A Dynamic Panel Data: Causality Test on Export Led Growth Hypothesis

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Abstract

This paper used a panel data approach to investigate the export led growth hypothesis (ELGH) for 10 selected OIC countries from 1978 to 2000. The 10 OIC countries were clustered into Asian, African and Middle Eastern groups. The GMM-SYS was employed to estimate the VAR panel data model for 10 OIC countries as a whole and each sub-group. From the empirical analysis we discovered that, for the 10 OIC countries as a whole the result showed that export and growth had uni-directional relationship and it supported the export led growth hypothesis (ELGH). But after we clustered the 10 OIC countries into three groups, the result was contradictory. The results from Asian group did not support the export led growth hypothesis. Meanwhile, bi-directional positive casual relationship presented in the African group. For the Middle East group, the empirical evidence showed that export and growth have a positive causal relationship.

Keywords: *Dynamic Panel Data, Panel VAR, GMM-SYS, Export and Growth*

1. INTRODUCTION

Dispute about the relationship between exports and economic growth has been debated since the 1960s. The importance of exports and economic growth process had been discussed in depth in the classical theory. Several studies have been conducted to examine the relationship between the variables. However, the results of previous studies have established disagreement and debates among scholars. According to Giles and Williams (2000), the study of export led growth (ELG) can be divided into three methods. The first method was based on cross-sectional regression analysis, the second method was applied cross-country rank correlation coefficients, and the third method was by using time series data. Recently, the new method to test the export led growth hypothesis (ELGH) has been developed by using panel data analysis. This method consists of simple combination of countries (N) and time (T). Among the early studies, ELGH was performed by some scholars, such as Emery (1967), Syron and Walsh (1968), Kravis (1970) and Michaely (1977). All of them used the bivariate models to study the ELGH. Meanwhile, Balassa (1978), Heller and Porter (1978), Tyler (1981), Kavoussi (1984), Balassa (1985) and Heitger (1987) used the cross-sectional multivariate data in their study. In both analyses (bivariate and multivariate), they found that exports and growth were correlated. Thus their findings supported the hypothesis that the export led growth. In other studies such as Feder (1982), Balassa (1985), Rana (1988), and Ram (1987) used the neoclassical growth accounting techniques of the production function. In this technique, they had regressed the independent variable on the real gross domestic product (GDP). In addition, their results supported the ELGH. However, their study failed to detach any causality among the dependent and independent variables.

To overcome the above problems, several researchers have used the time series data in their analysis. They then tested Granger causality based on Vector Autoregressive (VAR). However, they produced conflicting results. For example, studies from Marin's (1992), Serletis (1992), and Al-Yousif (1999) supported the ELGH. While Giles et al. (1993) found that the ELGH was only true for certain commodities. However, Jung and Marshall (1985), Chow (1987), Ahmad and Kwan (1991), and Sharma and Dhakal (1994) found that present marginal relationship of uni-directional causality to the ELGH in their study. Meanwhile, others scholars such Thornton (1996), and Shan and Shu (1998) found that export and growth have a bi-directional relationship. However, the time series approach required a lot of data. If the data is not sufficient, it will result to the probable superiors. Due to the existence of low frequency data in many studies, it is feared that they are not strong enough to support one hypothesis to another. Therefore, alternative approaches to increase the number of observations should be used. The approach is by polling time series data (T) across many countries (N) as possible; we call these as panel data approach. This approach had been used by Islam (1995) and Konya (2006) in their ELGH studies. In this context, the main purpose of this study is to confirm the export led growth hypothesis (ELGH) in the selected OIC countries. For this reason, we use the panel data approach.

2. METHODOLOGY AND DATA

2.1 The Model

In early studies, many researchers had applied the baivariate model to test the ELG hypothesis. Even though their analysis supported the ELGH, however the result was still superior (Shah & Sun 1998~~b~~). Therefore, to overcome this problem, a number of other variables were included in the model as control variables. Riezman et al. (1996), Al-Yousif (1999), and Reinhardt (2000) in their study considered imports, real effective exchange rate, cost of capital and labor as additional factors to the export led growth model.This study employed panel data from 1978 to 2000 to investigate the relationship between economic growth and exports in 10 selected OIC countries. We specify $lgdi_{it}$ (log real GDP), $lexpi_{it}$ (log real exports), $limpi_{it}$ (log real imports), $leri_{it}$ (log real exchange rate), $lcp_{i,t}$ (log gfcf to represent capita), $lgov_{i,t}$ (log government expindutre) and $llbr_{i,t}$ (log labor). The model used was a 7 - variable VAR model. Where, subscript i and t represented the individual (country) and period effects respectively. By considering the individual effects, the VAR model for the panel may take the form as follows:

$$y_{i,t} = \sum_{j=1}^{p} \alpha_j y_{i,t-j} + \beta^{'}(L) x_{i,t} + \eta_i + v_{i,t} \tag{1}$$

η_i represents unobserved heterogeneity country-specific and time effect with $E(\eta_i) = \eta_i$ and $Var(\eta_i) = \sigma_\eta^2$. The $v_{i,t}$ was assumed to be independently distributed across countries with zero mean. Nevertheless, arbitrary forms of heteroskedasticity across units and times were possible. y_{it} is $lgd_{i,t}$ or $lexp_{i,t}$: $x_{i,t}$ were predetermined variables as $ler_{i,t-j}$, $limp_{i,t-j}$, $lcp_{i,t-j}$, $lgov_{i,t-j}$, $llbr_{i,t-j}$, $lexp_{i,t-j}$, and $lgdp_{i,t-j}$, where *j = 1,…,p*. Since η_i was assumed to follow a stochastic process of an individual effect, $E(y_{i,t-1}\eta_i) \neq 0$ and $E(x_{i,t}\eta_i) \neq 0$. $\beta(L)$ was polynomial lag operator. In turn to avoid bias in OLS estimation caused by country specific effect, we took a first difference of equation (1).

$$\Delta y_{i,t} = \sum_{j=1}^{p} \alpha_j \Delta y_{i,t-j} + \beta^{'}(L) \Delta x_{i,t} + \eta_i + \Delta v_{i,t} \tag{2}$$

Where Δ was to represent the first difference. Equation (2) was a remedy of OLS estimation problem due to a correlation between individual effect and explanatory variables. Anyhow the equation (2) also created another problem of correlation between the lagged dependent and the error term, $E(\Delta y_{i,t-1}\Delta v_{i,t}) \neq 0$. Therefore, if we kept using the equation (2) OLS would cause to be bias and inconsistent result. To overcome this problem of $E(\Delta y_{i,t-1}\Delta v_{i,t}) \neq 0$ we followed Arellano and Bond (1991) who employed lagged dependent variables $(y_{i,t-1} for s \geq 2)$ in the level instrument in the Generalized Method of Moment (GMM). Then, the corresponding optimal instrument matrix Z_i with predetermined regressors $x_{i,t}$ correlated with the individual effect was given by

$$Z_i = \begin{pmatrix} y_{i1} & x_{i1} & x_{i2} & 0 & 0 & 0 & 0 & 0 & \cdots & 0 & \cdots & 0 & 0 & \cdots & 0 \\ 0 & 0 & 0 & y_{i1} & y_{i2} & x_{i1} & x_{i2} & x_{i3} & \cdots & 0 & \cdots & 0 & 0 & \cdots & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & & \vdots & & \vdots & \vdots & & \vdots \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \cdots & y_{i1} & & y_{i(T-2)} & x_{i1} & \cdots & x_{i(T-1)} \end{pmatrix} \quad (3)$$

Where rows according to the first difference equation (2) for period t = 3,4,…,T for individual *i*, which took advantage on the moment conditions.

$$E\left[Z_i^{'}\Delta v_i\right] = 0 \qquad for\, i = 1,2,...,N, \quad (4)$$

where $\Delta v_i = (\Delta v_{i3}, \Delta_{i4}, ..., \Delta v_{iT})'$. In general, the asymptotically efficient GMM estimation based on this set of moment conditions minimized the criterion.

$$J_N = \left(\frac{1}{N}\sum_{i=1}^{N}\Delta v_i^{'} Z_i\right) W_N \left(\frac{1}{N}\sum Z_i^{'}\Delta v_i\right) \quad (5)$$

Using the weight matrix

$$W_N = \left[\frac{1}{N}\sum (Z_i^{'}\, \Delta\hat{v}_i\, \Delta\hat{v}_i^{'} Z_i)\right]^{-1} \quad (6)$$

