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## International Trade in Services and Economic Growth: The Case of Jordan

*Buthaina M.A. Muhtaseb*<sup>1</sup>

### ABSTRACT

The aim of this study is to investigate the impact of services imports on Jordanian economic growth during 1990–2012. Regression analysis is based on an output growth equation, utilizing the Fully-Modified Ordinary Least Square method after performing the appropriate statistical tests. The results suggest that the coefficient on total imports (manufacturing plus services) is positive and significant, whereas services imports (alone) have a significant but negative correlation with output per capita. This finding has been mainly driven by the negative significant effect of business services, which in Jordan's case, could not-as usually expected-induce technological progress and enhance economic growth.

**Keywords:** Trade in services, services imports, economic growth, Jordan.

### INTRODUCTION

The role of services in the world economy has increased considerably in recent decades. Services made up 72 per cent of the world's gross domestic product (GDP) in 2012, according to the World Development Indicators. Services have become the single largest sector in many economies, constituting three fourths of GDP in advanced countries, and a smaller but increasing share in developing countries. Employment in the services sector is as much important as output and even more.

Regarding the size of international trade in service, it has been growing fast. Between 1980 and 2011, world commercial services registered high growth rates at roughly 8 per cent per year on average, against 7 per

cent for merchandise, and hence, raising its contribution to total trade in goods and services from 15.9 per cent to 18.7 per cent (World Trade Report, 2013).

Expansion of services trade and its widespread availability worldwide can be crucial for an efficient services sector and can represent a vital source of economic growth. Indeed, as one of the important economic characteristics of many services is their facilitating role, the benefits of an efficient services sector extend far beyond the services industries themselves, and are felt through their effects on other economic activities. Accordingly, services trade may bring new technologies from abroad that stimulate technological progress in the whole economy. Also, it may provide industries with essential low - cost and high- quality intermediate inputs which may improve their international competitiveness. Moreover, trade in goods may be enhanced via facilitating international transactions.

Since economic growth is one of the most important objectives of macroeconomic policies of every country, various factors that influence this growth, including

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<sup>1</sup> Associate Professor of Economics, Department of Business Economics, Faculty of Business, The University of Jordan.

✉ b.muhtaseb@ju.edu.jo

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services trade, should be considered when exploring the sources of economic growth. In the case of Jordan, which has experienced high economic growth rates during (2004-2008), exceeding 8 per cent per year, officials are now concerned about the slow growth during the last few years. Conducting research on this issue is important for Jordan, in light of its accession to the World Trade Organization (WTO) and signing the General Agreement on Trade in Services (GATS), as well as concluding many free trade area agreements.

In view of the above, this study aims at analyzing the role of services trade in Jordan's economy, and investigating its impact on economic growth.

It should be noted that the focus in this study will be on services imports, for two reasons: First, in markets where supply is inadequate in terms of quantity and quality, imports of essential services can be as vital as imports of basic commodities. Second, most trade literature concentrates on the effect of export goods trade or total trade on the economy's growth, and the role of services imports is neglected. Therefore, we hope that this study may contribute to the existing literature on the relationship between services trade in developing countries and their economic growth.

The rest part of the study is organized as follows. Section 2 provides a brief discussion on literatures. An overview of the Jordanian services trade sector is presented in section 3. Data set and methodology are presented in section 4, while section 5 provides the results and discussion of the study findings. Finally, the paper gives a conclusion in section 6. Two appendixes (I and II) are included at the end of the study.

## 2. Literature Review

There is a substantial amount of research investigating the impact of trade on economic growth. Empirical testing has been carried out covering cross-country and time series analysis. Amongst the most prominent publications are Sachs and Warns (1995)

Rodrik and Rodriques (2000), Greenaway (2002) and Dollar and Kraay (2004).

Studies focusing on the impact of trade in services on economic growth are relatively limited. Some of these studies have explored the impact of total services trade or trade of key services sectors on the growth of the economy as a whole for a certain country. Another group considers a panel of developing countries or of both developing and developed countries.

An example of the studies on the country level, is that of Tunisia. A general equilibrium model of Tunisia suggests that liberalization of main services sectors (telecommunication, construction, transportation, business and insurance, distribution and Finance) could yield gains reaching 7 per cent of GDP (OECD, 2002). Another study, which examines the role of only two services sectors, is carried out by Matto et.al (2006). The authors provide some econometric evidence growth performance using cross-country regression for a sample of 60 countries. They find that controlling for other determinants of growth, countries with open financial and telecommunications sectors grew on average, about 1 percentage point faster than other countries.

