External Efficiency of Education System in Pakistan: Measurement and Impact on Foreign Direct Investment

Nasir Mahmood[1] and Faisal Munir[2]

Abstract

This study empirically investigates the impact of external efficiency of education system on foreign direct investment in Pakistan for the period 1984-2016. The study estimated the affect in two step estimation methodology, in first step external efficiency of education system (TE) is calculated by applying Stochastic Frontier Analysis (SFA). In the second step the estimated efficiency scores are incorporated in the time series analysis to determine the impact on FDI. The study has used Gross national income (GNI) per labor employed as output measure and mean years of schooling (MYS) along with some other explanatory measures as input to estimate external efficiency of education system. In the second step implications of education system efficiency on FDI some control measure for FDI are also incorporated, e.g. Trade openness, infrastructure, and governance. Based on unit root tests, the study follows Johansson Cointergation approach to test the cointegration among the variables. The findings of the study show that TE and MYS have positive and significant impact on FDI in Pakistan. The results are supported with standard diagnostic tests and signs of estimated coefficients are according to the expectations. Further, long run and short run estimation results are consistent with recent empirical evidence found for other countries. In case of Pakistan, no empirical study previously exists on the subject thus magnifying the contribution of this study in the literature. Based on findings of the study, it is obvious that external efficiency of education system along with traditional determinants of FDI must be considered for designing effective policies to encourage FDI inflows in Pakistan.

Key Words: External Efficiency of Education System, Foreign Direct investment, Stochastic Frontier Analysis, Johansson Cointegration test

Introduction

Identifying Foreign Direct Investment (FDI) friendly policies is crucial for policymakers. FDI is an important source of revenue for several countries. FDI helps fill the investment gap and is an excellent vehicle for technology transfer (Keller, 2010). For these reasons, FDI led growth is at the core of several growth strategies in many countries. At the same time, the quality of human capital is an essential ingredient for attracting FDI. Some studies examined the role of several barriers to FDI inflows and the quality of human capital appears to be one of the most challenging ones (e.g. Brooks et al., 2010; Assuncao et al., 2011). The proposed study focuses on the quality of the education related to the ability of countries to match the educated individuals' skills to the needs of the economy.

This study will examine the adequacy of the education system in attracting FDI. The adequacy of the education system has been considered one of the drivers of the quality of human capital (Hanushek and Dennis 2000). Firstly, Psacharopoulos (1986) analyzed the issue of the adequacy of the education system through a model that measures the misallocation cost on the labor market emanating from the education system. Since Psacharopoulos (1986), the literature has explored different aspects of the adequacy of the education system to the labor market. Vincens (2005) focused on defining qualitative and quantitative adequacy of the education system while Plassard and Tran (2009) described over-education as another aspect of the

[1] Lecturer in Economics, Punjab Higher Education Department, Punjab, Pakistan
[2] Lecturer in Economics, GC Women University Sialkot, Pakistan

education system inadequacy. Over-education happens when the number of years of schooling is higher than the required education necessary to hold a given position. This is associated with a waste of resources. Topel (1997) made a clear difference between the static adequacy of the education system and the dynamic one. The static adequacy is more about matching the supply of skilled labor to the labor market demand at a given moment in the time; dynamic adequacy deals more with the future demand on the labor market and the adjustment in the education system accordingly.

The education systems around the World face two types of efficiency issues: internal and external efficiency (World Bank, 2015). First, the internal efficiency is defined as the ability of the education system to use the education sector inputs to provide education services of high quality. Second, the external efficiency captures the notion of producing skilled labor that matches the demand on the labor market. The current study focuses on the external efficiency of the education system. The external efficiency of the education system is a typical example of the adequacy of the education system to the labor market. It refers to the ability of the education system to reflect the number of years of schooling in the income structure in the labor market. An efficient education system should lead to a perfect correlation between schooling years and wages. The concept of external efficiency of the education system builds on the theory of human capital which postulates that other things being equal, education tends to augment skills and productivity and raises workers' lifetime earnings. The external efficiency of the education system is the ability to reduce the misallocation between supply and demand for skilled labor. There is a consensus that in most countries, there are significant mismatches between the output of the education system (skilled labor supply) and the nature of demand for skilled workers in the labor market.