Where the $\Delta\hat{v}_i$ was the consistent estimate of the first differential residual. It was derived from the initial consistent estimator. Based on the assumption of homoskedasticity v_{it}, given the structure of the first differential model required asymptotically GMM estimator equivalent. It could be obtained by using one-step estimator instead of the weight matrix.

$$W_{1N} = \left[\frac{1}{N}\sum_{i-1}^{N}(Z_i^{'} H Z_i\right]^{-1} \quad (7)$$

Where H was a (T-2) square matrix with 2's on the main diagonal, - 1's on the first off-diagonals and zeros elsewhere. Notice that W_{1N} did not depend on any estimated parameters (Bond, 2002).

To ensure whether a one-step or two-step estimator should be used, Bond (2002) mentioned that "In fact, a lot of applied work using these GMM estimators had focused on results for one-step estimator rather than the two-step estimator. This was partly because the simulation studies had suggested very modest efficiency gains from using two-step version, even in the presence of considerable heteroskedasticity (see Arellano and Bond, 1991;

Bundell & Bond, 1998; Bundell et al., 2000), but was more importantly because the dependence of the two-step matrix on estimated parameters made the usual asymptotic distribution approximations less reliable for the two-step estimator". Based on this rationale, we employed one-step estimator in our estimation. Since Nelson and Plosser (1982) proved the unit root problem in the aggregate time series data, unit root test procedure had become one of the procedures required in the econometric estimation. In their writings, Bound, Jaeger and Baker (1995) asserted that "the presence of unit root cause of existing instruments for equations in first differences was likely weak. Instrument variable estimator could be seriously disrupted until the sample was bias, in which the instruments used were weak. "

If the use of variable instruments that were not stationary in the first difference equation, it would produce poor estimators. To overcome this problem, Bundell and Bond (1998) had recommended the use of GMM (GMM-SYS) models by Arellano and Bover (1995). In other words, they used lagged differences to solve the problem of unit root and near unit root. From their simulation, the results indicated that when the coefficient on the lagged dependent variable was close to 1, the efficiency of using the GMM-SYS estimator was greatly improved. The estimation of the GMM-SYS was to stack another instrument variable of the first difference to the original level instrument variable matrix equation (3) as follows:

$$Z_i^+ = \begin{pmatrix} Z_i & 0 & 0 & \cdots & 0 \\ 0 & & & & \\ 0 & \Delta y_{i2} & 0 & \cdots & 0 \\ . & . & . & & . \\ 0 & 0 & 0 & \cdots & \Delta y_{i(T-1)} \end{pmatrix} \tag{8}$$

Where Z_i was defined as in equation (3). The computation of the one-step or two-step GMM-SYS was as shown earlier. The only difference was the substitution of Z_i^+ for Z_i in the instrument variable matrix.

Since the coefficient of lagged dependent variable from yearly macrodata was close to 1, the robust one-step GMM-SYS of Blundell and Bond (1998) was used to estimate the relation in equation (3) and test the Granger causality between real export and real GDP.

3. ANALYSIS AND DISCUSSION OF RESULTS

Before we estimated the equation 3, we first needed to determine the optimal lag period ρ. In time series data, determining the optimal lag for the VAR model was based on the AIC or SBC. However, determining the optimal lag panel VAR model was different from the time series VAR model. Currently, there were only two literatures that discussed on how to determine the optimal lag for the panel data VAR model. The first method was introduced by Holtz-Eakin et al. (1998). According to them, optimal lag could be determined by using the likelihood ratio test. Meanwhile, the second approach was based on statistical mj introduced by Arellano and Bond (1991). Followed Bwo Nung Huang, et al. (2007), this analysis also used the approach that was suggested by Arellano and Bond (1991). According to the method of Arellano and Bond (1991), where j was the order of autocorrelation used to determine the optimal lag. In this approach, Arellano and Bond (1991) used the first order (m1) and second order (m2) serial autocorrelation to obtain the optimal lag. This meant that, in different lag period, the selection of the optimal lag was based on no serial correlation in the residual panel VAR model (Arellano, 2003).

