

# DEVALUATION AND OUTPUT GROWTH IN PALESTINE: EVIDENCE FROM A CGE MODEL

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## ABSTRACT

Whether exchange rate devaluation supports economic growth or not is an open question empirically. This paper analyzes the impacts of the devaluation on the Palestinian economy using a computable general equilibrium model. We investigate the effect of a 15% devaluation of the exchange rate on output growth of Palestine. By using latest data (a 2012 social accounting matrix for Palestine) and CGE modeling, this paper finds that devaluation is contractionary in Palestine. A 15% devaluation of the exchange rate results on lower real gross domestic product, the simulation results show that GDP will decrease by 1.99 %. Import and export will decline by 20.61% and 52.67% respectively. Also, a 15 percent devaluation will reduce the level of private consumption by 6.31 % and inflation (CPI) will increase by 4.7 from the base line.

## JEL CLASSIFICATION & KEYWORDS

■ C68 ■ D58 ■ E52 ■ F31 ■ O21 ■ COMPUTABLE GENERAL EQUILIBRIUM ■ SOCIAL ACCOUNTING MATRIX ■ EXCHANGE RATE ■ DEVALUATION

## INTRODUCTION

The Palestinian economy of the West Bank and Gaza, burdened by the consequences of prolonged occupation since 1967, has been faced with additional constraints since the eruption of the Second Intifada in 2000: geographical fragmentation under the tense Israeli closure policy and the construction of the wall. The economy is marked by negative external shocks, heavy reliance on remittances and foreign aid, a weak ability to generate domestic employment and distortions in the structure of production, trade and economic resources allocation. The present economic policy framework (Paris Protocol, 1994) does not give the Palestinian Authority monetary and trade policy tools for managing the Palestinian economy (UNCTAD, 2009).

Palestine has been facing the problem of trade deficit since the creation of the Palestinian Authority in 1994. The Palestinian economy depends strongly on imports. The trade deficit was more than 44 % of GDP in 2012. The trade deficit was driven by a decline of productive capacity and the incapability of local producers to satisfy local demand, which increased reliance on imported consumer goods, mainly from Israel (PCBS, 2013). In theory, the high trade deficit can be reduced by an exchange rate devaluation, which encourages production of traded output relative to non-traded goods. The question is: would devaluation of the exchange rate have contractionary or expansionary effects on the Palestinian economy?

In theory, currency devaluation is a tool for enhancing the exports sector of the economy. Devaluation improves the trade balance if the Marshall-Lerner condition is

satisfied. Devaluation increases the price of a country's imports relative to that of its exports; therefore exporters obtain higher domestic currency revenues from a particular export quantity while imports contract due to the higher domestic currency price of imports. Thus, devaluation performs similar to a tax on imports and a subsidy to exports. That causes the trade balance to recover. This tends to improve the foreign sector, which increases output in the economy. According to this view devaluation has expansionary effects on output and aggregate demand. However, there are reasons why devaluation could be contractionary. Exchange rate devaluation can affect the supply side of the economy: it increases the cost of imported inputs, and thus the cost of production, leading to a decrease in the aggregate supply in the economy. By increasing the value of transfers from the rest of the world, which are in foreign currency, when converted to the home currency devaluation may increase the prices and thereby increase the cost of production of exportable goods and domestic goods, adding to the overall rate of inflation. The net effect derives from the joined effects of both the aggregate demand and the aggregate supply shift (Lizondo and Montiel, 1988; Kandil, 2006). Economies that rely more on imported inputs are more likely to experience contractionary effects from devaluation because of higher cost of production comparative to the gain in the volume of exports. And the contractionary effect from lessening aggregate demand can lead to bigger trade deficit. This framework is a good description of the state of affairs in Palestine. An exchange rate policy has to take the contractionary and expansionary impacts of changes in currency value into consideration. The use of a computable general equilibrium model makes it possible to take both effects into account (Zhang et al., 2006).

