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General Sales Tax and Economic Growth in Small Open Developing Countries: Evidence from Jordan

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ABSTRACT

This paper examines the long and short-term empirical relationship between general sales tax(1) and economic growth between 1980-2018 in Jordan. Standardized tests were utilized, specifically Augmented Dickey-Fuller and Phillip-Peron methods. From the results, it can be ascertained that the variables are integrated at different degrees and are less than two. As such, we utilized the "Auto-Regressive Distributed Lag (ARDL)" approach for co-integration to determine the relationship between variables over both short and long term periods. Its results indicated one co-integrated relation between sales tax and economic growth. Moreover, a significantly positive effect was observed on economic growth in the short run, but in contrast, long term outcomes showed a negative relationship between the variables. As such, this study concludes that an amendment is needed in the tax system to make it more beneficial for Jordanian economic growth.

INTRODUCTION

Jordan, among other countries, has experienced different shocks since 2003, like a massive influx of refugees from Iraq and Syria, regional political volatility, and the financial crises of late 2008. These shocks have remarkably elevated severe economic problems. The Central Bank figures indicated that in 2018, the National debt reached a record high of 94.2% of GDP, economic growth fell to 2%, while unemployment and poverty rates increased to 18.6% and 15.7%, respectively (Central Bank of Jordan, 2019).

Before the financial crisis that occurred in 2008, Jordan was cooperating with the "International Monetary Fund (IMF)" and the "World Bank (W.B.)," the country carried out severe but gradual corrective measures, culminating in the past four years. The government has gradually and continually amended and increased tax rates, it is most observable within sales, income, and profit taxes, which have been rising over time frequently and in value as an attempt to cover the deficit derived from the debt as aforementioned. Consequently, in the fiscal year of 2018, total tax revenues reached 65.3% of total domestic revenues, while the general sales tax accounts for the high-

est percentage of total tax revenue, reaching nearly 70%, followed by income tax and profits up to 21%, while other taxes accounted for only 9% (Ministry of Finance, Jordan, 2019).

The government claims that these measures correct the course of the economy, stimulate competitiveness, and promote long-term growth. However, the tight fiscal policy and the tax increases followed by the government in the past years have become under severe criticism, mainly due to shrinking demand and production coupled with high unemployment and poverty rates. Research dealing with the impact of the sales tax on growth has not received significant attention, especially in Jordan, where there are no studies to address this issue, despite it playing an essential role in the tax system of the country. As such, this study has been designed to fill this literature gap by examining what impact general sales tax can have on the economy of a country over both the short and long term as a means of ascertaining how economic growth is related to the current sales tax system and if it is constructive for the economic growth of the country. The results could serve as guidance for small open economies similar to Jordan.

1. LITERATURE REVIEW

Tax systems and tax schemes of various forms, names, and objectives are among the most critical components of fiscal policies in all countries. The tax systems aim to raise the revenues needed to finance government expenditures and to direct economies in a manner that stimulates stable and sustainable growth. Changes in the mix and levels of taxes can have various long and short term economic impacts (see, for example, Burgess and Stern, 1993; Kalas et al., 2017). It is identified that favorable economic impacts are achieved when the government uses a tax system that works to reduce overall subsidies, decrease or eliminates deficit financing, provides and improves upon incentives given, and avoids unforeseen gains. These factors have been ascertained to have a more desirable effect on economic growth, (both long and short term), however, in some cases may also reduce investment and create equity and efficiency trade-offs (Burman et al., 2016). The literature related to general sales tax and economic growth is inconclusive and is unable to provide a comprehensive insight into the subject matter. There is no definitive answer that resolves the relationship between them, especially in less developed countries. However, the previous literature agrees that the impact of general sales tax on economic growth depends on a country level of development, the tax mix, and the way taxes are collected and spend (Besley and Persson, 2014). Empirical studies revealed three main diversified patterns concerning the effect of taxes upon the economy, specifically in terms of growth; most parts showed a negative effect; others indicated that the impact is positive, while the latter indicated a weak or no impact. The answers seem to depend on the country, which is examined; further, the tax design of the said country, as well as their overall tax system, was a significant contributor to the final outcome. This was, of course, further complimented by the method of investigation and the type and extent of data used (Gale et. al., 2015).

There are fundamental differences between developing and developed countries. Developing countries usually contain a large informal sector, many small scale businesses, inclined to depend on fewer natural resources, and receive external assistance. This low level of development has the consequences of these countries having subsisted on a lower level of taxes; they adopt a tax system that significantly contrasts with that presents within more developed countries (see for instance Burgess and Stern, 1993; Besley and Persson, 2014). As such, the empirical literature will be categorized into studies in developed, developing, and cross-country, as well as the main findings of the study.