The external efficiency of the education system and FDI inflows are related for several reasons (Mouhoud, 2013). First, foreign investors may be attracted by the quality and the relevance of the expertise developed by the labor force in a given developing country. Second, it is well known that multinational firms are usually interested in subcontracting with countries' companies, especially in countries where the local labor force is highly qualified. Third, in the current context of globalization, offshoring appears to be a common alternative for international companies to boost their competitiveness, and countries where adequate trained labor force is available may attract investors. Foreign Direct Investment in Pakistan increased by 2761.10 USD Million in 2016. Foreign Direct Investment in Pakistan averaged 2651.26 USD Million from 2010 until 2016, reaching an all-time high of 3184.30 USD Million in 2010 and a record low of 2099.10 USD Million in 2012 (World Bank, 2016). The number of unemployed graduates is also increasing day by, so there may be a chance for country to attract FDI.

The prime objective of the study is to test whether there is a relationship between FDI inflows and the external efficiency of the education system in Pakistan. For this purpose the study also measures external efficiency scores of education system in Pakistan.

This research assumes that the quality of the labor force training with regard to the needs of the economic activities, as captured by the level of external efficiency, matters in attracting FDI. Literature on FDI with special reference to Pakistan is only focused to some traditional determinants (Zeshan and Talat, 2014). There also some studies which have determine the impact of FDI inflows on Human Capital in Pakistan (Mahmood and Chaudhary, 2010). To the best of our knowledge, this study is the first to make a causal link between the external efficiency of the education system and FDI. So this magnifies the significant contribution in the existing literature with special reference to Pakistan.

Literature Review

The literature on the subject studied in the research is very limited however; the relationship between FDI and economic development is well documented in the literature. FDI could help countries, by not only increasing the stock of capital, but also improving the productivity of the economy through technology transfer. Technical determinants of FDI are well documented in the empirical literature, the literature shows that a cross-country technological diffusion exists that improves productivity and FDI is one of the major channels (Helpman, 1997; Miyamoto and Yasuyuki, 2006 and Sheng and Xu, 2012). Many countries rely on FDI to escape from the poverty trap. However, Borensztein et al. (1998) found that FDI has a positive effect on productivity growth, as well as income growth only if the recipient country has reached a certain human capital level. Consequently, FDI is an important factor of economic growth and the level of human capital could strengthen the relationship between FDI and growth. Several studies investigated the determinants of FDI inflows and some of them concentrated on the role of human capital. According to Assuncao et al. (2011), existing literature showed three main determinants of FDI: location (infrastructure, human capital, and so on), institutions (corruption, political instability, and so on) and factors related to trade theory (openness, factor endowments, and so on). The present study focused on human capital. In addition to allowing countries to take better advantage of technological diffusion, existing literature showed that the level of human capital could affect the attractiveness of countries with respect to FDI.

The evidence of the relationship between human capital and FDI remains mixed. On one hand, human capital is one of the determinants for the location of FDI flows. This relationship is demonstrated in many empirical studies in the literature. For instance, Brooks et al. (2010) showed that human capital positively affects FDI inflows, especially in skilled labor intensive sectors where the level of education could allow technological innovation and productivity improvement. Noorbakhsh et al. (2001) found that human capital is one of the key determinants of FDI inflows and the effect increases over time. On the other hand, other empirical findings revealed that there is no effect of human capital on FDI flows. For instance, Root and Ahmed (1978) found that human capital is not a determinant for FDI. In the same vein, Narula (1996) pointed out that even though human capital comes up with a positive sign in the econometric model, it is not a significant determinant of FDI inflows.

