



The Effects of International Trade Openness on Government Revenue: Empirical Evidence from Middle East and North African Region Countries

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ABSTRACT

This study investigates the impact of international trade openness on government revenue in Middle East and North African (MENA) countries for the period of 2000–2015. More specifically, this study examines the relationship between government revenue and international trade openness, real gross domestic product (GDP) per capita, corruption level measure, and population. The study utilized panel data, covering the period of 2000–2015, for nine selected MENA countries. The results of the study, using the panel fully modified least squares, highlights the negative impact of international trade openness on government revenue. Moreover, the results indicate that countries with a higher real GDP per capita and lower corruption level have more government revenue while the total population plays a negative role in government revenues.

Keywords: Trade Liberalization, Government Revenue, Gross Domestic Product

JEL Classifications: E01, F1, H5

1. INTRODUCTION

The role of trade openness as a proxy indicator of trade liberalization is one of the vital issues that have been investigated widely in the economic literature. Several studies argued that trade openness as an “engine of growth” can play a significant role in improving economic growth and the level of development. Especially in the long run, due to the ability of international trade in increasing productivity and encouraging greater efficiency, it has been revealed that internationally active countries tend to be more productive (Kim et al., 2013; Shahbaz, 2012; Dong, 2014).

In general, developing countries suffer from a large deficit in both public budget and current account balance. In addition to insufficient domestic financial resources as a main source of fund. However, the different types of financial inflows play an important role in case of developing countries to finance government expenditure and achieve long-run developmental strategies (Todaro and Smith, 2009). Hence, the importance of this study comes from identifying the potential benefit of international trade openness in driving government revenue flows. Recent

studies attempt to identify the potential factors that can be related to promoting domestic financial flows. Trade liberalization is considered by many studies as one of the major determinants of financial flows, especially government revenue.

2. BACKGROUND

Several studies explored the potential linkage between international trade openness and public government revenue as an example of domestic financial flows. Direct and indirect tax types are considered as one of the major domestic financial resources that can be used to finance government expenditure. The relationship between international trade openness and government revenue has been widely investigated. According to previous literature, there are two different arguments about the impact of trade openness (free trade) on government revenue: The positive effect argument and the negative effect argument.

The positive effect argument: Previous studies attempted to examine the main determinants of government revenue in

general and tax revenue. Specifically, several studies (Stotsky and Woldemariam, 1997; Bornhorst et al., 2009; Drummond et al., 2012) aimed to identify the potential factors that can be related to better the tax revenue inflows. The empirical evidence of these studies show that the degree of international trade openness plays a positive role in enhancing the tax revenue by increasing the productivity of output and promoting economic growth and hence, generating more government revenue.

The outcomes of recent studies support the positive effect argument of international trade openness on government revenue in general, and tax revenue in particular. Mushtaq et al., (2012) analyzed the determinants of tax revenue in Pakistan over a period of 1975-2010. This study used the following explanatory variables: Exchange rate, population, gross domestic product (GDP), and trade openness. The study's results highlighted that international trade openness is one of the most important determinants of tax revenue in Pakistan. In addition, Jaffri et al.s. (2015) study investigated the potential linkage between trade liberalization and tax revenue in Pakistan during the period of 1982-2013 by using the autoregressive distributed lag model. The empirical study evidence showed a positive impact of trade liberalization on tax revenue over the study period. The results indicate that in the long-run, a 1% increase in international trade openness leads to 0.35% increase in tax revenue. Based on this, the study recommends the policymakers to reduce the restrictions on international trade and take advantage of the positive role of international trade openness in enhancing the total tax revenue by reducing tax evasions and tax exemptions in Pakistan.

Gnangnon (2017) indicated that trade openness has a positive impact on tax revenue, based on the panel data for 169 countries among which 37 were least developed countries during the period of 1995-2013. The study showed that the positive role of trade liberalization depends on the level of development of the country and the level of its domestic trade liberalization policy. The general argument indicates that restriction in the trade policy weakens the positive impact of trade openness on government revenue and hence, the tax revenue. In addition, a higher level of development measured by the real GDP increases the positive impact of trade openness on tax revenue, especially in the long-run.

