

# IMPACTS OF EXTERNAL PRICE SHOCKS ON THE PALESTINIAN ECONOMY

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## ABSTRACT

This paper investigates the impact of import price shocks (known as external price shocks) by 10% from the base line on the aggregate Palestinian economy variables. A simulation of external shocks is carried out using a 2012 Palestinian Social Accounting Matrix (SAM) and Computable General Equilibrium (CGE). The simulation results show that real GDP decreases by 2.91% and nominal GDP declines by 7.54%. Import and export decreases by 23.12 % and 17.37% respectively. The trade deficit will decline by 8.95 % after external price shock. A 10 percent external price shock will reduce the level of private consumption by 14.92 % from the base line and real exchange rate (REXR) will decrease (devalue) by 12.50% from the base line.

## JEL CLASSIFICATION & KEYWORDS

■ C68 ■ F41 ■ F43 ■ O11 ■ TRADE LIBERALIZATION  
■ EXTERNAL PRICE SHOCKS ■ COMPUTABLE GENERAL  
EQUILIBRIUM ■ PALESTINIAN ECONOMY

## INTRODUCTION

In the age of globalization, domestic macroeconomic variables are affected by domestic and external shocks. To what degree macroeconomic variations in emerging markets are originated in external shocks. One of the most important external price shocks is the oil import price shock. From a theoretical viewpoint, oil price shocks influence the macroeconomic variables via the following channels. Supply side shock result: concentrating on the direct effect on output owed to the change in marginal producing costs initiated by oil-price shock. Wealth transfer impact: lay emphasis on the various marginal consumption rate of petrodollar and that of ordinary trade surplus. Inflation effect: examining the connection between domestic inflation and oil prices. Real balance effect: studying the adjustment in money demand and monetary policy. Sector adjustment effect: assessing the change cost of industrial structure, which is used to explain the asymmetry in oil-price shock impact. Unexpected effect: reflecting on the uncertainty over oil price and its effect (Brown & Yucel, 2002; Nguyen, Tran, & Le, 2014). External price shocks, especially oil prices matter to the health of the global economy. Higher oil prices contributed to the global economic downturn. Current market environment are more unbalanced than unusual, because of geopolitical uncertainties which emphasize growing pressures on crude oil prices. Higher prices are contributing to high levels of unemployment and aggravating budget deficit problems in many oil importing countries. The contrary economic effect of higher import price shocks of oil prices on developing nations is usually severe. This is due to their dependent on imported oil and because energy is utilized less efficiently. The high oil prices in the global market are impacting the Palestinian economy, through its impact on the balance of payments and on domestic prices

through different means. As food and petroleum products are core elements in Palestinian household budgets, higher petroleum products prices as a result of external price shocks along with other price increases decreased disposable income and demand. Higher cost of doing business would reduce producers' profits and may initiate decline output. The Palestinian economy has been burdened by the effects of prolonged occupation. The conditions that have evolved in the West Bank and Gaza since the start of the occupation in 1967, the Oslo Accords in 1993 and the establishment of the Palestinian Authority in 1994, and the 2000 crisis have identified a range of Israeli policies and factors that have adversely affected the Palestinian economy. These policies and factors include natural resource transfers, closures, labor market dependency, distorted trade, prohibitive Israeli security measures, geographical fragmentation, the construction of the wall, uncertain public revenue and exhausted productive capacity. The Palestinian economy has depended on an adverse growth path that is highlighted by vulnerability to external shocks, reliance on external resources, weak domestic employment creation capacity, distortion in the use of economic resources, and distortion in the structure of production and trade. These factors have made the Palestinian economy subject to Israeli policies. The development of the Palestinian economy needs extensive private investment (UNCTAD, 2009a; 2009b).

