Impact of Foreign Trade on Real Gross Domestic Product in Nepal

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Abstract

This research uses yearly time series data from 1975 to 2023 to examine how international trade affects Nepal's Real Gross Domestic Product (RGDP). The link between import, export and real GDP was investigated in this study using a descriptive and analytical research technique. The Augmented Dickey-Fuller (ADF) stationarity test evaluates data time series features. Descriptive analysis, correlation analysis and regression analysis were used to examine the relationships and measure the impacts. Strong positive relationships between RGDP and import (0.946) and export (0.921) were shown by the correlation study. According to the regression study, import and export both significantly boost RGDP; import has a coefficient of 9.55 while export has a coefficient of 0.50. Approximately 92% of the variance in RGDP can be explained by the regression model, according to the high R-squared value of 0.92. All things considered, the results demonstrate how much international commerce has impacted Nepal's economic growth.

Keywords: *export, foreign trade, import, real GDP*

Introduction

The GDP of Nepal fell to 1.9% in fiscal year 2023 from 5.6% in the previous year (Singh, 2023). Tighter monetary policy, the progressive elimination of COVID-19 stimulus measures, global economic issues and budget consolidation contributed to this decline. Nepal wants long-term economic recovery and is pursuing an environmentally responsible, resilient and inclusive growth model. This research examines the link between Nepal's exports and imports and it's Real GDP in the context of sustainable economic growth. Globalization and commerce have changed Nepal's economy (Rankin, 2004). Policymakers, economists and stakeholders must understand international trade patterns and their influence on GDP. Nepal relies substantially on imports for local consumption and manufacturing (Sharma, 2015). Effective trade policy for sustained economic development require understanding how trade patterns affect actual GDP growth. Nepal has great export potential in hydropower, tourism and agriculture but realising it requires a deep knowledge of export performance and real GDP growth (Badal, 2019). Goretti, Kihara, Salgado, and Gulde (2019) have explained that Nepalese economy is highly exposed to external shocks, so its ability to leverage international trade opportunities is crucial for macroeconomic stability and inclusive growth. They examined how foreign trade fluctuations affect real GDP dynamics.

Smith (1937) and Ricardo (1985) stressed the need of international commerce in economic progress. The relevance of international trade in economic growth has long been recognized (Letiche 1960), but Nepalese research on foreign trade and Real GDP are few. Trends, linkages and repercussions must be examined in Nepal's context. The study analyzes trends, correlations, and the amount of international trade's influence on Nepal's Real GDP. It examines whether international trade increases Real GDP and how much it affects Nepal's GDP. The study seeks to illuminate international trade dynamics and Nepal's economic progress.

Review of Literature

Theoretical Review

The focus in the international discussion of growth has been on international commerce because of its central role in fostering economic development. In an effort to deduce how international trade contributes to economic expansion, numerous theoretical frameworks have been devised, including neo-technology theory (Hirsch, 1974), modern trade theory (Lam, 2015) and neo-classical theory of the Heckscher-Ohlin-Samuelson model (Kurose, & Yoshihara, 2016). These theories provide different perspectives on the mechanisms through which trade can contribute to economic development, ranging from cost efficiency and comparative advantages to factor endowments, technological advancements and scale economies (Ozawa, 1992)). This issue has prompted numerous empirical tests of theories to provide insights into how international trade practically influences economic development.

Sachs (1985) critically assesses why Latin American countries performed poorly compared to their East Asian counterparts during the international debt crisis in the early 1980s and concludes that the currency rate management and trade regime appear to be the main distinctions. The key idea emphasized in conclusion is that a focus of nation on exports and a competitive exchange rate can economic growth (Edwards, 1993).

Empirical Review

Pawlos (2002) employed Johansen's cointegrating approach to reveal a positive long-run elasticity of imports with regard to real GDP, although insignificant at conventional levels. However, real international reserves exhibit a favorable and substantial influence on imports in short run. Pawlos (2004) concludedthat there was significant and positive long-run impact of imported intermediate goods on real Gross Domestic Product (GDP). Moreover, in the short term, highlights a notable positive and statistically significant relationship between changes in imported intermediate goods and contemporaneous real GDP growth. Michelis and Zestos (2004) observed a bi-directional causality between GDP and exports and imports across most countries, with exceptions noted, such as the Netherlands. Pistoresi and Rinaldi (2012) measured the direction of causality between imports and GDP growth. Pre-World War I, import growth precedes GDP growth, which subsequently drives export growth, while post-World War II witnesses bidirectional causality, possibly attributed to increased intra-industry trade. The literature is evolving relationship between foreign trade dynamics and real GDP growth, influenced by diverse contextual factors. Cerritos (2015) analyzed the data of Bangladesh over 32 years, reports a negative relationship between imports and GDP growth, alongside a reciprocal negative association between GDP growth rate and imports. Imports, consumer price index and terms of trade harm economic development, whereas exports help (Ahmad, Afzal, & Khan, 2017). Abdulkadhim (2020) assessed both the short and long-run impact of economic circumstances on Saudi GDP growth from 1980 to 2014. Gross fixed capital creation, export, import, and finance development drive Saudi economic growth, according to studies. The results show that imports hurt long-term economic development. Okenna and Adesanya (2020) analyze how international commerce affects economic growth in Nigeria, Ghana, and Benin. They stress exchange rates, tariffs and subsidies using World Development Indicators secondary data.