Using a secondary education index to proxy the level of human capital, Cleeve (2008) revealed that the relationship between FDI and the human capital level is not conclusive. Cheng and Kwan (2000), using China's regional level data, showed that the quality of labor, in a variety of measures, is insignificant in explaining the regional distribution of FDI in China. Hong (2008) found an insignificant impact of labor quality on the location of China's inward-FDI. More recently, Cleeve et al. (2015) found that there is no evidence of the importance of human capital for FDI inflows to Sub-Saharan Africa.

The current paper explores new evidence regarding the relationship between human capital and FDI inflows. Special attention is given to the role of education adequacy rather than the level of education. Quoting Psacharopoulos (1986), Dumartin (1997) and Smith (2001), the adequacy of the education system to the labor market could be defined as a process aiming to provide the economy with the optimal quantity of qualified labor. As the component of this broader concept, the external efficiency of the education system captures the efficiency with which the years of schooling are translated into income in the labor market. Literature on Pakistan is limited in scope of estimation of external efficiency of education system and its implications on FDI, so, the current study is valuable contribution in the literature. This research investigates the role of the external efficiency of the education system in FDI attractiveness in Pakistan.

Methodology

Efficiency model

Following Battese and Coelli (1995), and by assuming a Cobb Douglas function for the frontier, the SFA model which is estimated is the following

$$\log(LABINC_t) = \alpha_0 + \alpha_1 \log(MYS_t) + \mu_t - \omega_t$$

Where LABINC is the labor income and MYS is the mean years of schooling at time t. ω is the technical inefficiency term that has a normal truncated distribution and μ is the error terms that are normally distributed.

$$\omega_t = Z_t\gamma + v_t$$

where the distribution of v_t is normal truncated. Z_t is a matrix of explanatory variables that could explain the inefficiency terms. After controlling for the inefficiency explanatory factors, the technical efficiency (the proxy for the external efficiency of the education system) is given by

$$q_t = \exp(-\omega_t) = \exp(Z_t\gamma + v_t)$$

FDI model

To determine the impact of external efficiency of education system on FDI, following model is developed by following Battese and Coelli (1995) and Miningou and Tapsoba (2017)

$$fdi_t = \theta_0 + \theta_1(q_t) + \sum_k \theta_{2m}X_{tm} + v_t$$

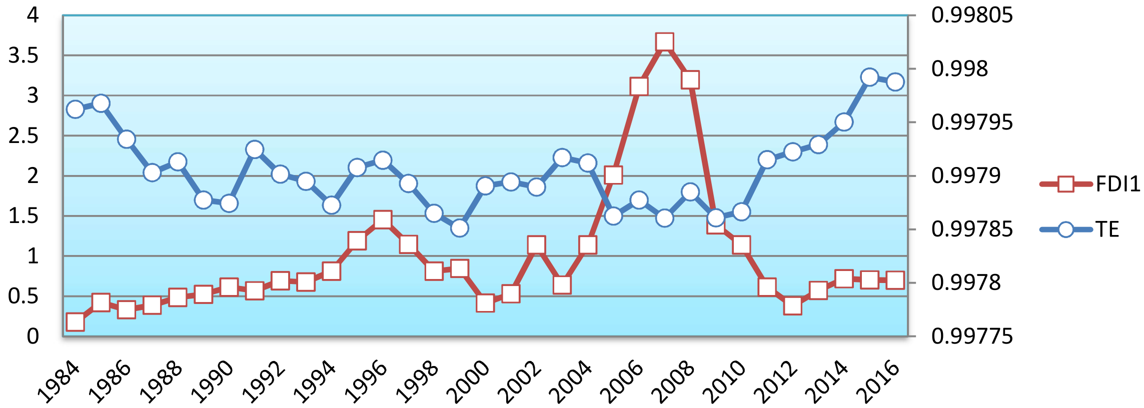
fdi is Foreign Direct Investment per labor employed and q_t a proxy for the external efficiency of the education system at time t. X_{tm} is the set of control variables. Variable description is given in Table .

