

THE RELATIONSHIPS BETWEEN ECONOMIC GROWTH, FOREIGN CAPITAL AND OPENNESS

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Abstract

The previous studies dealing with growth theories have determined foreign trade or FDI as the main factors that promote economic growth. Yet, the main effect of these two variables on the growth rate of economy is still ambiguous as the many of those studies have neglected to capture the joint effect of foreign trade and FDI on growth. The main objective of this study is therefore to measure the impact of openness on growth by concerning the contributions of foreign investments to the exportations for 23 Asia-Pacific country group. The study employs dynamic panel data method for the period between 2006 and 2014. Our findings show that foreign trade or FDI has no power to explain economic growth but the interaction term representing the joint effect of foreign trade and FDI has a significant and positive effect on growth. Furthermore, our empirical results support a positive and significant relationship between growth and tax and foreign exchange rates.

Keywords: Equity Capital, Foreign direct Investment, Growth, Openness, Dynamic panel data.

JEL Codes: C23, F21, F23, F24, F2

EKONOMİK BÜYÜME, YABANCI SERMAYE VE DIŞA AÇIKLIK

Özet

Büyüme teorileri üzerine yapılan önceki çalışmaların çoğu dış ticaret ve Doğrudan Yabancı Yatırımları (DYY) ekonomik büyümenin temel faktörleri olarak belirlemiştir. Yine de bu çalışmaların dış ticaret ve DYY'ların büyüme üzerindeki ortak etkisini göz ardı ettiğinden, bu iki değişkenin büyüme üzerindeki temel etkileri halen belirsizdir. Dolayısıyla bu çalışmanın amacı dış açıklığın büyüme üzerindeki etkisini yabancı yatırımların ihracata olan katkısını da göz önünde bulundurarak 23 Asya-Pasifik ülke gurubu için ölçmektir. Çalışma, 2006 ve 2014 dönemi için dinamik panel veri metodunu kullanmıştır. Bulgularımız, dış açıklık ya da DYY'ın büyüme üzerinde açıklayıcı bir etkisini bulamamış, fakat dış açıklık ve DYY'lerin ortak etkisini temsil eden etkileşim teriminin büyüme üzerindeki etkisinin pozitif ve anlamlı olduğunu göstermiştir. Bundan başka, sonuçlarımız vergi ve yabancı döviz kuru oranları ile büyüme arasında pozitif ve anlamlı bir ilişkiyi desteklemektedir.

Anahtar Kelimeler: Öz sermaye, Doğrudan yabancı yatırımlar, Büyüme, Dışa açıklık, Dinamik panel veri.

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Introduction

Foreign trade and Foreign Direct Investments (FDI) are well-known factors behind the economic growth. Foreign trade has a crucial role in transferring the technology and innovation through importation. It also puts pressure on multinational firms to be more productive and competitive to win in the international markets through exportation. Thus, multinational firms are forced to adopt more capital-intensive production facilities to survive in international markets. International trade has therefore a potential to cause economic growth sourcing mostly from accumulation of physical capitals.

On the other side, FDI has important role enhancing the economic growth through increasing the export potentials of the host country. Vertically integrated FDI aims to utilize lower factors of production costs to export the products abroad. Since resource costs are generally lower in developing countries compared to developed countries, developing countries mostly receive vertical FDI rather than horizontal FDI. Thus, one may assume that vertical FDI may have a growth-lead effect on the economy. Furthermore, horizontal FDI aims to serve host market and therefore has the potential to increase domestic funds that can be used for future investments. In other words, while vertical FDI may affect the growth through increasing export potentials, horizontal FDI may affect the economic growth through the increasing the loanable funds in the country. Beside these, FDI may affect the growth through transferring new technology, managerial skills, new production methods or job creation as well.

