

Causal nexus between economic growth, FDI and employment: An inquiry into BRICS and ASEAN

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Abstract. *This article discusses the documentary evidence on the Efficient Market Hypothesis (EMH) This study examines the nexus between economic growth, FDI and employment. We employ panel data for BRICS and ASEAN nations for the period 1993 to 2019. We have used FGLS considering the cross-section dependence and slope heterogeneity. Moreover, we apply the Pairwise Dumitrescu-Hurlin panel non-causality tests to confirm the direction of causality. The study finds that overall impact of FDI and employment on economic growth is ambiguous. However, in HIE, FDI positively impact economic growth. We observed bidirectional causality between FDI and economic growth. Human capital and globalization have positive impact on economic growth. The relation between FDI and employment is ambiguous. However, it may increase employment in high income economies. To receive the intended benefit of FDI, authorities should focus on the local development of the region. The positive sign of openness suggests restrictive trade policies should not be encouraged. However, the sophisticated policy is required to maintain the high economic growth and low unemployment.*

Keywords: ASEAN, BRICS, feasible generalized least square, foreign direct investment, panel non causality.

JEL Classification: C40, E24, F16, F43, O47.

1. Introduction

Over the last few decades, countries particularly developing countries have experienced large inflow of foreign direct investment (FDI) and high economic growth, despite this labour market did not experience improvement (Das and Ray, 2020). In theory, relation between economic growth and FDI can run in either direction. On one hand FDI increases economic growth and support the FDI 'growth led hypotheses. The 'market led hypothesis' which presuppose that economic growth attract more FDI (Rodrik, 1999; Mah and Yoon, 2010) FDI with capital brings technology to target firms, countries. So, it affects labour force composition, productivity and wages (Hale and Xu, 2016). FDI like private and public investment generate employment and sound employment in turn brings more FDI as high employment bring social and political tranquillity and thus smooth governance (Das and Ray, 2020). It increases per capita income, generate employment maintain healthy BOP (Kumari and Sharma, 2017). FDI have multi-impact on economic growth in terms of introducing technology, managerial capabilities, and making the economy more globalized (Rizvi and Nishat, 2009). It creates job for the host country by establishing local manufacturing plant or by acquisition of local plant. However, the picture is not clear whether FDI increase growth and help in employment creation.

FDI as an important determinant of growth intend to stabilize the labour market. The results are equally ambiguous whether FDI increases employment/unemployment. FDI seeks stability and cheap labour. This implies that surplus labour is the possible determinant of FDI. The impact of FDI on employment depends upon several factors such as, type of investment (brownfield or greenfield), type of sector or industry (FDI in labour intensive industry or capital), and whether it substitute domestic production by crowding out domestic investment. For instance, (Mucuk and Demirsel, 2013) point out that FDI and unemployment are cointegrated while in Tunisia and Turkey FDI positively impact unemployment. Jenkins (2006) for Vietnam shows that by the introduction of labour-saving technique the employment creation potential of FDI has reduced. Nevertheless, it depends upon the level of development of an economy. FDI is a source of rapid development only for certain developed countries (Blomstrom et al., 1992) (Kumar et al., 2010; Pheang et al., 2017) found positive impact on economic growth and employment or negative impact on unemployment. However, some studies find positive impact on employment but no impact on economic growth. Albassam (2015) indicate that FDI do not impact economic growth while it positively impacts employment. The ambiguity varies from region and development of the economy. As (Blomstrom et al., 1992) noted that development of the economy affects the intended benefit of foreign capital. So, this necessitates to analyse the nexus among the FDI, employment and economic growth. To the best of our knowledge, this study is the first of its kind to analyse this relationship simultaneously.

The contributions of the study to the debate is manifold. Firstly, we outline the lack of empirical work on the linkages between economic growth, employment and FDI, even the fact of high economic growth, rise in flow of FDI and stagnant employment. To the best of our knowledge no study has examined simultaneously the nexus between economic

growth, FDI and employment in case of BRICS and ASEAN. However extensive literature is available on the impact of FDI on unemployment and economic growth, casual relation between FDI and economic growth, FDI and unemployment (Hussain et al., 2021).

Second, we employ the so-called second-generation econometric model. For instance, FGLS (feasible generalized least square) which is applicable in presence of cross section dependence and slope heterogeneity, and it has been ignored by previous studies. Third we make use of other indicators like KOFGI (to measure openness), HC to measure human capital based on Penn world Table 10.0.

