

EFFECTS OF TRADE OPENNESS AND ECONOMIC GROWTH ON THE PRIVATE SECTOR INVESTMENT IN SYRIA

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Introduction

Motivating private sector investment is one of the most important goals of any country, because it assists in achieving economic growth, through providing a source of output, income and employment creation in the country. Therefore, knowing the factors that affect private investment is important for planners and policy makers. Trade liberalization and economic situation are of these factors that that can play a vital role in boosting the private investment in the country and it has been frequently discussed by economists for many years.

In the case of Syria, the central planning strategy was implemented by the state from 1963 until the beginning of the first decade of the 21st century, when the government has started working to reform the Syrian economy from a socialist central planning economy to a social market economy, but the government did not disclose its direction to a social market economy until it was adopted by the Baath Party Congress in 2005 (Brück et al., 2007). Then the Tenth Syrian Five-Year Plan (2006-2010) was based on the social market economy policy to reform the Syrian economy (Seifan, 2009). Based on this new direction of the Syrian economy, the government has worked to reduce the interference of the state's institutions in production operations, encourage the private sector to invest in different activities, reform the economy, open up the economy to foreign investment, liberalize foreign trade, and diversify exports (Seifan, 2009). Besides, the achievements of the economic reform program in the first decade of the 21st century included the opening of private and Islamic banks, creating of the Damascus stock market (DSM) which opened its doors in March 2009, creating private insurance companies, allowing the private sector to invest in higher education, and improving the quality of the human capital (UNIDO, 2009). Furthermore, during this decade, the government worked to improve investment in the industrial sector by allowing the private sector to invest in the industries that were earlier only state owned, such as cement and sugar, creating industrial cities, and providing the necessary industrial infrastructure (SIA, 2009). That has encouraged the domestic private sector and foreign investment to build industrial projects in Syria. Figure 1 shows the gross fixed capital formation of the private sector in Syria, from 1980 to 2010. It is clear that there was a big rise in the value of private sector investment in the 21st century. Private sector investment increased from SYP 62290 million in 2001 to SYP 193268 million in 2010 (see Figure 1).

Unfortunately, the war has started in Syria since 2011, which caused a huge damage on the Syrian economy and created a new situation quite different than in before 2011. Many factories have been destroyed, the infrastructure has been damaged, and investment has been declined (SCPR, 2014). Given this backdrop, the aim of this study is to investigate the effect of trade openness and economic growth on the private sector investment in Syria from 1980 to 2010, in order to evaluate whether the government's economic policy in liberalizing foreign trade and improving the economic situation was a successful policy to motivate the private sector investment in

the country. This findings will allows us to suggest possible macroeconomic policies that the Syrian government could adopt after the war.

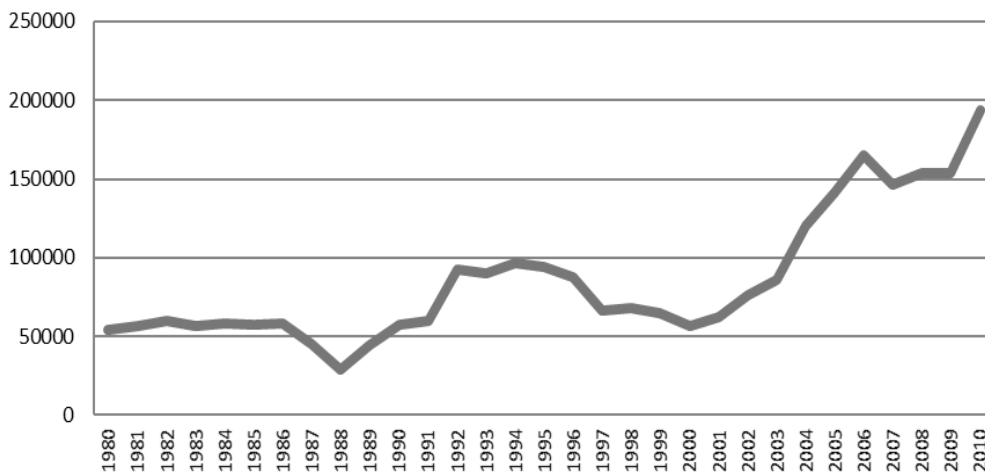


Figure 1. Gross Fixed Capital Formations (GFCF) of the Private Sector (SYP million), at constant 2000 prices, 1980-2010