The empirical literature available in developed countries is much more methodical, with more accurate data that is generally more useful as compared to that of developing countries. It concludes that there is a negative long term relation between economic growth and taxes, on the other hand, the short-term impact, while present, is not robust. A large portion of these studies has been conducted in the United States (see, for instance, Romer and Romer, 2010; Atems, 2015). The

same negative results of raising taxes on economic growth were also found by Hayo and Uhl (2013) in the case of Germany, Hussain and Liu (2019) for Canada, and Gil and Ramos (2019) for Spain. On the other hand, Few studies have shown positive, weak, or no relation between taxes and economic growth. Some instances are Kalas et al. (2017) for the USA; and Katz et al. (1983) for a group of 22 developed market economy countries.

The number of studies regarding the economies of developing countries is scant when compared to those that target developed ones. Most research studies that are conducted have results indicative of a negative relationship between taxes and growth, the same as developed countries, for example, Ahmad, S. et al. (2016) for Pakistan, and Dladla & Khobai (2018) for South Africa, While relatively few studies have indicated a positive effect, most of them are in Africa (see for example see Oboh and Edeme, 2018). Furthermore, some found a weak relation in developing countries like Burgess and Stern (1993).

The same trend can be further observed in cross-country studies that have attempted to explore this same relationship (for example, see Ormaechea and Yoo, 2012). While others like Mendoza et al. (1997) and McNabb (2018) revealed a positive, weak, or no relation.

Concerning the impact of the sales tax on economic growth, the literature indicates a limited number of published studies in refereed journals; various studies have used different methodologies with different samples in different countries, and showed a clear difference in the results, especially between developing and developed countries. In the USA Shon (2017) used aggregate county-level data from 1990 to 2013 to examine the relation between two different levels of taxation, both on a state and local level, sorted into different categories based on the industrial sectors. They determined a negative impact; this effect was most significant within industries associated with manufacturing. However, another study by Li and Lin (2015) for the period 1960–2013, using the ARDL model, found a long-run negative relationship between local sales tax and economic growth while the short-run impact was positive.

Munir & Sultan (2018) used an ARDL approach to analyze data from Pakistan for the period 1976-2014 for determining what impact taxes would have. Their findings indicated, as opposed to the observations mentioned above, that sales tax had a positive effect on economic growth in both the long and short term. Hakim et al. (2016) analyzed cross- country data (both developed and developing countries) in terms of the effect that occurs due to the application of goods and services tax (GST), utilizing the Arellano-Bond dynamic panel GMM method. From these investigations, it ascertained that GST harmed economic growth in developing countries. In contrast, the impact was positive in developed countries; based on this a revision of GST in developing countries was deemed to be necessary to increase revenue generation and stimulate economic growth. In Jordan, a careful search of the literature resulted in one study that touched on sales tax. Mdanat et al. (2018) used data between 1980 and 2015; they aimed to investigate the relationship that existed between tax structure and economic growth in Jordan using error correction techniques. They found that the tax structure alone, is not a sufficient indicator for designing policy, however, separating the tax model into different categories shows a significant negative effect of corporate taxes and personal taxes on per capita income, in stark contrast, per capita income was positively affected by consumption tax and tariffs.

When one examines the literature on both a national and international level, taxation is considered one of the critical factors in influencing economic growth in any country. However, research related to the effect of sales tax on growth has not received sufficient attention and has not reached a decisive result, especially in developing countries. Therefore, this study aims to examine the effect of general sales tax on economic growth in Jordan as a case study for small open developing countries.

2. DATA AND METHODOLOGY

By following Li and Lin (2015), in their leading study of the impact of sales taxes on economic growth in the United States, one can use a general form function to represent the relation between the two variables:

$$GY_t = f(GST_t) \quad (1);$$

Where GY_t is an annual percent change in GDP as a measure of economic growth, GST_t is the annual sales tax revenues measured in millions of Jordanian Dinars, and t denotes the year. Gross Domestic Product (GDP) and General Sales Tax (GST) data were sourced from the following institutes: The Central Bank and Ministry of Finance in Jordan for the period 1980 –2018 *(2)*.
The Autoregressive Distributed Lag (ARDL) bounds testing approach for cointegration, suggested by Pesaran & Yongcheol (1998) and Pesaran et. al. (2001) will be used to examine the relation in equation (1). This approach is superior to another cointegration procedure suggested by Johansen (1991) and Engle & Granger (1987), in that it does not require a large sample, does not assume that all variables have the same order of integration, and it avoids the endogeneity problem (Lamotte et al., 2013). The ARDL procedure mainly involves two basic steps. In the first step, we form an unrestricted error correction model (ECM) as in Equation 2, to test for a long-term relationship between the two variables using the bounds-testing procedure.

