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Determinants of Import Performance: A case of Nepal

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Abstract

Import is a crucial component of an open economy. The study is analyzed Using the (ARDL) technique to estimate the aggregate import demand of goods and services function for Nepal using annual data covering the period 1980 to 2021, this research examines the relationship between Nepal aggregate import and macroeconomic factors. Using the augmented dickey-Fuller test, variables were discovered to be stationary at I (0) and I (1). The results of the bound test indicate that the factors that influence Nepal's imports of goods and services are Import Value Index (IVI), Private Consumption (PC), and Population Growth (PG) are cointegrated. Only educational expenditure is the factor that doesn't influence import performance of Nepal. The working age of Population growth, import value index and private consumption have appreciable effects on long run period in Nepal's total import of goods and services.

Key words: *Import of goods and services, Nepal, ARDL, Population Growth, Private Consumption*

1. INTRODUCTION

International trade is a term used to describe a transaction involving at least two countries. International trade is the back born of global economy brings together a numerous advantage to the trade partnering countries that are becoming rich and wealthy. Two conceivable exchanges are imports and exports. An import is a good or service that is brought into the country from abroad (Allais, 2022).

Imports are foreign products and services that residents, companies, and governments of other nations purchase. What the imports are or how they are conveyed doesn't matter. They can be delivered by mail, sent electronically, or even flown hand-carried in carry-on luggage. They are imports if they are made elsewhere and offered for sale to citizens of the country. Prior to 1951 AD, Nepal's only international trading partners were Tibet and India. However, Nepal's trading relations with many other nations, including Japan, the USA, Germany, Malaysia, Singapore, Thailand, Kuwait, France, Bangladesh, Spain, and others, have grown since 1951 AD. Although Nepal's foreign commerce is expanding quickly, the trade imbalance is also expanding along with the overall volume of trade (Kafle, 2017).

Nepal had a negative trade balance of $-12.12 billion due total exports of $1.89 billion and total imports of $14.01 billion and 35.85 billion US dollars is Nepal's GDP in 2021. Nepal exports $770 million worth of services, while importing $16957 million worth of goods and services. Nepal has historically had a negative trade balance for a long time. Even if the global economic crisis has not significantly harmed exports, a rise in imports has led to a worsening of the deficit. India, China, Bangladesh, and the USA are Nepal's top trading partners (World Bank, 2021).

Rationale of the Study

The findings of this study will aid state and federal administrations in understanding how macroeconomic factors affect the nation's overall performance in terms of imports. The budget office will receive information from the study's findings about the temporal trends in the performance of the nation's imports relative to macroeconomic indicators. They will gain from knowing more about the macroeconomic policies that will improve import performance and helps to increase country economy. Researchers and academics will benefit from the findings of this study since they will provide a theoretical and empirical framework for understanding how macroeconomic factors impact import performance.

Research Gap

There are various factors affecting the export of a country. IMF (2019) points out that macroeconomic factors are significant in explaining variations in bilateral trade balances in major trading nations. It also shows that, in US-Germany trade balance, 20% variation and over 95% variations in US-China trade are explained by the macro-economic variables. Budha (2014) determined that government spending does not significantly affect Nepal's imports from India. Gross domestic product, exports, and comparable pricing all have an adverse effect on Nepal's need for Indian imports, suggesting that there are few alternatives. Trade liberalization benefits Nepal's import of goods from India as well.

Although various research has revealed the impact of individual macroeconomic variables on Nepal's imports, as of the time of the study, no studies have examined the impact of multiple macroeconomic variables on export performance in Nepal. Therefore, this study aims to fill this gap.

Research Questions

i. Is there any relationship between Macroeconomic variables and import performance in Nepal?
ii. Do import value Index, private consumption, educational expenditure, and population growth, have any effect on import performance of Nepal?

Research Objectives

I. To evaluate the relationship between macroeconomic variables and import performance in Nepal.
II. To analyze the effect of import value Index, private consumption, educational expenditure, and population growth in import performance of Nepal.