Arnold et al. (2007) analyzes the effects of allowing foreign providers greater access to services industries on the productivity of manufacturing industries relying on services inputs. Based on firm-level data from the Czech Republic and utilizing OLS productivity estimates in several specifications, the authors conclude that there is a positive relationship between Foreign Direct Investment (FDI) in services and the performance of the domestic firms in manufacturing. In a related firm-level research on China, Zhang et al. (2010) estimate the productivity effects of services trade liberalization by using a panel dataset of Chinese manufacturing firms. Because of the heterogenous effects of services trade liberalization on different types of plants, the authors use a "difference in difference" approach and compare the TFP in the firms with different impacts of services trade

liberalization. The results of the study suggest that a positive productivity effects for firms located in east China, firms with heavy services usage, foreign invested firms and exporters. Co- integration and VECM country tests are used to explore the linkages between inward FDI, services trade and economic output in India. The empirical findings confirm the long-run relationship among these variables (Dash and Parida, 2012).

On the other hand, the following studies are examples of studies that are concerned with investigating the impact of services trade considering not only one country but a group of countries. The study of Francois et al. (2008) on the EU countries examines the impact of trade on all EU members. They started by estimating the existing trade barriers in the EU, then they run simulations to estimate effects of the causality achieved liberalization of cross- border trade in services. The simulations are based on computable general equilibrium (CGE) model. The results show that larger gains are obtained from comprehensive reductions in trade barriers. Also, specialization patterns of old members are reinforced towards services, and the new members towards manufacturing. While the paper of Li et al. (2003) covered in addition to developed countries a larger number of developing countries, reaching a total of 82 countries. Through applying a dynamic panel approach to examine the effect of imports of services on economic growth, the authors find that these imports have a positive effect on economic growth in developed countries and a negative impact on developing ones.

An opposite, but encumbered by risks, result has been obtained from a recent study carried out by Terzi (2010). The author based his results on analyzing the theoretical background of the issue in addition to investigating the findings of recent empirical studies. He compares potential benefits with potential risks and analyzes the role of trade liberalization in terms of comparative advantages in developing countries. The author argues that international trade in services can

improve economic performance in developing countries, but he finds that trade liberalization also carries some risks and potential costs, related to profits, financial sector stability and poverty.

Whalley (2003) does not reach to a confined conclusion regarding the impact of services trade liberalization on developing countries. He does not use a specific econometric model, but through discussing the potential effects of services trade liberalization on developing countries and reviewing existing quantitative studies, he shows that the picture emerging yields only a clouded image of likely impacts on trade, consumption, production and welfare.

We can conclude our brief review of literature by a study conducted by Majluf and Zarrilli (UNCTAD, 2007). Their paper addresses a number of theoretical and methodological issues including the question of whether the theoretical assumption for justifying reform in the goods sector can be directly and fully transferred to the services sector. The paper concludes that assessing the actual and potential implications of services liberalization in developing countries is a complex exercise. They also suggest that in light of the limited number of empirical studies on countries and services sectors, the existing quantitative assessment has produced inconclusive results.

As for Jordan, several studies have been carried out on services trade. Al-Shakhanbeh (2005) has examined the impact of liberalizing policies that Jordan has applied to fulfill its commitments towards that General Agreement on Trade in Services (GATS) on the banking sector, as one of the important sectors of services in Jordan. Using the Fully Modified Ordinary Least Squares method, the researcher reached to the conclusion that the growth in the output of the banking sector leads to an increased growth in the real GDP. In another study, also on the banking sector, Kandah (2004) has analyzed the effect of GATS on the performance of both Jordanian and Qatari banks. He based his work on

comparative static analysis and investigated the financial data between the two countries. He concluded that there is a need to improve the efficiency of the banking sectors in these countries.

In 2006, Ministry of Industry and Trade and (UNCTAD) in their study on Jordan's trade in services cover its most important aspects: size, trade Policy, institutional framework in addition to sectoral assessment of key services sectors. But the relationship between total trade or sectoral trade of services and economic growth has not been examined. Also, the Report of 2008 entitled " Assessment of Trade Policy in Jordan and Recommendations for Reform " conducted by the United States Agency for International Development (USAID) has included a section on trade policies related to services, but this report is confined to trade policies.

The study of Feraboli and Trimborn (2008) investigates the impact of trade liberalization of Jordan on aggregate economic performance, as well as effects on welfare and income distribution utilizing a dynamic CGE model, which has been specified and calibrated to the Jordanian economy. But, this study is about trade

liberalization in general and not trade in services.

Accordingly, the importance of this study arises not only from the importance of the subject itself, but also from our attempt to fill the gap and provide empirical evidence on the effect of trade in services on the economic growth of a small developing country (Jordan).

### 3. Overview of The Services Sector in the Jordanian Economy

Jordan's economy is dominated by the services sector in terms of value added and employment. Services trade is, however, less important. The following subsections explore these issues in some details.

#### 3.1 Importance of the Services Sector

Table 1 presents the Jordanian main services sector indicators. The contribution of the services sector to gross domestic product ranged between 63.8 - 72.4 per cent during the last two decades. This sector is also significant in terms of employment, as nearly two thirds of job opportunities are created in the services sector.