Table 1: Variable Description

Penal A: efficiency model	Penal B: CAB and FDI models
OUTPUT • GNI per person employed **Inputs** • Mean years of schooling **Explanatory factors for the inefficiency** • Secondary education vocational pupils (percent of total pupils) • Employment rate	**Key variables** • FDI net inflows per unit of employment • External efficiency of the education system **Control Variables** Infrastructure • Fixed Telephone Subscription (per 100 people) Institutions and Financial • Government Stability Openness • Total trade (percent of GDP)

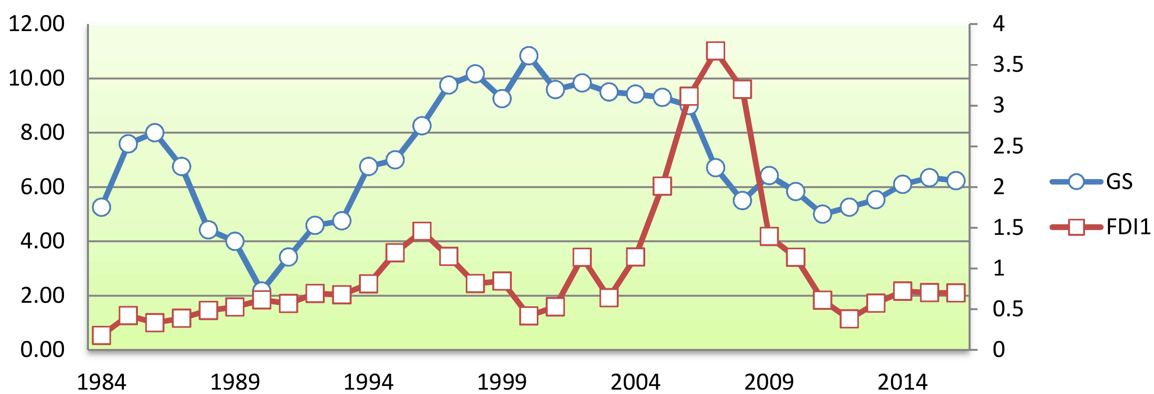
In empirical analysis time series data is used for the period of 1984 to 2016 for Pakistan. Data is sourced from relevant institutions like data on years of schooling is taken from United Nations (UN), other measures is taken from World Bank, Pakistan Bureau of Statistics and International Country Risk Guide (ICRG). Descriptive figures are given below, external efficiency and government stability with FDI respectively.

Figure 1: Foriegn direct investment and external efficiency of education in Pakistan



Source: World Bank (2017) and Author's calculation

Figure 2: Foreign direct investment and government stability in Pakistan



Source: World Bank (2017) and Author's calculation

Results and Discussions

Stochastic Frontier analysis (SFA) Model over time series by following Djokoto (2012) is applied to estimate external efficiency of education system in Pakistan. For FDI model standard time series analysis has been carried out. The OLS, Engel Granger, Autoregressive Distributed Lag Model and Johansen co-integration are the most frequently used technique to explore long run relationship in time series analysis among the chosen variables for estimation. OLS is used when all variables are stationary at level while all other techniques can be applied when regressors are non-stationary. In the present study by applying unit root test it is found that all the variables are integrated of order I(1) so estimated model is non-stationary at level neither bivariate so the long run association is found by applying Johansen co-integration. ECM is applied to find short run relationship. Unit root test of error term should be stationary at level.

Unit Root Analysis

A time series is stationary if its mean and variance are constant over time and the value of co variance between the two time periods depend on lag or gap between the time periods. A time series is non-stationary if its mean and variance is time variant. If the time series are non-stationary, regression would be spurious so first we check stationarity by applying ADF test on all variables. The results of ADF test shows that all variables are non-stationary at levels and stationary at first difference which signals towards Johansen Co-integration test to find existence of long run relationship among variables.

