

Foreign Capital Inflow and Sustainable Economic Development:

A Case Study of Turkey

Ahmet Cetin1, Murat Mustafa Kutluturk1, Birol Cetin2

*1CankiriKaratekin University, Faculty of Economic and Administrative Sciences,
18100 Cankiri, Turkey.*

*2Turkish International Cooperation and Development Agency,
VlahaBukovca, Podgoritsa.*

E-mails: akcetin@hotmail.com, mmkutluturk@gmail.com, bcetin@gop.edu.tr

Abstract

This study analyses the effect of foreign capital inflow (especially foreign direct investment) on the sustainable economic development of Turkey. The main objectives of the study are to analyse the long run relationship between foreign direct investment and sustainable economic development. Quarterly data were used from the period of 1992:Q1 to 2011:Q3. The Engle-Granger Methodology for cointegration was applied to estimate the long run relationship. The Augmented Dickey Fuller (ADF) unit root tests were used to check the stationarity of each variable in the model. The ADF tests of the differences of each variable indicate that all of the variables are integrated of the first order. Cointegration was applied to estimate the long run relationship. A stable long run relationship was found between foreign direct investment and the sustainable economic development. Even if error correction

coefficient was statistically significant, the short run regression model was statistically insignificant. It was concluded that foreign direct investment had positive impact on the sustainable economic development in the long run but not in the short run.

Keywords: Capital Inflow, Foreign Direct Investment, Economic Development, Engle-Granger, Cointegration

1. INTRODUCTION

It has been considered capital as the central element of the process of economic development. Based on this view, the capital-deficient countries heavily resorted to foreign capital as the primary means to achieve rapid economic growth. In economic literature, it has been widely accepted that Foreign Capital Inflow (FCI) stimulates sustainable economic development via adoption of new (foreign) technology, which can happen via licensing agreements, beginning competition for resources, employee training and knowledge, and export spillovers. Because of these benefits of foreign capital inflow, many developing and emerging countries have attracted and experienced large capital inflows during the past decades. However, foreign capital inflow can even adversely affect the development process. It exposes the recipient country to external shocks. That short-term capital flows can increase the fragility of the financial system and destabilize the economy. They not only pose a threat to the financial system but also undermine the economic progress of the developing nations. Additionally, it is more volatile than other categories of capital flows and its sudden reversal tends to have destabilizing effects on the host country. The growth experience of many of these countries has not been very satisfactory and, as a result, they accumulated a large external debt and are now facing serious debt servicing problems.

Peterson Institute for International Economics reports that FDI possibly increase the level of productivity so that initiate a circle that in turn increase wage level, saving, so investment, and again productivity. According to report, FDI with higher technology transferred, new management skill implemented, and increasing skill of local workers may bring new dynamics to the economy beside spillover these new implementations into the local firms. In addition competition in the local market will rise efficiency, increase output, and also stimulate economic growth. Such developments may lead economies to increase not in the way of quantity but also quality of products. Growing economy demands new skilled labor should increase wages and so standards of livings like education and health²³.

Similar concerns were also reported by OECD. Countries on the track of the development consider FDI as a medium of economic development. To attract the FDI, countries liberalize their FDI regimes, hoping macroeconomic growth and enhance welfare. If countries hope to attract foreign investments some basic foreign investment friendly policies and some basic features like scale economies, labor supply, infrastructures, natural resources etc. and some level of economic development need to be available so that FDI may have effect on spillover of technology, human capital formation, integration with world through trade, competitive environment and so on. Such policies and its effects will help economic development like

²³http://www.iie.com/publications/chapters_preview/53/1iie258x.pdf

reduction of poverty, environment friendly technologies and socially sensitive corporate policies²⁴.

According to Papanek (1973) FCI consist of three parts. First part is foreign aid that includes official borrowings and transfers that has no direct effect on the economy. Second part is foreign private investment that has two components: net foreign private direct investment and long term borrowing. Net Foreign Direct Investment (FDI) is physical capital that has effects on economy's real sectors by increasing physical capacity of product or services and prepares an environment for new economic opportunities and employment. Lastly all other inflows refer to net short term borrowings, net private transfers etc. that has little but unsustainable impacts on the economy. As in this paper development was being concerned, FDI as a most effective part of FCI on development was chosen as the main indicator.