Lutfunnahar (2007) explored the main determinants of tax revenue performance in Bangladesh by using tax revenue as a percentage of the GDP as a dependent variable. He argued that Bangladesh has a low tax ratio and the study results suggested that increasing the trade openness will lead to better tax revenue performance. The study results highlighted that international trade related positively to tax revenue and is considered to be one of the main variables that determine the tax effort. Chaudhry and Munir (2010) used the same explanatory variables as Lutfunnahar's (2007) study to investigate the determinants of tax revenue in Pakistan from 1973 to 2009. The empirical evidence showed that international trade openness, and international financial flows (external debt, foreign aid), and political stability are the major determinants of tax efforts in Pakistan. The study also showed that foreign trade played a key role in enhancing the tax revenue as a percentage of the GDP ratio, since Pakistan increased the degree of trade liberalization

over the study period and which contributed positively to the tax revenue performance. They argue that Pakistan suffered from a high budget deficit with low tax ratio (tax revenue/GDP), but after boosting the trade openness the tax ratio increased.

In general, the empirical evidence for most of the studies that analyzed the main determinants of tax revenue support the positive impact of trade openness on the performance of tax revenue. However, this positive effect of trade openness on government revenue depends on several factors, such as the structure of trade liberalization and the impact of the existing free trade structure on each component of government revenue, in addition to the import and export price elasticity (Frankel, 1999). In addition, findings from several studies on international trade openness and non-tax resource revenue showed that free trade positively affects the domestic non-tax revenue resources as a percentage of the GDP by, enhancing the mobilization of these types of domestic revenue (Crivelli and Gupta, 2014; Brun et al., 2015; Thomas and Trevifo, 2013).

2.1. Negative Effect Argument

On the other hand, several studies argued that trade liberalization can lead to a reduction in government revenue; the rationale behind this negative argument is based on the fact that developing countries rely heavily on indirect tax revenue sources, such as import tariffs. So, when countries increase their degree of openness to international trade, it induces a reduction of the restrictions on imports tariff tax and hence, it decreases the tax revenue. The general negative argument of trade liberalization on tax revenue, based on recent studies, argues that there is a potential loss in government revenue as result of decreasing the tax on international trade to facilitate free trade (Khattry and Rao, 2002). The empirical evidence from recent studies (such as Khattry and Rao, 2002) showed that increasing the degree of international trade openness contributes negatively to the total tax revenue in low-middle income countries. The study shows that the structural characteristics of low-middle income countries, such as the size of population, the degree of urbanization, and the age dependency ratio and others explain the negative effect of international trade openness on government revenue.

Cagé and Gadenne's (2014) study indicated that international trade openness induces extra financial costs related to international trade tax cuts in developing countries. However, in developed countries, increasing the degree of trade openness does not have a negative effect on government revenue. This is because the high-income developed countries have efficient tax management systems which can compensate any decline in the tax burden in foreign trade by imposing tax on domestic transactions. The main conclusion of this study is that international trade openness leads to a reduction in the total tax revenue, especially in the long-run.

3. DATA, METHODOLOGY AND ECONOMETRIC MODEL

3.1. The Econometric Model

Models based on economic theory and previous empirical studies, such as Brun and Gnangnon, (2017), will be estimated in order to

achieve the study objective and test the main study hypotheses. To analyze the impact of international trade openness on government public revenue, a log linear form, such as the following, is used:

$$\log Y_{it} = \alpha_0 + \alpha_1 \log x_{1it} + \alpha_2 \log x_{2it} + \alpha_3 \log x_{3it} + \alpha_4 \log x_{4it} + \varepsilon_{it}$$

Where:

- $\log Y_{it}$: Denotes government public revenue, excluding grants, as a percentage of the GDP.
- $\log x_{1it}$: The logarithm of international trade openness of a country, measured by the sum of exports and imports for goods and services in terms of dollars, as a percentage of the GDP measured in terms of dollars.
- $\log x_{2it}$: The logarithm of the real GDP per capita, measured in terms of dollars.
- $\log x_{3it}$: The logarithm of the total population.
- $\log x_{4it}$: The logarithm of the corruption level.
- α_0 : The intercept.
- $\alpha_1, \dots, \alpha_4$: The estimated parameters for the independent variables.
- ε_{it} : The error term.