To answer the question of whether devaluation has contractionary or expansionary effects on the Palestinian Economy and would a devaluation of the exchange rate be useful in restoring trade competitiveness, improve the trade balance and output growth level, we evaluate the impact of devaluing the exchange rate on the Palestinian Economy. For this purpose, 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 15% devaluation of the exchange rate relative to the baseline.

## Literature review

A number of researchers have examined the relationship between devaluation and output growth. They found various results for devaluation and its effect on output growth. Many studies shows that changes in real exchange rates tend to have real effects on output and employment. Samuelson (1964) gives early evidence of the importance of a competitively valued real exchange rate in encouraging exports which have a role for economic development.

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A nation under a fixed exchange rate regime can promote exports by devaluing the currency. Devaluation raises imports price. By making exports cheaper and imports more expensive, real devaluation promotes the net exports, and hence, aggregate demand, output, employment, and real income, if the Marshall-Lerner condition is satisfied. The expansionary impact of devaluation is best accomplished in export directed economies, which seems to have a significant effect on the economic growth. Jaussaud and Rey (2012) found that Japanese exports to China and United States to decrease if currency appreciated, which in turn affected growth adversely. Kamin and Rogers (2000) state the conventional wisdom view about the expansionary effect of devaluation:

“...a more depreciated real exchange rate, by encouraging the growth of the export sector and hence the openness of the economy, is believed to place a country on a developmental path with greater potential for sustained growth.” (Kamin and Rogers, 2000, p. 86)

However, devaluation raises imports price that leads to inflationary side effects. High import prices reduce the demand for intermediate input imported and import of capital goods. The supply shock induced by the increase in the price of imported inputs promotes into the inflation (Bahmani-Oskooee and Miteza, 2006). If exports sector is to a great extent dependent on imported inputs, then devaluation will induce cost-push inflation in the import and export sector, and decrease the competitiveness of the exports. Devaluation of domestic currency reduces the aggregate supply at a quicker rate relative to the increases in the aggregate demand. Devaluation decrease demand deposits and domestic savings (Kamin and Rogers, 2000). Devaluation can have an adverse impact on the economy by affecting the external stability, causing capital outflow, decline foreign reserves, and thus raising the need for foreign borrowing. Bahmani-Oskooee and Kutan (2008) contended that countries which rely more on imported inputs are more likely to experience contractionary effects from devaluation because of higher cost of production comparative to the gain in the volume of exports. This framework is a good description of the state of affairs in Palestine. The contractionary effect from lessening aggregate demand can lead to bigger trade deficit (Krugman and Taylor, 1978). Kamin and Rogers (2000) found that real devaluation creates high inflation which decreases the rate of economic growth in Mexico. Mejia-Reyes et al. (2010) found that devaluation had contractionary effect on economic growth on the economies of: Argentina, Brazil, Chile, Columbia, Venezuela and Mexico. Rodrik (2008), and Eichengreen and Gupta (2013) concluded that there is a positive relationship between an undervalued currency and economic growth, while overvaluation is negatively related to economic growth. Haddad & Pancar (2010) found that a policy of managed real undervaluation has a positive impact on exports.

### The exchange rate in CGE models

Computable general equilibrium models are suitable for analyzing the effects of policy changes within economies, since they consider the impact of the interactions and interdependencies within an economy (Dervis et al., 1982). They have been used by economists to assess the impact of exchange rate policies. Siriwardana and Iddamalagoda (2003) use two computable general equilibrium models (GTAP, a world model, and a model of Singapore) to evaluate the impact of the 1997-1998 East Asian financial crisis, which began as an exchange rate crisis in Singapore. The effects of the crisis and the policies to face the crisis