**Table 1**  
**Main Services Sector Indicators in Jordan (Percentage of GDP)**

Year	Value Added	Employment*	Exports	Imports
1990	63.8	----	36.0	31.5
1995	68.8	----	26.3	24.8
2000	72.4	64.5	19.4	20.4
2005	68.0	65.4	18.5	20.2
2010	65.9	65.3	21.3	16.8
2012	66.8	65.0	18.6	14.8

**Source:** Central Bank of Jordan (CBJ) and Jordan's Department of Statistics

**Notes:** .... Not available

\* Percentage of total employment.

Such ratios are higher than the average for developing countries and that for Middle Eastern

countries, but are comparable to those in industrialized countries. The factors behind these high ratios are,

however, not the same. In Jordan’s case, we can explain this high contribution of services by the exceptionally large imports surplus relative to the size of the economy, the large public administration and defense sectors, and the substantial part of wholesale and retail trade in GDP. It also reflects the other face of the coin, i.e. the narrow base of commodity producing sectors, such as agriculture.

### 3.2 Development of Services Trade

As stated before, the ratio of services trade (export + imports) to GDP in Jordan is less than that for value added and employment, reaching about one third in 2012 (18 per cent for exports and 15 per cent for imports). The ratio of exports declined from 36.0 per cent in 1990 to

only 18.6 percent in 2012, compared with 31.5 per cent and 14.8 per cent for imports, in the same order.

The steady decline in the ratios of each of exports and imports to GDP as appears in Table 1 is not caused by a reduction in their values. Figure 1 depicts the developments in the values of both exports and imports, and shows that the general trend for each of them are increasing, indicating that the growth in GDP during this period surpassed that of trade.

Comparison of the behavior of services imports with that of exports reveals that exports registered more fluctuations, but they are minor changes. Moreover, exports values were higher than imports during the first decade and again during 2007-2012, but the gap during the second period is, however, larger.

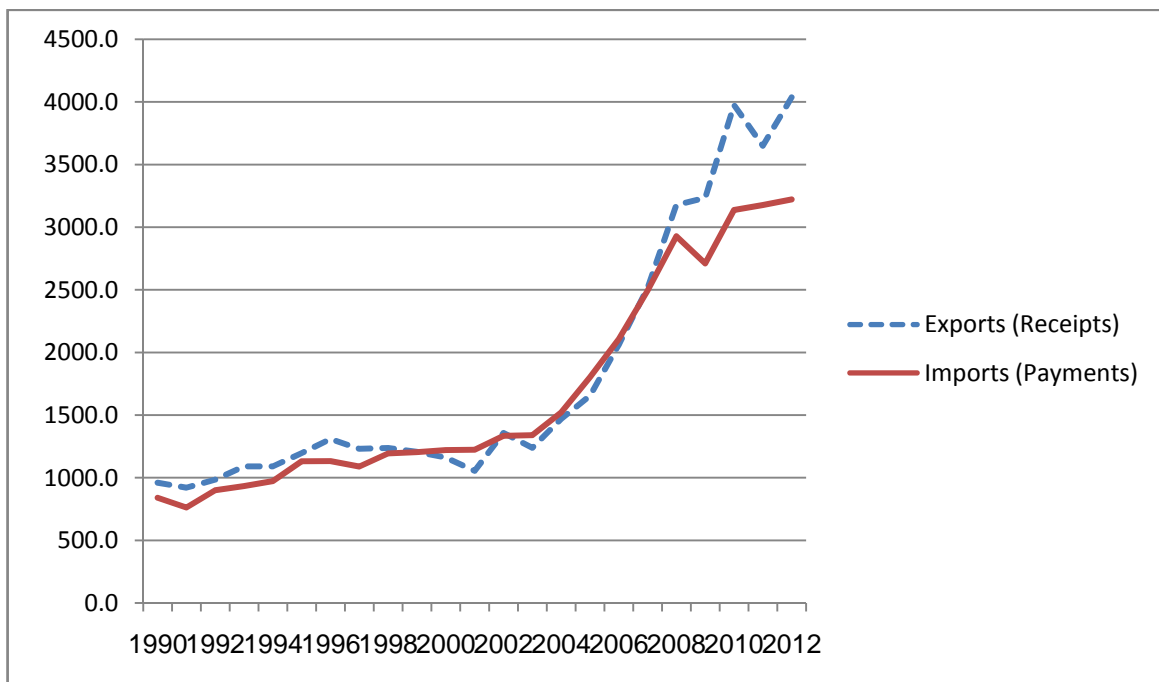


Figure 1: Trends in Services Exports and Imports (JD million)

Source: Central Bank of Jordan (CBJ), Monthly Statistical Bulletin, various issues.

Also, a decline is recorded in the ratios of the services exports as well services imports in the corresponding total of trade in goods and services. Table

2 shows that services exports share in total exports of goods and services are higher than those of imports. But each of them recorded a reduction in its ratio, from 50.0

per cent in 1995 to around 40.0 per cent in 2012 for exports, compared with one third and one fifth for

imports during the same period.