3.2. Study Sample

The study used the annual database, covering the period of 2000-2015, for selected countries from the Middle East and North African (MENA) regions. The selected countries are: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, and Tunisia. The country selection was based mainly on the data availability.

3.3. Study Hypotheses

The following null hypotheses were formulated:

- H_0 : There is no significant relationship between international trade openness and government revenue.
- H_{01} : There is no significant relationship between government revenue and the real GDP per capita.
- H_{02} : There is no significant relationship between government revenue and corruption level.
- H_{03} : There is no significant relationship between government revenue and total population.

3.4. Study Variables Measurement

In order to test the study's hypotheses, the model variables need to be defined and measured.

As for the study dependent variable, there are two main types of financial flow: The first one is the domestic financial flow, while the other one is the international financial flow.

According to Shukla and Glenday (2001), domestic financial flows are when government public revenue is considered as one of the main tools for fiscal policy, and government revenue is defined as the domestic financial inflow that the government received from different sources as follows:

1. Taxable sources (direct tax): Taxes imposed on different sources of income and wealth and paid by mainly by the public (individuals and corporations), indirect tax: Sales tax (tax on goods and services).

2. Non-taxable sources: Income from government-owned corporations, capital inflows in the form of external loans and debts from international financial institutions, and foreign aid from other counties.

The general argument on trade openness, as one of the study's independent variables, is based on the previous literature (Akubu et al., 2015; Hysa et al., 2014; Kose et al., 2009) which denotes that trade openness, as a proxy for trade liberalization, has a positive role in promoting and enhancing economic growth and trade openness, and thus, is considered as one of the main determinants of economic growth and is considered as an engine of growth. There are different measures for international trade openness, the most popular one being the sum of total exports and imports as a percentage of the GDP.

Based on several researches (Brun and Gnanon, 2017; Masood et al., 2016; Pattayat, 2016; Chaudhry and Munir, 2010), the following control variables are expected to be included: Real GDP per capita, total population, corruption index.

Real GDP per capita: According to the World Bank, the real GDP per capita can be used as a proxy indicator for social welfare and used as a benchmark to compare the standard of living between the countries. Real GDP per capita is calculated as the total economic output of a country divided by its total population, adjusted for inflation.

Corruption level index: According to the Worldwide Governance Indicators, a corrupt practice is the offering, giving, receiving or soliciting, directly or indirectly, of anything valuable to influence the actions of another party improperly.

4. EMPIRICAL ANALYSIS

This section presents the empirical portion of the study. The analysis of the results will be conducted according to the following three steps:

1. Examine the stationarity of each variable using panel unit root tests.
2. Examine the long run-relationship between the study variables.
3. Depending on 1 and 2, a proper method of estimation will be chosen.

4.1. Panel Unit Root Tests

Before testing the existence of a cointegration relationship between the study variables, the stationarity of the variables are tested by applying the different types of panel stationarity tests at both the levels differently. The results with constant, constant and trend are presented in Tables 1-4, respectively.

It is important to detect whether the study variables have unit root. There are various methods that can be used to test the stationarity of variables. Summary is considered as a formal test method that includes the major types of panel unit root test. The general hypotheses for a panel unit root test are as follow:

Table 1: Panel unit root test: Level

Variables	Exogenous variables	Methods	Statistic value	P value	Decision
TGR	Individual effects	Levin, Lin and Chu	-1.4291	0.0765	Non-stationary
		Im, Pesaran and Shin W-stat	-0.57878	0.2814	Non-stationary
		ADF-Fisher Chi-square	19.9816	0.3339	Non-stationary
		PP-Fisher Chi-square	22.6035	0.2063	Non-stationary
TOP	Individual effects	Levin, Lin and Chu	-1.59068	0.0558	Non-stationary
		Im, Pesaran and Shin W-stat	0.27319	0.6076	Non-stationary
		ADF-Fisher Chi-square	11.8965	0.8525	Non-stationary
		PP-Fisher Chi-square	11.1831	0.8864	Non-stationary
COR	Individual effects	Levin, Lin and Chu	-2.30818	0.0105	Stationary
		Im, Pesaran and Shin W-stat	-1.46503	0.0715	Non-stationary
		ADF-Fisher Chi-square	25.9767	0.1003	Non-stationary
		PP-Fisher Chi-square	25.2025	0.1194	Non-stationary
POP	Individual effects	Levin, Lin and Chu	-1.70468	0.0441	Stationary
		Im, Pesaran and Shin W-stat	0.63738	0.7381	Non-stationary
		ADF-Fisher Chi-square	32.4612	0.0194	stationary
		PP-Fisher Chi-square	2.69370	1.0000	Non-stationary
GPC	Individual effects	Levin, Lin and Chu	-3.885	0.0001	stationary
		Im, Pesaran and Shin W-stat	-1.09644	0.1364	Non-stationary
		ADF-Fisher Chi-square	21.5038	0.2548	Non-stationary
		PP-Fisher Chi-square	12.9913	0.7921	Non-stationary

Table 2: Panel unit root test: Level

Variables	Exogenous variables	Methods	Statistic value	P value	Decision
TGR	Individual effects	Levin, Lin and Chu	-1.1058	0.1344	Non-stationary
		Breitung t-stat	0.32464	0.6273	Non-stationary
	individual linear trends	Im, Pesaran and Shin W-stat	0.89496	0.8146	Non-stationary
		ADF-Fisher Chi-square	12.1809	0.8378	Non-stationary
		PP-Fisher Chi-square	15.4666	0.6297	Non-stationary
TOP	Individual effects	Levin, Lin and Chu	-1.32458	0.0927	Non-stationary
		Breitung t-stat	0.42042	0.6629	Non-stationary
	individual linear trends	Im, Pesaran and Shin W-stat	0.27277	0.6075	Non-stationary
		ADF-Fisher Chi-square	16.2454	0.5754	Non-stationary
		PP-Fisher Chi-square	13.9501	0.7323	Non-stationary
COR	Individual effects	Levin, Lin and Chu	-0.65163	0.2573	Non-stationary
		Breitung t-stat	-0.46709	0.3202	Non-stationary
	individual linear trends	Im, Pesaran and Shin W-stat	-0.80078	0.2116	Non-stationary
		ADF-Fisher Chi-square	22.6818	0.2031	Non-stationary
		PP-Fisher Chi-square	18.5060	0.4228	Non-stationary
POP	Individual effects	Levin, Lin and Chu	-20.3304	0.0000	Stationary
		Breitung t-stat	2.32242	0.9899	Non-stationary
	individual linear trends	Im, Pesaran and Shin W-stat	-26.2292	0.0000	Stationary
		ADF-Fisher Chi-square	159.097	0.0000	Stationary
		PP-Fisher Chi-square	6.55016	0.9934	Non-stationary
GPC	Individual effects	Levin, Lin and Chu	0.71640	0.7631	Non-stationary
		Breitung t-stat	2.33490	0.9902	Non-stationary
	Individual linear trends	Im, Pesaran and Shin W-stat	3.20938	0.9993	Non-stationary
		ADF-Fisher Chi-square	10.1648	0.9264	Non-stationary
		PP-Fisher Chi-square	3.15998	1.0000	Non-stationary

- Null hypothesis: Panel data has a unit root (non-stationary).
- Alternative hypothesis: Panel data does not have a unit root (stationary).

Tables 1 and 2 present the testing of the null hypothesis of the unit root of the study variables by applying a summary test type at level with the individual effects and individual linear trends, respectively. Based on the probability value, we can take the decision regarding the stationarity of the study variables. If the probability value is <5%, we reject the null hypothesis and accept the alternative hypothesis. This means that the study variables at level do not have a unit root. On the other hand, if the probability

value is more than 5%, we fail to reject the null hypothesis and reject the alternative hypothesis, meaning that the study variables have a unit root. If the results are mixed, we take the decision based on the majority of test method results. Hence, if most of the methods show that the study variable has a unit root, the decision will be that the study variable is non-stationarity. On the other hand, if most of the methods show that the study variable does not have a unit root, the decision will be that the study variable is stationarity.