The majority of previous studies have analyzed the relationships between FDI and growth (Lipsey, 2000) or foreign trade and growth (Pahlavani et al., 2005). Most of these studies have confirmed the positive relationship between growth and FDI or growth and openness but failed to capture the joint effect of both FDI and foreign trade on the economic growth. This paper argues that joint effect of foreign trade and FDI may differ from their separate effects on the economic growth. Since the investing multinational companies abroad are mostly superior in technology and innovation, they are most likely to create growth potentials. In other words, exportation originated from FDI may have more led-growth potentials compared to exportation originated from national investments. Thus, rather than an isolated study investigating the interactions between growth and foreign trade or growth and FDI, one should consider the joint effects of both foreign trade and FDI on growth as well.

As (Belloumi, 2014, p. 272) has noted that “The main implication of the endogenous growth theory is that policies which induce international trade, competition, change and innovation will promote growth”. Our argument therefore is that foreign capitals that promote international trade, competition or innovation may enhance growth even if openness (foreign trade) does not contribute to the growth by itself. The main objective of this study is therefore to measure the impact of openness on growth by concerning the contributions of foreign capitals to the exportations for 23 Asia-Pacific country groups². By doing so, this study employs unbalanced dynamic panel data from 2006 to 2014 within the system Generalized Method of Moments (GMM) specification.

The countries in the analysis can be listed as follows: Armenia, Australia, Azerbaijan, Bangladesh, China, Hong Kong, Kazakhstan, Kuwait, Korea, Madagascar, Mongolia, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Turkey, Vietnam, India, Indonesia, Israel, and Japan.

The contributions of the study to the literature can be expressed as follows: First, we are able to find the joint effect of openness and FDI on growth by concerning the endogeneity issue within GMM specification. Second, we are also able to predict the effects of openness or FDI on growth. Third, we are able to provide more realistic and conclusive result regarding the relationship between FDI and growth and/or foreign trade and growth.

Literature Review

Analysis of literature reveals that there is certain distinction between neoclassical growth and new growth models. While neoclassical growth model assumes the technology as exogenous variable, new growth models assume the growth as endogenous variable. Thus, most of the previous studies consider FDI as a factor for short-run growth but ignore FDI's spillover effects that may cause long-run growth. The study of Solow (1956, 1957) model was main guide formulating the neoclassical growth models and light the way for many previous studies that investigate the determinants of growth. These studies assume that there is a diminishing return so that FDI does not affect the long-run growth rate but rise the output level through a temporary increase in capitals and income per capita. Yet, new growth theories regard technological progress as endogenous. So that, FDI may enhance the technological progress even in the short-run through spillover arising from different sources such as: tangible capitals, human capitals, Research and Development (R&D) expenditures, new production techniques or methods etc. Even though, there is an abundant literature studying the effects of FDI or foreign trade on the growth; the most of these studies have found mixed evidence regarding the effects of these two variables on growth.

Ghirmay et al. (2001) have investigated the relationship between exports and growth. They have concluded that there is positive relationship between exports and growth in twelve developing countries in which exports promote for investments and thus higher GDP. Mamun and Nath (2004) has found a unidimensional causality from export to growth for Bangladesh. A recent study by Musila and Yiheyis (2015) has investigated the effects of trade openness on the level of investment and the rate of economic growth in Kenya by using time series analysis. They evaluated both trade openness and policies formulated that induce international trade. They concluded that while trade openness leads growth in Kenya, incentive policies designed to promote foreign trade have a negative and significant effect on investments and rate of growth. Furthermore, the studies of Barro, 1991; Dollar, 1992; Dollar and Kraay, 2001, 2003; Edwards, 1998; Frankel and Romer, 1999; Sachs and Warner, 1995 have all found a positive correlation between growth and openness. Yet, some of the previous works have found a negative relationship between growth and foreign trade. The studies of Clemens and Williamson, 2001; Irwin, 2002; O'Rourke, 2000 have claimed a negative relationship between growth and openness.