Palestine is a small, resource-poor economy. Palestine is highly open import dependent economy and imports play a crucial role in influencing domestic activities and balance of payments situation. The Palestinian economy relies on external resources; therefore, it is vulnerable to external shocks. Fuel and food are core elements in Palestinian household budgets, higher imports prices as a result of external shocks may reduce disposable income and social welfare. Therefore, the objective of this research is to quantify the impact of external price shocks on the Palestinian macroeconomic indicators such as on domestic production, imports, export, household consumption, and other related variables. To quantify the impact of external price shocks on the Palestinian Economy, we constructed a general equilibrium model that captures the economic conditions and characteristics of the Palestinian economy, and we constructed a 2012 social accounting matrix for Palestine. The study focuses on the impacts of a 10% external price shocks relative to the baseline.

## Literature Review

The idea that external shocks are essential for emerging markets goes back to the empirical research of Calvo, Leiderman, & Reinhart (1993). They found that external shocks explain big part of the fluctuations in the real exchange rates in Latin America between 1988 and 1991. There are several studies focused on the role of external prices shocks in deciding the macroeconomic Volatility.

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Kose & Riezman (2001) used a general equilibrium model to analyze the impact of external shocks on macroeconomic fluctuations in African countries. They found that, compared with interest rates and productivity shocks, terms-of-trade shocks can explain a large portion of output fluctuations in low-income countries. Ng (2002) analyzed three shocks, external, domestic supply and domestic demand shocks, for five Southeast Asian countries over the period 1971–1995. He found high domestic responses to external shocks. Mackowiak (2007) found that external shocks are significant source of macroeconomic instability in emerging economies. And, United States monetary policy shocks influence interest rates and the exchange rate in emerging economies. The price level and real output in an average emerging economy react to United States monetary policy shocks by more than the price level and real output in the United States. Al-Amin, Chamhuri & Jaafar (2008) investigated the impacts of external price shocks in the Malaysian economy. They carried three simulations with various degrees of external shocks using Computable General Equilibrium (CGE). They found that the external price shocks by 15% reduce the local production of building and construction sector, hotels, restaurants and agriculture. On the import side, they found that imports declines significantly in all sectors from base level and significant negative effect spreads to the fixed capital investment and investment. It also reduces the household income, household savings and household consumption and raises the cost of livings in the economy. Aydın & Acar (2011) used general equilibrium model for the Turkish economy to analyze the economic effects of oil price shocks on macroeconomic variables, including GDP, consumer price inflation, indirect tax revenues, and trade balance. The found that oil price shocks have very significant effects on macroeconomic variables in the Turkish economy. Allegret, Couharde, & Guillaumin (2012) examined the significance of external shocks in domestic fluctuations of East Asian economies. External shocks entail oil price, U.S. output and U.S. monetary policy. Domestic variables consist of output, production price and nominal exchange rate. They found that external shocks have a growing significance to East Asian economies since 90s. Mohammed (2014) applied computable general equilibrium model (CGE) to simulate the Algerian economic impact of food import price increase by 25 percent, the oil price decrease by 30 percent. He found that the price shocks in scenario 1 or 2, reduce overall Algerian domestic output and exports. Lower output also decreases employment thus initiating a fall in household's income and household consume less quantity of both domestic and imported goods.

#### Methodological Framework and Data

Computable general equilibrium models are an essential method for policy analysis and for investigating the impacts changes in policy variables or exogenous shocks. They are originated in the economic theory. They are denoted in a set of mathematical equations which describe the behavior of the different actors. The competitive market equilibrium of supply and demand is decided by the demand functions of the consumers and the production functions of the firms. The computable general equilibrium framework offers a theoretical quantification that associates the general equilibrium theory by Arrow and Debreu with real economic data, given by a social accounting matrix, to solve numerically for the quantities of supply, demand and price that maintain equilibrium across all markets. When the economy is at its initial equilibrium, policy variations or shocks initiate changes in prices, activity levels and demands that yield a new equilibrium. By comparing the new and the benchmark equilibrium prices, production

