Do Exports and Imports Affect the Gross Domestic Product in Palestine During the Period (2000-2020)?

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Abstract: This paper examines the relationship between exports, imports, and GDP in Palestine. For this purpose, annual data for the periods 2000-2020. Johansen's test for cointegration analysis was used to estimate the var model and Granger-Causality tests. The least squares (OLS) regression test according to the result of the analysis concluded It turns out that there is no causal relationship between exports, imports and GDP, as shown by Granger's test, and when conducting VAR test, it was found that there is no effect of exports on GDP, but unless it is expected that there will be a positive effect of imports on GDP in Palestine. Through the results, we can confirm that imports affect GDP, which means that it is one of the factors of economic growth in Palestine.

Keywords: Export, Import, Economic Growth, Causality, Palestine

Type: Research paper

1. Introduction

Economists and policymakers are interested in the long-term dynamics of economic growth (Chokri et al., 2018). For a society to achieve a continually improving standard of living, total production must increase. Economic growth is measured using Gross Domestic Product (GDP), which comprises four components: private consumption, business investment, government spending, and net exports (exports minus imports). This study focuses on the impact of imports and exports on GDP.

Export growth is a key determinant of economic expansion, serving as a vital source of foreign exchange earnings that can alleviate balance of payments issues (Abu-Shihab et al., 2014). In contrast, imports result in outflows of domestic currency and can deteriorate the trade balance, potentially hindering economic development (Bakar & Mabrouki, 2017). However, in certain countries, imports can act as catalysts for economic growth. Specifically, Krugman (1984) suggests that imports can facilitate long-term economic development by providing intermediate goods, which in turn enhance the creation and quality of economic capital. Additionally, imports can boost productivity by enabling the transfer of knowledge from developed to developing nations (Lawrence & Weinstein, 1999).

This study aims to provide a formal assessment of the causal relationship between Palestinian imports, exports, and GDP. Analyzing the Palestinian economy is significant due to its unique circumstances. Israeli control over Palestinian territories and political instability have rendered the Palestinian economy exceptional. The researcher will determine the degree of integration for each variable and combine them to estimate a linear regression. If all variables are integrated at the first difference, the estimation will be based on a Vector Autoregression (VAR) model. If the variables in the first difference are stationary, cointegration tests will be conducted. If no cointegration relationship exists, unrestricted VAR models and Granger causality tests will be applied. If cointegration is found among the variables, a Vector Error Correction Model (VECM) will be employed.

The remainder of the paper is structured as follows: Section 2 provides an overview of the impact of exports and imports on GDP in Palestine. Section 3 reviews relevant literature on exports and imports, highlighting prominent theories and previous studies on the subject. In Section 4, we develop our hypotheses and research framework. Section 5 presents the results while Section 6 concludes the study.

2. Import, Export, and Economic Growth in Palestine

For Palestine, exports play a vital role in supporting the national economy. However, the country faces numerous security and economic constraints due to the occupation, which imposes stringent measures that severely restrict exports. These challenges have turned Palestine into a predominantly import-dependent economy, as its economic structure is tied to that of the occupying state. Palestinian merchants face significant difficulties in producing high-value-added goods, forcing the national economy to rely heavily on imports, which explains the substantial trade balance deficit (Qassem, 2018).

As a developing country with a large population relative to its geographical area, Palestine's economic challenges are further exacerbated by its unique status as the only nation in the world under occupation. To meet daily needs, Palestine primarily imports goods, services, and equipment from Israel. It also imports clothing and food from Turkey. According to the Palestinian Monetary Authority (PMA) (2021), Palestinian exports include products such as stone, gypsum, furniture, iron, vegetables, roots, herbs, shoes, tobacco, wood, oil, and other goods.
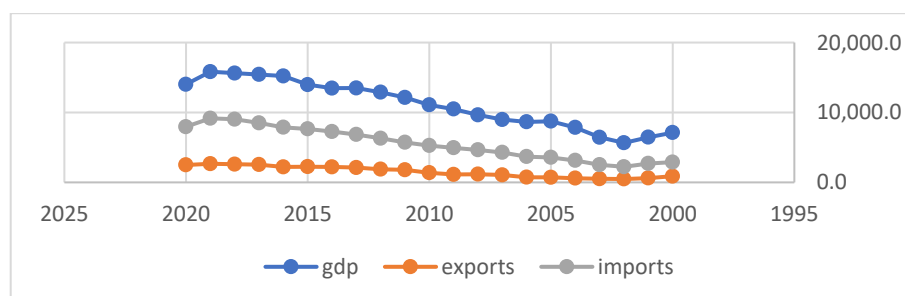