Source: Central Bureau of Statistics

Previous Studies

Many studies investigated the effect of trade openness and economic growth on the private sector investment in different countries. The findings from these studies tend to vary from one country to another. Asante (2000) concluded that real credit to the private sector has a positive effect on private investment, and a restrictive trade regime has had a negative effect on private investment, while trade liberalization affects it positively. However, Bibi et al. (2012) found that trade openness affects negatively the domestic investment in Pakistan, because trade openness helps in creating more chances for the outflow of capital out of the economy. Besides, Ouattara (2004) found that private investment in Senegal is affected positively from public investment, real GDP and foreign aid, while terms of trade affect it negatively due to Senegal depends on import of energy and its production and export base are narrow which makes its economy vulnerable to terms of trade shocks, and the credit to private sector also affects it negatively, because the institutional environment that surrounding the private sector in Senegal lacks a professional business and organization, and some domestic banks and Non-governmental organizations (NGOs) which channeled credits to the private sector also lack personnel with experience in credit analysis.

Lesotho (2006) found that public investment has a negative impact on private investment in Botswana, while GDP growth, credit to the private sector, real interest rate and real exchange rates affect it positively. A depreciation of the local currency will increase the cost of imported capital, which reduces private investment, and vice versa. Besides, with rising the interest rates on deposits, more real balances which can be used to finance private investment will be attracted, and that will support private investment in the country. Ajide and Lawanson (2012) also found that in the long and short run public investment and external debts have a negative impact on private investment in Nigeria, while GDP, interest rate, credit to the private sector, the terms of

trade, and reforms dummy affect it positively. However, the exchange rate has a positive impact on domestic private investment in the long run and negative impact in the short run due to a depreciation of local currency in the short run cannot motivate private investment until in the long run when the time lagged effects starts paying off. Al-Badry (1998) concluded that GDP growth rate, exports and the credit facilitating affect positively private investment in Jordan, while real exchange rate, real interest rate, and government investment affect it negatively. However, Al-Abdulrazag (2003) found that GDP growth rate, population growth rate, real interest rate, and government investment spending on construction activities have a positive and significant effect on private investment in the construction sector. Besides, Al-Khatib et al. (2012) found that GDP growth rate, FDI, exports, human capital, domestic credit, and the development level of the financial sector have a positive and significant effect on domestic investment in Jordan.

Frimpong and Marbuah (2010) found that in the long and short run real GDP, public investment, credit to the private sector, inflation, real interest rate, real exchange rate and regime of constitutional rule have a positive effect on private investment in Ghana, while openness affect it negatively. Furthermore, external debt has a positive effect on private investment in the short run and a negative effect in the long run. Frimpong and Marbuah (2010) explained these results as follows, with inflation the prices of goods and services will increase which motivate enterprises to increase its production to achieve more profit from the high prices and profitability in the economy, higher interest rates leads to increase in the domestic savings which spurred private investment through rising the investible funds for the private sector, trade liberalization leads to the rise in the foreign competition of domestic private investors which affect private investment negatively, depreciation of the domestic currency motivates private investment for export and import substituting industries, and public investment can supports private investment in Ghana through governments' efforts to improve the infrastructure in the country. However, Naa-Idar et al. (2012) found that public investment and high levels of external debt have a negative impact on private investment in Ghana, while inflation, GDP, trade openness and exchange rate have a positive impact on it.

Methodology

The vector autoregression (VAR) model will be used in this study. Our model consists of three variables: private sector investment, tread openness, and GDP in Syria. Private sector investment is the dependent variable. The model is presented as follows:

$$\ln PI = \alpha + \beta_1 OPEN + \beta_2 \ln GDP + \varepsilon_t, \quad (1)$$

where α is the intercept, β_1 , and β_2 are the coefficients of the model, $\ln PI$ is the natural log of gross fixed capital formation of the private sector in real value (millions of SYP), $OPEN$ is the tread openness (the percentage of total exports and imports to GDP), $\ln GDP$ is the natural log of the gross domestic product (millions of SYP), and ε_t is the error term.

