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# THE NEXUS OF TRADE, EMPLOYMENT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM PALESTINE

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## **Abstract:**

*The economies, trade and employment in the Palestinian territories (PTs) in the Gaza Strip and West Bank have undergone numerous shocks and instabilities over the past four decades. Palestinian External trade experienced numerous difficulties and in particular Israel imposing for restriction on Palestinian trade with the neighboring countries and the rest of the world as a whole. Meanwhile, employment rates in PTs decreased sharply by Israeli restrictions which imposed on Palestinian labor movement into Israel since 1994 and intensified with the Palestinian uprising in 2000 year., This study uses the cointegration and Granger causality tests to examine both the long run and short run relationships among trade, employment and economic growth of Palestine for the time period 1968-2017 . The econometrics results based on vector error correction models (VECM) confirm the existence of long run relation between trade, employment and economic growth and show that both employment and GDP are main determinants of trade but not trade and GDP determinants of employment or trade and employment determinants of GDP. Causality tests confirm VECM results that changes on economic growth in the long run cause change in trade in the short run. By reconciling causality results with that of VECM, we conclude an existence of marginal causality runs from GDP to employment and from trade to employment.*

**JEL. Classification: E24, F14,O47**

**Key words: Trade, Employment, Economic growth, Cointegration, Granger causality tests, Palestine**

## **1-Introduction**

There is a continuous literature still shed light on the nexus of trade, employment and economic growth in both developed and developing countries.

Distinctively, Palestine is considered as a one of developing countries which is still experiencing the impact of occupation along a number of decades. The overarching constraint to economic development in Palestine is the restrictions on trade, movement of labor and restrictions on economic activities as a whole by the Israeli occupation.. This situation affected adversely the performance of trade, employment and economic growth. The Palestinian territories in the West Bank and the Gaza Strip characterized by a continuous deficit lasted for decades since 1967 year. Also, Palestine witnessed high level of unemployment and had weak rates of economic growth, a status hinders development.

Numerous studies discussed the relationship between trade and economic growth and/or trade, employment and economic growth in Palestine. This Study adds another contribution in empirical analysis for the nexus of trade, employment and economic growth, in view of the fact that the dynamic nexus between these variables not researched yet.

The main objective of this paper is to explore the dynamics of the relationship between external trade, employment and economic growth in Palestine using the annual data for the period 1968 to 2017.

The paper organized as follows: Section 2 contain a selective review of the literature. Section 3 highlights time trends for the selected variables. Section 4 describes data and methodology. Section 5 presents the empirical results and finally section 6 concludes the discussion.

## **2-Selected Literature Review**

Theoretically the nexuses of trade growth and employment stems from consensus prevails among economists that greater openness to international trade has been the basis for sustained rapid growth. This common consent is in line with the assumption that enhanced trade raises

output, create employment, produces technological innovation, increases economies of scale, extends market from autarky (Anderson and Babulla 2008; Dollar and Kraay 2003; Bhagwati and Srinivasan 2002).

Numerous studies examined the relationship between trade flows, employment and economic growth since the mid of 1980s. Of these earlier ones: Krugman (1986), OECD (1992), Messerlin (1995), Rodrik (1996) and Rattso and Trovik (1998).

Krugman (1986) empirically confirmed that elasticity of demand for labor is higher with greater openness of trade in case of imperfect competition.

The study of OECD (1992) concluded that trade was a net source of employment gains for the period 1970-1985.

Messerlin (1995) found that impact of trade on employment was very small and positive for most of the period 1976-1992 in case of France economy.

Rodrik (1996) ascertained that trade generates productivity growth which induces employment and wage shock.

Rattso and Trovik (1998) analyzed the employment effect following the liberalization of trade in Zimbabwe in the early 1990s by using a computable general equilibrium model. He found that opening up of trade led to a contraction in output and employment coexisted with sharp increase in imports and a rising trade deficit.

Slaughter (2001) provided mixed support to the view that trade contributed to increased elasticities for an industry year panel for US over the period 1961-1991. The study found that both elasticity of labor demand and trade increased over time, but a robust linkage between them not confirmed.