Figure 1: Total imports, exports, and GDP in Palestine (in millions of USD)

The data presented in Figure 1 clearly show that Palestine achieved its highest export level to date in 2019, amounting to 2.6593 billion US dollars, while imports reached 9.1617 billion US dollars. During the same year, the gross domestic product (GDP) stood at 15.829 billion US dollars. However, in 2020, the global economy was significantly affected by the emergence of the Covid-19 pandemic. Preventive quarantine measures imposed by governments worldwide led to a substantial decline in foreign trade and severe economic losses. As a result, Palestine's foreign trade decreased by 17%, with exports dropping to 2.4958 billion US dollars, imports declining to 7.9485 billion US dollars, and GDP falling to 14.0154 billion US dollars (Palestinian Monetary Authority, 2021). To overcome these challenges, Palestine must focus on improving its economic situation by restoring pre-pandemic trade levels and negotiating agreements with the Israeli side to enhance its export performance. This study aims to examine the direct economic links between trade and economic growth in Palestine, utilizing annual data from 2000 to 2020. Specifically, the study seeks to answer the empirical question of whether exports drive economic growth, imports drive economic growth, or economic growth drives exports and imports.

3. Literature Review and Theoretical Background

Numerous researchers have explored various aspects of trade and economic growth. Among the most notable studies, Hossain and Dias (2004) found that total exports and product exports have both positive and statistically significant effects in the short and long term. Similarly, Abu Jamea (2005) concluded that Palestinian exports have declined significantly due to forced economic integration with Israel and the limited influence of foreign trade with Egypt and Syria. Hoque and Yusop (2010) observed that trade liberalization, particularly through reducing import tariffs, results in significant short-term increases in imports, with more substantial effects in the long term.

Ozurumba and Chigbu (2013) highlighted a unidirectional causal relationship between global trade and production, while Alavinasab (2013) demonstrated a positive correlation between exports, real exchange rates, and Iran's economic growth. Abu Aida (2013) supported the notion that export growth positively influences GDP. Conversely, Al-Astal (2014) found that the growth of foreign trade had only a slight impact on Palestine's economic development, as reflected in indicators of economic activity and GDP. Mitra and Khan (2012) noted a non-significant positive impact of imports and exports on India's economy, while Zahee et al. (2014) identified a positive relationship between Pakistan's imports, exports, and GDP. Akhter (2015) discovered that exports positively correlate with economic growth, whereas imports negatively correlate with growth in the long term. Similarly, Bakar and Mabrouki (2017) noted that trade liberalization through tariff simplifications showed limited positive effects on total imports.

Helles (2016) observed that foreign trade negatively impacts GDP in Palestine due to debt accumulation and economic constraints, while Halder (2019) concluded that both exports and imports positively influence GDP growth, although factors like exchange rate inflation do not significantly affect GDP growth. Fannoun (2019) emphasized a bidirectional causal connection between imports, exports, and economic growth in the long term. However, Bakari,

Fakraoui, and Mabrouki (2020) argued that Peru's trade openness and domestic investment have not contributed substantially to economic development due to economic mismanagement and regulatory weaknesses. Badwan and Atta (2021) found that capital inflows increased the thresholds for Palestinian industrial exports, while Ali, Hasan, and Oudat (2021) observed no causal relationship between exports, imports, capital flows, and economic development. These findings underline the need for effective export control policies to avoid unsustainable growth.

The theoretical framework for international trade began with Adam Smith's Wealth of Nations in 1776, which introduced the theory of absolute advantage, emphasizing that countries should produce goods of better quality than others without government interference (Ahmed, 2001). Ricardo's 1817 theory of comparative advantage extended this idea, suggesting that each country has a specific advantage for profitable trade based on resource differences (Abu Sharara, 2006). Despite its influence, Ricardo's theory was criticized for not addressing a framework for trade exchange between countries. John Stuart Mill advanced this discussion through his theory of international values, which highlighted the importance of achieving parity in demand to balance exports and imports among nations (Ghozlan, 1975). Heckscher and Ohlin later expanded Ricardo's theory by incorporating factor endowments and relative production costs, emphasizing that international trade is driven by comparative advantages in production resources (Heckscher & Ohlin, 1991). In 1961, Stephen Linder introduced the similarity theory, suggesting that export success depends on aligning with consumer preferences in countries with similar demand structures (Hatem, 2005). Vernon's (1966) product lifecycle theory explained how the production of goods begins domestically and gradually shifts abroad as products mature, reflecting the post-WWII industrial dominance of the United States (Mullor-Sebastián, 1983).