levels, consumptions and income levels, we can carry out a quantitative analysis and estimate the results of these policies or exogenous shocks (Shoven & Whalley, 1984; Lofgren, Harris, & Robinson, 2002). A social accounting matrix contains most of the data required to implement a computable general equilibrium model analysis. It is an economy-wide data framework, representing the economy of a country and it accounts for the economy circular flow of incomes and payments in the economy. Social accounting matrix is a square matrix in which each account is represented by a row and a column. The elements of the matrix represent the payment from the account of a column to the account of a row. (King, 1985; Roland-Holst, 2008). To carry out Computable general equilibrium analysis, a 2012 social accounting matrix for Palestine and a Palestinian Computable general equilibrium (CGE) model have constructed. A Palestinian Computable general equilibrium (CGE) model based on the standard model used by the International Food Policy Research Institute (IFPRI) (Lofgren et al., 2002). Lofgren et al. (2002) has a complete description of the IFPRI's standard model. In addition a 2012 social accounting matrix (SAM) for Palestine is constructed. The 2012 social accounting matrix is used as the initial data for the calibration of the Palestinian computable general equilibrium model. See table 3: Macro 2012 social accounting matrix for Palestine million of dollars.

#### Price Block

The Palestinian model builds on the Lofgren et al. (2002) framework. The notational rules make it possible to make a distinction between variables (upper-case Latin letters) and parameters (lower-case Latin letters). The price system of the model assumes quality differences among goods of various origins and destinations: exports, imports, and domestic outputs used domestically. Endogenous prices are related to other prices (endogenous or exogenous) and to non-price model variables. The import prices paid by domestic consumers for imported commodities include import tariffs and transaction costs per import unit. The import price is in local-currency units. The world price of imports (pwm) transforms to the import price (PM) through the exchange rate (EXR) and import tariffs plus transaction costs. The domestic import price (PM) is flexible. The tariff rate (tm) and the world import price (pwm) are fixed, which follows from the small-country assumption: the share of world trade for the country is small that it confronts an infinitely elastic supply curve at the existing world price (pwm). The import price (PM) is the price paid by domestic users for imported commodities. The equation of the import price of good c is:

$$PM_c = pwm_c \cdot (1 + tm_c) \cdot EXR + \sum PQ_c \cdot icm_{cc} \quad (1)$$

where c is a commodity, PM is the import price including transaction costs, pwm is the world market import price, PQ is the composite price (the market price paid by domestic commodity consumers), tm is the import tariff rate, EXR is the exchange rate, and icm is the quantity of commodity as trade input per imported unit. The export price (PE) is the price granted to domestic producers for their exports. The world price of exports (pwe) transforms to the export price (PE) through the exchange rate (EXR) and export tariffs plus transaction costs. The domestic export price (PE) is flexible. The tariff rate (te) is fixed. The world export price (pwe) is fixed, which follows from the small-country assumption: the share of world trade for the country is small that it confronts an infinitely elastic supply curve at the established world price. The equation of the export price of good c is:

$$PE_c = pwe_c \cdot (1 - te_c) \cdot EXR + \sum PQ_c \cdot ice_{cc} \quad (2)$$

Where PE is the export price, pwe is the world market export price, te is the export tax rate and ice is the quantity of commodity c as trade input per exported unit of c. The export price is the price received by domestic producers which is affected by the export taxes (te), the transaction costs and the exchange rate (EXR). Demand Price of Domestic Nontraded Goods PDD

$$PDD_c = PDS_c + \sum Pqc \cdot lcd_{cc} \quad (3)$$

Where PDD is demand price for commodity produced and sold locally, PDD equation defines the demand prices as the supply price plus the cost of trade inputs per unit of local sales of the commodity in question. PDS is supply price for commodity produced and sold locally, and lcd is amount of commodity c as trade input per unit of c produced and sold locally. The model contains distinct prices for local output that is used locally. In the presence of transaction costs, it is necessary to make a distinction between prices paid by consumers and those prices obtained by suppliers. Absorption is total local spending on a commodity at local demand prices. Absorption is the total expenditure on local output and imports at the demand prices, PDD and PM.