Bruno et.al (2004) showed that trade might induce an increase in labor demand elasticity via a scale effect due to the increased competition on the output market and/or via a substitution effect generated by expanding the firm production possibility set to include additional inputs. By estimating labor demand using a industry-year panel from a number of industrial countries over the period 1970-1996 it was found a significant a significant substitution effect of trade on labor demand elasticity only for the UK, meanwhile the evidence is mixed for Italy and France and in all countries globalization has not significantly affected labor demand elasticity.

Jenkins and Sem (2006) tested the impact of trade flows and foreign investment on employment in the developing countries of Bangladesh, Vietnam, Kenya and South Africa. The economic integration of Bangladesh and Vietnam caused significant increase in the number of unskilled jobs while job creation in response to greater openness was minimal in Kenya and South Africa with job creation biased towards more skilled workers and that for a given level of output, trade seems to have led to significant fall in employment in South Africa and Kenya.

Of recent studies, Umoru (2013) examined the impact of international trade flows on employment generation in Nigeria by employing the vector error correction model. He found that the volume of international trade has no significant positive impact on employment generation in Nigeria.

Also, Tsegaye (2015) examined the nexus between trade and economic growth in South Korea by using the vector error correction model and granger causality test. This study indicated that unidirectional long run causality existed between exports and economic growth in Korea while it was bi-directional for imports. Moreover, it found unidirectional short run causality running from exports and imports to economic growth.

Further, Cernat and Sousa (2015) highlighted the importance of trade via exporting firms of key mode services (e.g. design, engineering, ICT services) as providers of good employment opportunities for EU citizens.

Having reviewed the previous literature we notice a variance in the impact of trade on employment and economic growth, notwithstanding of positive effects for trade happened in many cases. This conclusion indicates that the ability of countries and developing ones to gain productivity growth through trade depends on many factors include education facilities to ensure property rights and to build up institutions (Anderson and Babula, 2008).

Relating to the Palestinian case there are a number of studies which examined or discussed the relationship between trade and economic growth or between trade, employment and economic growth.

Abugamea (2005) modeled external merchandise trade in Palestine for the period 1986-1998. It provided an analysis for trade by using cointegration analysis and by estimating a vector error correction model. The cointegration analysis mainly showed that domestic demand which proxied by GDP growth was a significant determinant of Palestinian trade in the long run in addition to the existence of trade with the rest of world. On the other hand, the short

run results found that domestic economic growth and Israeli economic growth were two factors determined Palestinian trade in the short run.

Abugamea (2008) employed seemingly unrelated regression equations estimation procedures for import-export trade modeling vis-à-vis an ordinary least square one to forecast the behavior of trade. The study denoted that main feature of the imbalanced customs union between the Palestinian areas in the West Bank and Gaza Strip was that while the Palestinian demand (economic activity) had a positive significant impact on imports from and export to Israel, both the Israeli and the rest of the world demand growth (GDPs) had an insignificant impact on the Palestinian exports.

UNCTAD (2012) investigated relationship between economic growth, trade and unemployment by using descriptive analysis for the period 1980 to 2005. It denoted to the absence of a clear systematic relationship between trade and growth, whereas GDP per capita has been declining over this period, with annual growth of about 2.5 per cent on average, the trade ratio (sum of exports and imports/GDP) exhibits no particular trend and showed very unstable behavior. This performance reflects the effects of various distortions faced the Palestinian trade under occupation policies. Meanwhile, the labor market suffered particularly from the Israeli closure policy, the long legacy of dependence on the Israeli labor market, the labor related elements in the Paris Protocol of 1994 and the lack of viable productive employment opportunities. These had led to a distorted and segregated labor markets in Palestine and labor movement restriction led to more unemployment reached about 24 per cent for this period compared with 6 and 20 per cents for the time periods, 1990-94 and 1995-99, respectively.

Also, Bsharat (2014) examined the effect of both domestic demand represented by growth in the Palestinian GDP and growth in the Israeli GDP and the number of closures days on Palestinian export performance for the period 2000 to 2013. The study used vector error correction modeling methodology. Mainly, it concluded the existence of cointegration in the long run among these variables. Moreover, in the short run it was found that export affected positively with growth in Israeli GDP and adversely with number of closures days.