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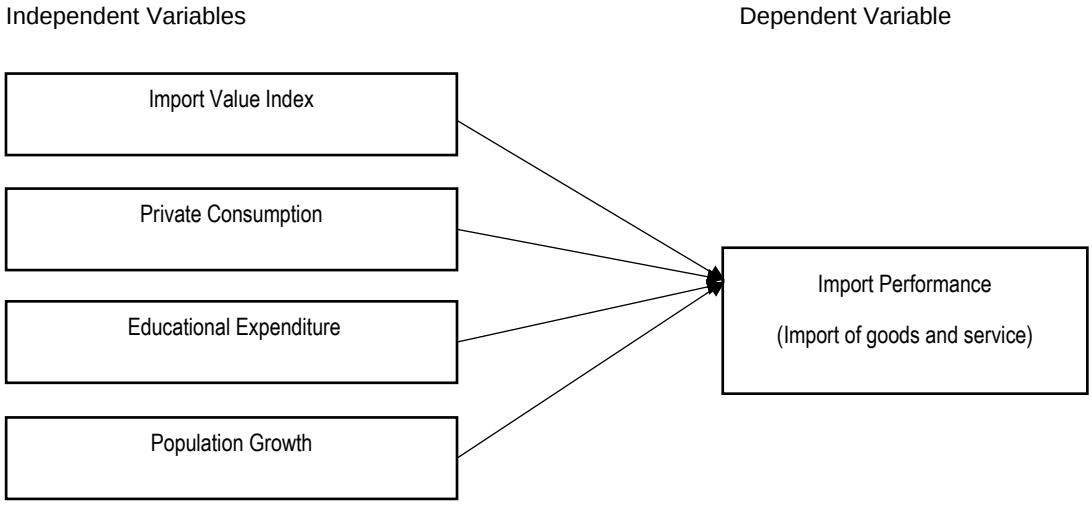
II. REVIEW OF LITERATURE

Research Framework

Figure 1

Research Framework



Note: Research Framework 2022

Hypotheses

Based on the reviews and above research framework, following hypotheses are formulated for the study:

H1: There is significant effect of Import value index on import performance.
H2: There is significant effect of Private Consumption on import performance
H3: There is significant effect of Expenditure on education on import performance.
H4: There is significant effect of Population growth on import performance.

Empirical Review

Many macroeconomic components have an impact on an export's performance. different studies have been conducted with the following results, which are presented below: -

Budha (2014) examined the Autoregressive Distributed Lag technique using annual data for the years 1975–2011, it examines how the final spending components affect Nepal's imports from India. The findings of the limits testing process demonstrate that the factors that affect Nepal's imports from India—personal consumption expenditure, government consumption expenditure, investment, exports, and relative prices are cointegrated. Personal consumption spending is one of the expenditure categories that has a substantial positive influence on the import demand from India. It has been determined that government spending has no appreciable influence on Nepal's imports from India. Gross domestic product, exports, and comparable pricing all have an adverse effect on Nepal's need for Indian imports, suggesting that there are few alternatives. Trade liberalization also has positive impact on Nepal's import from India

Murad (2012) Used bilateral data between Bangladesh and its main trading partners, this study calculates the trade elasticities. The findings, which were obtained using data spanning the years 1973 to 2009, confirm long-term correlations between export and import volume, real exchange rate, and real income. The investigation reveals that only in the case of the United States does the Marshall- Lerner criterion hold. As a result, it's possible that the actual exchange rate decline won't have a long-term positive impact on Bangladesh's trade balance.

Anaman & Buffong (2001) identifies the key variables that influenced Brunei Darussalam's total import volume between 1964 and 1997. South East Asia's smallest and richest oil producer is Brunei Darussalam. The nation is distinguished by a small population, a high GDP per capita, and imports making up a significant share of GDP. The total import demand was calculated using the ordinary least squares method as a function of real effective exchange rate, real GDP, and population. The findings showed that the volume of total imports was considerably influenced by the real effective exchange rate, the real GDP, and the population. While aggregate imports were inelastic in terms of price and income, they were elastic in terms of population.