are analyzed using the GTAP model and the policy responses are evaluated using the Singapore model. They evaluate the exchange rate policies (among other policies) to minimize the negative effects of an exogenous shock. They analyze the impact of 15% devaluation of the exchange rate, which improves the competitiveness in the traded sectors (mainly exportable). Anderson and Evia (2003) apply a computable general equilibrium model for Bolivia to analyze the macroeconomic impact of foreign aid in Bolivia. Foreign aid causes an appreciation of the real exchange rate, which makes exporters less competitive on world markets. This adversely affects the producers of locally produced tradable, as their products become relatively more expensive on the international markets, and they have to compete with cheaper imports. Wobst (2001) uses a computable general equilibrium model of the Tanzanian economy to analyze the importance of an exchange rate devaluation to eliminate the existing trade deficit through export-oriented economic growth. He finds that currency devaluation benefits agricultural more than industrial sectors. The elimination of the trade deficit through devaluation has to come from the export side. Willenbockel (2006) uses a computable general equilibrium model of the Chinese economy and its trade relations with the rest of the world to analyze the structural effects of a real exchange rate revaluation. Yu et al. (2003) use a single country computable general equilibrium model of China to analyze the effect of 5% real exchange rate devaluation on China's global trade balance. Zhang et al. (2006) apply a computable general equilibrium model to simulate the effects of Chinese real exchange rate appreciation on India's trade balance and other macroeconomic indicators. They find that a Chinese real exchange rate appreciation would improve the Indian total trade, but would lead to a decline in India's GDP and worsen its total welfare. Yang et al. (2013) analyze the impacts of the Chinese Renminbi appreciation on the Chinese economy using a global computable general equilibrium model. They found that the Chinese economy will be affected adversely, with a decrease in real gross domestic product, drop in employment rates, and a decrease in the trade surplus.

### Methodological framework and data

#### Computable General Equilibrium (CGE)

Computable general equilibrium models are an important tool of analysis in development economics. The computable general equilibrium methodology is a powerful methodological tool for examining the impacts across multiple markets of changes in policy variables or exogenous shocks and an instrument for policy analysis. They are used for making predictions about the behavior of economies in response to shocks and to different policies. Computable general equilibrium models are derived from economic theory. The competitive market equilibrium of supply and demand is determined by the demand functions of the consumers and the production functions of the firms. Computable general equilibrium models represent the direct and indirect interactions between all sectors of the economy. The computable general equilibrium framework provides a theoretical quantification that combines the general equilibrium structure introduced by Arrow and Debreu with real economic data -provided by a social accounting matrix- to solve numerically for the quantities of supply, demand and price that preserve equilibrium across all markets. Markets respond to changes in prices. The general equilibrium happens when a set of prices make supply equal to demand in all markets at the same time (Shoven and Whalley, 1984). Computable general equilibrium models are

a branch of economic models that work on actual economic data to evaluate the impacts of changes in policy, technology or external factors on the economy. They provide an economy-wide framework for policy analysis to assess a broad range of policy issues. This economy-wide, multi-market approach captures all sectoral and inter-sectoral price linkages simultaneously rather than analyzing each commodity market separately. The computable general equilibrium model that we use is neoclassical. Its framework is developed from the micro-economic foundations of optimization behavior of rational economic agents. Consumers demand commodities and supply their endowments to maximize their utility, subject to their endowments. Producers (activities) demand inputs and supply outputs to maximize their profits, subject to production technologies. The optimizing assumptions emphasize the role of commodity and factor prices in affecting consumption and production decisions by households and producers. The model is formulated on a Walrasian system with the assumption of general equilibrium, which can be obtained when supply equals demand across all connected markets in the economy at a matrix of relative prices (Dervis et al., 1982).