Recently, Abugamea (2015), used the cointegration and Granger causality tests to examine both the long run and short run relationships between economic growth, exports and imports of Palestine for the time period 1968-2012. The results, based on Vector Error Correction model showed the existence of the long run relationship between imports and economic

growth given exports stationary. Moreover, causality tests confirm VECM results that import cause changes on economic growth in the long run but not in the short run.

Further, Abugamea (2018), analyzed the determinants of unemployment in Palestine over the period 1994-2017. Empirical results showed the variables of GDP, inflation, labor force, external trade, as a macroeconomic determinants, and restrictions on labor movement, as an institutional one, were main determinants of unemployment in Palestine. Whilst GDP impacted unemployment significantly with a negative effect, it was found inflation, labor force and restrictions on labor movement impacted unemployment significantly and with a positive effect and external trade not affected unemployment significantly.

In view of this background, this study uses the cointegration and Granger causality tests to examine both the long run and short run relationships among trade, employment and economic growth of Palestine for the time period 1968-2017.

### **3-Trade, Employment and Economic Growth: Time Trends**

Towards tracing the dynamics of relationship between trade, employment and economic growth we commence by denoting to the behavior of these variables over the time period of study.

Figure (1) exhibits an increasing time trend for the variables of trade and economic growth (gdp) and a decreasing time trend for the employment variable. Moreover, the behavior of growth pattern of these variables could be shown in figure (2).

Over the period 1968-2017 the economies of the Palestinian territories of the Gaza Strip and West Bank experienced numerous external shocks which affect trade, economic growth and employment rate.

Mainly, since the early of 1990s , trade characterized by a more dominance of imports over exports, where imports constitute about 70 percent of total trade, and also with a stagnant pattern of growth for trade as a whole. Trade grew annually by an average of 8 percent for the period 1968-2017 with the best performance in the years 1982, 1979, 1986, 1990 and 1996, 2004, 2007 and 2011 with rates of growth 47, 22, 30,22 and 16, 18, 21 and 18 percents, respectively. The poorest performance recorded in the years 1982, 1988 and 2002 with a negative rate of growth 15, 26 20 percents, respectively. This performance coincided with the years in the aftermath of a stagnant pattern of growth during a complete integration with the

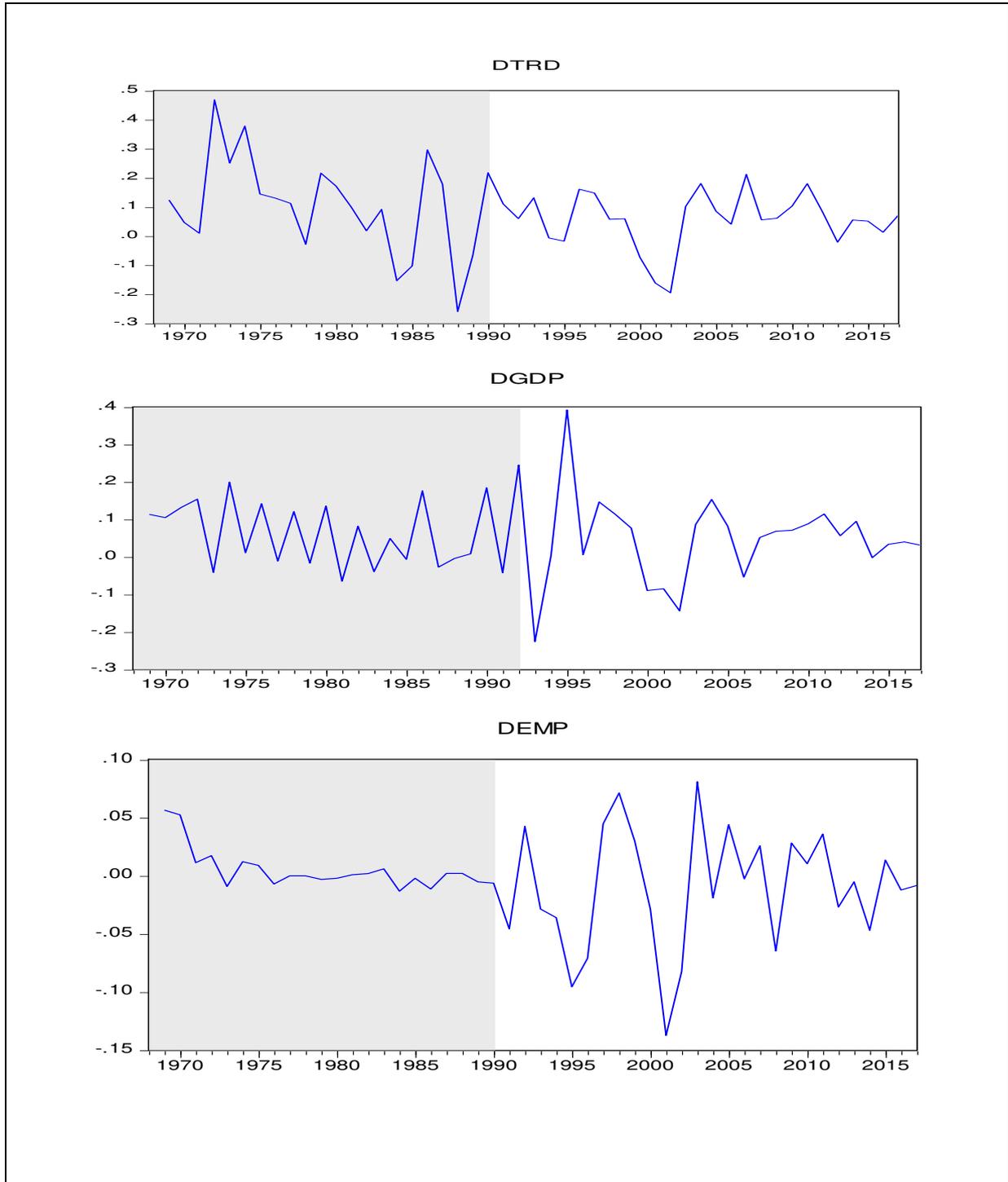
Israeli economy in 1980s, the eruption of the first Palestinian Intifada in 1987 and the eruption of second Al-Aqsa intifada in 2000 year, respectively, (World Bank, 1993) and (Abugamea, 2010).