Narayan & Narayan (2010) used time series data to re-estimate the import and export demand functions for Mauritius and South Africa. We find evidence of a long-term relationship between import demand, income, and prices for both countries using the limits tests for cointegration. Our long run elasticities demonstrate that domestic income and relative prices significantly affect import demand for both countries, with income being the key factor. Furthermore, we discover that income is statistically significant for Mauritius, whereas South Africa's export demand is not responsive to comparable pricing or income.

Uzunoz and Akcay (2009) analyzed a double logarithmic-linear function, this study examined the variables influencing wheat import demand from 1984 to 2006. Wheat import demand in Turkey was calculated as a function of domestic prices, GNP per capita, the exchange rate between the Turkish Lira and the US Dollar, lagged imports, wheat output value, domestic demand, and trend factor. The analysis was conducted using data from the years 1984 to 2006. The findings indicate that a change in domestic wheat pricing has a significant impact on the demand for wheat imports and that Turkish consumers would choose to buy native wheat over wheat imported gradually.

Acharya (2019) examined the development, make-up, and trajectory of Nepalese exports. This descriptive study draws data from secondary sources. Simple statistical techniques like ratio and percent are used in the analysis. This analysis reveals Nepal's extremely poor export performance. The result is a fast-growing trade deficit, which is a problem. Nepal is likewise unable to diversify the nations and goods it trades with. Low export and high import, low-quality goods, poor trade policy, increased production costs, a lack of publicity and advertising, low production, sluggish industrial growth, a lack of trade diversification, etc. are the main contributors to the growing trade deficit. By diversifying its trade, Nepal can lower its trade imbalance.

Khan et al. (2013) Studied to estimate the function of the disaggregate import demand for Pakistan from 1981 to 2009, the Engle-Granger and Bound tests were performed to look at the consistency of long-run characteristics between import demand and its determinants. ADF and PP tests have demonstrated that all of the variables are I before to the testing for co-integration (1). Regardless of the estimate techniques, the co-integration result demonstrates the existence of a long-term link in the import demand and its determinants. By utilizing the Bound and EG procedures, the predicted long-term elasticities of import demand with regard to consumption spending, investment expenditure, export expenditure, and relative prices are, respectively, (0.40, 0.38), (0.57, 0.77), (-0.17, -0.26), and (-0.53, -0.59). First, the findings are evenly divided throughout the two distinct long run experiments carried out. Second, different expenditure components have varied effects on total import demand, with long-term investment expenditure being extremely sensitive to consumption expenditure, which is subsequently followed by export expenditure.

Abbott and Seddighi (1996) This paper examined the long-run relationship between UK aggregate imports and the macroeconomic components of final expenditure, using the Johansen multivariate cointegration analysis. It is found that there are significant differences between the long-run elasticities of import demand with respect to the different components of final expenditure, over the period 1972 to 1990. An error correction model is proposed for short-run forecasting of UK aggregate imports. The short-run model appears to track the data well.

III. RESEARCH METHODOLOGY

Research Design

Investigating the effect of macroeconomic variables on nations import performance is the main objective of this study. Import Value Index (IVI), Private Consumption (PC), Expenditure on Education (EE), and Population Growth (PG) are the independent variables in this study, while Import of Goods and Services (IMP) is the dependent variable. This study will use both descriptive and analytical research design. The population for the study is overall country's macroeconomic variables. This study takes 140 observations with time period from 1980 to 2021 i.e., 40 years' data. The required data are retrieved from the official World Bank database and the Nepal Rastra Bank's publication of the country's current macroeconomic and financial situation (NRB).

Methods of Data Analysis

Stationarity of the data is necessary in time series analysis, so ADF test is done for the stationary of data. All variables are free of non-stationarity at all levels and at first difference, according to the results of the ADF test for the unit root test, which is consistent with the ARDL model specification. The model for this study:

$$IMP_{t-2} = \beta 0 + \beta 1\ LNIVIt_t + \beta 2\ PC_t + \beta 3\ EE_t + \beta 4\ PG_{t-1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ 1$$

Where,

$\beta 0$, β_1, β_2, β_3 and β_4 =Regression coefficients

IMP= Import Performance (Dependent Variable)

IVI= Import Value Index

PC= Private Consumption

EE=Expenditure on Education

PG=Population Growth

IV. RESULT AND ANALYSIS

Unit Root test

Stationarity of the data is necessary in time series analysis, if this assumption is violated then the result of integration has no meaning or it is called spurious regression. This test helps to check the variables for accuracy before proceeding further model.