Table 2: Unit Root Test of Augmented Dickey-Fuller

Variable	At Level		At First Differences		Decision
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
FDI	-5.595[1] (0.1045)	-2.816[1] (0.2023)	-3.727[0] (0.0085)***	-3.689[0] (0.0382)**	I(1)
TE	-1.833[0] (0.3583)	-1.790[0] (0.6859)	-5.783[0] (0.0000)***	-6.490[0] (0.0000)***	I(1)
MYS	-0.008[0] (0.9509)	-2.058[0] (0.5485)	-4.811[0] (0.0005)***	-4.752[0] (0.0032)***	I(1)
TO	2.639[0] (0.1959)	-3.078[0] (0.1283)	-7.807[0] (0.0000)***	-7.690[0] (0.0000)***	I(1)
GS	-1.548[0] (0.4968)	-1.443[0] (0.8277)	-4.950[0] (0.0004)***	-4.824[0] (0.0024)***	I(1)
TLS	-1.532[0] (0.5047)	2.206[6] (1.0000)	-4.480[0] (0.0012)***	-4.853[1] (0.0026)***	I(1)

*, **, *** indicates the significance of tau Statistics at 10%, 5% and 1% respectively

As in the model all variables are integrated at I (1) so we apply Johansen co-integration test. The first step in applying Johansson Conintegration test is to apply VAR and check the cointegrating vectors. The results of co-integration test come up in form of Trace Test and Maximum Eigen Value to indicate number of co-integrating equations in the model.

Table 3 Unrestricted Cointegration Rank Test (Trace) (FDI model)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.947628	191.2752	95.75366	0.0000
At most 1 *	0.726339	102.7935	69.81889	0.0000
At most 2 *	0.557716	63.91756	47.85613	0.0008
At most 3 *	0.494083	39.44350	29.79707	0.0029
At most 4 *	0.426051	19.00204	15.49471	0.0142
At most 5	0.075209	2.345623	3.841466	0.1256

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The Trace test shows 5 co-integrating equations at 5% level of significance meaning that all variables are integrated at 5% significance level. The first column, Hypothesized number of co-integration equations shows number of co-integrating equation, 1,2,3,4 co-integrating equations. The probability of none is 0, rejecting null hypothesis and there is long run relationship among variables

Table 0: Unrestricted Cointegration Rank Test (Maximum Eigenvalue) (FDI)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.947628	88.48177	40.07757	0.0000
At most 1 *	0.726339	38.87592	33.87687	0.0116
At most 2	0.557716	24.47406	27.58434	0.1190
At most 3	0.494083	20.44146	21.13162	0.0322
At most 4 *	0.426051	16.65642	14.26460	0.0205
At most 5	0.075209	2.345623	3.841466	0.1256

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Maximum Eigen Value shows 3 co-integrating equations at 5% level of significance leading to rejection of null hypothesis. Maximum Eigen Statistics are greater than Critical values at all hypothised cointegrating equations except at most 3. Both tests establish long run association among all variables concluding that all variables will move along in long run.

The long run results show that external efficiency of education system and FDI has significant and positive relationship. Long run estimates are given in table 5.

Table 5 Long Run results

Dependent Variable: FDI				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-957597.7***	277279.9	-3.4535	0.0019
TE	959369.2***	277846.9	3.4528	0.0019
MYS	379837.2***	73518.85	5.1665	0.0000
TEMYS	-380585.0***	73668.55	-5.1661	0.0000
TO	3.9271**	1.4149	2.7755	0.0101
GS	3.4150**	1.6445	2.0766	0.0479
TLS	-32.3806***	9.3335	-3.4692	0.0018
Diagnostics				
R-squared	0.764236	F-statistic		14.04667
Adjusted R-squared	0.709830	Prob(F-statistic)		0.000000

*, **, *** indicates the significance of test Statistics at 10%, 5% and 1% respectively