So, in this backdrop we estimate the nexus among the economic growth, FDI and employment by employing second generation econometric technique namely FGLS. Section two present the overview of literature which is divided into two strands. The data collection and model specification are in section three whereas section four is about econometrics techniques. Sections five and six deals with the empirical results and discussion respectively, whereas section seven devoted for conclusion and policy implications.

2. Review of literature

As we examine the relationship between economic growth, employment and FDI. The existing literature present the ambiguous picture whether FDI negatively or positively impact the economic growth and employment/unemployment. Theoretically the direction of causality between FDI and economic growth can be in either direction. And there is no consensus among the researcher whether FDI causes employment/unemployment and whether FDI increases employment in host nation or not. Thus, in order to elaborate further we divide the literature review into two, namely FDI-economic growth nexus and FDI-employment nexus.

2.1. FDI-economic growth nexus

Theoretically, FDI like other investment increases economic growth of the host nation. FDI is considered as best alternative to fuel the economic growth in developing countries, source of management skill, improved product and quality services and increases export potential of the host nation (Strat et al., 2015). Certain threshold level of development is required to effectively absorb technology from foreign investor (Blomstrom et al., 1992) (Borensztein et al., 1995) analyse the impact of FDI on growth for 69 developing countries for the period 1970-1989. The result indicates that FDI positively impact economic growth through technology and knowledge spill over. Similar study by (de Mello, 1999) analyse the impact of FDI on economic growth for the period 1970-1990 for OECD and non-OECD countries. The study finds the long run positive impact of FDI on growth in OECD economies. They find that the positive growth effect is on account of technology and knowledge spill overs. Moreover study find no causality in the short run in OECD economies and negative short run impact of FDI on GDP in non-OECD economies. This indicates that growth effect of FDI is limited to OECD. Narayanamoorthy et al. (2009) for BRICS during the period 1992-2007 analyse the casual link between FDI and economic

growth. The study reports bidirectional causality for Brazil, Russia and South Africa and unidirectional causality for India and China running from FDI to economic growth (Zhang, 2001) based on cointegration technique and error correction model for 11 East Asian and Latin American countries concludes positive impact of FDI on economic growth. However, the extent of positive impact on growth depends on the individual characteristic of economies such as level of education and human capital, macro-economic condition, economic freedom. Mehrara et al. (2012) for 57 developing countries during 1980-2007 find bidirectional causality between FDI and economic growth. Pegkas (2015) for Eurozone counties based on FMOLS and DOLS for the period 2002-12 find positive long run relationship between FDI stock and economic growth. (Hansen and Rand, 2006) also find a positive long run relation for 31 developing economies. Similarly, (Samad, 2009) examine the link between FDI and economic growth for 19 developing countries and found a positive significant long run relation.

On the other hand, some studies find negative effect of FDI on economic growth, and some found no significant relationship. Saltz (1992) for developing economies for the period 1970-80 find inverse relationship between FDI and economic growth. Mencinger (2003) for eight European Union countries finds negative effect of FDI on economic growth. Anyanwu and Yameogo (2015) employ GMM and OLS technique for West African countries between the period 1970-2010 and the study finds the negative relation between FDI and economic growth. Alfaro et al. (2004) for a panel of 71 developing countries found negative relation between FDI and economic growth. However authors argued that it is due to the less developed financial market.

Likewise, Levine and Carkovic (2002) for 72 countries for the period 1960-1995 find a weak link between FDI and economic growth. Sarkar (2007) for a panel of 51 less developed countries based on ARDL report no significant effect of FDI. Herzer et al. (2008) for 28 developing countries during 1970-2003; (Nath, 2009) for 13 transition economies of Central and Eastern Europe, and the Baltic region during the period 1991-2005, Louzi and Abadi (2011) for Jordan for the period 1997-2006; Tekin (2012) for the case of least-developed countries during the period 1970-2009; Belloumi (2014) for the case of Tunisia during the period 1970-2008; Mahembe and Odhiambo (2016) for the case of low-income SADC countries during the period 1980-2012; and more recently, Golitsis et al. (2018) for Albania during the period 1996-2014 report a weak or no significant impact of FDI on economic growth.