Conceptual Framework

The influence of international trade on Nepal's real GDP is examined using important economic theories and empirical data from relevant literature (Sharma & Bhand, 2005).

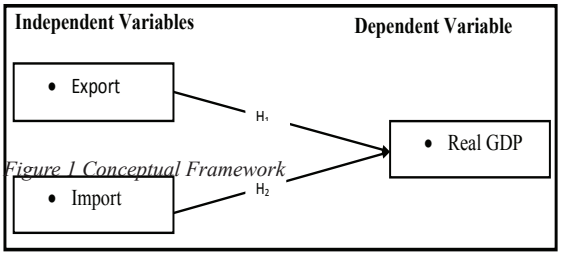

Figure 1 Conceptual Framework

Hypotheses

Alternative Hypothesis

- **H_1:**Export significantly positive impact on Real GDP in Nepal.
- **H_2:** Import significantly positive impact on Real GDP in Nepal.

Methods and Materials

Foreign commerce shapes countries' economy, especially emerging ones like Nepal. Foreign trade's influence on Nepal's Real GDP from 1975 to 2023 was examined using descriptive and analytical study design, yearly time series analysis, ADF test for stationarity, correlation and regression analysis are used. Analytical research designs use correlation and regression analysis to examine international trade and Real GDP. The 1975–2023 study includes 49 years. Nepal Rastra Bank, Central Bureau of Statistics Nepal, Ministry of Finance and relevant government publications provide reliable foreign trade and Real GDP statistics. The study used time series analysis to detect international trade and Real GDP trends, patterns, and volatility across the research period. Time series data stationarity has tested using Augmented Dickey-Fuller (ADF). This test checks for unit roots, which imply non-stationarity. Stationarity is needed for effective regression analysis.

Correlation analysis is conducted to examine the degree of association between foreign trade (exports and imports) and Real GDP of Nepal. Pearson's association coefficients measure the strength and direction of variable connections. Regression analysis determines how international trade affects Nepal's Real GDP. Real GDP is the dependent variable while exports and imports are the independent variables in multiple regression models. Regression coefficients are estimated using OLS (Thapa, 2023).

Analytical Model

The multiple regression model is specified as follows:

$$RGDP = \alpha + \beta_1 IPT + \beta_2 EXP + \epsilon_t$$

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Where,

RGDP = Real Gross Domestic Product

IMP = Import

EXP = Export

$\beta\beta$ = intercept

$\beta_1, \beta_2\beta_1, \beta_2$ = Coefficient of Import and Export

$\epsilon_t\epsilon_t$= Error Term

Results

Table 1 Descriptive Analysis

	RGDP	IMPORT	EXPORT
Mean	1122054	43059.73	323426.7
Maximum	2576200	200031	1920448
Minimum	349523.1	889.6	1814.6
Std. Dev.	667508.6	43318.36	483342
Observations	49	49	49

The descriptive analysis table presented furnishes a comprehensive overview of key statistical measures concerning GDP, imports and exports to understand the dynamics of study. Beginning with the measures of central tendency, the mean GDP stands at approximately 1,122,054, denoting the dataset's average GDP value. Similarly, the mean

imports and exports are reported as 43,059.73 and 323,426.7, respectively, indicating the average levels of both import and export activities. Moving on to variability, the standard deviation figures shed light on the extent of dispersion within the dataset. With GDP exhibiting a notably high standard deviation of 667,508.6, alongside moderately lower values for imports (43,318.36) and exports (483,342), it suggests considerable variation in GDP values, while import and export levels demonstrate comparatively lesser variability. Skewness, portraying the asymmetry of the distribution, reveals a slight rightward skew for GDP (0.684701), indicating a tendency towards higher values. This skewness is more pronounced for imports (1.226163) and exports (1.703686), suggesting a more significant concentration of lower values in the dataset.

Table 2 Correlation Analysis

	RGDP	IMPORT	EXPORT
RGDP	1		
IMPORT	0.946	1	
EXPORT	0.921	0.903	1

Real Gross Domestic Product (RGDP) and imports and exports have strong correlation coefficients of 0.946 and 0.921, respectively. This shows a significant positive linear link between GDP and imports and exports. As GDP rises, imports and exports tend to rise too. The correlation value between imports and exports is 0.903, showing a strong positive linear link. Thus, more imports tend to increase exports and vice versa. The correlation research shows that GDP and international commerce, especially imports and exports, are linked. They imply that GDP variations are linked to international trade shifts, whether imports or exports. This research is primarily concerned with the impact of foreign commerce on GDP. The strong positive correlations demonstrate the importance of international trade dynamics in understanding GDP variations and economic performance, underscoring the significance of our work in understanding these interactions.