External technical effciecnicy of education system has significant coefficient at 1% level and carries positive sign which shows strong impact and relationship between External efficiency of education system and Foreign direct investment in Pakistan. Mean years of schooling (MYS) also has significant and Positive impact at 1% significance level confirming positive and significant relationship between the two. Trade openness also has negative relationship with FDI with significant coefficient. Other measures particularly Government stability alos has significant and positive impact on FDI in Pakistan. The goodness of fit is shown by the value of R^2 and Adjusted R^2 which oscillates between 0 and 1.The values of R^2 and Adjusted R^2 near to 1 indicates that model is good fit and this model is good fit explaining 76% variations in dependent variable FDI. F Statistics reflects joint effect of independent variables

on dependent variable. The probability of F Statistics is less than 0.05 showing significant impact of all independent variables.
Error correction model confirms the long run association is true among the variables used in the model. Results are given in table 6.

Table 6: Short Run results (ECM)

Dependent Variable: DFDI				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.7997	3.5702	0.5040	0.6197
DFDI(-1)	0.4836***	0.1322	3.6580	0.0016
DFDI(-2)	0.2921*	0.1612	1.8118	0.0851
DTE	1002489.**	347218.7	2.8871	0.0091
DMYS	342330.2***	112217.6	3.0505	0.0063
DTEMYS	-343020.8***	112463.9	-3.0500	0.0063
DTO	3.4501***	1.0951	3.1503	0.0050
DGS	1.6311	2.0787	0.7846	0.4418
DTLS	-28.0838***	9.2107	-3.0490	0.0063
ECM(-1)	-0.1271***	0.1934	-5.8258	0.0000
Diagnostics				
R-squared	0.764759	F-statistic		7.224359
Adjusted R-squared	0.658901	Prob(F-statistic)		0.000123
*, **, *** indicates the significance of test Statistics at 10%, 5% and 1% respectively				

Short run ECM results show error term ECM1is negative and highly significant at 1% level. ECM shows the adjustment speed to correct the disequilibrium in the short run to long run equilibrium. Coefficient of ECM(-1) is negative and significant speed of correction of disequilibrium in short run to long run equilibrium.

Diagnostic Tests

According to assumptions of Classical Linear Model, in Ordinary Least Squares estimation technique, estimators are best linear unbiased meaning that error term has zero mean value, variance of residuals are constant, error terms are independent of each other and residuals follows normal distribution. Some diagnostic tests are applied to check whether estimators fulfill these assumptions. There are three types of diagnostic tests (a) Coefficient Test (b) Residual Test (c) Stability Test[1]. The results of diagnostic test are given in table 7

Table 7 Diagnostic tests for ECM Model

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.7272	Prob.	0.4969
Obs*R-squared	2.2428	Prob. Chi-Square	0.3258
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.0569	Prob.	0.4337
Obs*R-squared	9.6632	Prob. Chi-Square	0.3784
Jarque-Bera Test of Normality			

[1] Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test: Breusch-Pagan-Godfrey, Jarque-Bera Test Of Normality and Ramsey RESET test.

Jarque-Bera	0.1191	Prob.	0.9421
Ramsey RESET Test			
t-statistic	1.1502	Prob.	0.2643
F-statistic	1.3231	Prob.	0.2643

Diagnostics results suggested there is no model misspecification problem no heteroskdasity, no serial correlation and there is no normality issue.