Sources:(1) Israeli Central Bureau of Statistics (ICBS), Statistical Abstract of Israel, Various Issues.

(2)World Bank. (1993). Developing the Occupied Territories. An Investment in Peace. Vol. 2, Washington, DC. (3) Palestinian Central Bureau of Statistics (PCBS), Various Issues.

**Figure (1): The Behavior of the variables; Trade, GDP and Employment Rate over the period 1968-2017**



Sources: :(1) Israeli Central Bureau of Statistics (ICBS), Statistical Abstract of Israel, Various Issues.

(2)World Bank. (1993). Developing the Occupied Territories. An Investment in Peace. Vol. 2, Washington, DC. (3) Palestinian Central Bureau of Statistics (PCBS), Various Issues.

**Figure (2): The Growth Behavior of the variables; Trade, GDP and Employment Rate over the period 1968-2017**

Economic growth (gdp) grew by 5.6 over the period 1968-2017. It exhibits cyclical fluctuations for the period from the early 1970s to the early 1990s, a period witnessed a deep integration with the Israeli economy and with chances to trade with Jordan and moving of Palestinian labor force to Arab countries. The period since the early of 1990s to present shows a stagnant pattern of growth and sharp structural shifts followed political events, First Intifada, Al-Aqsa Intifada, Siege and wars on Gaza Strip, which affected the Palestinian land in the West Bank and Gaza Strip. The best performance recorded in the years 1974, 1980, 1986, 1992, 1995, 2004, and 2011 with rates of growth 20, 14, 18, 25, 39, 15 and 11 percents, respectively. The poorest performance recorded in the years 1973, 1987, 1993, 2002 and 2006 with negative rates of growth 4, 3, 23, 14 and 5 percents, respectively.

Employment rate recorded a negative rate of growth with 0.4 percent over the period of study. The period from 1970s to 1990 witnessed a stable pattern of employment coexisted with Israeli economy absorbing about 36 percent of total Palestinian labor force. The period since the early 1990s to present witnessed a steadily declining pattern of employment which reflects more than 40 percent of unemployment in the West Bank and Gaza Strip resulted from more restrictions of the Israeli occupation on their economies and on movement of Palestinian labor to Israel. The best performance was found in the years of 1992, 1998, 2003, 2011 and 2014 with rates growth in employment of 4.3, 7.1, 8.6, 3.6 and 4.7 percents, respectively compared with the poorest one in the years 1991, 1995, 2001 and 2008 with negative rates of growth of 4.6, 9.6, 13.7 and 6.5, respectively.