Table 1

Results of the stationarity of variables

Variable	Adj T-stat	Probability at 5%	conclusion
IMP	-5.941094	0.0000	I (1)
PC	-4.000887	0.0034	I (0)
LNIVI	-6.517545	0.0000	I (1)
EE	-3.746120	0.0068	I (0)
PG	-4.502086	0.0009	I (0)

Source: Authors computation from the E-views 12- SV, 2022

Table 1 shows that IMP and LNIVI are stationary at level, similarly PC, CC, PG are stationary at first difference. This leads us to believe that every variable we are utilizing in this study is stationary. Thus, we have a mixed order of integration of variables at I (0) And I (1) So this support using ARDL Co-integration test.

Autoregressive Distributed Lag (ARDL) model

Table 2

ARDL based on Akaike information Criterion

ARDL (2,0,0,1,0) based on Akaike information Criterion

Dependent Variable: (IMP)

Variables	Coefficients	T- Value	P- Value
Constant	52.79375	5.913260	0.0000
ΔIMP (-2)	-0.372469	-2.792839	0.0089
ΔLNIVI	8.506017	4.479352	0.0001
ΔEE	-0.039906	-1.204588	0.2375
ΔPG(-1)	11.79342	1.463002	0.1535
ΔPC	-0.451876	-3.988616	0.0004

R^2 = 0.933464	F - Statistics probability = 62.13004 [0.00000]
Adjusted R^2= 0.918439	Durbin - Watson Stat = 1.625138

Source: Authors computation from the E-views 12- SV, 2022

The result of time series data is based on the ARDL model as presented in table shows that Import Value Index (IVI), Private Consumption (PC), Expenditure on Education (EE), and Population Growth (PG) are the independent variables in this study, while Import of Goods and Services (IMP) are found among the Macroeconomic variables to have statistically significant effects on export performance. Here overall model is significant with respect to the dependent variables at the 5% level of significance.

The Durbin-Watson statistic (DW) of 1.625138 which states that there is no serial correlation in the regression model. Moreover, adjusted R-squared, which measures the goodness of fit of the variables, suggesting that about 91.8 percent of the variations in export is jointly explained by the explanatory variables. It means adj r-square is near to 1 which shows that additional variables will add additional value in the model. The value for R-squared is 0.9334 which means that 93.34% of the variation in import is explained by the explanatory variables in the model while the remaining 6.66 % changes in import performance is caused by other factors outside the scope of this study.

Bounding Test for Co-integration relationship

Table 3

Estimation of Bound test for ARDL Cointegration Model

Test Statistic	Value	Signifi.	I (0)	I (1)
F- Statistic	9.950433	10%	2.2	3.09
		5%	2.56	3.49
K	4	2.5%	2.88	3.87
		1%	3.29	4.37

Source: Authors computation from the E-views 12- SV, 2022

The result from the table 3 shows the computed value of F-statistic for the model is 9.080810 which is greater than the upper bound values of 2.56 and 3.49 at 5 percentages significance level respectively. This shows that the rejection of the null hypothesis that there is no cointegration when import is normalized in each of the estimated model. As a result, it shows that there is long term steady relationship among variables in context of Nepal.

Long Run Relationship in the ARDL Cointegration Form

Table 4

Coefficient of Long Run Relationship in the ARDL Cointegration Form

Variables	Coefficients	Standard of error	T- Value	P- Value
LNIVI	10.83094	1.380694	7.844564	0.0000
EE	-0.050813	0.042404	-1198296	0.2399
PG	-5.657348	1.285514	-4.400847	0.0001
PC	-0.575385	0.170098	-3.382675	0.0020
C	67.22369	13.25935	5.069907	0.0000

Source: Authors computation from the E-views 12- SV, 2022

At a significance level of 5%, Table 4 demonstrates a positive and significant connection between LNIVI and IMP. According to the link between LNIVI and IMP, a 1 unit rise in LNIVI results in a 5.7919 unit increase in IMP over time. The association between PG and PC is also negatively significant at the 5% level. According to the findings, an increase of 1unit in PC and PG will result by declining of 0.575385 and 5.657 unit in import performance. Here, Expenditure in education is negatively and insignificant because its probability value at 5% level of significance is high.