Table 3 Augmented Dickey-Fuller test statistic

	RGDP		IMPORT		EXPORT	
	t value	P value	t value	P value	t value	P value
	-10.13	.000	-6.01	.000	-4.77	.001
1% level	-3.58		-3.60		-3.61	
5% level	-2.92		-2.93		-2.93	
10% level	-2.60		-2.60		-2.60	

**MacKinnon (1996) one-sided p-values.*

The ADF test provides test statistics along with critical values at significance levels of 1%, 5%, and 10%. A unit root time series under the ADF test null hypothesis points to non-stationarity. At all three significance levels—1%, 5%, and 10%—the series test statistic for real GDP (RGDP) is -10.13, with ap value .00. This suggests that because the RGDP series lacks a unit root, it is static. At all significance levels, the Import series test statistic is -6.01, with a probability of .00. Strong evidence against a unit root in the Import series supports stationarity. At 1% significance, the Export series test statistic is -4.77, with a probability of 0.001. Additionally, probability values are fewer than critical values at 5% and 10% significance levels. There is substantial evidence against a unit root in the Export series, showing stationarity. Overall, the ADF test findings show that RGDP, Import and Export are stable. These series are appropriate for time series analysis and modeling since they do not show trends or regular patterns.

Table 5 Regression Analysis

Variables	β	σ	t value	P value
IMPORT	9.55	1.51	6.33	.00
EXPORT	0.50	0.14	3.69	.00
C	92.80	42121.07	13.05	.00
R^2	.92			
F value	259.57			
P value	.00			

Dependent Variable: RGDP

Regression analysis of the Impact of Foreign Trade on GDP research paper offers strong explanations

of the relationship between GDP and foreign trade. Strong correlation between these elements emphasizes the significance of international trade for development and economic progress. The regression model shows that GDP grows by 9.55 units for every unit increase in imports and 0.50 units for every unit increase in exports. These results are statistically significant due to low import and export coefficient p-values. The high R-squared value of .92 shows that imports and exports explain a lot of GDP volatility. The F-statistic emphasizes the model's importance by showing how foreign trade variables affect GDP. These findings corroborate the study article's claim that international trade considerably affects GDP and the investigated country or region's economic trajectory.

EViews is capable of doing thorough diagnostics on time series data. A battery of tests confirms our statistical results. No heteroscedasticity was detected with a p-value greater than 0.05 in the Heteroscedasticity Test. The absence of multicollinearity was shown by variance inflation factors (VIF) < 10. The Histogram Test demonstrated ($p = .00$) normal distribution of the data, while the Breusch-Godfrey Serial Correlation LM Test indicated no evidence of serial correlation in the residuals, with ($p = 0.68$) more than 0.05. These results collectively indicate the reliability of the model and enhance the validity of the statistical analyses, ensuring robustness of the research findings.

Discussion

Regression analysis shows, in line with earlier research, that trade in goods and services raises GDP. The positive import coefficient has been shown to raise GDPby research Kartikasari (2017), Ali et al. (2018) and Karabulut (2019). Kogid, Mulok, Ching, Lily, Ghazel & Loganathan (2011). The results' consistency demonstrates the adaptability of the GDP-import link in many contexts and eras of history. The data confirms earlier research by demonstrating that exports increase GDP. Mofrad (2012), Ahmad et al. (2017), Ugochukwu and Chinyere (2013) and Kartikasari (2017) discovered a favorable correlation between GDP and exports. Consistency of the research supports the notion that exports assist economic growth and development. There are many reasons for the strong correlation between GDP and imports and exports. Countries may get more resources by moving goods and services across borders thanks to international commerce. Imports may raise local production's efficiency and cost, which would encourage economic expansion. International trade increases investment, growth, and output at home.

Implications

Policymakers, stakeholders and scholars in Nepal should consider these results. To leverage on international trade's potential for economic growth and development, authorities should promote open and dynamic trade environments. This comprises trade liberalization, lowering trade barriers and improving international competitiveness.

Take use of this fact by seizing the opportunities that come with doing business internationally for innovation, knowledge sharing and technology transfer. Through promoting growth in its export industry and liberalizing imports of necessities and resources, Nepal can strengthen its economic resilience and competitiveness in the international market.

Academics and interested parties in Nepal should investigate the impact of international trade on the country's manufacturing sector. To maximize international trade benefits for fair and sustainable economic development in Nepal, more policy assessments, trade trend monitoring and empirical research are required. This will help lead evidence-based decision-making.

Conclusion

The major and favorable effect of international commerce on Nepal's GDP is the conclusion of this study. We have shown, by thorough regression analysis that the country's economic direction is mostly shaped by both imports and exports. This analysis shows that the GDP increases by around 9.55 units for every unit increase in imports, and by about 0.50 units for every unit increase in exports. The strong and statistically significant results are shown by the low p-values and the high R-squared value of 0.92. Analysis is consistent with other studies on the subject, which continuously emphasizes the favorable correlation between GDP,

imports, and exports. Several reasons may be linked to the observed positive correlations between GDP and variables related to international trade.

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