The analysis begins with the unit root test to determine whether the time series data are stationary at levels or first difference. The Augmented Dickey Fuller (ADF) unit root test is used in this study to test for the stationary of the variables. After

determining the order of integration of each of the time series, and if the variables are integrated of the same order, the Johansen cointegration test will be used to determine whether there is any long-run or equilibrium relationship between the private sector investment and the other independent variables in the model. If we found that the variables are cointegrated, the Granger causality tests (Dash, 2014) will be conducted based on the VECM to determine the causality relationships among variables. On the other hand, if there is no cointegration among the variables, the VAR model will be employed to test for short-run Granger causality between the variables. Lastly, impulse response functions (IRF) test and variance decomposition (VD) analysis are used in this study to help in determining whether the independent variables play any important role in explaining the variation of private sector investment at short and long forecasting horizons.

This study uses annual time series data of Syria during the period from 1980 to 2010. This data collected from the World Bank (WB) and the Central Bureau of Statistics (CBS). All variables in this study are in real value. Besides, all data will be expressed in the logarithmic form, except for OPEN.

Empirical Results and Discussion

From the results of the ADF unit root test in Table 1, we can see that all the variables are not stationary at the levels, but became stationary after first differencing at least at the 5 percent level of significance. This means that all the variables are integrated of order 1, that is, I(1).

Table 1. ADF Unit Root Test Results

ADF	Level			First difference		
	Intercept	Trend and intercept	None	Intercept	Trend and intercept	None
lnPI	-0.362961	-1.744027	1.212235	-4.434971 ***	-4.500059 ***	-4.322557 ***
OPEN	-1.286164	-2.600719	0.134984	-6.172008 ***	-6.053857 ***	-6.229452 ***
lnGDP	1.117441	-1.771122	2.094763	-3.741055 ***	-4.786693 ***	-1.980987 **

*Note: *** Denotes significance at the 1 per cent level, and ** at the 5 per cent level.*

Johansen Cointegration Test Results

After determining that all the variables are stationary in the first difference, we can use the cointegration test (Fatnassi and Abaoub, 2012) to determine the presence of any cointegration or long-run relationship among the variables based on the Johansen cointegration test. But before running the cointegration test, we run the VAR model first to determine the optimal lag length, based on the minimum Akaike Information Criterion (AIC). The maximum lag has been set to 5 in the lag length selection process. The optimal lag length selection is 4 lags based on the AIC. After that we proceed with the cointegration test for the model. Table 2 shows that there are three cointegration equations based on the trace and one cointegration equation based on the maximum eigenvalue tests. In other words, the results indicate that there is a long-run relationship between lnPI, OPEN, and lnGDP.

Table 2. Johansen Cointegration Test Results

No. of CE(s)	Trace Statistic	Probability	Max-Eigen Statistic	Probability
$r = 0$	54.14634***	0.0002	33.85803***	0.0008
$r \leq 1$	20.28831**	0.0496	11.07414	0.2464
$r \leq 2$	9.214168**	0.0489	9.214168	0.1439

Note: *** Denotes significance at the 1 per cent level, and ** at the 5 per cent level

After having found a cointegration relationship among the variables $\ln PI$, $OPEN$, and $\ln GDP$, the cointegrating equation was normalized using the real PI variable. Table 3 shows the normalized cointegrating vector.