**Table 2**  
**Importance of Jordanian Trade in Services (%)**

Year	Exports		Imports	
	Shares in World Services Exports	Shares in Jordan's Total Exports	Shares in World Services Imports	Shares in Jordan's Total Imports
1995	0.1	49.1	-----	32.9
2000	0.1	46.3	-----	29.7
2005	0.9	35.2	0.10	21.4
2010	0.14	44.3	0.12	24.2
2012	0.12	41.9	0.11	19.8

**Source:** Central Bank of Jordan (CBJ), World Developments Indicators

**Notes:** ..... not available.

All in all, Jordan's trade openness strategy during the last decade, has been reflected on the continuous increases in exports and imports of both goods and services, but the impact was more pronounced in the goods side of trade, and the shares of each of services exports and imports in world's total was stagnant at around 0.1 per cent.

### 3.3 Sectoral Composition of Services Trade

According to the OECD, international transactions in services are grouped into three main categories: travel, transportation and other commercial services. The main items of other commercial services are: construction services, communication services, financial services, computer and information services, research and development, royalties and license fees, among others.

The most important items in Jordan's services exports and imports are transportation and travel (see Table 3). While travel has dominated services receipts, accounting for more than 60 per cent of the total since the mid of the last decade, we find that transportation payments contribution to the total during the last decade ranged between 38% and 52%.

"Other services" experienced a different path. Until 2000 their receipts were higher than payments, but the opposite occurred later on. This category, which includes business services, has a significant impact on economic growth through diffusing knowledge and technical-know-how into the services sector, and hence, the economy as whole.

### 4. Data and Methodology

#### Dataset

The dataset required for performing the regression analysis for Jordan during the concerned period 1990-2012 is obtained from domestic and world organizations sources. Real gross domestic product, population, gross domestic investment are taken from Central Bank of Jordan (CBJ), Monthly Statistical Bulletin, various issues. Services imports (payments) and exports (receipts) are taken from the Balance of Payments statistics published also in CBJ Monthly Statistical issues. Both exports and imports are evaluated at F.O.B prices. All the above economic variables are expressed in Jordanian Dinars.

The source for manufactured imports is WITS data

base. Their values are converted from US Dollars to Jordanian Dinars using the end period exchange rate

presented in the CBJ Statistics. Education data are obtained from the World Bank Indicators.

**Table 3**  
**Sectoral Composition of Services Exports and Imports Percentage of Total**

Year	Transportation	Travel Total	Other Business Services	Government services
<b>Exports</b>				
1990	25.7	35.3	37.8	1.2
1995	24.5	38.6	35.7	1.2
2000	18.3	44.1	35.3	2.3
2005	20.1	61.7	14.1	4.0
2010	20.0	64.0	9.2	6.8
2012	24.6	60.9	9.1	5.4
<b>Imports</b>				
1990	45.9	26.5	27.6	27.6
1995	44.8	26.3	28.9	28.9
2000	38.1	22.5	24.4	15.0
2005	52.8	23.0	21.2	3.0
2010	48.1	35.6	13.9	2.4
2012	57.2	25.2	15.9	1.7

**Sources:** - For the years 2000-2012, the ratios are computed from: Central Bank of Jordan, Monthly Statistical Bulletin, Various Issues.

For the years before 2000, Central Bank of Jordan, Unpublished Data.

### Methodology

Our main hypothesis in this study to be tested is that the services imports (payments to the outside world) in Jordan have a negative effect on its economic growth. Three other sub-hypotheses are:

- a) Travel imports have a significant negative effect on economic growth.
- b) Transportation imports have a significant negative effect on economic growth.
- c) "Other Services" imports have a significant negative effect on economic growth.

In order to test these hypothesis, we can choose one of the ways in which the growth of income or output of a country may be expressed (Thirlwall, 1994, 2011). Also, researches find that in essence, investigation of the impact of the core variables on economic growth doesn't matter if total factor productivity (TFP) approach or output growth equation is employed.

In this study, we prefer to adopt the production function estimation approach. It avoids the errors one might face in computing TFP, and allows a more ready comparison with most growth equations. Moreover, inclusion of other variables that may be important to growth equations can be easily examined (Li et al., 2003).

Durlauf et al. (2004) provided a survey of a large numbers of different regressors that have been proposed in the growth literature reaching 145 different regressors, which are then grouped into 43 distinct growth determinants, the majority of which have been found to be statistically significant using conventional standards. The authors pointed out that a main reason for this large number of variables is due to questions of measurement.

Based on Levine and Renelt's (1992) idea, the identified variables should have a robust empirical importance across different model specifications. Their



analysis includes a constant, income, investment share in GDP, secondary school enrollment ratio, and population growth. The theoretical base for these variables is found in Solow model of economic growth. According to the study of Durlauf et al. (2004) these variables are considered robust growth determinants, as has been confirmed in many subsequent empirical research.