2.2. FDI – Employment nexus

This section outlines the review of previous studies on relation between FDI and employment. There is no consensus regarding the causality between economic growth and FDI as pointed out in previous section. FDI as an important determinant of growth intend to stabilize the labour market. The studies examine the employment elasticity in the Okun law framework pointed out ambiguous result. However general conclusion is that over the period employment elasticity is declining. The impact of production on employment creation depends on several factors. According to UNCTAD 1994, employment creation through FDI depend on several factors. First, the type of investment (greenfield or brownfield investment). For instance, Mucuk and Demirsel (2013) point out that FDI and

unemployment are cointegrated while in Tunisia and Turkey FDI positively impact unemployment. Secondly the type of sector or industry, whether FDI and so the growth is taking place in labour intensive sector or not. Third whether it substitutes or replace domestic production.

The studies like (Kumar et al., 2010; Pheang et al., 2017) indicate that FDI positively impact the economic growth and help in reducing unemployment. Albassam (2015) contended that FDI do not impact economic growth while it positively impacts employment. Sharma and Cardenas (2018) conclude that FDI reduces overall unemployment in Mexico and offer more working hours and possibly increases hour wage rate. Poumie and Claude (2021) examine the impact of foreign capital on employment in 29 African countries. Based on DOLS, AMG and CCEMG study concludes that FDI positively impact employment in the region. Balcerzak and Żurek (2011) for Poland and (Chang, 2007) for Taiwan based on VAR conclude that impulse in FDI inflows have adverse impact on unemployment, thus beneficial for employment. Chaudhuri and Mukhopadhyay (2014) argue that FDI has the potential to reduce unemployment among both skilled and unskilled labour in developing countries.

Contrary to the above studies, large stream of literature concludes negative effect of FDI on employment or support the neutrality hypothesis. Zdravkovic et al. (2017) find no relation between FDI and employment creation in the 17 transition countries and hence support the general conclusion that the FDI remains neutral to employment generation. Hisarciklilar et al. (2014) opine that FDI negatively influence employment in Turkey. However the study attribute such phenomenon to Merger and acquisition. The study by (Rizvi and Nishat, 2009) support the neutral hypothesis that FDI do not influence the employment and growth to employment elasticity is very less. Mucuk and Demirsel (2013) find that FDI and unemployment are cointegrated while in Tunisia and Turkey FDI positively impact unemployment. They argue that it is due to the concentration of brownfield investment and merger and acquisition. Aktar et al. (2009) examine that FDI does not reduce unemployment in Turkey and even economic growth does not cure unemployment. Strat et al. (2015) examine the causal relation between FDI and unemployment in 13 EU states based on TY procedure. The study concluded that there is causality running from FDI to unemployment in four and for three states it run from unemployment to FDI. Onaran (2008) indicates overall impact of FDI on employment is not significant in CEEC. Additionally, contrary to traditional view, she finds that labour demand is not sensitive to wage dynamic. Jenkins (2006) for Vietnam shown that by the introduction of labour-saving technique, the employment creation potential of FDI has reduced.

Table 1. Variable description and sources

Variables	Variable definition	Sources
GDP	GDP per capita (\$) at 2010 prices	World Development Indicators (WDI) 2021
FDI	FDI in stock % of GDP	United Nations Conference on Trade and Development (UNCTAD) 2021
Openness	Economic, social and political globalization with a weightage of 33.3 each	(KOFGI) KOF Swiss Economic Institute 2020
HC	Average year of schooling and return to education	Penn World Table 10.0
Emp	Total Employment	Penn World Table 10.0
Wage	GDP per person employed (constant 2017 PPP \$)	World Development Indicators (WDI) 2021

3. Data collection and model specification

The study investigates the connection between economic growth, FDI, employment, human capital and openness using data from different sources for the period 1993 to 2019. We convert the sample data to form the panel for 9 ASEAN and 5 BRICS nations for the period 1993 to 2019. Myanmar is not included in the panel owing to unavailability of data for chosen variables. We take GDP per capita at constant 2010 prices in dollar as a proxy for economic growth. Employment is measured as total employment and it is retrieved from Penn World Table 10.0. It covers all the working age population. FDI stock as proxy for FDI which is taken from UNCTAD (2020), human capital is proxied by human capital index which is based on average year of schooling and return to education and is retrieved from Penn World Table 10.0. Openness is proxied by KOFGI (KOF globalization index) (Gygli et al., 2019). KOFGI considers economic, social, and political dimension of globalization. So, it overrides the other measure of globalization such as trade openness measured by percentage share of trade to GDP. By linear imputation we make balance dataset as for the year 2019 KOFGI data point is not available. We take GDP per person employed as proxy for wage. The study employs wage in employment equation to correct for omitted variable bias. It is derived by dividing GDP by total employment in the economy. It is converted to constant international 2017 dollar using PPP rate to compare across the cross sections.