Computable general equilibrium models are used to compute quantities and prices in different equilibrium. When the economy is at its initial equilibrium, policy changes or shocks lead to changes in prices, activity levels and demands that produce a new equilibrium. By comparing the new and the benchmark equilibrium prices, production levels, consumptions and income levels, we can perform a quantitative analysis and evaluate the effects of these policies or exogenous shocks. This approach makes it possible to evaluate policies or the impact of exogenous shocks in a theoretically consistent manner, by quantifying the effects that result from the interactions among all markets in the economy. Computable general equilibrium models are specified in a set of mathematical equations. The core of computable general equilibrium models are the multi-sectoral intermediate input links (Input-Output), and the equations that describe the economic behavior of agents and the endogenous prices. Computable general equilibrium models allow any degree of sectoral disaggregation appropriate for the analysis of inter-sectoral shifts. The model involves the calibration of a database that describes the Palestinian economy (the social accounting matrix), to give values to the parameters of the model mathematical equations (Shoven & Whalley, 1984).

Computable general equilibrium (CGE) modeling provides an economy wide evaluation of policies and a framework. The sectoral and institutional detail of the CGE model allows for a more detailed analysis of policies, and it has an advantage over partial equilibrium analysis because it offer an economy wide evaluation of policies. To undertake Computable general equilibrium analysis, A Palestinian Computable general equilibrium (CGE) model has built 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.

#### Social accounting matrix

A social accounting matrix is a comprehensive, economywide data framework, representing the economy of a country. 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. A social accounting matrix accounts for the economy-wide circular

flow of incomes and payments in the economy. It represents the structure, internal and external links of the economy, and the roles of agents and sectors in the economy. The sources of data for the social accounting matrix are an input-output matrix, national income accounts and household income and expenditure statistics. Thereby, it is wider than an input-output matrix and national accounts. These data are from different time periods, but they still provide a good indication of the structure of the economy and the interactions among social and economic entities (King, 1985; Roland-Holst, 2008). A social accounting matrix is built on a walrasian general equilibrium framework. Walras' law is the principle for organizing the information in the social accounting matrix. It is assumed that agents earn incomes from selling their initial endowments to other agents. The agents spend part of their incomes to buy commodities or primary factors in the markets. All exchanges occur; in which for each income formed must be a corresponding expenditure. The revenues are located in the row accounts and expenditures in the column accounts. Since revenues must be accounted for by expenditures, the total of rows and columns must be equal for a given account (double entry accounting). Thereby for a consistent social accounting matrix, the sum of rows (revenues) and columns (expenditures) of each account must balance. However, because the data are often inconsistent with each other, thus it is likely the data will lead to unbalanced social accounting matrix. Thus balancing the social accounting matrix is needed which done by using a GAMS code to equate the sum of rows and their correspondent columns (Robinson et al., 2001; Fofana et al., 2005).

A social accounting matrix contains most of the data required to implement a computable general equilibrium model analysis. The computable general equilibrium model has to be based on recent relevant available data to be credible for policy analysis. When historical data are used for policy analysis, it should be demonstrated that the structure of the economy has not substantially changed for the evaluation and analysis of policies to be credible and valuable. A 2012 social accounting matrix 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 2: Macro 2012 social accounting matrix for Palestine million of dollars.

#### Exchange rate in the model

The Palestinian model builds on the Lofgren et al. (2002) framework. The notational make it feasible to differentiate between variables (upper-case Latin letters) and parameters (lower-case Latin letters). The exchange rate (EXR) enters in the following equations: the price of imports, the price of exports, and transfer income from abroad. A devaluation of the exchange rate affects the model through those equations. The price system of the model assumes quality variation between commodities 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 little that it faces an infinitely elastic supply curve at the existing world price (pwm). The import price (PM) is the price paid by local users for imported goods. The equation of the import price of good c is:

$$PM_c = pwm_c \cdot (1 + tm_c) \cdot EXR + \sum_c PQ_c \cdot icm_c$$

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:

$$PE_c = pwe_c \cdot (1 - te_c) \cdot EXR + \sum_c PQ_c \cdot ice_c$$

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). Institutional factor incomes are split among domestic institutions after payment of direct factor taxes and transfers to the rest of the world. The transfers to the rest of the world are fixed in foreign currency and changed into local currency by multiplying by the exchange rate (EXR). The equation of the income to domestic institution i from factor f is:

$$YI_{i,f} = shift_{i,f} \cdot [(1 - tf_f) \cdot YF_f - trnsfr_{row,f} \cdot EXR]$$

where i ∈ INS is the set of institutions (domestic and rest of the world), YIF is the income to domestic institution i from factor f, shift is the share of domestic institution i in income of factor f, tf is the direct tax rate for factor f, and trnsfr is the transfer from factor f to institution i. Total household income YI is the total incomes from factors and transfer from other institutions (government and rest of the world which includes remittances). The equation of the income to households i from factor f is:

$$YI_i = \sum_f YIF_{i,f} + \sum_i TRII_{i,i} + trnsfr_{i,gov} \cdot CPI + trnsfr_{i,row} \cdot EXR$$

where i ∈ INSDNG is a set of domestic non-government institutions, YI is the income of institution i (in the set INSDNG), and TRII is the transfers from institution i to i (both in the set INSDNG). Total government revenue YG is the total revenues from taxes, factors, and transfers from the rest of the world. The equation of the total government revenue is:

$$\begin{aligned} YG = & \sum_i TINS_i \cdot YI_i + \sum_f tf_f \cdot YF_f + \sum_a tva_a \cdot PVA_a \cdot QVA_a + \\ & \sum_a ta_a \cdot PA_a \cdot QA_a + \sum_c tm_c \cdot pwm_c \cdot QM_c \cdot EXR + \\ & \sum_c te_c \cdot pwe_c \cdot QE_c \cdot EXR + \sum_c tq_c \cdot PQ_c \cdot QQ_c + \\ & \sum_f YIF_{gov,f} + trnsfr_{gov,f} \cdot EXR \end{aligned}$$

where YG is the government revenue, TINS is the direct tax rate for institution, YI is the income of institution, YIF is the income to domestic institution i from factor f, shift is the share of domestic institution i in income of factor f, tf is the direct tax rate for factor f, trnsfr is the transfer between institutions, YF is the income of factor f, tva is the rate of value-added tax for activity a, ta is the rate for activity, QA is the quantity (level) of activity, QVA is the quantity of (aggregate) value-added, QINTA is the quantity of aggregate intermediate input, PVA is the price of (aggregate) value-added, and PA is the activity price (gross revenue per activity unit). Total investment and total savings have to be equal. Total savings is the sum of savings from local non-government institutions, the government and the rest of the world, with the rest of the world savings changed into local currency. Total investment is the total of fixed investment and stock changes:

$$\begin{aligned} & \sum_i MPS_i \cdot (1 - TINS_i) \cdot YI_i + GSAV + FSAV \cdot EXR = \\ & \sum_c PQ_c \cdot QINV_c + \sum_c PQ_c \cdot qdst_c \end{aligned}$$

where GSAV is the government savings, FSAV is the foreign savings, qdst is the quantity of stock change, QINV is the quantity of fixed investment demand for commodity, TINS is the direct tax rate for institution, MPS is the marginal propensity to save for domestic non-government institution and YI is the income of institution. The producer price index is the numeraire. All prices are therefore relative to the producer price index, which is held fixed; if the model numeraire is the consumer price index and held constant, some prices will need to decrease as imported prices increase. The model is homogeneous of degree zero in prices: if we double all prices, the real allocation of resources does not change (Lofgren et al., 2002).

### The simulation

We simulate the devaluation of the exchange rate to analyze the impact of devaluation scenario on production, and foreign trade. The Palestinian CGE model incorporates a functional relationship between the trade balance and the exchange rate. The model allows through closures fixing the exchange rate at any desired level (the foreign savings flexible) to simulate a particular exogenous devaluation and solving the model endogenously. The producer price index (DPI) is the numeraire, all prices are therefore relative to the DPI, which is held fixed and the consumer price index (CPI) is flexible (if the model numeraire is the CPI and held constant, some prices will need to decrease as imported prices increase. A constant CPI as numeraire implies that prices of commodities that are not imported or trade dependent, such as most services, will decrease). The simulation considers the impact of a 15% devaluation of the real exchange rate. We devalue the real exchange rate exogenously by 15% and endogenously solve for the trade balance. All the transactions in the social accounting matrix are in dollars, so we set the exchange rate in the base line to one. A devaluation of the exchange rate affects the model via the price of imports, the price of exports and transfers (equations 1- 6). Devaluation affects foreign savings and transfers to and from the world, and changes the prices of imports and exports, which affects the economy through the tradable goods sectors.