Table 1: The estimated result from the dynamic panel GMM-SYS for the OIC Countries

Independent	Dependent ASIA		AFRICA		Middle East		OIC	
	$\Delta lgd_{i,t}$	$\Delta lexp_{i,t}$	$\Delta lgd_{i,t}$	$\Delta lexp_{i,t}$	$\Delta lgd_{i,t}$	$\Delta lexp_{i,t}$	$\Delta lgd_{i,t}$	$\Delta lexp_{i,t}$
$\Delta lgd_{i,t-1}$	-.1021 (-0.20)	.7564*** (1.95)	-.2174 (-0.96)	.6957* (3.19)	.4887* (2.84)	.5078** (1.89)	.9629* (12.10)	.0961 (1.08)
$\Delta lgd_{i,t-2}$	.4347 (0.77)	-.6854 (-1.22)	-.6854 (-1.22)	.3080 (-0.86)				
$\Delta lgd_{i,t-3}$	.1989 (0.59)	.4479 (1.16)	1.0478* (3.99)	-.9578* (-3.80)				
$\Delta lexp_{i,t-1}$	-.2648 (-0.59)	1.0725* (3.00)	-.6029 (-2.40)	1.1681* (4.97)	.2222 (1.13)	.7357* (3.90)	.2793** (2.30)	.8465* (6.63)
$\Delta lexp_{i,t-2}$	.3203 (0.69)	-.6157 (-1.44)	.4779 (1.08)	.0704 (0.22)				
$\Delta lexp_{i,t-3}$	.2493 (0.66)	.3871 (0.95)	.8610* (3.38)	-.7284* (-3.06)				
$\Delta ler_{i,t-1}$	.1972 (1.16)	-.1115 (-0.93)	.2600* (3.89)	.2426* (3.06)	-.1304* (-3.69)	.1418* (4.36)	-0190 (-1.30)	.0042 (0.26)
$\Delta ler_{i,t-2}$	-.2325 (-1.37)	.2495 (1.51)	.3412 (0.94)	-.7378 (-1.71)				
$\Delta ler_{i,t-3}$	-.5661* (-5.27)	-.5213* (-19.02)	-.6120*** (-1.77)	.4395 (1.19)				
$\Delta limp_{i,t-1}$	-.1883* (-2.60)	.4205* (12.46)	-.1616 (0.68)	-.2067 (-0.92)	-.2487* (-3.44)	.2629* (2.74)	-.4039* (-4.68)	.2738* (3.01)
$\Delta limp_{i,t-2}$	-.1793*** (-1.71)	-.1151* (-5.36)	-.1899 (-0.65)	.0001 (0.00)				
$\Delta limp_{i,t-3}$	.2494 (1.49)	-.0872 (-0.63)	-.1761 (-1.64)	.0454 (0.27)				
$\Delta lcp_{i,t-1}$	.0444 (0.26)	-.1528 (-1.28)	.1627 (1.20)	-.3062** (-2.33)	.1803** (2.22)	.1256 (-1.13)	.0602 (0.67)	-.1097 (-1.16)
$\Delta lcp_{i,t-2}$	.1898 (0.72)	.0584 (0.24)	-.1241 (-0.63)	.2007 (1.20)				
$\Delta lcp_{i,t-3}$	-.2653 (-1.07)	-.0488 (-0.22)	.2916*** (1.70)	-.2949 (-1.39)				
$\Delta lgov_{i,t-1}$	.3326* (3.00)	-.1957 (-1.27)	-.0339 (-1.64)	.0398* (3.17)	.4338* (4.79)	-.5007* (-3.00)	.0159 (1.46)	-.0319 (-1.52)
$\Delta lgov_{i,t-2}$	-.3757** (-2.35)	.2364 (1.22)	-.0426* (-4.26)	.0347* (2.60)				
$\Delta lgov_{i,t-3}$	.1025 (1.42)	-.0981 (-1.12)	-.0486** (-1.71)	.0659* (2.95)				
$I\Delta llbr_{i,t-1}$	30.8647* (3.09)	-32.122* (-2.64)	1.6838 (0.10)	-.7822 (-0.04)	-.2485* (-3.87)	-.3009* (5.51)	-.0116 (-0.18)	.0896 (1.44)
$\Delta llbr_{i,t-2}$	-64.596* (-4.60)	62.894* (4.15)	14.5534 (0.45)	-12.4499 (-0.34)				
$\Delta llbr_{i,t-3}$	32.454* (4.24)	-29.843* (-5.57)	-19.382 (-1.22)	16.5934 (0.85)				
N	3	3	4	4	3	3	10	10
NT	69	69	92	92	69	69	230	230
Hensen test p-value	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
m1	-1.67***	-1.72***	-1.75***	-1.81***	-1.73***	-1.73***	-2.53**	-2.41**
m2	-1.03	-0.75	-1.19	-0.05	-0.78	-0.91	-0.72	-0.57
$\Delta lgd_{i,t-j} \neq \Delta lexp_{i,t}$		1.35 [0.2451]		14.46* [0.0001]		3.57*** [0.0588]		1.17 [0.2797]
$\Delta lexp_{t,t-j} \neq \Delta lgd_{t-i}$	0.43 [0.5113]		11.39* [0.0007]		1.28 [0.2588]		5.29** [0.0214]	