Error correction version of ARDL model

Table 5

Coefficient in Short Run Relationship in the ARDL Cointegration Form

Dependent Variable: (EXP)				
Variables	Coefficients	Standard error	T- Value	P- Value
D(IMP(-1))	0.372469	0.113347	3.286086	0.0025
D(P_G)	-16.23638	3.511303	-4.624035	0.0001
CointEq(-1)*	-0.785344	0.094318	-8.326587	0.0000
R^2	0.663547			
DW	1.625138			
Adj.R^2	0.644855			

Source: Authors computation from the E-views 12- SV, 2022

Table 5 presents the result for short term error correction model for IMP. The coefficient of the error correction term is negative and statistically significant, indicating the evidence of cointegration among the IMP and other variables in the model. The comparatively higher value of the error correction term for EXP implies relatively higher rate of adjustment in IMP when shocks arise. The coefficient of error correction term (i.e.; -0.785344) implies that about 78.54 % of total adjustment takes annually when

shock arises. It can be seen from the table that the difference of PG has negative relationship with IMP and significant at 5% level of significance. Form the table increase in PG by 1unit causes to decrease in IMP by 16.236 unit.

The above results show that the coefficient of the error- correction term, coineqn (-1), for the estimated export equation is both statistically significant and negative, implying that, it will rightly act to correct past deviations from the long run equilibrium. The coefficient of -0.785344% denotes that 78.54% percent of any past deviations will be corrected in the current period.

Residual Diagnosis Test

Table 6

Result of residual diagnosis test

Test Series	F-Statistics	Probability
Serial Correlation LM Test	0.802493	0.3597
Normality Test (Jarque-Bera Test)	0.647462	0.723445
Heteroskedasticity	1.038552	0.3876

Source: Authors computation from E-Views 12 SV, 2022

In Table 6 the result of serial correlation LM test shows that there is no presence of serial autocorrelation residuals because its p-value is greater than 5% level of significance. Similar to this, the probability of Jarque-bera is greater than 5% level of significant which shows that the data over the time period are normally distributed. And additionally, the overall probability value of Breusch-Pagan Godfrey test is higher than 0.05 which shows that data are homoscedastic.

V. Conclusion

In this study, different macroeconomic variables are employed to determine the impact on country import performance. This study uses the (Pesaran et al., 2001) techniques to determine whether there is long or short run relationship exist between IVI, PC, PG, EE and export performance. Based upon findings, a bound testing approach to cointegration, developed within an ARDL framework is used to investigate the existence of a long run equilibrium relationship between gross domestic product, Inflation rate, Indirect Taxation and broad money supply. It uses the LM test to check the serial correlation in the model. Similarly, it has used Breusch- Pagan-Godfrey test to check the existence of the heteroscedasticity and employed normality test to check the normality of the data.

The results provide strong evidence that LNIVI, PC AND PG play a stronger role in determining import performance in the long run behavior in Nepal as compared to the EE. This suggests that a wide range of additional macroeconomic variables also influence the variation in import performance. Overall, it is proven that there is long-term causal link between macroeconomic variables and import. However, the long-term link is tenuous. These study's findings suggest that Nepal's import cannot be forecast just by the chosen macroeconomic indicators.

Nepal is still dealing with the issue of a quickly expanding trade deficit. In comparison to previous years, the nation's import ratio is rising. The difference between export and import is enormous. Landlocked status, low export and high import, greater infrastructure costs, incorrect trade policy, higher cost of production, lack of marketing and advertising, low production, etc. are the main contributors to Nepal's growing trade deficit. Nepal cannot decrease its steadily growing trade deficit unless it adopts new policies to boost its trade competitiveness. Nepal could also enhance its trading structure in terms of macroeconomic factors and commodities.

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