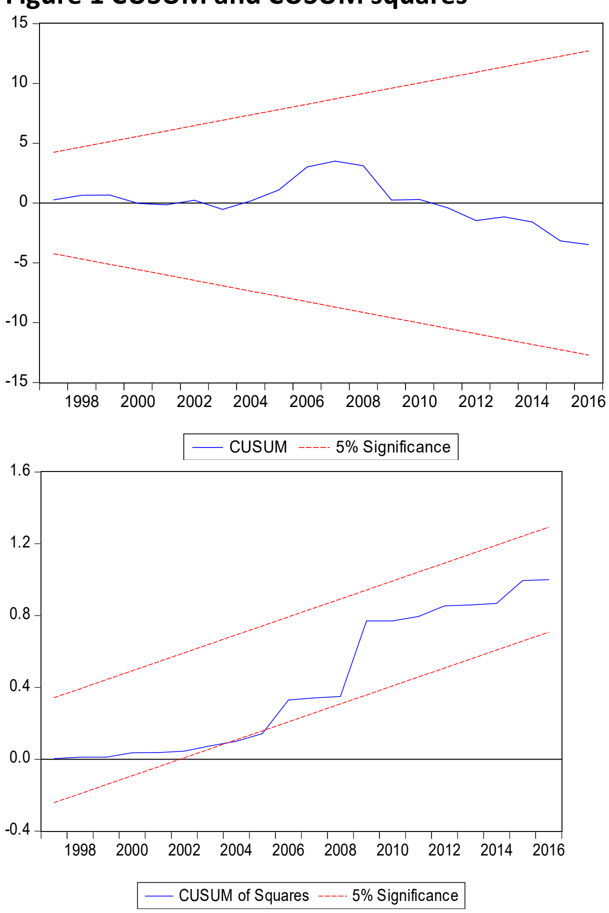
The model can be plagued with following problems if any violation of the assumptions occurs:

a. The coefficient estimators ($\beta\hat{}_s$) are biased which conveys that E ($\beta\hat{}$) $\neq \beta$.
b. The ancillary standard deviation are also biased resultantly invalidates hypothesis testing.
c. It also reflects that assumed distribution of test statistics are inappropriate.

Assumption of zero mean can never be violated if constant is present in regression line. Violation of constant variance assumption leads to biased standard error and invalidates t-test. Heteroskedasticity is the feature of cross section data Autocorrelation is usually feature of time series data when error terms are serially correlated it means that co-variance of error term is non zero causing biased and inefficient estimators and inflated R^2.Normality assumption is required in small samples to validate hypothesis testing. Presence of outlier in data can cause this violation if this outlier is removed from data usually this problem is removed.

To test the stability of the results CUSUM and CUSUM of Squares test are applied

Figure 1 CUSUM and CUSUM squares



Conclusion

The study empirically investigates the impact of external efficiency of education system on foreign direct investment inflows in Pakistan using time series data from Pakistan over the period from 1984 to 2016. In the first step of investigation the study estimate the external efficiency of education system by applying stochastic frontier analysis (SFA). The study used gross national income (GNI) per labor employed as output and mean years of schooling (MYS) along with some explanatory measure as input to determine the external efficiency of education system. The results of efficiency model determine that there is only a minor deviation in the efficiency level over time. In the second step implications of education system efficiency on FDI some control measure for FDI are also incorporated, e.g. Trade openness, infrastructure and governance. Based on unit root tests, the study has applied Johansson Cointergation approach to test the cointegration among the variables. The findings of the study show that TE and MYS have positive and significant impact on FDI in Pakistan. The results are supported with standard diagnostic tests and signs of estimated coefficients are according to the expectations. Further, long run and short run estimation results are consistent with recent empirical evidence found for other countries. In case of Pakistan, no empirical study previously exists on the subject thus magnifying the contribution of this study in the literature. Based on findings of the study concludes that external efficiency of education system along with traditional determinants of FDI must be considered for designing effective policies to encourage FDI inflows in Pakistan.