For these reasons, in case of such a scenario FDI may cause economic development which is our concern in this study. As proxy variable of sustainable development, the ratio of external debt to export was used. If this ratio gets higher, amount of GDP allocated for current and future payments increases that social spending such as poverty, health and education could negatively be affected in the long run (Anwar, 2011).

2. LITERATURE REVIEW

Even though there is a debate over FDI and its effects on economies at different stages for years, it is undeniable that countries suffer with shortage of saving require other nations savings to break the chain of being the member of so called less developed nations. FDI is one of the most important pillars of the economic growth and development for especially developing, transition and emerging economies.

Lucas (1988) and Barro (1990) using endogenous growth model tried to investigate if any effect of FDI on economic growth through diffusion of technology and they show importance of technology on the economic development. The importance of liberalization at the financial sector and stable economy for FDI was emphasized by De Gregorio and Guidotti (1995). Similar points made by the World Bank (2002) that FDI improve productivity, growth and trade even though effects diversifies among countries and sectors according to host countries policies and characteristics.

Qi (2007) discusses in the paper, that FDI may have direct and indirect effect on the economy. It may directly promote economic growth but also it may help human capital development, strengthening completion related sectors and technology transfer indirectly. Aitken and Harrison (1997) reached a conclusion supports previous one that FDI increase the productivity not only for foreign firm but also domestic firms in the same sector.

On the other hand De Backer and Sleuwagen (2003) and Carcovic and Levine (2005) discussed the subject that after FDI it may change the structure of the economy and may affect the trade, price, finance etc. so that it will affect resources allocation and slow the economy.

FDI may improve economic conditions by increasing employment, productivity, export transferring technology and skills (UNCTAD 2008). According to Borensztein (1998) FDI through training and labor management are beneficiary not only for the economic growth but

²⁴<http://www.oecd.org/dataoecd/47/51/1959815.pdf>

also oversee firms' interaction with other local firms that may lead to increase production standards higher for production and improve management skills more.

In the sectorial level Sekmen (2007) investigated Turkey's tourism sector for 1980-2005 and didn't find cointegration among variables but found unidirectional relationship between FDI and GDP and bidirectional relation between exchange rate and GDP and FDI. Ilhan and Huseyin (2007) searched for the impact of FDI on Turkey's and Pakistan's economic growth for the periods of 1975 and 2004. They concluded that there is bidirectional causality exists for the case of Turkey and unidirectional causality exist for the case of Pakistan from FDI to GDP.

3. DATA AND METHODOLOGY

For this study quarterly data has been collected from Electronic Data Delivery System of Central Bank of the Republic of Turkey for the periods between 1992:Q1 and 2011:Q3. All variables namely external debt, export, and foreign direct investment (FDI) were measured in million US dollars. As a measurement of sustainable development the ratio of external debt to export (EDX) is used. Variables are used in the form of natural logarithm. In addition to taking logarithm form of variables, X11 seasonal adjustment methodology has implemented to variables.

Griffith (2001) indicates that if time series are concern in a regression, two non-stationary variables may produce incorrect results. Time series are generally tends to show increasing or decreasing tendency.

In order to catch the long and short run relationship between FDI and development cointegration technique is used. This technique, that was introduced by Granger in 1981 and developed by Engle and Granger 1987, gives us advantages to analyze the both short and long run relation together. Basically this approach indicates that even if economic time series exhibits non-stationary behaviors, a suitable linear combination between these variables may remove trend component so that time series variables become stationary. In such a case these time series variables are called as cointegrated which economically may be a good indicator of long run or steady state equilibrium if exist. Cointegration test can be conducted via Engle and Granger (1987) or Johansen (1988, 1991) and Johansen and Juselius (1990).