Later, Krugman and Lancaster's work on new trade theory in the 1980s emphasized economies of scale and product differentiation, highlighting the strategic behavior of firms to secure competitive advantages in global markets (Krugman, 1979; Lancaster, 1980).

Recent theories assert that international trade fosters income growth and economic development through effective resource allocation and technological advancements (Blavasciunaite et al., 2020). Exports and imports play vital roles in economic development, with exports driving innovation, reducing market fluctuations, and stabilizing national income (Ruranga & Musabanganji, 2019). However, exports' impact may be limited by factors such as competition, product unfamiliarity, and political instability (Bakar & Mabrouki, 2017). On the other hand, imports can enhance economic growth by providing essential equipment and goods for value-added production, although excessive imports can weaken the trade balance and impede development (Yüksel & Zengin, 2016).

This extensive literature highlights the multifaceted role of trade in economic development, emphasizing the need for strategic policies to maximize its benefits while addressing its challenges.

4. Conceptual Framework and Development of Hypothesis

4.1. Data

The analysis conducted in this study covers annual time series data from 2000 to 2020 in Palestine. The dataset includes economic growth measured as GDP (in US dollars), exports of merchandise and services (in US dollars), and imports of merchandise and assistance (in US dollars). All data were sourced from the PMA (2020).

4.2. Methodology

The researcher will determine the degree of integration for each variable. If all variables are stationary at their levels, they will be combined to estimate a linear regression. Conversely, if all variables are stationary at their first differences, the estimation will be based on a VAR model. Regarding the estimation approach for different types of VAR models, if the variables in the first difference are unbiased, the co-integration of the variables will be assessed. If the co-integration test indicates no co-integration relationship, the analysis will include autoregressive tests for unconstrained vectors (unconstrained VAR) and Granger causality tests. If a co-integration relationship is found among the variables, a Vector Error Correction Model (VECM) will be employed.

4.3. Model Specification

To analyze causality and explore the connection between exports, imports, and GDP, the study adopts a production function framework widely used in previous research, including studies by Ramos (2002), Titus (2007), Güngör & Bernard (2014), Afaf & Hussain (2015), Bakar & Mabrouki (2017), and Ruranga & Musabanganji (2019). The production function is enhanced to incorporate exports and imports and is expressed as follows:

$$GDP_t = f\,(exports, imports)\;\ldots \tag{1}$$

The function can also be represented in a log-linear econometric format:

$$LGDP_t = \beta_0 + \beta_1\,(LEXPORTS)_t + \beta_2\,(LIMPORTS)_t + \varepsilon_t \tag{2}$$

Where:
β0: The constant term
β1 (LEXPORTS): export logarithm
β2 (LIMPORTS): imports logarithm
t: The time trend
ε: The random error term

4.4. Hypotheses Development

Based on the reviewed literature, the following hypotheses were formulated:
    H01: There is a negative relationship between exports and GDP.
    H02: There is a negative relationship between imports and GDP.

5. Findings and Discussion

5.1. Unit Root Test

Since time series data are often characterized by instability, which can lead to misleading results, the researcher conducted the Augmented Dickey-Fuller (ADF) test. The results of this test are summarized in Table 1. The results of the ADF test

confirm that all variables are integrated at order (1), meaning they are stationary at their first differences at significance levels of 1%, 5%, and 10%. Consequently, we reject the null hypothesis (H0), which assumes non-stationarity, and accept the alternative hypothesis (H1) of stationarity. Based on the VAR lag selection criteria, a lag of 1 is optimal for further analysis.

Table 1: Tests for unit root: ADF

Variable	Level	Differences	Probability	Lag Period	ADF	Result	Difference
Log(GDP)	1%	1	0.0013	1	-4.84944	Stationary	First
Log(Exports)	1%	1	0.0091	1	-3.87466	Stationary	First
Log(Imports)	1%	1	0.0014	1	-4.81999	Stationary	First

5.2.   Cointegration Test

To determine cointegration, the Johansen test was applied. The results in Table 2 indicate no cointegration relationships between the variables. Thus, we proceeded with VAR model estimation and Granger causality tests.