According to Table 1, government public revenue (TGR) and the international trade openness of a country (TOP) has a unit root

Table 3: Panel unit root test: 1st difference

Variables	Exogenous variable	Methods	Statistic value	P value	Decision
D (TGR)	Individual effects	Levin, Lin and Chu	-2.69274	0.0035	Stationary
		Im, Pesaran and Shin W-stat	-2.85569	0.0021	Stationary
		ADF-Fisher Chi-square	39.5585	0.0024	Stationary
		PP-Fisher Chi-square	95.7312	0.0000	Stationary
D (TOP)	Individual effects	Levin, Lin and Chu	-5.13671	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-3.68057	0.0001	Stationary
		ADF-Fisher Chi-square	45.4309	0.0004	Stationary
		PP-Fisher Chi-square	85.7624	0.0000	Stationary
D (COR)	Individual effects	Levin, Lin and Chu	-6.82269	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-5.55652	0.0000	Stationary
		ADF - Fisher Chi-square	65.3645	0.0000	Stationary
		PP-Fisher Chi-square	96.7489	0.0000	Stationary
D (POP)	Individual effects	Levin, Lin and Chu	-15.9662	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-15.5127	0.0000	Stationary
		ADF-Fisher Chi-square	158.534	0.0000	Stationary
		PP-Fisher Chi-square	7.12886	0.9890	Stationary
D (GPC)	Individual effects	Levin, Lin and Chu	-2.54573	0.0055	Stationary
		Im, Pesaran and Shin W-stat	-2.15906	0.0154	Stationary
		ADF-Fisher Chi-square	30.8497	0.03	Stationary
		PP-Fisher Chi-square	34.444	0.0111	Stationary

which is at level with the individual effects. With regard to Levin, Lin and Chu tested that the corruption level (COR), real GDP per capita (GPC) are stationary at level but the majority results for other test types show that COR, GPC have a unit root. With regard to ADF - Fisher Chi-square and Levin, Lin and Chu tested that the total population (POP) is stationary, but the majority results for other test types show that POP has a unit root. According to Table 2, government public revenue (TGR), international trade openness of a country (TOP), the corruption level (COR), GDP per capita (GPC) have a unit root at level with the individual effects and individual linear trends. With regard to Levin, Lin and Chu, Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square tests, the total population (POP) is stationary but the majority results for other test types show that POP has a unit root.

Tables 3 and 4 present the testing of the null hypothesis of the unit root of the study variables by applying the summary test type at 1st difference with the individual effects and individual linear trends, respectively. According to Table 3, government public revenue (TGR), international trade openness of a country (TOP), the corruption level (COR), real GDP per capita (GPC), total population (POP) are stationary at first difference with the individual effects. According to Table 4, the government public revenue (TGR), international trade openness of a country (TOP), the corruption level (COR) is stationary at first difference with the individual effects and individual linear trends. With regard to Breitung t-stat, the total population (POP) and real GDP per capita (GPC) have a unit root but the majority results for other test types show that the POP and GPC are stationary. The main conclusion is that the study data are stationary after taking the first difference into consideration.

4.2. Panel Cointegration Test

It is critical to examine the existence of a cointegration relationship between the study variables in order to check whether these variables have a long-run stable relationship.

Developing a panel cointegration model is the main target of this study. To achieve this target, there is a precondition for running

the panel cointegration model, in other words (cointegration regression), and that the study variables must be non-stationary at level. However, when the variables are converted into first difference, it will become stationary. The general hypotheses for panel unit root test are as follow:

- Null hypothesis: There is no cointegration in the model.
- Alternative hypothesis: There is a cointegration in the model.

According to the Kao panel cointegration test (Engle Granger based), there is one deterministic trend specification which is the individual intercept. Table 5 presents the outcome of this test for the study model. If the probability value is <5%, we can reject the null hypothesis and accept the alternative one, meaning that the study variables are cointegrated. On the other hand, if the probability value is more than 5%, we will fail to reject the null hypothesis and reject the alternative one, meaning that the study variables are not cointegrated. With regard to the Kao test outcomes in Table 5, the probability value is <5%, meaning that the study variables for each model have a long-run, stable relationship.