Note: N = Number of countries: NT = no of observations; Hensen statistics were used to test H_o: over-identifying restriction were valid; number inside () were t statistics; number inside [] were p-values; Δ = first difference; lgdi$_{it}$ (log real GDP), lexpi $_{it}$ (log real exports), limpi $_{it}$ (log real imports), leri $_{it}$ (log real exchange rate), lcp$_{i,t}$ (log gfcf to represent capita), lgov$_{i,t}$ (log government expindutre) and llbr$_{i,t}$ (log labor). m1 and m2 donated the statistical of serial uncorrelated residuals of the first and second order in the testing of the panel model: ≠ represents "does not Granger cause"; *,** and *** represent 1%, 5% and 10% significance level.

The mj statistical was the standardized residual autocovariance, which were asymptotically N (0,1) under the null of no autocorrelation. If the disturbance v_i was not serially correlated, this should be the evidence of the significant and negative first order (j = 1) serial correlation in the form of differences (i.e. $\hat{y}_{i.t} - \hat{\upsilon}_{i.t-1}$), and no evidence of second order (j = 2) serial correlation in the differenced residual (Doornik et al., 2006 and Bwo Nung Huang, et al., 2007). The advantage of using statistics mj for the optimal lag was that it could avoid the problem of misspecification of the serial correlation.

From Table 1 above, m1 and m2 were the first order and the second order serial uncorrelated test result of the panel VAR residual. From the empirical analysis we found that the panel VAR of 10 OIC countries (as a whole) and the Middle Eastern group required 1 lag period to rid the serial correlation of panel VAR residual. Meanwhile, for the Asian and African groups VAR (3) or 3 lag period for a panel VAR model were required to meet the assumptions. This applied for both exports and economic growth equation. From the overall analysis, we found that Hensen test indicated that we could not reject the null hypothesis that Ho: over-identifying Restrictions were valid. This showed that the instrument variables in the model assumptions GMM-SYS were appropriate.
Based on the overall analysis of 10 selected OIC countries, we found that the hypothesis export does not Granger cause was rejected at 5% significant level. This means that, exports Granger cause of economic growth. Through the empirical evidence, we could not reject the hypothesis growth does not Granger cause exports. From the panel data analysis, we found that there was a positive feedback nexus between exports and economic growth (the coefficient for one – period lag is 0.7825). In other words, when exports increase, it would also generate economic growth in the OIC countries. From the overall estimated VAR panel model, we indicated that only import variable significant at 1% level, but the other variables were not significant. We also discovered that the import had a positive casual relationship with export. This could be influenced by bilateral or multilateral trade relations adopted by the OIC members with their trading partners.

There were advantages and disadvantages of using panel data methods. The advantage of using panel data was that we could increase the number of observations. This would be able to improve the empirical estimation. Yet, the weakness of this method was that it assumed 10 selected OIC member countries as one unit, although in the fundamental, these countries were dissimilar units. However, these methods gained popularity because it could increase the number of observations compared to the time series data. As a result, the estimation output would be more reliable.To overcome the differences between the OIC countries, we clustered the 10 selected OIC member countries into three sub-clusters. Basically, the three sub-clusters are Asian, African and Middle Eastern. Once we clustered the OIC member countries into three groups, the study found that there were conflict results emerged between each group. For Asian group, we found that exports does not Granger cause growth as well as growth does not Granger cause exports. This showed that there was no evidence of casual relationship between exports and growth in and vice versa. Based on this empirical result, we faced difficulties to determine the economics growth because export did not generate the economic growth in Asia countries. The economic growth for Asia may be generated by others productive economic activities such as tourism, health, construction and education. As for the African countries, we discovered that exports Granger cause growth and growth Granger cause export at 1% significant level. These illustrated that an escalating in exports would boost the economic growth and vice versa.