References

- Assuncao, S., Forte, R. and Teixeira, A. A. C. (2011). Location Determinants of FDI: A Literature Review, *FEP Working Papers* No 433.
- Battese, G.E. and Coelli, T.J. (1993). A stochastic frontier production function incorporating a model for technical inefficiency effects. Working Papers in Econometrics and Applied Statistics No 69, Department of Econometrics, University of New England, Armidale.
- Borensztein, E., De Gregorio, J. and Lee, J. (1998). How Does Foreign Direct Investment Affect Economic Growth? Journal of International Economics, 45: 115-135.
- Brooks, D. H., Hasan, R., Lee, J.-W., Son, H. H. and Zhuang, J. (2010). Closing Development Gaps: Challenges and Policy Options. *Asian Development Review*, 27(2): 1-28.
- Cheng, K. L. and Kwan, K. Y. (2000). What are the determinants of the location of foreign direct investment? The Chinese experience. Journal of International Economics, 51(2): 379-400.
- Cleeve, E. (2008). How effective are fiscal incentives to attract FDI to Sub-Saharan Africa? *The Journal of Developing Areas*, 42(1): 135-153.
- Cleeve, A. E., Debrah, Y. and Yiheyis, Z. (2015). Human Capital and FDI Inflow: An Assessment of the African Case. *World Development*, 74: 1–14, 2015
- Djokoto, G. J. (2012). Technical Efficiency of Agriculture in Ghana: A Time Series Stochastic Frontier Estimation Approach, *Journal of Agricultural Science,* Vol. 4, No. 1.
- Dumartin, S. (1997). Formation Emploi : Quelle Adéquation ? *Économie et Statistique*, 303 : 59-80.
- Helpman, E. (1997). R&D and productivity: The International connection. Discussion Paper No. 6101, NBER, Cambridge, MA.

- HDR (2016) Human development for everyone. *Briefing note for countries on the 2016 Human Development Report, Pakistan*. UNDP.
- Hong, J. (2008). WTO accession and foreign direct investment in China. *Journal of Chinese Economic and Foreign Trade Studies*, 1(2):136-147.
- Keller, W. (2010). International trade, foreign direct investment, and technology spillovers. *Handbook of the Economics of Innovation*, 2: 793–829.
- Miningou, W. E. and Tapsoba, J. S. (2017). Education Systems and Foreign Direct Investment: Does External Efficiency Matter? *IMF Working Paper.* WP/17/79.
- Mouhoud, E. M. (2013). Mondialisation et délocalisation des entreprises. Paris: La Découverte.
- Miyamoto, K. and Yasuyuki, T. (2006). Knowledge Spillovers from Foreign Direct Investment and the Role of Local R&D Activities: Evidence from Indonesia. Economic Development and Cultural Change, (55) : 173-200.
- Narula, R. (1996). Multinational investment and economic structure: Globalisation and Competitiveness. London: Routledge.
- Noorbakhsh, F., Paloni, A. and Youssef, A. (2001). Human Capital and FDI Inflows to countries: New Empirical Evidence. World Development, 29(9): 1593-1610.
- Plassard, J.-M. and Tran, T. T. N. (2009). L'analyse de là sur éducation ou du déclassement : l'escroquerie scolaire enfin démasquée ou beaucoup de bruits pour rien ? Celui qui augmente sa connaissance augmente sa douleur (Ecclésiaste 18). Revue d'économie politique, 119(5) : 751-793.
- Psacharopoulos, G. (1986). Welfare effects of government intervention in education. *Contemporary Economic Policy*, 4(3): 51-62.
- Sheng, Y. and Xu, X. (2012). Productivity Spillovers from Foreign Direct Investment: Firm-Level Evidence from China. World Development, 40(1): 62–74.
- Smith, M. R. (2001). Technological change, the demand for skills, and the adequacy of their supply. *Canadian public policy*, 27(1): 1-22.
- Root, F. R. and Ahmed, A. A. (1978). The influence of policy instruments on manufacturing Direct Foreign investment in developing countries. *Journal of International Business Studies*, 9(3): 81-94.
- Topel, H. R. (1997). Factor proportions and relative wages: The supply-side determinants of wage inequality. Journal of Economic Perspectives, 11(2): 55-74.
- Trapp, K. (2015). Measuring the labor income share of countries: Learning from social accounting matrices. *WIDER Working Paper* 2015/041.
- Vincens, J. (2005). L'adéquation formation-emploi. Paris : La Découverte.
- World Bank (2015). Governance and finance analysis of the basic education sector in Nigeria. *World Bank document*, ACS14245.
- WDI (2016). World Development Indicators. *World Bank data set.*
- Zhuang, H. (2008). Foreign direct investment and human capital accumulation in china. *International Research Journal of Finance and Economics*, 19: 205-15.