3.1. Empirical model

The literature review present in the above section revealed that the connection among the variables is ambiguous. Our core variables are economic growth, FDI and employment. The study estimates two models, first consider economic growth as dependent variable and in second equation employment is dependent variable. Additionally, we control for the human capital and globalization as proxy for openness in the first model as these two indicators gain importance in recent years. FDI is an aspect of globalization and consider as important determinant of economic growth and employment creation in the host nation. However, it depends on the nature of investment whether it crowds out the domestic investment or is mere merger and acquisition. In employment equation we control for human capital and wage (GDP per person employed) to avoid the model misspecification due to omitted variable bias. We posit the Cobb Douglas type of function and thus we transform the variables into their natural log form. Our baseline equation is.

$$Y_{it} = \alpha_{it} + \beta_1 FDI_{it} + \beta_2 Openness_{it} + \beta_3 HC_{it} + \beta_4 EMP_{it} + U_{it} \quad (1)$$

where:

$i = 1, \dots, N$ for each cross section, $t = 1, \dots, N$ refers to time period of the study, α = intercept, β s and U refer to elasticities and error term respectively.

The second equation is

$$Emp_{it} = \alpha_{it} + \beta_1 FDI_{it} + \beta_2 wage + \beta_3 HC_{it} + \beta_4 GDP_{it} + U_{it} \quad (2)$$

where:

$i = 1, \dots, N$ for each country, $t = 1, \dots, N$ refers to time. α = intercept, β s and U refer to elasticities and error term respectively and Emp refers to total employment.

4. Econometrics techniques

The study is based on panel data covering the variety of economies of BRICS and ASEAN. As the panel data comes with its own merits, for in instance, it reduces the collinearity problems, improve the efficiency of the result and increases the degree of freedom and sample variation (Hsiao, 2007; 2012) However, there are certain caveats also while analysing panel data. As it is the combination of different cross sections, so it suffers from the problem of cross section dependence and slope heterogeneity. So, it is important to check for cross section dependence. Because conventional unit root (the so-called first-generation unit root test) are based on the assumption of cross section independence. Disregarding these steps may result wrong selection of econometric method. So we implement the (Pesaran, 2004) for cross section dependence and technique developed by (Pesaran, 2007; Pesaran and Yamagata, 2008) for slope heterogeneity so that the suitable method could be applied. So, we start with the cross-section dependence test. It is likely that the panel data like ours would exhibit cross section dependence due to existence of common shocks with heterogeneous impact as economies are integrated with each other. Disregarding the cross-section dependency may have detrimental impact on the regression output. When it exists in the data the OLS become inefficient and produce bias estimated standard error for the model (Moscone and Tosetti, 2009). We therefore test the cross-section dependency of the series (Pesaran, 2004) CD test. This test is also valid for dynamic heterogeneous panel and for small sample. Pesaran (2004) test is computed as:

$$\sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \sqrt{\rho_{jn}} \quad (3)$$

Where T is time, N is individual observation and ρ_{jn} is the sample for which correlation coefficient was computed. Pesaran (2007) test is robust to non-stationarity and parameter heterogeneity. We then estimate the slope heterogeneity using (Pesaran and Yamagata, 2008) test. The model estimated in presence of heterogeneous slope yield inconsistent and biased result. As result indicates that there is cross sectional dependence and slope heterogeneity in the data. So, the conventional unit root test become invalid as they assume the cross-sectional independence in the model. We perform CADF (Pesaran, 2007) test (so-called second-generation unit root test) to check the level of integration of the variables. In presence of cross-sectional dependence and heterogeneous slope parameters CADF yield efficient and reliable result. CADF is based on the mean of the individual augmented Dickey Fuller t-statistics of each unit. The null hypothesis assumes the series are non-stationary.