$$PQ_c \cdot (1 - tq_c) \cdot Qqc = PDD_c \cdot QD_c + PM_c \cdot Qm_c \quad (4)$$

Where QQ is amount of goods supplied to local market (composites supply), QD is amount sold locally of local output, QM is amount of imports of commodity, and tq is rate of sales tax (as share of composite price inclusive of sales tax). In computable general equilibrium model, the process can only conclude relative prices, and solves for prices relative to a numeraire. In the model the numeraire is the Consumer price index CPI.

$$CPI = \sum PQ_c \cdot cwts_c \quad (5)$$

Where cwts is weight of commodity c in the consumer price index, and CPI is consumer price index (exogenous variable).

### The Simulation and Empirical Results

We simulate the import price shocks to analyze the impact of external price shocks scenario on production, and macroeconomic aggregate. The simulation considers the impact of a 10% rise in import prices. An external price shock affects the model via the price of imports. Table 1 shows the impact of the External Shock by 10% from the base line on the aggregate variables. The simulation results show that real GDP decreases by 2.91 % and nominal GDP declines by 7.54%. Import and export decreases by 23.12 % and 17.37% respectively. The trade deficit will decline by 8.95 % after external price shock; net taxes decreases by 10.58%, as a percentage of GDP the trade deficit decreases by five percentage points from 44.16 % of GDP at base line to 39.84% of GDP after external price shock (Table 1). A 10 percent external price shock will reduce the level of private

consumption by 14.92 % from the base line and real exchange rate (REXR) will increase (devalue) by 12.50% from the base line. Private saving will increase by 8.6% while foreign saving will decline by 4.8 %.

Table 1: National Accounts

	Millions of USD			As % of GDP	
	Base Line	External Price Shock	% Change	Base Line	External Price Shock
Absorption	9794.7	8840.713	-9.74	144.162	134.015
Private consumption	6394.38	5440.393	-14.919	94.115	82.47
Gov. consumption	2302.57	2302.57	0	33.89	34.904
Investment	1097.75	1097.75	0	16.157	16.641
Exports	1091.46	901.897	-17.368	16.065	13.672
Imports	4091.93	3145.824	-23.121	60.227	47.687
Net Taxes	1408.024	1260.322	-10.58	17.291	19.105
GDP	6794.23	5384.792	-2.906	100	100
GDP at factors cost	5386.206	5386.206	0	79.276	81.628
Trade Deficit	3000.47	2243.927	-8.954	44.157	39.838

Source: Author

### CONCLUSION

This study concludes that demographic factors such as sex, age, birth order position and marital status significantly predicts graduates' entrepreneurial entry decisions. It was further found that sex and marital status had big contribution than all four significant factors. This implies that, males and married graduates had stronger desire of becoming entrepreneurs than females and those who stayed single. These findings suggest that demographic factors contribute in predicting entrepreneurial entry intention.

Even if some demographics cannot be altered by policy makers, having a clear knowledge on trends and potential effects of demographics in terms of innovation and new venture creation will allow policy makers to create proper frameworks. For example, understanding the demographic determinants of graduates' entrepreneurial entry decisions allows universities, consultants, advisors and policy makers to get a clearer picture of how intentions are formed and how new venture founders' beliefs, perceptions and motives imposes.

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Table 2: The macro 2012 social accounting matrix of Palestine

	1	2	3	4	5	6	7	8	Total
1 - Activities		10456.04							10456.04
2 - Commodities	4886.99	1033.29		6394.38	2302.57	1097.75		1091.46	16806.44
3 - Factors	5386.21								5386.21
4 - Households			5671.96		371.43				6043.39
5 - Government							1801.95	818.65	2626.6
6 - Saving Invest				-750.92	-47.4			1896.07	1097.75
7 - Taxes	182.84	1225.18		399.93					1801.95
8 - Rest of the world		4091.93	-285.75						3806.18
Total	10456.04	16806.44	5386.21	6043.39	2626.6	1097.75	1801.95	3806.18	

Source: Author

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