#### **4-Data and Methodology**

The objective of this paper is to explore the dynamics of the relationship between external trade, which comprises imports and exports, employment rate and economic growth in Palestine using the annual data for the period 1968 to 2017. In this study, the variables are trade (TRD), employment rate (EMP) and economic growth (GDP) ) in the Palestinian

territories. Trade comprises both imports and exports of merchandise and services ones expressed in US dollars. Gross domestic product (GDP) in US dollars is used as the proxy for economic growth in Palestine and employment rate represents labor employed of total labor force in percents. In the absence of a unified source of Palestinian data, we collected data from different sources. Palestinian trade figures, employment rate and GDP for the period 1968-1993 were obtained from Israeli Central Bureau of Statistics (ICBS) and The World Bank, 1993. Data for period 1994-2017 obtained from Palestinian Central Bureau Statistics (PCBS) publications. All the variables are taken in their natural logarithms to be leveled. Data on the Palestinian GDP, trade and employment rate are plotted in Figure (1).

In this study we employed time series econometrics techniques, mainly rely on cointegration and error correction modeling. Estimation procedure consists as follow:

First, unit root test, second, cointegration test, third, Granger Causality test based on the error correction model estimation (VECM).

**Unit Root Tests:** The purpose of unit root test is to check whether the data is stationary or not. The data is said to be stationary if its mean, variance and covariance remain constant over time,. Consider the following AR(1) model:

$$Y_t = \phi Y_{t-1} + \varepsilon_t \quad (1)$$

The stationary condition is  $\phi < 1$ .

Case 1:  $\phi < 1$  the data is stationary.

Case 2:  $\phi > 1$  the series exploded

Case 3:  $\phi = 1$  shows unit root and non-stationary

In this paper we use both the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests to examine the data set for stationarity, Dicky and Fuller (1979) and Phillips, Perron (1988). These are used to eliminate the problem of autocorrelation. The determination of lag length is based on Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC). Three possible forms of these tests areas shown:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \epsilon_t \quad (2)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \epsilon_t \quad (3)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \alpha_1 t + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \epsilon_t \quad (4)$$

Where  $\alpha_0$  is constant,  $\alpha_1$ ,  $\beta_i$ ,  $\gamma_i$  are slope coefficients,  $t$  is a linear time trend and  $\epsilon_t$  is the error term. The null hypothesis can be expressed as:  $H_0: \gamma = 0$ , on the other hand, alternative hypothesis is  $H_1: \gamma < 0$ .

**Cointegration Tests:** The Johansen cointegration test is employed to check the long-run relation between the concerned variables, Johansen (1988, 1991) and Johansen and Juselius (1990). The variables which have the same order of integration could be checked for cointegration. In this study we will see only two variables are examined for the cointegration. The Johansen cointegration test shows the long run properties of the variables where the test is based on the maximum likelihood estimation of the K-dimensional Vector Autoregression (VAR) having order  $p$ . Both the trace eigenvalue statistic and the maximum eigenvalue statistic are used.

**Granger Causality Test Based on VECM:** The order of Vector Autoregression (VAR) of order  $p$  in the error-correction model is determined by minimizing the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC). The Granger causality test is used to check the causality between the concerned variables. The granger causality test is based on the following Vector Error Correction Models (VECMs):

$$\Delta LGDP_t = \delta_1 + \sum_{i=1}^{n-1} a_{1i} \Delta LGDP_{t-i} + \sum_{i=0}^{j-1} \gamma_{1i} \Delta LEMP_{t-i} + \sum_{i=0}^{m-1} r_{1i} \Delta LTRD_{t-i} + \phi_1 ECT_{t-1} + \omega_{1t} \quad (5)$$

$$\Delta LEMP_t = \delta_2 + \sum_{i=0}^{n-1} a_{2i} \Delta LGDP_{t-i} + \sum_{i=1}^{j-1} \gamma_{2i} \Delta LEMP_{t-i} + \sum_{i=0}^{m-1} r_{2i} \Delta LTRD_{t-i} + \phi_2 ECT_{t-1} + \omega_{2t} \quad (6)$$

$$\Delta LTRD_t = \delta_3 + \sum_{i=0}^{n-1} a_{3i} \Delta LGDP_{t-i} + \sum_{i=0}^{j-1} \gamma_{3i} \Delta LEMP_{t-i} + \sum_{i=1}^{m-1} r_{3i} \Delta LTRD_{t-i} + \phi_3 ECT_{t-1} + \omega_{3t} \quad (7)$$