### Empirical results

Table 1 shows the impact of the devaluation by 15% from the base line on the aggregate variables. The simulation results show that GDP decreases by 1.99 %. Import and export decreases by 20.61 % and 52.67% respectively.

	millions USD			As % of GDP	
	Base line	Devaluation	% Change	Base line	Devaluation
Absorption	9794.700	9391.030	- 4.121	144.162	141.023
Private consumption	6394.380	5990.710	- 6.313	94.115	89.961
Gov. consumption	2302.570	2302.570	–	33.890	34.577
Investment	1097.750	1097.750	–	16.157	16.485
Exports	1091.460	516.568	- 52.672	16.065	7.757
Imports	4091.930	3248.386	- 20.615	60.227	48.780
Net Taxes	1408.024	1292.380	- 8.213	17.291	19.407
GDP	6794.230	6659.212	- 1.987	100.000	100.000
GDP at factors cost	5386.206	5386.206	–	79.276	80.884
Trade Deficit	3000.470	2731.818	- 8.954	44.157	39.838

Source: Authors' calculations

	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	2626.60
6 - Saving-Invest.				- 750.92	- 47.40			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	2626.60	1097.75	1801.95	3806.18	

Source: Authors' calculations

The trade deficit will decline by 8.95 % after devaluation; net taxes decreases by 8.21% 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 devaluation (tables 1). A 15 percent devaluation will reduce the level of private consumption by 6.31 % from the base line and the inflation (CPI) will increase by 4.70 % from the base line.

### Conclusion

By using a computable general equilibrium model, we analyze the effects of devaluing the exchange rate on the trade balance and on resource allocation in Palestine. This aims at quantifying the effects on the overall production and trade in the Palestinian economy. The Palestinian economy depends highly on imports that cannot be substituted by domestic production, which is due to poor natural resources; therefore, devaluation adversely affects the supply side. Devaluation would make imported goods relatively more expensive and consequently consumers would reduce their demand. Therefore, there would be an improvement in Palestine's overall trade balance. Overall devaluation has a contractionary effect on the Palestinian economy. The simulation of the effects of devaluation provides some policy lessons to the Palestinian Authority policymakers: there is no real benefit from devaluation due to the contractionary effect on the economy.

### References

Alexander, S. (1952). Effects of a Devaluation on a Trade Balance. Staff Papers-International Monetary Fund, 2(2), 263-278.

Anderson, L. and Evia, J. (2003). The Effectiveness of Foreign Aid in Bolivia. ISEC Working Paper 10/03.

Bahmani-Oskooee, M., & Gelan, A. (2013). Are Devaluations Contractionary in Africa? *Global Economic Review*, 42(1), 1-14.

Bahmani-Oskooee, M., & Kutan, A. M. (2008). Are Devaluations Contractionary in Emerging Economies of Eastern Europe? *Economic Change and Restructuring*, 41(1), 61-74.

Bahmani-Oskooee, M., & Kandil, M. (2007). Real and Nominal Effective Exchange Rates in MENA Countries: 1970–2004. *Applied Economics*, 39(19), 2489-2501.

Bahmani-Oskooee, M., & Miteza, I. (2006). Are Devaluations Contractionary? Evidence from Panel Cointegration. *Economic Issues*, 11(Part 1).

Bresciani-Turroni, C. (2013). *The Economics of Inflation: A Study of Currency Depreciation in Post-war Germany, 1914-1923*. Routledge.