Table 2: Cointegration test results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value at 0.05	Prob
None	0.738899	39.83344	42.91525	0.0984
At most 1	0.398582	14.31934	25.87211	0.6312
At most 2	0.217439	4.658488	12.51798	0.6459

5.3.   VAR estimation

The purpose of the VAR estimation is to determine whether the independent variables (exports and imports) have positive or negative effects on the dependent variable (GDP).

Table 3: VAR estimates

Variable	LIMPORTS Coefficient	LEXPORTS Coefficient	LGDP Coefficient
LGDP(-1)	0.976112	1.591244	1.346365
	(0.70694)	(0.98034)	(0.58515)
	[1.38075]	[1.62316]	[2.30088]
LEXPORTS(-1)	0.320184	0.824878	0.351014
	(0.28385)	(0.39363)	(0.23495)
	[1.12800]	[2.09558]	[1.49399]
LIMPORTS(-1)	0.031342	-1.120831	-0.457690
	(0.77131)	(1.06960)	(0.63843)
	[0.04063]	[-1.04790]	[-0.71690]
Constant (C)	-0.640706	-6.915609	3.263996
	(2.69314)	(3.73466)	(2.22917)
	[-0.23790]	[-1.85174]	[1.46422]

Note: Standard errors are provided in parentheses ( ), while T-statistics are provided in brackets [ ].

The VAR estimation results in Table 3 highlight the dynamic relationships between GDP, exports, and imports in the Palestinian economy. The coefficient

for lagged GDP (LGDP(-1)) is positive and statistically significant, indicating that past economic performance strongly influences current GDP, suggesting persistence in economic activity. Conversely, lagged exports (LEXPORTS(-1)) show a positive but statistically insignificant impact on GDP, reflecting a weaker role in driving economic growth within the period studied. Lagged imports (LIMPORTS(-1)) exhibit a negative and insignificant effect on GDP, suggesting that while imports may support production through inputs, their overall contribution to economic growth is limited in this model. Additionally, the influence of exports and imports on each other is inconsistent and lacks statistical significance, underscoring the complexity of trade dynamics in a constrained economic environment. These results emphasize the dominant role of internal economic momentum (as reflected in GDP's own lagged values) over external trade variables in shaping short-term economic outcomes.

The model is as follows: LGDP = C(1)*LGDP(-1) + C(2)*LEXPORTS(-1) + C(3)*LIMPORTS(-1) + C(4)

Table 4: Coefficients and statistical measures

Parameter	Coefficient (C)	Std. Error	t-Statistic	Probability (Prob.)
C1	1.169719	0.576894	2.027613	0.0596
C2	-0.194881	0.166164	-1.172825	0.2580
C3	0.087326	0.498888	0.175042	0.8632
C4	-0.886696	1.834149	-0.483437	0.6353

The results in Table 4 show that lagged GDP (C1) has a positive and marginally significant effect on current GDP (p = 0.0596), indicating its strong influence on economic performance. In contrast, lagged exports (C2) and imports (C3) have statistically insignificant effects, suggesting minimal impact on GDP growth. The constant term (C4) is also insignificant, reinforcing the dominant role of past GDP over trade variables in driving current economic outcomes.

5.4. Granger Causality Tests

The Granger causality test was conducted to determine causal relationships between the variables. The causality test results in Table 5 indicate no causal relationships between exports, imports, and GDP.

Table 5: Granger Causality Tests

Null Hypothesis	Result	Prob.
LEXPORTS does not Granger Cause LGDP	Rejected	0.4433
LGDP does not Granger Cause LEXPORTS	Rejected	0.0877
LIMPORTS does not Granger Cause LGDP	Rejected	0.6865
LGDP does not Granger Cause LIMPORTS	Rejected	0.4391
LIMPORTS does not Granger Cause LEXPORTS	Rejected	0.1933
LEXPORTS does not Granger Cause LIMPORTS	Rejected	0.3289

5.5. Multiple Least Squares Regression (OLS)

The regression analysis examines whether there is a statistically significant relationship between the variables. The regression results in Table 6 indicate that imports positively impact GDP and are statistically significant at the 1% level, with

a 1% increase in imports leading to a 7.91% increase in real GDP. Exports have a negative impact on GDP but are not statistically significant.