Following the works of Levine and Renelt (1992), Sala\_Martin (1997) and Li, Greenaway and Hine (2003) we use in the present study the following (core) explanatory variables: real GDP per capita, population, secondary school enrollment rate, (a proxy for human capital), gross domestic investment (a proxy for physical capital). As this study is concerned with international services trade, our specification includes the share of services imports in GDP, and the share of trade in manufacturing in GDP. The basic specification for our model is:

$$\Delta \ln y_t = \alpha_1 + \alpha_2 \Delta \ln POP_t + \alpha_3 \Delta \ln SCH_t + \alpha_4 \Delta \ln GDI_t + \alpha_5 (SER / GDP)_t + \alpha_6 (MANU / GDP)_t + \Delta \mu_t \quad (1)$$

Where:

$y_t$  = Real GDP per capita;

$POP_t$  = Population;

$SCH_t$  = Secondary school enrollment rate;

$GDI_t$  = Gross domestic investment ;

$(SER / GDP)_t$  = The ratio of trade in services to GDP;

$(MANU / GDP)_t$  = The ratio of trade in manufacturing to GDP.

$(t)$  = time  $\mu$  = error term

## 5. Empirical Work

Before starting the application of data on the output equation, two tests will be conducted; the stationary test and the co-integration test.

### 5.1 Statistical Test

#### Stationarity Test

Macroeconomic time series data are generally characterized by non stationary, which causes regression

results to suffer from spurious regression problems (khan and Gill, 2009). To avoid this possibility, we will test the variables in this study for stationary, starting by transformation of all the variables into natural logarithm in order to lessen the probability of heteroskedasticity in the model. Then, the degree of integration of the variables will be examined using the Augmented Dickey Fuller (ADF) test, based on the null hypothesis that each variable has a unit root. Accepting the null hypothesis implies that there is a unit root, whereas rejecting it means that the time series is stationary.

Table A (Appendix I) reports the results of ADF tests. The results show that the variables are not stationary on their levels. They, however, become stationary after taking the first difference I (1). The residual is stationary at a lower level I (0).

#### Co-integration Test

The next step is to test for co-integration. The Johansen procedure (1988, 1995) is used to detect the number of co-integration vectors. In this test, the null hypothesis states that no co-integration exists among the variables.

The results of the study regarding the trace and max-eigenvalue show that the null hypothesis of no co-integration is rejected, indicating that there are at least two co-integration equations at the 0.05 level, implying that there exists a long-run relationship between real GDP per capita and gross domestic investment, the ratio of trade in (services plus manufacturing) to GDP, and population, see Table B (Appendix).

### 5.2 Results and Discussion

As has been shown, there exists co-integration among the variables of the study of the first rank I (1). This enables us to employ the Fully-Modified Ordinary Least Square (FM-OLS) method, which was originally introduced in work by Phillips and Hansen (1992), to estimate the long run parameters of the output equation.

The (FM-OLS) method is preferred to the Ordinary Least Squares (OLS) method. because it can provide optimal estimates of co-integrating regressions, through modifying least squares to account for serial correlation effects and for endogeneity in the regressors that results of the existence of a co-integrating relationship.

FM-OLS Method is used to get a better estimate of the OLS method, in other words, this method corrects for the estimated ordinary least squares parameters ( $\hat{\beta} = (Y_2'Y_2)^{-1}Y_2'Y_1$ ) in order to get rid of the errors of the parameters that affect the approximate distribution of the ordinary least squares estimator, by correcting the estimator to get rid of the Endogeneity problem between the time series as following:

$$\hat{y}_{1t}^+ = y_{1t} - \hat{\omega}_{12}\hat{\Omega}_{11}\Delta y_{2t} \quad (2)$$

$$\hat{u}_{1t}^+ = u_{1t} - \hat{\omega}_{12}\hat{\Omega}_{11}\Delta y_{2t} \quad (3)$$

and the Serial Correlation problem between errors, by

$$\hat{\delta}^+ = \sum_{k=0}^{\infty} (u_{1t-k}^+ u_{2t-k}^+) \quad (4)$$

$$\text{where } u_{1t}^+ = u_{1t} - \omega_{12}\Omega_{11}\Delta y_{2t} \quad (5)$$

Accordingly, the FM-OLS method combines them to estimate ordinary least squares estimator, according to the following formula:

$$\hat{\beta} = (Y_2'Y_2)^{-1}(Y_2'\hat{y}_1^+ - T\hat{\delta}^+) \quad (6)$$

Table 4 presents the estimated output equation for the full sample during 1990-2012. In column (1) we report the results for total imports (manufacturing plus services), while in column (2) total imports are separated into two components; manufacturing imports and services imports. Column (3) disaggregates services imports into three categories: travel, transportation and "others".

The estimated coefficients (sign and magnitude) of

the (core) explanatory variables of the model are consistent across the three specifications. They are, in general, highly significant and are in line with theoretical priors. Increases in gross domestic investment had led to increases in real GDP per capita. Also, a high level of human capital (as represented by the high secondary school attainment rate) has been associated with faster growth in GDP. Moreover, according to our expectations, a statistically and negative correlation is found between the growth rate of population and real per capita income.