Chortareas, G., Cipollini, A., & Eissa, M. A. (2012). Switching to Floating Exchange Rates, Devaluations, and Stock Returns in MENA Countries. *International Review of Financial Analysis*, 21, 119-127.

Dervis, K., de Melo, J., and Robinson, S. (1982). *General Equilibrium Models for Development Policy*. Cambridge University Press, New York.

Edwards, S. (1986). Are Devaluations Contractionary?, *The Review of Economics and Statistics*, Vol. 68, pp 50 1- 7.

Eichengreen, B., & Gupta, P. (2013). *The Real Exchange Rate and Export Growth*. World Bank, Policy Research Working Paper 6629.

Eltalla, Hakeem (2010). *Essays on the Palestinian Economy*. PhD dissertation, Vrije Universiteit Brussel. Published: Vubpress, Brussels 2010. ISBN, 9789054878308.

Fofana, I., Lemelin, A. and Cockburn, J. ( 2005). *Balancing a Social Accounting Matrix*. Inter-university Center on Risk, Economic Policies and Employment (CIRPEE).

Fridman, M. (1953). *The Case for Flexible Exchange Rates*. Essays in Positive Economics. Chicago, University of Chicago Press.

Jaussaud, J., & Rey, S. (2012). Long Run Determinants of Japanese Exports to China and the United States: A Sectoral Analysis. *Pacific Economic Review*, 17(1), 1-28.

Haddad, M., & Pancaro, C. (2010). Can Real Exchange Rate Undervaluation Boost Exports and Growth in Developing Countries? Yes, But Not for Long. *World Bank-Economic Premise*, (20), 1-5.