The studies investigating the impact of FDI on growth are inconclusive and controversial issue in the literature as well. While some of these studies have found positive a relationship between FDI and growth, others have found a negative relationship and still others have found no relationship at all. The studies of Blomstrom et al. (1994) have argued that FDI may lead growth only if host country Gross Domestic Product (GDP) per capita is high enough. Borensztein et al. (1998) analyzed the effect of FDI

on growth with in a cross country regression. They have concluded that FDI may transfer modern technology and enhance growth but this technological transfer depends on the human capital. Furthermore, the study of Öztürk and Kalyoncu (2007) and Ilgun et al. (2010) and Doğan (2013) have all investigated the causality from FDI to growth and growth to FDI. At the end of their study, they have all confirmed that FDI leads growth by increasing the capital investments in the host country. A recent study by Taşpın (2016) has analyzed the relationships of causality between FDI, export and growth for the period of 1974-2011 in Turkey. She found a bidirectional relationship between export and growth, but she could not find such effect from FDI to GDP. She has concluded that FDI may enhance growth only if FDI is vertically integrated or promotes exports in Turkey. Furthermore, handful of the studies such as Boyd and Smith (1992); Sadik and Bolbol (2001) have found a negative significant relationship between FDI and economic growth. On the other side, the studies of Nicet-Chenaf and Rougier, (2009) and Yalta, (2013) and a recent study by Karahan (2016) have investigated the linkage between FDI and growth. They all concluded that FDI does not create growth potential through technological diffusion in the host country.

Data and Methodology

Data:

We have determined the GDP growth rate as of our dependent variable. GDP growth rate is a ready data calculated simply by taking the ratio of difference in current and previous GDP to previous GDP. Our main independent variables and control variables can be explained as follows: Equity Capitals, Openness index, Country Risk (CR) index, Tax rates on sales revenue, Official exchange rate and inflation. Statistical data on GDP growth rates, Openness index, Exchange rates and inflation have been taken from World Bank data retrieval tool³. Furthermore, while equity capitals have been attained from the International Monetary Fund, Balance of Payment (BOP) Statistics⁴ and Country risk index has been reached from the Political Risk Service (PRS) Country Group⁵All data points are measured in USA dollars. Expected sign of the coefficients and short definitions of explanatory variables are presented below:

Equity Capitals. FDI is consisting of three financial components. Equity capitals represent the most important portion of total FDI. Mergers and Acquisitions (M&A's), Green-Field Investments are most important entry-mode of equity capital investments in the foreign market. They are initial and irreversible investments in the host country while the other two (reinvested earnings and intra-company loans account for subsequent investments that emerge after equity capital investment. Since, the aim of foreign investors may affect the export potentials and thus foreign trade in host market, this study employs equity capital investments representing first-entry foreign investments into the Asia-Pacific county group. The expected sign of equity capital variable on growth is ambiguous.

3.www.worldbank.org

4.www.imf.org

5.www.prsgroup.com

Openness Index. Openness index is calculated simply by dividing the summation of exports and imports values by GDP. Most of the previous studies have employed openness index as an indicator of country' involvement in the international trade. We have employed openness index to find out the impact of foreign trade on growth. Based on economic theory, expected sign of openness index on growth is ambiguous as well.

Country Risk (CR) Index. Country Risk index is a composite index of political, economic and financial risk indices in the host country. This variable is incorporated into the specification as a control variable to measure the impact of country risk associated with political, economic and financial situations of the country on the growth. Since the data points on risk index range from very high risks (0-49) to very low risks (50-100); as the CR risk index falls, risks associated with economic, political and financial risks reduce as well. Thus, we expect a positive relationship between CR index and growth.

Tax Rates. Taxes imposed by the government to finance public expenditures may have mixed effects on the growth. A decrease in tax rates increase the disposable income and leads an increase in the level of consumption. Thus, one may assume that there might be an inverse relationship between taxes and growth. On the other side, as the government increases the amount of tax revenues, it may able to either reduce the Balance of Payments (BOP) deficit, if any, or increase the domestic investments by increasing the loanable funds. Furthermore, tax collections may reduce the borrowing needs of government to finance public expenditures. Yet, increase in loanable funds depends on the budget surplus. If government budget gives a surplus, this surplus may be used as loanable funds to be financed domestic investments or reduce budget deficit. Thus, the expected effect of taxes on growth is inconclusive.