Where,  $\Delta$  = Difference operator,  $ECT_{t-1}$  = One period lagged value of the error correction term. The significant error correction term is interpreted as the long-run causal effect.

## 5-Empirical Analysis

The stationary properties of the variables; TRD, EMP and GDP are examined by using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (FP) tests, before employing tests for cointegration and Granger causality. These tests were applied to determine the order of integration on level as well on first differences. Stationarity of all the variables are tested at intercept and then at intercept and trend. The results of these tests are shown in Table (1).

**Table (1): Unit Root Tests**

| Variable      | Augmented Dicky Fuller Test |                      | Phillips-Peron Test  |                      | Conclusion |
|---------------|-----------------------------|----------------------|----------------------|----------------------|------------|
|               | Intercept                   | Intercept and Trend  | Intercept            | Intercept and Trend  |            |
| LGDP          | -2.9867<br>(0.0432)         | -3.2908<br>(0.0798)  | -2.9844<br>(0.0434)  | -3.3087<br>(0.0768)  | I(1)       |
| $\Delta$ LGDP | -6.1383*<br>(0.000)         | -6.5414*<br>(0.000)  | -6.1253*<br>(0.000)  | -6.5414*<br>(0.000)  |            |
| LTRD          | -2.7209<br>(0.0781)         | -2.5997<br>(0.2822)  | -2.4744<br>(0.1278)  | -2.6021<br>(0.2813)  | I(1)       |
| $\Delta$ TRD  | -5.1726*<br>(0.0001)        | -5.3546*<br>(0.0003) | -5.0863*<br>(0.0001) | -5.2145*<br>(0.0005) |            |
| LEMP          | -0.0013<br>(0.9524)         | -1.3754<br>(0.1547)  | -0.7157<br>(0.8331)  | -0.6896<br>(0.4131)  | I(1)       |
| $\Delta$ LEMP | -6.9215*<br>(0.0000)        | -6.2742*<br>(0.0002) | -6.9215*<br>(0.0000) | -5.7512*<br>(0.0000) |            |

Figures indicate t-statistic and in parenthesis are p values.

\* shows significant at both 1% and 5% levels.

The results conclude that trade, employment rate and GDP are stationary at first difference.

Thus, trade, employment and GDP are integrated of the same order i.e I(1).

Since the variables TRD, EMP and GDP are integrated of the same order i.e I(1), the hypothesis of cointegration is examined by the Johansen cointegration test. Also, in this case, by introducing DLR as a dummy variable and as exogenous variable too, takes the value of (1) for the years since 2001 onwards and zeros for the others, which represents restrictions on Palestinian labor movement to Israel, Abugamea (2018), the results of this test are given in Table (2).

**Table (2): Johansen Co-integration Tests**

| Null Hypothesis | Alternative Hypothesis | Trace Statistics | 5% Critical Value | Prob. Value** |
|-----------------|------------------------|------------------|-------------------|---------------|
| $r=0^*$         | $r=1$                  | 37.3490          | 29.79707          | 0.0056        |
| $r=1^*$         | $r=2$                  | 18.8638          | 15.4947           | 0.0149        |
| At most 2       | $r > 2$                | 3.5523           | 3.8415            | 0.0595        |

\*Denotes rejection of the hypothesis at the 5% level.

\*\* Mackinon-Haug-Michelis (1999) p-values

The Trace statistics Value are greater than the critical value at 5% significance level under the null hypothesis of no cointegration vector ( $r=0$ ) and one cointegration vector and lesser than the ones under the null hypothesis of two cointegrating vectors. Thus, the test statistics indicate two cointegrating vectors, and there is the long run equilibrium relation between trade, employment and economic growth, given dummy of restriction on Palestinian labor employment in Israel.