Regarding the international trade variables, the coefficient on total imports of (manufacturing and services) ratio to GDP is positive and statistically significant at the 5 per cent level. Turning to column (2) we see that the effect of services imports alone on economic growth is negative and significant at 1 per cent level, whereas that of manufacturing alone is positive and significant at the 5 per cent level. Therefore, we accept our main hypothesis that total services imports have a negative effect on Jordan's economic growth.

It is worth mentioning that the results of this empirical study on Jordan's case is largely comparable to those obtained from other studies, such as the empirical research conducted by Li et.al (2003) on 82 developing and developed countries. The 60 developing countries have shown the same sign and statistical significance of the main explanatory variables as our study suggests (gross domestic investment, human capital and growth of population). Moreover, the coefficient on total imports of services and manufacturing together have been also positive and statistically significant. Separation of the total into its components exhibits a highly significant coefficient, with a negative sign for services, and a positive one for manufacturing, which are the same findings for Jordan.

We can explain the positive total imports effect on Jordan's economic growth by examining separately the effect of each of manufacturing and services. It seems

that the positive effect of manufacturing has been more than enough to compensate for the negative impact of

services, and thus, the net effect of both of them was positive.

**Table 4**  
**Jordan's Imports in services and Economic Growth**

Variable	(1)	(2)	(3)
$\Delta \ln \text{POP}$	-1.39917	-1.46481	-1.20538
	(-14.84420)***	(-11.89113)***	(-6.679234)***
$\Delta \ln \text{SCH}$	0.919821	0.657259	0.163209
	(10.12407)***	(4.893043)***	(0.934289)
$\Delta \ln \text{GDI}$	0.116762	0.079566	0.048458
	(17.68536)***	(8.222439)***	(3.534394)**
<b>IMPORTS/GDP</b>	0.034194		
	(2.747968)**		
<b>Service-IMP/GDP</b>		-0.10778	
		(-4.844669)***	
<b>MANU-IMP/GDP</b>		0.021132	0.013323
		(2.172384)**	(0.613448)
<b>TRAVEL-IMP/GDP</b>			-0.06037
			(-3.722618)***
<b>TRANSP-IMP/GDP</b>			0.001064
			(0.033426)
<b>OTHERS-IMP/GDP</b>			-0.04961
			(-3.546974)***
<b>Constant</b>	0.058703	-0.08814	-0.23896
	(7.243443)***	(-3.304229)**	(-3.266133)***
<b>Adjusted R squared</b>	0.695273	0.568101	0.711878
<b>Durbin-Watson stat</b>	2.854249	1.951717	1.928694

\*\*significant at 5%    \*\*\* significant at 1%

The positive correlation between manufacturing imports and economic growth may be illustrated by disaggregating imports of manufacturing according to their economic function. The share of imports of machinery and equipment in total Jordanian imports (excluding oil) exceeded 30 per cent in 2012, of which about one third was sourced from the European Union.

This, however, indicates that these high quality capital goods may have a highlight role in diffusing modern technology and thus enhancing economic growth.

Explanation of the negative effect of services imports requires looking at the nature of the flow of the components of these imports. The role of each of travel, transportation and "others" categories is examined after

introducing them separately in our growth equation. The findings are reported in column (3) of Table 4. They show that services imports of each of travel and "other services" has a significant negative effect on economic growth, which means that we should accept the null hypothesis. Transportation Impact is, however, insignificant.

It should be noted, that the category of "others" includes business services as well as other items which usually play an effective role in technology diffusion and have a large impact on economic growth. Since the finding of this category shows a negative significant effect on growth in contrast with an insignificant impact for the largest contributor to services imports (transpiration), we can say that the "other services" impact dominates and its negative role has been reflected on total services imports as well.

## 6. Conclusion

Enhancement of the slow Jordanian economic growth prevailing during the last few years has become one of the top priorities of policy-makers in Jordan. As empirical research results on the role of international trade in economic growth is controversial, there is a need for examining this role in different developing countries, including Jordan, particularly that of services imports, as

a possible source for economic growth.

The interest in conducting research on this issue is also driven by the officials continuous claims to liberalize services trade after Jordan's accession to the WTO and the GATS, in addition to concluding many bilateral and regional trade agreements.

The findings of employing a regression analysis focusing on services imports, indicate that their impact on economic growth is statistically significant but negative, owing mainly to the negative significant effect of the category of "other services" including business services, which may be of vital role to technological progress and diffusion of recent know-how.

More detailed research is, however, required with respect to transportation and specific sub-sectors of the business sector, which may give better insights on the role that can be played by these services sectors to foster economic growth. Also, choosing the appropriate liberalization policies can influence growth positively.

## Acknowledgment

It is to be noted that the following research has been prepared during the scientific sabbatical leave given by The University of Jordan to the researcher during the academic year 2012/2013.