$$\Delta GY_t = \beta_0 + \sum_{i=1}^{n} \beta i.\, \Delta\, GY_{t-i} + \sum_{i=0}^{m} \lambda i.\, \Delta GST_{t-1} + \varphi_0.GY_{t-1} + \varphi_1.GST_{t-1} + \eta_t \quad (2);$$

Where β_0 is the drift;
βi, λ_i, φ_0 and φ_1 are coefficients;
Δ denotes the first difference operator;
N and m are the lag lengths of the variables in difference form;
and η_{it} is a white noise/error term.

The optimum number of lags of n and m is selected using the following information criteria: Akaike Information Criteria (AIC), Schwarz Criterion (S.C.), and Hannan–Quinn (H.Q.). The cointegration of variables in the equation (2) involves testing the main hypothesis of H0: $\varphi_0 = \varphi_1 = 0$. The Wald-test is used to test this main hypothesis, where the calculated F-value is compared with the tabulated critical values proposed by Pesaran et al. (2001). Their tabulated values consist of the lower bound values (LB) which assumes that the variables are I(0) and upper bound values (UB), assume that the variables are I(1). If the calculated F- value is greater than the value of the upper bound, we reject the main hypothesis and conclude the existence of a cointegrated relationship. However, if the F-calculated is less than the lower bound LB, then we cannot reject the main hypothesis of no cointegration, while if the F-calculated is lies between LB and UB, the test is inclusive *(3)*.

As the second step, in the case of cointegration among the variables, we can meaningfully estimate the coefficients of the long-run model:

$$GY_t = \alpha_0 + \alpha_1 GST + v_t \quad (3);$$

And, then we use the OLS estimates of equation (3) to generate the lagged residuals series, (Z_{t-1}), and fit the restricted ECM:

$$\Delta GY_t = \beta_0 + \Sigma\, \beta_i \Delta GY_{t-i} + \Sigma \gamma_j \Delta GST_{t-j} + \omega_i z_{t-1} + e_t \quad (4).$$

Where ω_i is the error correction coefficient as a measure of the rate of adjustment in which the short-term imbalance is adjusted towards long-term equilibrium,

$z_{t-1} = (GST_{t-1} - \alpha_0 - \alpha_1 GST_{t-1})$ and $\alpha_{0=} - (\beta_0 / \theta_0)$, $\alpha_{1=} - (\theta_1 / \theta_0)$ from equation (2).

3. RESULTS

One of the requirements for using the ARDL method is that the degree of integration of any of the variables used should not exceed one (Pesaran et al., 2001). Hence, Augmented Dickey-Fuller(ADF) and Phillip Perron(PP) tests have been utilized in this section as a means to determine the degree of integration of GY_t and GST_t. The results of both tests in (Table 1) confirm that GY_t is I (0), and GST_t is I (1).

Table. 1 results of ADF and PP tests

Augmented Dickey- Fuller test					
Variable	ADF at level		ADF, 1st Difference		Conclusion
	Intercept	Intercept&trend	Intercept	Inter-cept&trend	Degree of integration
GY_t	-2.843*	-3.003*	———	———	I(0)
GST_t	4.172	-0.653	-2.941*	-5.347***	I(1)
Phillip Perron test					
	PP at level		PP, 1st Difference		
	Intercept	Intercept&trend	Intercept	Inter-cept&trend	
GY_t	-5.246***	-4.329***	———	———	I(0)
GST_t	3.220	-0.672	-3.405**	-5.347***	I(1)

***at 1 percent level of significance **at 5 percent level of significance *at 10 percent Level of significance

In the next step, the long run relationship between GST_t and economic growth shall be investigated by using the ARDL bounds testing approach. Table 2 indicates the rejection of the null hypothesis of no co-integration between the two variables at the 97.5 % level of confidence.

Table. 2 Results for the bounds of the F-test

Null hypothesis: no cointegration				
Test Statistic	Value	p- value	Lower limit I(0)	Upper limit I(1)
F- Statistic K	5.2051	10%	3.02	3.51
		5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Asymptotic critical values are calculated by Eviews 11
According to Pesaran et al., (2001).
Case 2: Restricted Constant and No Trend.
*F-calculated of 7.54 > upper limit of 6.48 at α = 1% level.