Official Exchange Rate. Official exchange rate is simply calculated as the division of domestic price levels to foreign price levels (local currency units relative to the U.S. dollar). While an increase in the exchange rate means appreciation of the local currency, a decrease in the exchange rate refers inverse. Dollars is the common currency to exchange goods and services in international market. An appreciated domestic currency can buy more dollars and makes the imported intermediate goods less expensive and thus reduce total cost of production. Thus, we expect a positive relationship between domestic currency appreciation and growth.

Inflation. Inflation rate is employed as a proxy to evaluate the well-being of the economy. An increase in inflation rates may signal that economy is not doing well and under bad economic circumstances growth is expected to diminish or slow-down. Thus, we expect a negative relationship between inflation rates and growth.

Methodology:

Panel data models combine both cross sectional units and time series data for a pooled data and known as appropriate models to capture individual effects (country sector or firms) effects within the data. Yet, classical panel data techniques such as Fixed Effect and Random Effect do not produce consistent estimators if we include the lagged of dependent variable into the panel data regression. Thus, one may employ Arellano and Bond (1991) (AB) method to deal with endogeneity issue in the dynamic panel data. This model is capable to capture the possible endogeneity problem among some of the explanatory variable and produce consistent and efficient estimators. This model is

known as generalized method of moment (GMM) procedure that utilizes the orthogonality conditions that exist between lagged values of y_{it} and the disturbance v_{it} .

Our main regression can be shown as follows:

$$y_{i,t} = \alpha_{0t} + \alpha y_{i,t-1} + \sum_{k=1}^7 \delta_k X_{kit} + v_i + v_{it} \quad (1)$$

Where y_{it} represents dependent variable, $y_{i,t-1}$ represents the lagged of dependent variable. Furthermore, X_{kit} indicates the explanatory variables, v_i and $v_{i,t}$ represents the individual country effect which is time invariant and error term respectively.

If we take the first difference of the regression to eliminate the individual effect within the dynamic panel data, our model can be shown as follows:

$$\Delta y_{i,t} = \Delta \alpha_{0t} + \Delta \alpha y_{i,t-1} + \Delta \sum_{k=1}^7 \delta_k X_{kit} + u_{it} \quad (2)$$

Where $\Delta y_{it} = y_{it} - y_{i,t-1}$ and, and $u_{it} = v_{i,t} - v_{i,t-1}$. Taking the first difference eliminates fixed effects but this process does not solve the collinearity problem between lagged of dependent variable and error term.

Arellano and Bond (1991) suggested taking the lagged levels of the explanatory variables as instruments to avoid collinearity problem. This approach is known as a difference GMM estimation and feasible technique as soon as explanatory variables are weakly exogenous and error term is serially uncorrelated. The orthogonality of the moment conditions can be specified as follows:

$$E[y_{i,t-s} u_{i,t}] = 0 \text{ or } E[y_{i,t-s} (v_{i,t} - v_{i,t-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T; k = 1, \dots, 3 \quad (3)$$

Furthermore, Arellano and Bover (1995) and Blundell and Bond (1998) suggested that the Arellano and Bond estimator may yield consistent and unbiased estimators unless the explanatory variables are not persistent overtime. Otherwise, as the lagged levels of the variables become weak instruments; one should add additional moment conditions using lagged first differences (LFD),

Additional moment conditions can be specified as follows:

$$E[y_{i,t-s} - y_{i,t-s-1}](\eta_i + v_{i,t}) = 0 \text{ for } s=1; k=1, \dots, 3 \quad (4)$$

For j^{th} endogenous regressor additional moment conditions can be specified as follows:

$$E[(X_{ji,t-s} - X_{ji,t-s-1})(\eta_i + v_{i,t})] = 0, \quad s=1; k=1, \dots, 3 \quad (5)$$

As we incorporate additional moment conditions into the model, we have what is called now GMM system estimation (GMM-sys). Even though, GMM system estimation yields superior estimators compared to GMM in difference (GMM-diff) estimators, this technique may lead over identification problems among instruments, thus may weaken the efficiency of the tests. Nevertheless, we adopt the system approach, following Roodman's (2009) instrument reduction technique by way of imposing lag limits and collapsing the instrument matrix.