Table 3. Cointegration Equation Normalized with Respect to PI

$\ln PI$	$OPEN$	$\ln GDP$	C
1.000000	-0.026827	-0.522100	-12.23287
	(0.01242)	(0.19781)	(4.92306)

From the Table 3, the long-run $\ln PI$ equation can be written as:

$$\ln PI = 12.23287 + 0.026827 OPEN + 0.522100 \ln GDP. \quad (2)$$

The cointegration equation above shows that the PI is positively related to $OPEN$ and GDP . The coefficient of $OPEN$ indicates that for every one unit increases in trade openness, private sector investment will increase by 2.68 percent. This suggests that trade openness has a vital role in motivating the private sector investment through boosting exports and making importing of intermediate, capital goods and new technology much easier, which motivate producers to increase and improve their production in the country. Our finding is in line with Asante (2000), Ajide and Lawanson (2012), and Naa-Idaret et al. (2012). The coefficient of $\ln GDP$ indicates that for every one percent increases in GDP , private sector investment will increase by 0.52 percent. This reflects the important role of the economic situation in motivating the private sector to improve and increase its investment in the country, because the rise in GDP is an indicating that the economic situation in the country is good, which motivates producers to increase their investment to earn more profits, while a decline in the GDP makes producers reluctant to increase their investment in the country, because a decline in the GDP means that the national economy has some problems affecting it negatively. This finding is in line with the finding of Al-Badry (1998), Al-Abdulrazag (2003), Lesotlho (2006), Frimpong and Marbuah (2010), Ajide and Lawanson (2012), Al-Khatib et al. (2012), and Naa-Idar et al. (2012).

Granger Causality Tests Results

Since the variables in the model are cointegrated, the Granger causality tests based on the VECM are used to determine the short and long run causal relationships among the variables. The Granger causality test results based on the VECM are shown in Table 4. The significance of the coefficient of the lagged error correction term shows the long run causal effect. It is clear that there are bidirectional short-run

causality relationships between OPEN, lnGDP and lnPI. Besides, there are unidirectional long-run causality relationship running from OPEN to lnPI, and bidirectional long-run causality relationships between lnGDP and lnPI.

Table 4. Granger Causality Test Results

	Independent variables			
	$\sum \Delta \ln PI$	$\sum \Delta OPEN$	$\sum \Delta \ln GDP$	ect(-1)
$\Delta \ln PI$	-	3.325115(3)**	2.545311(2)**	-2.642218*
$\Delta OPEN$	2.971802(2)**	-	3.491761(3)**	-0.211203
$\Delta \ln GDP$	3.764021(3)**	1.632604(2)	-	-3.467405**

Notes: ect(-1) represents the error correction term lagged one period. The numbers in the brackets show the optimal lag based on the AIC. D represents the first difference. Only F-statistics for the explanatory lagged variables in first differences are reported here. For the ect(-1) the t-statistic is reported instead. ** denotes significance at the 5 per cent level and * indicates significance at the 10 per cent level.

Impulse Response Functions (IRF) Test Results

Impulse response functions (IRF) allow us to study the dynamic effects of a particular variable’s shock on the other variables that are included in the same model. Besides, we can examine the dynamic behavior of the times series over ten-year forecast horizon. There are many options for transforming the impulses. We will use the generalized impulse response functions (GIRF). Figure 2 shows that when there is a shock to OPEN, lnPI will respond positively in the following years. This shows the important role of trade openness in motivating private sector investment in the country through helping it to get machines and production inputs that can be used in the production activities, in addition to exporting the products abroad which motivates the private sector to improve and increase its production. However, when there is a shock to lnGDP, lnPI responds positively in the first six years, then it responds negatively in the following years. Hence, it is important to improve the economic situation in the country by improving the infrastructure and creating an attractive investment climate.

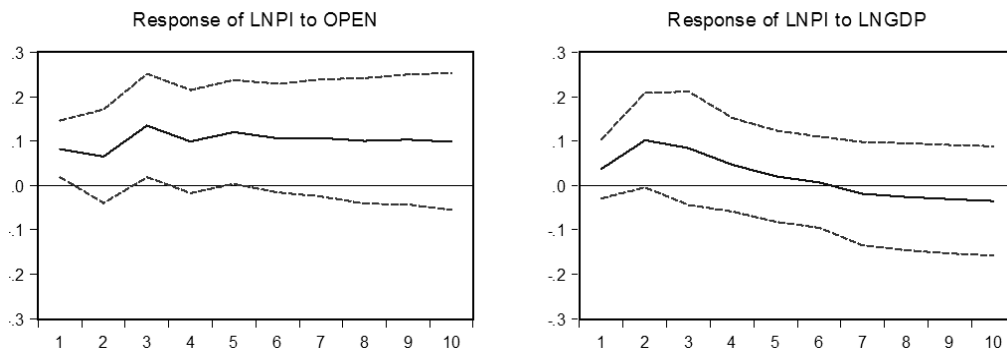


Figure 2. Generalized Impulse Response Functions (GIRF) Results

Variance Decomposition (VD) Analysis Results

The variance decomposition (VD) for 1-year to 10-year forecast horizons will be applied to explain how much of the uncertainty concerning the prediction of the