Table 6: OLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	2.935979	0.300161	9.781338	0.0000
LEXPORTS	-0.057627	0.069459	-0.829651	0.4176
LIMPORTS	0.791020	0.090764	8.715131	0.0000
R^2	0.989581			
Adj R^2	0.988424			

5.6. Residual Diagnostics Tests

Residual diagnostic tests were conducted to ensure the adequacy of the model. The diagnostic tests confirm the model's adequacy. The R^2 in Table 7 is greater than 60%, the F-statistic probability is less than 5%, and the LM and Breusch-Pagan-Godfrey tests have p-values above 5%.

Table 7: Residual Diagnostics

Test	Value	Prob.
R^2	0.989581	
Adjusted R^2	0.988424	
F-Statistic	854.8458	0.0000
LM Test		0.1452
Breusch-Pagan-Godfrey Test		0.6858

The null hypothesis in Figure 2 assumes that residuals are normally distributed. The test results indicate that the residuals are normally distributed, providing no evidence to reject the null hypothesis.
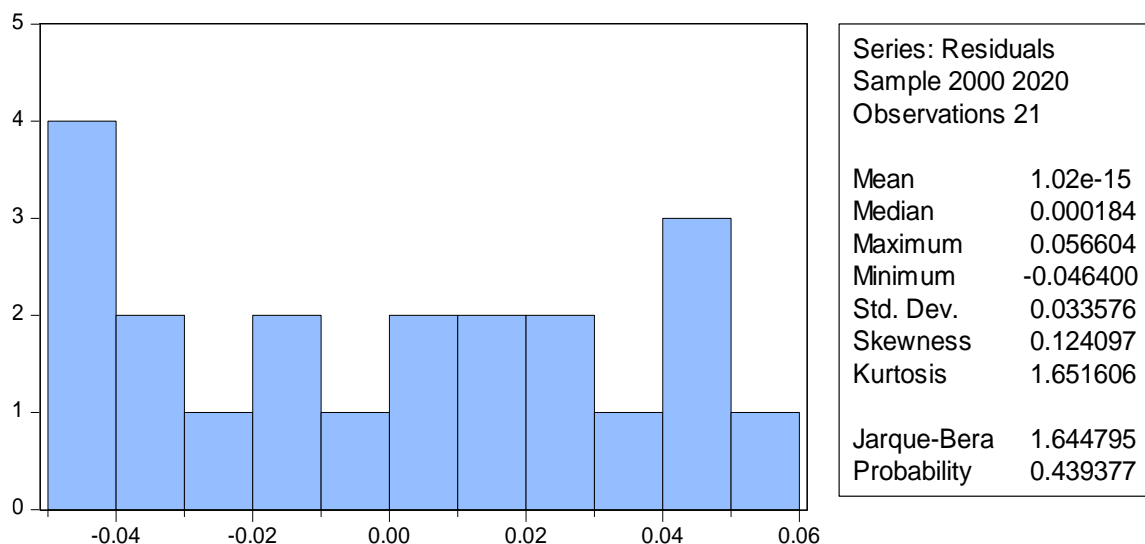

Series: Residuals	
Sample 2000 2020	
Observations 21	
Mean	1.02e-15
Median	0.000184
Maximum	0.056604
Minimum	-0.046400
Std. Dev.	0.033576
Skewness	0.124097
Kurtosis	1.651606
Jarque-Bera	1.644795
Probability	0.439377

Figure 2: Normality test

6. Conclusion

Our findings reveal no significant causal relationship between exports, imports, and GDP, as indicated by the VAR test and Granger causality test. However, an unexpected result emerged: imports have a positive impact on GDP in Palestine. This outcome aligns with studies by Mitra & Khan (2012), Zahee, Khattak, Ashar, & Zaib (2014), and Halder (2019), which also identified a positive effect of imports on economic growth measured by GDP. However, a key difference lies in the treatment of exports. While these studies found a positive relationship between exports and GDP, our results indicate a negative and statistically insignificant relationship. This discrepancy can be attributed to the vital role imports play in the Palestinian economy. Many imports consist of production inputs and commodities that are challenging to produce domestically. A significant proportion of these imports are directed toward factories that manufacture goods for the local market, contributing to GDP growth, albeit modestly, in both the short and long term. This explains the observed positive impact of imports on Palestinian economic growth.

This study faced certain limitations, the most notable being the use of multiple data sources, including PCBS, the World Bank, and the PMA. These institutions often report inconsistent figures, presenting challenges in data consistency. The researcher opted for the most logical and reliable data available.

In light of these findings, this study recommends further research on the impact of imports and exports on GDP, with a focus on analyzing each variable separately. Given the positive effect of imports, future studies could employ models like ARDL to explore these dynamics in greater detail.

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