Having cointegration between trade, employment rate and economic growth, the final step is to check the causality between the three variables by using the Vector Error Correction Model (VECM).

The estimation of VECM requires selection of an appropriate lag length. The number of lags in the model is determined according to the Schwarz Information Criterion (SIC). The lag length that minimized the SIC is 2. Then, an error correction model with the computed t-values of the regression coefficients is estimated and the results are reported in Table (3).

**Table (3): Results of Granger Causality test based on VEM**

| Vector Error Correction Estimates<br>Sample: 1968-2017<br>Sample (adjusted): 1971 2017 |                     |               |               |
|--|---------------------|---------------|---------------|
|  | Dependent variables |               |               |
| Regressors   | $\Delta$ LTRD       | $\Delta$ LEMP | $\Delta$ LGDP |
| $\Delta$ LGDP(-1)  | 0.6145              | 0.0176        | -0.0817       |

|                   |                                    |                                    |                                     |
|-------------------|------------------------------------|------------------------------------|-------------------------------------|
|                   | (0.1704)<br>(3.6062) *             | (0.0594)<br>(0.2951)               | (0.1619)<br>(-0.5045)               |
| $\Delta$ LGDP(-2) | 0.2324<br>(0.1772)<br>(1.3113)     | 0.0200<br>(0.0618)<br>(0.3241)     | 0.0681<br>(0.1684)<br>(0.4046)      |
| $\Delta$ LEMP(-1) | 0.4911<br>(0.4230)<br>(1.1610)     | 0.2121<br>(0.1474)<br>(1.4386)     | 0.5689<br>(0.4019)<br>(1.4157)      |
| $\Delta$ LEMP(-2) | 0.0561<br>(0.4417)<br>(0.1270)     | -0.0498<br>(0.1540)<br>(-0.3234)   | -0.0262<br>(0.4197)<br>(-0.0625)    |
| $\Delta$ LTRD(-1) | 0.0616<br>(0.1413)<br>(0.4361)     | 0.0009<br>(0.0492)<br>(0.0192)     | 0.0732<br>(0.1343)<br>(0.5449)      |
| $\Delta$ LTRD(-2) | -0.3213<br>(0.1284)<br>(-2.5019)*  | 0.0387<br>(0.0448)<br>(0.8642)     | 0.1593<br>(0.1220)<br>(1.3056)      |
| Constant          | 0.0637<br>(0.0384)<br>(1.6586)     | 0.0025<br>(0.0134)<br>(0.1902)     | 0.1064<br>(0.0365)<br>(2.9164) *    |
| DRL               | -0.1064<br>(0.0486)<br>(-2.1916)*  | -0.0377<br>(0.0169)<br>(-2.2290) * | -0.0789<br>(0.0461)<br>(-1.7105) ** |
| $ECT_{(t-1)}$     | -0.0509<br>(0.0205)<br>(-2.4825) * | -0.0216<br>(0.0072)<br>(-3.0269) * | -0.0350<br>(0.0195)<br>(-1.7950) ** |
| $R^2$             | 0.4992                             | 0.2769                             | 0.2160                              |
| Adj. $R^2$        | 0.3937                             | 0.1247                             | 0.0510                              |
| F-statistic       | 4.7340                             | 1.8193                             | 1.3090                              |
| S.E. equation     | 0.1378                             | 0.03996                            | 0.1046                              |

\* and \*\* denote significant at 5% and 10 %, respectively.

The estimated coefficient of error correction term  $ECT_{t-1}$  in the TRD equation is statistically significant and has a negative sign, which confirms the long run equilibrium relation between the independent and dependent variables at 5 per cent level of significant. Also, its relative value (-0.0509) in this case shows the rate of convergence to the equilibrium state per year. Clearly, the speed of adjustment of any disequilibrium in trade towards a long run equilibrium is about 5 per cent of the disequilibrium in trade is corrected each year. This situation denotes to a modest adjustment of trade to changes in economic activity and employment rate of labor force under the prevailing constraints affect the Palestinian economy.