dependent variable can be explained by the uncertainty surrounding the other variables in the same model during the forecast horizon. The forecast error variance decompositions of the variables in our model are given in Table 5.

Table 5. Variance Decomposition (VD) Analysis Results

Period	S.E.	lnPI	OPEN	lnGDP
1	0.178592	100.0000	0.000000	0.000000
2	0.269074	92.73680	0.793713	6.469490
3	0.321267	88.19089	5.580496	6.228619
4	0.339498	85.16286	8.946437	5.890700
5	0.360907	76.36048	18.40490	5.234615
6	0.382363	68.10544	27.14169	4.752861
7	0.410055	59.99861	35.17040	4.830993
8	0.436880	54.02810	40.91414	5.057760
9	0.463728	48.97824	45.58540	5.436357
10	0.486871	45.19116	48.86725	5.941596

In the first year, the error variance of PI is exclusively generated by its own innovations and has been decreasing since then for the various forecast horizons. However, at the 10-year forecast horizon, its own shocks contribute about 45% of the forecast error variance. On the other hand, OPEN and lnGDP shocks explain 49% and 6% respectively of the forecast error variance of PI. Furthermore, the contributions of OPEN in explaining lnPI forecast error variance has increased during the 10-year forecast period, but there are no significant changes in the contribution of lnGDP.

Conclusion

This study investigated the effect of trade openness and economic growth on the private sector investment in Syria using annual time series data from 1980 to 2010. The model has three variables, with the private sector investment as the dependent variable. The ADF unit root test, Johansen cointegration test, Granger causality tests, impulse response functions (IRF), and variance decomposition (VD) analysis were used in this study. The ADF test results indicate all variables are I(1). The Johansen cointegration test showed that trade openness and GDP have a positive and significant long-run relationship with the private sector investment. Furthermore, from the Granger causality tests, we found that there is unidirectional long-run causality relationship running from trade openness to private sector investment, and bidirectional long-run causality relationships between GDP and private sector investment. While in the short run there are bidirectional short-run causality relationships between trade openness, GDP and private sector investment. The impulse response functions (IRFs) indicated that when there is a shock to trade openness, private sector investment will respond positively in the following years. However, when there is a shock to GDP, private sector investment responds positively in the first six years, then it responds negatively in the following years. The variance decomposition (VD) analysis showed that over a ten-year forecasting horizon, trade openness and GDP shocks explain 49% and 6% respectively of the forecast error variance of the private sector investment.

Based on the results of this study, trade openness makes the process of import and export much easier, and improving the economic situation helps in creating an attractive investment climate in the country, which in turn motivates producers to increase and improve their production. Hence, the government's economic policy in liberalizing foreign trade and creating an attractive investment climate was a successful policy to motivate the private sector investment in the country. Therefore, it is vital for the Syrian government to still adopt the same policy when the war finishes in Syria.

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Abstract

This study attempts to investigate the effect of trade openness and economic growth on the private sector investment in Syria over the period 1980-2010. The cointegration test indicates that private sector investment is positively related to the trade openness and GDP. The Granger causality test indicates bidirectional short-run causality relationships between trade openness, GDP and private sector investment. There are also unidirectional long-run causality relationship running from trade openness to private investment, and bidirectional long-run causality relationships between GDP and private investment. The study result indicates that it is vital for the Syrian government to still adopt the economic policy in liberalizing foreign trade and creating an attractive investment climate in order to motivate the private sector investment in the country.

Keywords: Syria, private investment, trade openness, economic growth, vector autoregression