The robustness of the estimators can be ensured by post estimation tests. One of them is so called as the Hansen (1982) or J test which is a test of over-identifying restrictions. If the instruments are jointly valid under the null hypothesis, failing to reject Hansen test ensures there is no over – identification restriction problem among instruments so that instruments are valid. Arellano-Bond test for AR (2) checks the null hypothesis of no serial correlation of the differenced error term. In this test, a large p value indicates strength of our estimates.

Empirical Results

We have specified two one-step system GMM specifications for a dynamic panel data from 2006 till 2014 for the Asia-Pacific country group. We have employed openness index and equity capitals as separate variables within the first specification and prefixed as GMM1. To measure the joint effect of foreign trade and equity capitals on growth, we have specified an interaction term that is included in the latter specification prefixed as GMM2. The estimation results of both GMM1 and GMM2 specifications are presented in Table 1. Furthermore, post estimations to ensure the robustness of our estimators are provided at the bottom of the Table. Hansen and Arellano Bond AR (2) Test statistics show that there is neither over-identification issue regarding the number of instruments nor serial correlations within the error term.

Table 1. Estimation Results

Variables	System-GMM1	System-GMM2
Growth _{t-1}	0.3628 (0.003)**	0.0969 (0.766)
Equity Capitals	-0.00001 (0.539)	—
Openness	0.0034 (0.323)	—
Capital*Openness	—	0.00001 (0.037)*

Composite	-0.0054 (0.892)	-0.0410 (0.413)
Tax	0.0524 (0.024)*	0.0448 (0.044)*
Exchange Rate	0.00005 (0.188)	0.00007 (0.021)*
Inflation	0.0274 (0.722)	0.0239 (0.740)
Dummy Variable for 2007	2.6256 (0.002)**	4.4519 (0.000)**
Dummy Variable for 2008	-1.5028 (0.022)*	0.0457 (0.963)
Dummy Variable for 2009	-3.6111 (0.005)**	-3.2203 (0.008)**
Dummy Variable for 2010	2.8378 (0.028)*	2.2135 (0.292)
Dummy Variable for 2011	0.3324 (0.659)	1.0247 (0.263)
Dummy Variable for 2012	0.2339 (0.614)	0.8438 (0.139)
Dummy Variable for 2013	0.3863 (0.307)	0.7974 (0.040)*
Wald Test	195.94 (0.000)**	219.42 (0.000)**
Arellano Bond Test AR(2)	0.451	0.412
Hansen Test	0.683	0.663
Num. of Instruments	29	15
Num. of Observations	155	155

Note. ** denotes the 1% significance level, whereas * denotes the 5% significance level. The standard errors of the coefficients are presented in parentheses.

From the Table 1, we can clearly argue that openness representing the foreign trade and equity capital investments (FDI) do not have any power to explain growth in Asia-Pacific country group. Yet, we have proved that interaction term indicating the common effect of foreign capital and openness has a positive and significant effect on growth. One may argue that international trade operations carried on by domestic investors are not able to contribute to the growth. Or, foreign investors are not successful to contribute to the growth unless they don't export the products abroad. In other words, domestic firms don't have economies of scale power, or capital intensive products to compete in the international market. It is well-known fact that the many of the multinational firms are large enough to have economies of scale power and efficient management or production techniques to compete in the international markets. Thus, foreign trade activities can be counted as one of the most important factors that contribute to the growth only if these activities carried on by foreign investors rather than

domestic investors. Furthermore, insignificant effect of FDI on growth can be explained as that equity capital inflows don't not contribute to the loanable funds that can be used for additional domestic investments in the host market. Supply of loanable funds can be increased through production chain when foreign investors buy locally made inputs and sell intermediate products to local firms. However, if foreign investors do not make business with local firms through production chain, FDI can boost growth only if it is vertically integrated rather than horizontally integrated.