## Appendices

### Appendix I

Table A. Summary of Unit Root Test Results

Variable	Level	ADF	Sign.		
			1%	5%	10%
Yt	I(0)	-1.1960	-4.4678	-3.6449	-3.2614
	I(1)	-4.9377*	-4.4678	-3.6449	-3.2614
POPt	I(0)	-3.0787	-4.4407	-3.6328	-3.2546
	I(1)	-4.3458*	-4.4678	-3.6449	-3.2614
GDI <sub>t</sub>	I(0)	-2.0407	-4.5325	-3.6736	-3.2773
	I(1)	-8.1408*	-4.5325	-3.6736	-3.2773
SCH <sub>t</sub>	I(0)	-1.4047	-4.4407	-3.6328	-3.2546

	I(1)	-4.1038*	-4.4678	-3.6449	-3.2614
(SER/GDP)t	I(0)	-2.1883	-4.4407	-3.6328	-3.2546
	I(1)	-6.0152*	-4.4678	-3.6449	-3.2614
(MAN/GDP)t	I(0)	-1.5043	-4.4407	-3.6328	-3.2546
	I(1)	-4.6643*	-4.4678	-3.6449	-3.2614
(import/GDP)t	I(0)	-1.5446	-4.4407	-3.6328	-3.2546
	I(1)	-5.1791*	-4.4678	-3.6449	-3.2614

\* Denotes rejection of null hypothesis at 5 percent level of significance.

Source: Researcher summarization from E-views 7 outputs.

### Table B. Cointegration Test

#### Table B-1

Included observations: 21 after adjustments

Trend assumption: Linear deterministic trend (restricted)

Series: LNY LNGDI LOG(IMPTOGDP) LNPOP

LOG (SCH)

#### Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.959115	138.3333	88.80380	0.0000
At most 1 *	0.774851	71.19626	63.87610	0.0107
At most 2	0.573699	39.88540	42.91525	0.0973
At most 3	0.480266	21.98059	25.87211	0.1415
At most 4	0.324470	8.237399	12.51798	0.2329

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

**Table B-2**

Included observations: 21 after adjustments  
 Trend assumption: Linear deterministic trend (restricted)  
 Series: LNY LNGDI LOG(SERTO GDP) LOG(MANTO GDP) LNPOP LOG(SCH)  
 Unrestricted Cointegration Rank Test (Trace)

<b>Hypothesized</b>	<b>Trace</b>	<b>0.05</b>		
<b>No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Statistic</b>	<b>Critical Value</b>	<b>Prob.**</b>
None *	0.981532	202.3597	117.7082	0.0000
At most 1 *	0.896275	118.5340	88.80380	0.0001
At most 2 *	0.733293	70.94770	63.87610	0.0113
At most 3 *	0.642416	43.19397	42.91525	0.0469
At most 4	0.414940	21.59789	25.87211	0.1554
At most 5	0.388861	10.34105	12.51798	0.1125

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

**Table B-3**

Included observations: 21 after adjustments  
 Trend assumption: No deterministic trend  
 Series: LNY LNGDI LOG(MANTO GDP) LOG (TRANSTO GDP)  
 LOG(OTHERSTO GDP)  
 Exogenous series: LNPOP LOG(SCH)  
 Warning: Critical values assume no exogenous series  
 Unrestricted Cointegration Rank Test (Trace)

<b>Hypothesized</b>	<b>Trace</b>	<b>0.05</b>		
<b>No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Statistic</b>	<b>Critical Value</b>	<b>Prob.**</b>
None *	0.958625	181.4365	83.93712	0.0000
At most 1 *	0.888874	114.5497	60.06141	0.0000
At most 2 *	0.801164	68.41068	40.17493	0.0000
At most 3 *	0.577209	34.48994	24.27596	0.0019
At most 4 *	0.443008	16.41152	12.32090	0.0098
At most 5	0.178231	4.122218	4.129906	0.0502

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

**Table C. Regression Equation**  
**Table C-1 Effects of total imports on Economic Growth**

Variable	Coefficient	Std. Error	t-Statistic	Prob.	$\bar{R} =$ 0.695273 D.W= 2.854249
$\beta_0$	0.058703***	0.008104	7.243443	0.0000	
$\Delta$ LNGDI	0.116762***	0.006602	17.68536	0.0000	
LN IMPORTS_GDP	0.034194**	0.012443	2.747968	0.0157	
$\Delta$ LNPOPULATION	-1.399171***	0.094257	-14.84420	0.0000	
$\Delta$ LNSCHOOL	0.919821***	0.090855	10.12407	0.0000	

\*\* significant at 5%      \*\*\* significant at 1%

**Table C-2 Effects of manufacturing and services imports on Economic Growth**

Variable	Coefficient	Std. E.	t-Statistic	Prob.	$\bar{R} =$ 0.568101 D.W= 1.951717
$\beta_0$	-0.088137**	0.026674	-3.304229	0.0048	
$\Delta$ LNGDI	0.079566***	0.009677	8.222439	0.0000	
LNSERVICES_GDP	-0.107784***	0.022248	-4.844669	0.0002	
LNMANUFAC_GDP	0.021132**	0.009728	2.172384	0.0463	
$\Delta$ LNPOPULATION	-1.464808***	0.123185	-11.89113	0.0000	
$\Delta$ LNSCHOOL	0.657259***	0.134325	4.893043	0.0002	

