + \beta_3 \ln \text{DIST}_{ij} + \beta_4 \ln \text{REER}_{ijt} + \beta_5 \ln \text{PCD}_{ijt} + \beta_6 \text{SAFTA}_j + \beta_7 \text{OECD}_j + \beta_8 \ln \text{ECO}_{it} + \beta_9 \ln \text{ECO}_{jt} + \text{eit}$$

Where the dependent variables are  $\text{IMP}_{ijt}$  (Imports, defined as the total imports of Nepal 'i' from trade partner 'j', for year 't', in millions of US dollars). Independent variables are  $\text{GDP}_t$  (Gross Domestic Product, defined as the market value of total production of goods and services in a country in time 't', in millions of US dollars),  $\text{DIST}_{ij}$  (Distance, defined as the geographical distance between the capital city of Nepal 'i' and its trading partners 'j', in kilometers (km)),  $\text{REER}_{ijt}$  (Real Effective Exchange rate, defined as the real exchange rate between the Nepalese Rupees (NPR) 'i' and the currency of the trading partners 'j' in time 't', in national currency of trading partners per NPR),  $\text{PCD}_{ijt}$  (Per Capita GDP Differential, defined as the absolute value of the difference between Nepal's GDP per Capita 'i' and that of its partners 'j' in time 't', in US dollars),  $\text{ECO}_t$  (Economic freedom index, defined as the degree of economic freedom of a country in time 't'),

SAFTA j (The South Asian Free Trade Area, defined as SAFTA = 1 if trading partner countries 'j' are the members of SAFTA otherwise SAFTA = 0), OECD j (The Organization for Economic Co-operation and Development, defined as OECD=1 if trading partner countries 'j' are the members of OECD otherwise OECD = 0).

**Table 5: Estimated Regression Results of GDP of Nepal and GDP of trading partners, real effective exchange rate, distance, regional economic integration (SAFTA and OECD), per capita GDP of Nepal and trading partners, economic freedom index of Nepal and economic freedom index of Nepal on imports of Nepal**

Model	Intercept	Regression coefficients of								Adj. R <sup>2</sup>	SEE	F-value	
		lnGDP <sub>i</sub>	lnGDP <sub>j</sub>	lnDIST	lnREER	lnPCD	SAFTA <sub>i</sub>	OECD <sub>i</sub>	lnECO <sub>i</sub>				lnECO <sub>j</sub>
1	-13.656 (2.418)*	1.760 (3.110)**									0.040	1.601	9.680
2	-2.57 (2.494)*		0.468 (6.32)**								0.157	1.500	39.940
3	9.05 (7.662)**			-0.616 (4.37)**							0.080	1.568	19.060
4	4.098 (26.34)**				0.067 (1.743)						0.010	1.626	3.040
5	5.58 (8.638)**					0.172 (2.617)**					0.027	1.612	6.850
6	3.704 (33.97)**						2.213 (6.265)**				0.155	1.502	39.240
7	4.44 (26.773)**							-0.919 (4.190)**			0.073	1.573	17.560
8	-28.544 (2.229)*								8.221 (2.535)*		0.025	1.613	6.430
9	9.969 (3.944)**									-1.436 (2.398)*	0.022	1.616	5.750
10	-18.054 (3.445)**	1.569 (3.010)**	0.455 (6.253)**								0.189	1.472	25.28
11	10.726 (7.172)**			-1.065 (3.98)**	0.027 (0.521)	0.207 (1.598)					0.088	1.561	7.740
12	4.018 (22.52)**						1.899 (5.031)**	-0.497 (2.22)*			0.170	1.489	22.46
13	-24.215 (1.901)								8.772 (2.737)**	-1.542 (2.610)**	0.052	1.59	6.710
14	-30.708 (3.507)**	1.172 (2.438)*	0.722 (9.516)**	0.781 (1.933)	0.185 (4.303)**	0.663 (4.05)**	3.55 (5.294)*	-2.702 (7.757)**	3.950 (1.458)	-3.297 (3.377)**	0.633	0.991	40.980

Notes: 1. Figures in parenthesis are t-values. 2. The asterisk signs (\*\*) and (\*) indicate that the results are significant at one percent and five percent level respectively. 3. Exports is the dependent variable.

Table 4 shows that the beta coefficients for GDP of Nepal are positive with imports of Nepal. It indicates that the GDP of Nepal has a positive impact on imports of Nepal. This finding is consistent with the findings of Dutta and Ahmed (1999). Likewise, the beta coefficients for distance are negative with imports. It indicates that the distance has a negative impact on imports. This finding is consistent with the findings of Alleyne and Lorde (2014). Similarly, the beta coefficients for real effective exchange rate are positive with imports. It indicates that the real effective exchange rate has a positive impact on imports. This finding is consistent with the findings of Ozturk (2012). The study also reveals that the beta coefficients for GDP per capita differential are positive with imports. It indicates that the GDP per capita differential has a positive impact on imports. Likewise, the beta coefficients for SAFTA are positive with imports. It indicates that the SAFTA

membership has a positive impact on imports. This finding is consistent with the findings of Sohn (2005). **Furthermore**, the study reveals that the beta coefficients for economic freedom index of trading partners are positive with imports. It indicates that economic freedom index of trading partners has a positive impact on imports. This finding is consistent with the findings of Naanwaab and Diarrassouba (2013).

#### 4. Summary and Conclusion

Trade is an integral part of the total developmental effort and national growth of an economy. It is a crucial instrument for industrialization while access to foreign exchange is essential for sustained economic development. Foreign trade plays a pivotal role in the process of economic development of a country. Both export and import trades are equally important. Therefore, the study of determinants of foreign trade is important for a growing country like Nepal.

This study attempts to examine the determinants of foreign trade of Nepal. This study is based on secondary data of 21 trade partners of Nepal with 210 observations for the study period from 2010 to 2019. The study showed that GDP of Nepal, GDP of trading partners, real effective exchange rate, regional economic integration (SAFTA), per capita GDP of Nepal and trading partners, economic freedom of Nepal and economic freedom of trading partners have positive impact on exports of Nepal. However, distance and regional economic integration (OECD) have negative impact on exports of Nepal. The study also showed that GDP of Nepal, GDP of trading partners, real effective exchange rate, regional economic integration (SAFTA) and economic freedom of Nepal have positive impact on imports of Nepal. The study concluded that distance, regional economic integration (OECD), per capita GDP differential and economic freedom of trading partners have negative impact on imports of Nepal. The study also concluded that GDP of foreign trade is the most determinant factor that explains the changes in foreign trade of Nepal.

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