4.3. Model Estimation

In light of the results of the panel stationarity and cointegration tests, the model cannot be estimated directly with the panel ordinary least squares (OLS). To avoid the problem of spurious regression, a panel fully modified OLS (FMOLS) was used to estimate the model's long-run parameters. The results of applying panel fully modified least squares are shown in Table 6 below:

According to the previous studies, there are different types of factors that have a potential impact on the government revenue. These factors include both the supply side and demand side factors (Brun and Gnanngnon, 2017). This study analyzed the potential role of some of these factors, such as:

4.3.1. International trade openness

The study used international trade openness as a traditional measure for trade liberalization by considering the summation

Table 4: Panel unit root test: 1st difference

Variables:	Exogenous variables	Methods	Statistic value	P value	Decision
D (ODA)	Individual effects Individual linear trends	Levin, Lin and Chu	-2.22671	0.0130	Stationary
		Breitung t-stat	-2.25999	0.0119	Stationary
		Im, Pesaran and Shin W-stat	-1.9271	0.0270	Stationary
		ADF-Fisher Chi-square	27.0990	0.0404	Stationary
		PP-Fisher Chi-square	98.4920	0.0000	Stationary
D (FDI)	Individual effects Individual linear trends	Levin, Lin and Chu	-8.43573	0.0000	Stationary
		Breitung t-stat	-5.56191	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-7.58889	0.0000	Stationary
		ADF-Fisher Chi-square	77.0248	0.0000	Stationary
		PP-Fisher Chi-square	91.2491	0.0000	Stationary
D (TGR)	Individual effects Individual linear trends	Levin, Lin and Chu	-8.24354	0.0000	Stationary
		Breitung t-stat	-5.36828	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-5.50619	0.0000	Stationary
		ADF-Fisher Chi-square	58.514	0.0000	Stationary
		PP-Fisher Chi-square	77.7774	0.0000	Stationary
D (TOP)	Individual effects Individual linear trends	Levin, Lin and Chu	-5.86559	0.0000	Stationary
		Breitung t-stat	-3.28127	0.0005	Stationary
		Im, Pesaran and Shin W-stat	-2.58814	0.0048	Stationary
		ADF-Fisher Chi-square	34.8833	0.0098	Stationary
		PP-Fisher Chi-square	91.3201	0.0000	Stationary
D (COR)	Individual effects Individual linear trends	Levin, Lin and Chu	-6.78376	0.0000	Stationary
		Breitung t-stat	-5.8113	0.0000	Stationary
		Im, Pesaran and Shin W-stat	-6.01492	0.0000	Stationary
		ADF-Fisher Chi-square	65.051	0.0000	Stationary
		PP-Fisher Chi-square	91.8147	0.0000	Stationary
D (POS)	Individual effects Individual linear trends	Levin, Lin and Chu	-2.48914	0.0064	Stationary
		Breitung t-stat	-2.441	0.0073	Stationary
		Im, Pesaran and Shin W-stat	-2.39683	0.0083	Stationary
		ADF-Fisher Chi-square	33.9099	0.0129	Stationary
		PP-Fisher Chi-square	70.9330	0.0000	Stationary
D (POP)	Individual effects Individual linear trends	Levin, Lin and Chu	-21.2729	0.0000	Stationary
		Breitung t-stat	2.88624	0.9981	Non-stationary
		Im, Pesaran and Shin W-stat	-17.1031	0.0000	Stationary
		ADF-Fisher Chi-square	89.9424	0.0000	Stationary
		PP-Fisher Chi-square	6.34448	0.9946	Non-stationary
D (DOC)	Individual effects Individual linear trends	Levin, Lin and Chu	-2.97528	0.0015	Stationary
		Breitung t-stat	1.17272	0.8795	Non-stationary
		Im, Pesaran and Shin W-stat	-1.28149	0.1	Non-stationary
		ADF-Fisher Chi-square	28.5417	0.0453	Stationary
		PP-Fisher Chi-square	35.7808	0.0075	Stationary
D (GPC)	Individual effects Individual linear trends	Levin, Lin and Chu	-3.85369	0.0001	Stationary
		Breitung t-stat	0.08055	0.5321	Non-stationary
		Im, Pesaran and Shin W-stat	-2.03294	0.0210	Stationary
		ADF-Fisher Chi-square	34.0085	0.0126	Stationary
		PP-Fisher Chi-square	48.4338	0.0001	Stationary