Residual based Engle Granger (EG) test is implemented in two steps. OLS is being used on level variables for cointegration regression than residuals are acquired to test stationarity using Augmented Dickey-Fuller (ADF) unit root tests. But before implement the test statistics variables integrated order are needed to be identified. If both variables are integrated at the same level, say I(d) than linear combination of these variables will also be integrated at the same level, I(d). If not say I(d-r) where $r < d$ than one may conclude that there is long run relationship between these variables or there is some cointegration. To implement EG test following regression is estimated and residuals are acquired: $y_t = \beta_0 + \beta_1 x_t + \varepsilon_t$. Obtained residuals are used for following models estimates: $\varepsilon_t = y_t - \beta_0 - \beta_1 x_t$. EG test is used to test on error term and if it is, say, I(0) than residuals series are said stationary. In such a case Engel introduces Error Correction Mechanism (ECM). Unit root tests can be implemented on the level and first difference variables:

$$\Delta y = \alpha_1 y_{it-1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{it-j} + x_{it} \delta + \varepsilon_t$$

ADF, that test the unit root of concerned time series variables, consist of first difference of the series as dependent variable and lagged and lagged difference terms, constant and a time trend as independent variables. The test of unit root is to test coefficient of (y_{t-1}).

As discussed by Loayaza (2002) the cointegration relationship between foreign direct investment and sustainable development following log-log form is used for estimation:

$$\text{LnEDX}_t = \beta_0 + \beta_1 \text{LnFDI}_t + \varepsilon_t$$

4. EMPIRICAL RESULT AND DISCUSSION

4.1. Unit Root Test

Prior to conducting the cointegration analysis, it is essential to check the Stationarity for each variable in the model. Unit root tests for stationarity are performed on both levels and first differences for both variables in the model. Three different models with varying deterministic components have been considered while performing the tests. These are: (1) model with the intercept; (2) the model with a constant and a trend; and (3) a model that neither includes a constant, nor a trend in the long-run cointegration space. The results of the tests are reported in Table 1. The results of the unit root tests shows that all the variables are non-stationary at level. First differencing of all variables yields acceptance of the null hypothesis of stationarity. Based on these test results, it is, therefore, concluded that both variables are I(1) variables.

Table 1: ADF Unit Root Test for Stationarity

Test with intercept and trend at level			
	None	Intercept	Trend&Intercept
LnEDX	-0.86	-1.04	-2.51
LnFDI	1.04	-0.47	-2.38
Test with intercept and trend at first difference level			
	None	Intercept	Trend&Intercept
D(LnEDX)	-10.22*	-10.28*	-10.21*
D(LnFDI)	-10.32*	-10.41*	-10.39*

Note: * indicated the stationary of the variables at 1% level of significance

4.2. Cointegration and Error Correction Model

To implement Engel Granger procedure following model has been estimated and result summarized below:

$$\text{LnEDX} = 3.155758 - 3.155758 \text{ Trend} - 0.074408 \text{ LnFDI}$$

(t-stat) (34.26) (-4.17) (-3.76)

R2 = 0.735 Adj. R2 = 0.728 DW = 0,486 F-Stat = 105,469 (Prob. 0.000)

The above results indicate that in the long run equation the variables are cointegrated since the residuals of the regression are stationary with one lag length based on SIC at the 5 percent level of significance.

Error Correction model has been formed as follows and test statistics given below.

$D(\text{LnEDX}) = -0.005804 + -0.007396 D(\text{LnFDI}) + -0.154757 \text{ECM-1}$

(t-stat) (-0.757) (-0.647) (-2.405)

R2 = 0.071 Adj. R2 = 0.046 DW = 2.09 F-Stat = 2.896 (Prob. 0.0614)

FDI was found statistically insignificant in the short run. We may conclude that FDI has no impact over economic development in the short run. On the other hand ECM is negative and statistically significant as required. This means that there is a relationship between FDI and economic development in the long run. 15% of deviation from the long run relation is being corrected every period.

5. CONCLUSION

The aim of this study is to analyse the long run relationship between foreign direct investment and sustainable economic development in Turkey with the application of an Engle-Granger approach using quarterly data from the period of 1992:Q1 to 2011:Q3. The data indicated that a stable long run relationship was found between foreign direct investment and the sustainable development. FDI would impact positively. Even if error correction coefficient was statistically significant, the short run regression model was statistically insignificant. It was concluded that foreign direct investment had positive impact on the sustainable economic development in the long run but not in the short run.

In the long run, the model indicates that a 1 percent increase in FDI would support sustainable development by 0.074 percent. According to study, FDI has no effect in the short run and limited effect in the long run.

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