Consequently, the ARDL model ascertains long and short term impact GST_t has on GY_t; this occurs whether the observation is made over a long or short term. The optimal lag length of ARDL (2, 2), is determined using the Akaike information criteria (AIC). Independence of the error terms is tested using the Breusch-Godfrey Serial Correlation L.M. Test, and the Q-statistics. Both tests indicate that we could not reject the null hypothesis of no serial correlation. To reserve space, we only report a summary of the L.M. test results in (Table 3). The results in the table show that F (2, 33) = 0.076866 with p-value = 0.9262,

indicating that the main hypothesis of no serial correlation between the residuals in the ARDL model cannot be rejected.

Table. 3 Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.076866	Prob. F (2,33)	0.9262
Obs*R-squared	0.190116	Prob. Chi-Square (2)	0.9093

Source: Authors estimation using Eviews 11

The long-run and the short-run estimates of the ARDL model are summarized in (Table 4). The results show that the long-run impact of general sales tax on economic growth is negative and significant (α=0.0510). Nevertheless, the long-run elasticity is relatively small, amounting to -0.005727. Short term effects are positive 0.016820 and significant at (α =0.10) level, meaning that increased sales taxes are good for short term economic boosts. These results are in concordance with previous investigations regarding the United States by Li and Lin in 2015. The estimated error correction coefficient ECM (-1) of -0.454638, is highly significant and has the correct negative sign. It indicates a relationship that is sustained and remains stable over the long-term between growth and general sales tax. Besides, the highly significant coefficient of the error correction term implies that the divergence of the economic growth variable from its long-run equilibrium in the previous year has corrected by 45.4638% in the next year. Reaching a long term balance or equilibrium would, therefore, require 24 months. Therefore, we can likewise conclude that the impulse of adjustment in the short-run ARDL relation toward the long-run equilibrium is relatively good and meaningful.

Table. 4 The long- and short-run ARDL relationships*

The ARDL long-run relationship-depended variable Economic growth (GY):				
Independent variable	Coefficient	SE	T-Ratio	[p-value]
Constant	7.661979	2.740096	2.796244	0.0083
GST	-0.005727	0.002834	-2.020577	0.0510
The ARDL short-run relationship or error-correction model - dependent variable first difference of economic growth (DGY):				
D (GY (-1))	-0.416049	0.119643	-3.477436	0.0014
D (NST)	0.016820	0.010252	1.640627	0.1018
D(NST (-1))	0.017538	0.011498	1.525387	0.1361
CointEq(-1)*	-0.454638	0.111901	-4.062879	0.0003
R-squared	0.541861	Mean dependent var	-0.402621	
Adjusted R-squared	0.504715	S.D. dependent var	7.222596	
S.E. of regression	5.083009	Akaike info criterion	6.182152	
Sum squared resid	955.9682	Schwarz criterion	6.349329	
Log likelihood	-122.7341	Hannan-Quinn criter.	6.243029	
D: represents the first difference operator The estimation is based on Case 2: Restricted Constant and No Trend ECM = GY - (-0.005727*GST + 7.661979)				

* The results were calculated using Eviews version 11 developed by IHS Global Inc. 4521 Campus Drive, #336 Irvine, CA 92612

Moreover, to ensure the stability of the ARDL model, we employ the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) test methods suggested by Brown et al. (1975) . The test plots are presented in Fig.1 and Fig.2. The results prove the stability of the parameters since the plots of the CUSUM and CUSUMSQ statistics restrain within the 5% critical bounds of parameter stability for our estimated model.