Additionally, we have empirically confirmed that higher tax rates on sales revues, foreign exchange rate and time effects have power to explain growth in the Asian-Pacific county group. The empirical results regarding the control variables and their interpretations can be expressed as follows: A higher tax rate has a robust significant positive effect on growth in which ensured in both GMM specifications. The effect of higher tax collection on growth may be two-sided. First, as the taxes are major means to finance government expenditures; higher tax collections may help government to increase the amount of public expenditures and therefore enhance the growth. Second, if tax collections are more in value than public expenditures, government budget may give a surplus that can be used to increase the supply of the loanable funds for domestic investments. Thus, one may simply assume that higher tax rates may have a growth potential in this county group through increasing public expenditures and/or supply of loanable funds. Furthermore, we have empirically found out that domestic currency appreciation leads to increase in growth rates of the economy. Foreign exchange rate is the key factor that affects the cost of both exportations and importations in a county. While host currency depreciation reduces the cost of exportations for foreigners, host currency appreciation reduces the cost of importations for domestic and foreign investors in the host market. Keeping this fact in mind, we can argue that host currency appreciation may have a growth potential in developing countries such as Asia-Pacific country group where investors mostly depend on imported intermediate products for their production process. Furthermore, time effects represented by dummies have significant and positive effect on the economic growth expect the year of 2009 where all countries have been severely affected by GFC. We have empirically showed once more that GFC has robust significant deterring effects on growth in this country group.

Conclusions

Even though, there is an abundant literature dealing with the determinants of economic growth, the most of these studies are conflicting in each other and still remain inconclusive. Our belief is that these studies have overwhelmingly considered only FDI or international trade as the main factor behind the growth rather than measuring the joint effect of foreign investments and openness on growth. Thus, the main objective of this study is to find out the effect of foreign trade on growth by taking the foreign investment inflows into the Asia-Pacific country group. By doing so, we have employed one-step system GMM specifications for dynamic panel data from 2006 till 2014.

At the end of our study, we have empirically proved that foreign trade or FDI has no power to explain economic growth but the interaction term representing the joint effect of openness and FDI has a significant and positive effect on growth. This re-

sult is worthy to emphasize: Growth is responsive to neither openness nor FDI if we disregard foreign capitals or openness respectively. The possible explanation for this surprising result is that domestic investors dealing with the foreign trade activities are not enjoying cost efficiency (economies of scale) enough to compete in international market and thus unable to contribute to the growth. Similarly, foreign investors that are more competitive in terms of cost efficiency, production technique, technology or innovation may contribute to the growth only if they are engaged in international trade. That means, horizontally integrated FDI is not a driver of growth unless the foreign investors are not engaged in doing business with domestic investors in the production chain. Yet, vertically integrated FDI is determining factor that promising growth in this country group.

With respect to the effects of control variables on growth, we have confirmed that higher tax rates, foreign exchange rates are positively correlated with growth. An increase in tax rates may motivates government to increase public expenditures or receive a surplus in budget that can be transferred to the banks. Thus, higher tax collections may promote growth through higher public expenditure or increase in the supply of loanable funds. Furthermore, as the host currency appreciates, investors enjoy more valuable funds in their hands that make the importations less expensive. In other words, dollar is a common currency in international market, ability of investors to buy more dollars with domestic currency reduces the cost of imported products that go into the production process and thus reduce the total production cost as well. Thus, host currency appreciation is another variable that promotes economic growth.

Lastly, we have confirmed that GFC has a deterring effect on economic growth in this country group. This result does not come up a surprise as we already know that GFC have reduced the FDI activities all over the world and thus narrowed the international trade in 2009.

Based on our empirical results, we can offer some policy implications as follows: First, vertically integrated FDI is key factor that enhance growth. Thus, FDI policy makers should try to attract vertically integrated FDI rather than horizontal FDI. Thus, new FDI incentive programs should be formulated that please foreign investors aiming to utilize lower production costs in this country group. Second, trade openness should be supported by the government through eliminating barriers to foreign trade such as reducing high tariff rates or quotes.

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