Also, the estimated coefficients of error correction term  $ECT_{t-1}$  in EMP equation is statistically significant and has a negative sign, which confirms the long run equilibrium

relation between the independent and dependent variables at 5 per cent level of significant. Its relative value (-0.0216) in this case shows the rate of convergence to the equilibrium state per year. This situation denoted to a lower adjustment of employment rate of labor to changes in the independent variables. Clearly, the speed of adjustment of any disequilibrium in EMP towards a long run equilibrium is about 2 per cent of the disequilibrium in GDP is corrected each year.

Once again, the estimated coefficients of error correction term  $ECT_{t-1}$  in GDP equation is statistically significant and has a negative sign, which confirms the long run equilibrium relation between the independent and dependent variables at 10 per cent level of significant. Its relative value (-0.0350) in this case shows the rate of convergence to the equilibrium state per year. This situation denoted to a lower adjustment of GDP growth to changes in the independent variables. Clearly, the speed of adjustment of any disequilibrium in GDP towards a long run equilibrium is about 3 per cent of the disequilibrium in GDP is corrected each year.

Thus coefficient of error terms results in trade, employment and GDP equations confirm the long run equilibrium relation between trade, employment and economic growth.

Also, in trade and GDP economic growth equations the coefficients of the first difference of TRD, and GDP lagged one and/or two periods indicate to some extent of the existence of short-run causality from trade and employment to GDP in economic growth equation and from GDP to trade in case of trade equation. Yet, F-statistic value (4.7340) in Table (3) from trade equation confirms the significant effect of GDP with other variables on trade but not for the effect of trade with other variables on GDP and EMP equations. These results are in line with the findings of Abugamea (2015) and Abugamea (2018), respectively.

In order to confirm the results of short-run causality between the  $\Delta LTRD$ ,  $\Delta EMP$  and  $\Delta LGDP$  based on VECM estimates, a standard Granger Causality test is also performed based on the F-values, Granger (1969).

**Table(4): Results of Granger Causality Test**

| Null Hypothesis                  | *F-statistic | Probability | Decision |
|----------------------------------|--------------|-------------|----------|
| LTRD does not Granger Cause LEMP | 3.4834*      | 0.0396      | Reject   |
| LEMP does not Granger Cause LTRD | 1.5444       | 0.2251      | Accept   |
| LEMP does not Granger Cause LGDP | 2.0734       | 0.1382      | Accept   |
| LGDP does not Granger Cause LEMP | 4.1054*      | 0.0234      | Reject   |
| LTRD does not Granger Cause LGDP | 0.9233       | 0.4049      | Accept   |
| LGDP does not Granger Cause LTRD | 11.1388*     | 0.0001      | Reject   |

- Number of lags =2

The results in Table (4) indicate that TRD does not Granger cause GDP and EMP does not cause GDP at 5 per cent level of significance. This result supports the ones obtained from VECM that there is no short-run causality at 5 per cent level of significance. Also, results denote that EMP does not Granger cause TRD, a result is similar to that of VECM. Once again, results indicate that GDP Granger cause trade, a case confirmed by VECM results. Meanwhile, results denote to causality runs from GDP to EMP and from TRD to EMP. By reconciling these results with that of VECM, we conclude an existence of marginal causality runs from GDP to employment and from trade to employment.

Overall, these results conclude the existence of long run relation between trade, employment and economic growth and also a causality runs from economic growth to trade in comparison with a weak causality one runs from both economic growth and trade to employment.

## 6-Conclusions

This study uses the cointegration and the Granger causality tests to examine the long run relation as well as to check the specific direction of the causality among trade, employment and economic growth in Palestine. The econometrics results based on vector error correction models (VECM) confirm the existence of long run relation between trade, employment and

economic growth and show that both employment and GDP are main determinants of trade but not trade and GDP determinants of employment or trade and employment determinants of GDP. Causality tests confirm VECM results that changes on economic growth in the long run cause change in trade in the short run. By reconciling causality results with that of VECM, we conclude an existence of marginal causality runs from GDP to employment and from trade to employment.

These findings guide to a number of policy implications: There is a need for expansive economic policies participated by governmental and private sectors, through which trade is strengthened and employment is encouraged, as well as trade policies should affect trade, import and export components to make trade more dynamic, thus affecting both employment and economic activity. Also, of importance by any way, lifting restrictions on Palestinian economics as a whole. This will push toward a more dynamic nexus between trade, employment and economic growth.

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