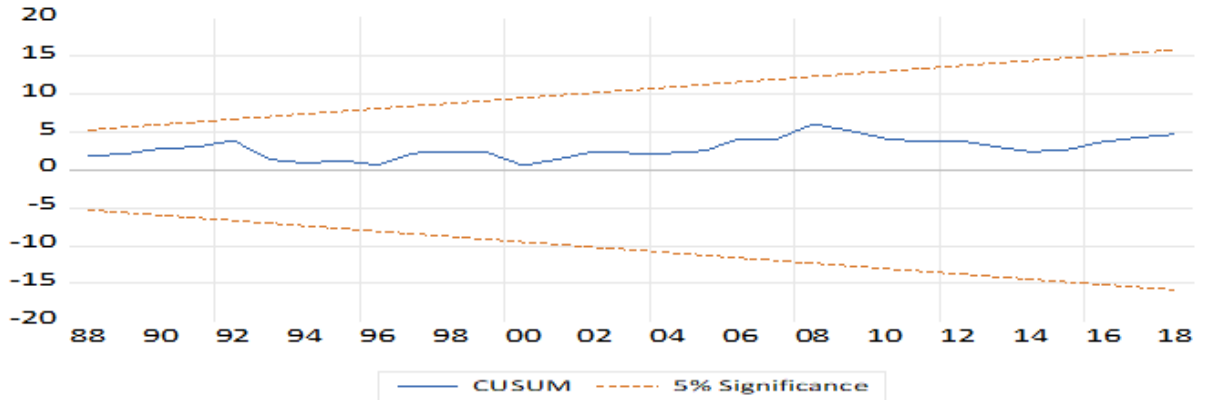

Figure1. CUSUM of the recursive error

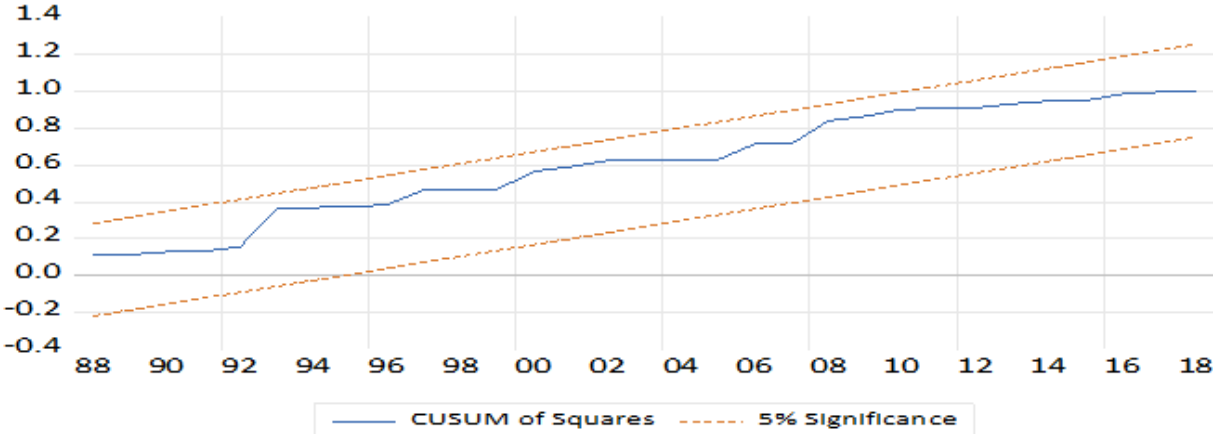

Figure 2. CUSUMSQ of recursive residuals

CONCLUSION

The argument about the impact of taxes has on economic growth is undoubtedly not concluded, while results generally favor the perspective that there is a negative impact on growth due to taxes, especially in developed countries. This study comes to provide new evidence to the relatively few studies on the effect of the general sales tax on economic growth in a small and open economy like Jordan. It provides, for the first time, an estimate of the short and long term elasticity of this impact in the Jordanian case. The results are mixed, they both prove that while there can be a boost in short term economic growth, over the long term, there is a negative association present between sales taxes and economic growth. The estimated long-run coefficient is -0.005727. The short-term dynamic relationship coefficient is 0.01682, and the speed of adjustment toward long-run equilibrium is -0.454638. The various diagnostic tests conducted on the estimated ARDL mod-

el indicate the effectiveness, validity, and stability of the model. The findings of this study could serve as a guide for economic policy- makers in Jordan, as well as for decision-makers in small open developing economies similar to the Jordanian economy.

FOOTNOTES

(1) In Jordan, the general sales tax began on a small scale as a government tax in 1926 and then the consumption tax its first phase in 1994 which included the importer and manufacturer, and the sales tax in its second phase, which added the remaining trade rings in 2000, then evolved to its current form as a general sales tax which became effective on 1-1-2001 under Law No. 36 of 2000. Amendments to the Law were made in 2009 by the Provisional Law No. 29 of 2009 (Ministry of Finance, Chapter 1506).
(2) To double-check the data accuracy, data sourced from official domestic sources were compared with international sources like IFS, World development Tables, and Penn's world tables. 1980-2018 period was the most extended periods available in all sources.
(3) In Eviews 11, critical value tables present the critical values computed under an asymptotic regime (sample size equal to 1000), in addition to providing critical values for finite sample regimes, sample sizes running from 30 to 80 in increments of 5, and referenced from Narayan (2005).

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