- Ghosh, A. R., Gulde, A., Ostry, J. and Wolf, H. C. (1995). Does the Nominal Exchange Rate Regime Matter? IMF Working Paper 95/121.
- Greenaway, D., Kneller, R., & Zhang, X. (2012). The Effect of Exchange Rates on Firm Exports and the Role of FDI. *Review of World Economics*, 148(3), 425-447.
- Kamin, S., and Rogers, J. (2000). Output and the Real Exchange Rate in Developing Countries: An Application to Mexico. *Journal of Development Economics*, 61(1): 85-109.
- Kandil, M. (2006). On the Transmission of Exchange Rate Fluctuations to the Macroeconomy: Contrasting Evidence for Developing and Developed Countries. *Journal of International Trade & Economic Development*, 15(1): 101-127.
- King, B. (1985). What is SAM? In *Social Accounting Matrix: A Basis for Planning*. Pyatt, G. and Round, J. (eds.). Washington D.C: The World Bank.
- Krugman, P. and Obstfeld, M. (2009). *International Economics: Theory and Policy* (8th edition). Pearson, Boston.
- Krugman, P. and Taylor, L. (1978). Contractionary Effects of Devaluation. *Journal of International Economics*, 8(3), 445-456.
- Lizondo, S. and Montiel, P. (1988). Contractionary Devaluation in Developing Countries: An Analytical Overview. IMF Working Paper, pp. 1-56, 1988. Available at SSRN: <http://ssrn.com/abstract=884824>.
- Lofgren, H., Harris, R. and Robinson, S. (2002). A Standard Computable General Equilibrium (CGE) Model in GAMS. Trade and Macroeconomics, International Food Policy Research Institute, Washington, D.C.
- Miao, Y., & Berg, A. (2010). The Real Exchange Rate and Growth Revisited: The Washington Consensus Strikes Back? (EPub). International Monetary Fund.
- Miteza, I. (2006). Devaluation and Output in Five Transition Economies: A Panel Cointegration Approach of Poland, Hungary, Czech Republic, Slovakia and Romania, 1993—2000. *Applied Econometrics and International Development*, 6(1), 69-78.
- Mejia-Reyes, P., Osborn, D. R., & Sensier, M. (2010). Modelling Real Exchange Rate Effects on Output Performance in Latin America. *Applied Economics*, 42(19), 2491-2503.
- Missaglia, M. and P.M.C. de Boer (2004). Food-for-work Versus Cash-for-work: Emergency Assistance in Palestine, *Economic Systems Research* 16, 367-390.
- Paris Protocol (1994). Protocol on Economic Relations between the Government of Israel and the PLO.
- Pauw, K., Dorosh, P., & Mazunda, J. (2013). Exchange Rate Policy and Devaluation in Malawi (No. 1253). International Food Policy Research Institute (IFPRI).
- PCBS (The Palestinian Central Bureau of Statistics)(2013). <http://www.pcbs.gov.ps>.
- PCBS (2013). Major National Accounts Variables for the Years 1994-2012 at Constant Prices: 2004 is the Base Year.
- Pyatt G., (1988). A SAM Approach to Modeling. *Journal of Policy Modeling*, 10: 327-52.
- Robinson, R., Cattaneo, A., and El-Said, M. (2001). Updating and Estimating a Social Accounting Matrix using Cross Entropy Methods. *Economic Systems Research*, Vol. 13(1).
- Rodrik, D. (2008). The Real Exchange Rate and Economic Growth. *Brookings Papers on Economic Activity*, 2008(2), 365-412.
- Roland-Holst, D. (2008). Social Accounting Matrix for Pakistan, 2004-5. Berkeley: University of Berkeley.
- Samuelson, P. A. (1964). Theoretical Notes on Trade Problems. *The Review of Economics and Statistics*, 46(2), 145-154.
- Shoven, J. and Whalley, J. (1984). Applied General Equilibrium Models of Taxation and International Trade: an Introduction and Survey. *Journal of Economic Literature*, 22(3): 1007-1051.
- Shoven, J. and Whalley, J. (1992). *Applying General Equilibrium*. New York: Cambridge University Press.
- Siriwardana, M. and Iddamalgoda, A. (2003). Effects of the Asian Economic Crisis on Singapore and Its Policy Responses: A General Equilibrium Analysis. *Journal of the UNE Asia Centre, UNEAC Asia Papers No. 6*, 2003.
- Staiger, R. W., & Sykes, A. O. (2010). Currency Manipulation and World Trade. *World Trade Review*, 9(4), 583-627.
- Thurlow, J. (2002). Can South Africa Afford to Become Africa's First Welfare State?. Trade and Macroeconomics Discussion Paper No. 101, International Food Policy Research Institute, Washington, D.C.
- UNCTAD (2009). Policy Alternatives for Sustained Palestinian Development and State Formation. UNCTAD/GDS/APP/2008/1. New York and Geneva, 1 May 2009.
- Willenbockel, D. (2006). Structural Effects of a Real Exchange Rate Revaluation in China: A CGE Assessment. MPRA Paper No. 920. Retrieved on June 30, 2009 from <http://mpra.ub.uni-muenchen.de/920>.
- Wobst, P. (2001). Structural Adjustment and Intersectoral Shifts in Tanzania: A Computable General Equilibrium Analysis. Research Report 117, International Food Policy Research Institute, Washington, D.C.
- Yang, J., Zhang, W., & Tokgoz, S. (2013). Macroeconomic Impacts of Chinese Currency Appreciation on China and the Rest of World: A Global CGE Analysis. *Journal of Policy Modeling*, 35(6), 1029-1042.
- Yu, E., Chi-chur, C. and Zhi, W. (2003). Export Tax Rebates and Real Exchange Rate Devaluation: China's Experience in Recent Asia Financial Crisis: A Computable General Equilibrium Analysis. GTAP Resource No. 1276. Center for Global Trade Analysis. Purdue University.
- Zhang, J., Sawhney, B., and Fung, H. (2006). The Impact of Chinese Real Exchange Rate Appreciation on India's Trade and Investment: A General Equilibrium Analysis. *Indian Journal of Economics and Business*, 5: 193-203.