Subsequently, we found that export does not Granger cause growth presented in the Middle Eastern group. However, empirical evidence from the economic growth equation showed that economic growth had a causal relationship with exports at 10% significant levels. This meant that, for the Middle Eastern group to boost the export growth, they should increase the rate of economic growth in advance. Resulting from our steps to clusters the OIC countries into three groups, we noticed that there was no same casual relationship between groups. Result also indicated that two groups completely had a different result with the 10 selected OIC countries as a whole. Only a Middle Eastern group recorded a bi-directional causal relationship between export and economic growth. It was apparent that the classification of countries into different groups based on region was conducive to a better and finer understanding of causal relationship between export and economic growth.

4. CONCLUSION AND POLICY IMPLICATIONS

The purpose of this paper is to investigate the export led growth hypothesis (ELGH). We used the panel data of 10 OIC countries from 1978 to 2000 and classified them into three groups namely Asian, African and Middle Eastern. As time series data approach, the panel data VAR model also required free from serial correlated residual. To deal with this, we firstly determined the optimum lag from the panel VAR model by using the mj statistics along with GMM-SYS model. From the pooled data analysis of the 10 OIC countries, we discovered that there was a uni-directional positive feedback relationship between export and growth. This finding supported the export lead growth hypothesis (ELGH). After we clustered the 10 OIC countries, the result was contradictory. The results from Asian group did not support the ELG hypothesis. Meanwhile, bi-directional positive casual relationship presented in the African group. For the Middle Eastern group the empirical evidence showed that export had a positive causal relationship with growth.These investigations differed from the previous study in which the panel data approach was used. For instant, Pazim and Khairul (2009) used pooled OLS, fixed and random effect model in their panel data analysis. In this empirical analysis, we used dynamic panel data (DPA) to investigate the casual relationship between export and growth along with GMM-SYS model. The GMM-SYS could capture the near unit root coefficients on lagged dependent variable. To overcome the heterogeneity problems, this study clustered the OIC countries into three groups such as Asian, African and Middle Eastern. Therefore the estimation outputs were free from near unit root and heterogeneity problems and it was robust.

From the policy perspective, the investigation of casual relationship between exports and growth had important policy implications. When the export led growth was positive, it demonstrated that the benefits of international trade were good for the wealth of the nations. In contrast, if growth led exports, then the exports would set back the externalities economic growth. In this situation, a stable policy was vital to ensure the export to generate the economic growth. In previous studies, many researchers focused on the use of time series data to examine the casual relationship between exports and growth. However, the use of the time series data sometimes was not sufficient because the data size is small; this would make the estimation less powerful. Although the use of panel data could overcome this problem, but these methods assume that all the 10 OIC countries were homogeneous (same unit). In order to overcome this problem, we clustered the OIC countries into three groups, namely Asian, African and Middle Eastern. We then employed the system GMM (GMM-SYS) model proposed by Blundell and Bond (1998). This panel VAR model was taking into account the problem of correlation between the lagged dependent variable and the residual. In addition, it also captured the near unit root coefficients on lagged dependent variable.

From the policy viewpoint, this study recommended that the OIC countries should execute the major institutional and economic structural reforms in order to enjoy the economic prosperity. The OIC policy makers could encourage more domestic private investment to boost their economic growth. Moreover, the policy makers also should reduce the trade barriers by implementing trade liberalization. Trade liberalization would allow the OIC countries to absorb technology development in higher speed. Additionally, these policies also could promote an attractive investment policy in order to attract more foreign direct investment (FDI) to the OIC countries. For instance, FDI in Malaysia became a catalyst in stimulating their economic performances during 1990s. Furthermore, FDI inflows could create the spillover effects and technological improvement as well as human capital development in the domestic economic (Borensztein, *et al*. 1995).

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