Table 5: Kao residual cointegration test

Cointegration test	Statistic value	P value
ADF	-4.16252	0.0000

Table 6: Estimation result for the model using FMOLS

Variable	Coefficient	standard error	t-statistic	P value
TOP	-0.227934	0.014005	-16.27549	0.0000
GPC	0.054014	0.001778	30.3778	0.0000
POP	-0.002044	0.000634	-3.224717	0.0016
COR	-0.047592	0.010698	-4.448652	0.0000

Source: Authors calculation using Eviews. FMOLS: Fully modified ordinary least squares

of the total export and import as a percentage of the GDP. The results of the model are reported in Table 6. The results show that the international trade openness (TOP) coefficient

is associated negatively with the government revenue (TGR) as a dependent variable; meaning that a 1% increase in international trade openness leads to 0.228% decline in the government revenue. This relationship has a significance level of 1%, wherein the results are consistent with the outcomes of Khattry and Rao's (2002) study. This result supports the negative perspective of the relationship between international trade openness and government revenue. The rationale behind this negative argument is based on the fact that international liberalization induced a reduction in the taxes imposed on international trade transactions and hence, reduced the government revenue. Previous studies (Agbeyegbe et al., 2006) have argued that this negative impact can be offset only if the countries are able to recover these losses in the foreign trade tax from other resources, such as domestic tax sources, imposed on domestic transactions.

4.3.2. The real GDP per capita

The real GDP per capita considers a proxy measure for the level of development. Real GDP per capita (GPC) has a positive and significant impact on the government revenue at 1% significant level, meaning that a 1% increase in the real GDP per capita leads to a 0.054% increase in the government revenue. These results are consistent with the outcomes of (Agbeyegbe et al., 2006) other studies which argued that a high real GDP per capita reflects a higher capacity for paying taxes and hence, this leads to more tax revenue collection.

4.3.3. Total population

The relationship between the total population (POP) and government revenue (TGR) is negative and significant at 1%, meaning that a 1% increase in the total population results in 0.002% decline in the government revenue. Therefore, we conclude that the total population has a weak negative effect on the government revenue. These results are consistent with the outcomes of (Khattry and Rao, 2002; Bahl, 2003) other studies, which argued that in case of the faster growth in population, it is difficult for the government to capture the new taxpayers, especially in the short-run. Based on this, we can conclude that a higher size in the total population leads to lower tax revenue.

4.3.4. The level of corruption

The impact of the corruption level (COR) on government revenue is negative and significant at 1%, meaning that a 1% increase in the corruption level leads to 0.048% decline in the government revenue. This result is consistent with the outcomes of Bird et al. (2008). The study argued that a lower corruption level contributes positively in the mobilization of the government revenue and hence, enhances the performance of tax collection. With regard to this, a lower corruption level leads to more government revenue.

5. CONCLUSION

The main goal of this study is to empirically test whether the existence of international trade openness as a proxy measure for trade liberalization is associated with providing more domestic financial flows measured by government public revenue in MENA countries, during the period of 2000-20015. Consequently, the study looks deeply into more related elements by exploring the main factors that determine domestic financial flows. The study used international trade openness as a traditional measure of trade liberalization by taking the summation of the total export and import as a percentage of the GDP. The empirical results indicated that the existence of international trade openness induced a reduction in the government public revenue. These results are consistent with the outcomes of Khattry and Rao's research (2002).

Based on the above discussion, we conclude that the empirical results of the study support the negative perspective of the relationship between international trade openness and government revenue. The rationale behind this negative argument, based on the fact that developing countries rely heavily on indirect tax revenue sources such as import tariffs. Therefore, when countries increase the degree of openness to international trade, it induces a reduction in the restrictions on import tariff tax and hence, it

decreases the tax revenue. Hence, the main conclusion of this study is that there is a potential loss in government revenue as result of decreasing the tax on international trade for facilitating free trade in developing countries.

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