\*\* significant at 5%      \*\*\* significant at 1%

**Table C-3 Effects of travel, transportation and others on Economic Growth**

Variable	Coefficient	Std. E.	t-Statistic	Prob.	$\bar{R} =$ 0.711878 D.W= 1.928694
$\beta_0$	-0.238963***	0.073164	-3.266133	0.0061	
$\Delta$ LNGDI	0.048458**	0.013710	3.534394	0.0037	
LNMANUFAC_GDP	0.013323	0.021718	0.613448	0.5502	
LNTRAVEL_GDP	-0.060367***	0.016216	-3.722618	0.0026	
LNTRANSPORT_GDP	0.001064***	0.031827	0.033426	0.9738	
LNOTHERS_GDP	-0.049614***	0.013988	-3.546974	0.0036	
$\Delta$ LNPOPULATION	-1.205379***	0.180467	-6.679234	0.0000	
$\Delta$ LNSCHOOL	0.163209	0.174688	0.934289	0.3672	

\*\* significant at 5%      \*\*\* significant at 1%

## Appendix II

Table 1. Main Economic Indicators and Services Imports

Year	GDP at Constant Market Prices	Population	Gross Domestic Investment	Manufactured Imports	Services Imports	Travel Payments	Transportation Payments	Other Payments (Government+ Other Busies services)
1990	3419.3	3.468	850.3	1,200.90	840.7	223.1	385.8	231.8
1991	3474.3	3.701	738.5	1,204.80	762.3	191.9	272.5	297.9
1992	3972.9	3.844	1208.8	1,792.50	900.3	238.1	407.1	255.1
1993	4151	3.993	1422.8	2,027.40	933.4	239.1	427.7	266.6
1994	4358.1	4.139	1451.2	1878.3	973	275.3	424.4	273.3
1995	4627.7	4.291	1554.5	2,050.80	1131.7	297.8	507.3	326.6
1996	4723.5	4.444	1499.3	2,069.60	1132.8	270.4	509.3	353.1
1997	4880.5	4.6	1321.8	2,088.50	1089.9	382.2	485.6	322.1
1998	5027.6	4.756	1224	2180.8	1194.6	250.4	424.6	519.6
1999	5181.4	4.9	1245.3	1996.3	1203.9	251.9	406.5	545.5
2000	5481.6	4.82	1341.4	2416.2	1220.9	274.3	465.4	481.2
2001	5702.3	4.94	1340	2611.2	1223.6	267.7	524	431.0
2002	6033.7	5.098	1365.3	2765.4	1335	321.3	546.9	466.8
2003	6286.3	5.23	1506.5	3122	1339.5	320.4	585.6	433.5
2004	6822.8	5.35	2215.6	4343.9	1521.4	371.4	784.6	365.4
2005	7379.6	5.473	3047.9	5456.2	1802.3	414.9	951.2	436.2
2006	7976.9	5.6	3025.4	5884.6	2106.2	593.4	1089	423.8
2007	8629	5.723	3671.9	7021.4	2493.8	625.8	1286.1	581.9
2008	9253.1	5.85	4661.6	8644	2928.6	712.3	1589.7	626.6
2009	9759.9	5.98	4447.9	7701.2	2710.5	755.4	1382	573.1
2010	9985.5	6.113	4487.4	8337.9	3137.5	1115.8	1509.1	512.6
2011	10243.8	6.249	5087.3	9,767.50	3177.6	824	1775.2	578.4
2012	10515.3	6.388	5437.9	10,440.00	3222	811.9	1841.8	568.3

Source: Central Bank of Jordan, Department of statistics, WITS Database

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## التجارة الدولية في الخدمات والنمو الاقتصادي: حالة الأردن

بشينة المحتسب<sup>1</sup>

### ملخص

تهدف هذه الدراسة إلى البحث في أثر مستوردات الخدمات على نمو الاقتصاد الأردني خلال الفترة 1990-2012. وقد بُني تحليل الانحدار المستخدم على معادلة نمو النتائج، باستخدام طريقة المربعات الصغرى العادية المعدلة كلياً بعد إجراء الاختبارات الإحصائية اللازمة. وتشير النتائج إلى أن معامل المستوردات الكلية (الصناعة التحويلية مضافاً إليها الخدمات) هو موجب ودال إحصائياً، بينما مستوردات (الخدمات وحدها) ذات ارتباط قوي سالب مع الناتج المحلي للفرد. ويمكن أن يُعزى ذلك إلى الأثر السلبي القوي لبند "خدمات الأعمال" والذي لم يستطع - كما يتوقع في أغلب الأحيان - أن يحفز التقدم التكنولوجي ومن ثم النمو الاقتصادي.

**الكلمات الدالة:** التجارة في الخدمات، مستوردات الخدمات، النمو الاقتصادي، الأردن.

<sup>1</sup> أستاذ مشارك، قسم اقتصاد الأعمال، كلية الأعمال،

الجامعة الأردنية، عمان، الأردن

✉ b.muhtaseb@ahu.edu.jo

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