4.1. Long run estimate

In this section we proposed the model based on the cross-section dependence, slope heterogeneity parameters and unit root test. We estimate the feasible generalized least square (FGLS). One of the prerequisites for FGLS is time period should be greater than cross section (Bai et al., 2021). The time period of the study is large than number of cross sections, so we use FGLS. FGLS is best to deal with cross section dependence, serial correlation, and slope heterogeneity. However, FGLS comes with some shortcomings as it underestimates the standard error in finite sample, or it inflates confidence. Secondly it demonstrates poor analytical performance when error variance covariance matrix is unknown. So, we apply PCSE (panel corrected standard error) to cross validate the estimate. We apply standard PCSE to cross check the result. Our analysis and discussion are based on FGLS.

4.2. Pairwise Dumitrescu-Hurlin panel causality tests

After succeeding FGLS estimation we estimate panel causality test. Engle and Granger (1987) and Granger (1988) contended that the two $I(0)$ and $I(1)$ series may have either bidirectional or unidirectional causality between at least the $I(0)$ series. We apply (Dumitrescu and Hurlin, 2012) panel non causality test. The (Dumitrescu and Hurlin, 2012) test produce strong output in presence of cross-sectional dependence and slope heterogeneity. It considers two facets of heterogeneity in addition to considering fixed effect, one heterogeneity of regression model, second heterogeneity of casual relationship. After long run estimation, it is important to conform the direction of causality among the variables. We use (Dumitrescu and Hurlin, 2012) panel non causality test to compute the direction of causality. The bootstrap procedure is useful when data exhibit cross section dependence.

5. Empirical results

The first step is to test the properties of the data used in the study. Disregarding of the properties may yield misleading results and conclusion. We confirm the cross-section dependence or independence using (Pesaran, 2004). Table 2 report the cross-section dependence test result. The null hypothesis is cross section independence. We conform the cross-section dependence using before estimation command for each series. We find cross section dependence in all the series except employment, as we reject the null of cross section independence at 5 % level since p-value is less than 0.05. CD tests conform that the shock in the economies can be transferred easily to other economies. We then proceed to test slope homogeneity using (Pesaran and Yamagata, 2008) test. The null is slope coefficient are homogeneous. We report the result for homogeneity test in Table 2. We reject the null of slope coefficient are homogeneous based on delta and adjusted delta value. The result indicates the slope parameter are not homogeneous.

5.1. Result for cross section dependence and homogeneity test

Table 2. Cross section dependency (H0: There is no cross-sectional dependency)

Variable	CD-test	P-value
GDP	35.27	0.000***
Employment	46.51	0.972
FDI	27.45	0.000***
KOFGI	46.77	0.000***
HC	47.38	0.000***
Wage	33.50	0.000***
Slope heterogeneity test for growth equation (H0: slope coefficients are homogenous)		
Economic growth Equation		
Test	Statistics	p-value
Delta	24.14	0.000***
Adjusted Delta	27.38	0.000***
Employment equation		
Test	Statistics	p-value
Delta	19.088	0.000***
Adjusted Delta	21.644	0.000***

Note: *** $p < .01$, ** $p < .05$, * $p < .1$.

Source: Authors' estimates.

Table 3. Unit root test result

		Variables					
		GDP	FDI	KOFGI	HC	Emp	Wage
I(0)	Without trend	-1.89 (0.31)	-2.370 (0.01)***	-2.06 0.127	-1.87 0.34	-1.83 (0.40)	-1.93 (0.26)
	With trend	-2.44 (0.30)	-1.99 0.90	-2.22 0.653	2.86 (0.01)**	-2.34 (0.45)	-1.90 (0.95)
I(1)	Without trend	-2.557 (0.001) ***	-2.67 (0.00)***	-2.716 (0.00)***	-2.487 (0.00)***	-2.12 (0.08)*	2.39 (0.0)***
	With trend	-2.77 (0.035) **	-2.98 (0.00)***	-3.24 (0.00)***	-3.41 (0.0)***	-2.48 (0.25)	-2.66 (0.08)*

Note: *** $p < .01$, ** $p < .05$, * $p < .1$. We report t-statistics, p-value are in parentheses. Two lags for each variable except HC and GDP, for GDP and HC four lag length have been chosen.

Source: Authors' estimates.

We conduct CADF test to level of integration of the variables. Table 3 above reports the result for CADF test. FDI and HC are stationary at level as the null that the series contain unit root is rejected. GDP, Openness and Emp are integrated of order one. So, we conclude that GDP, Openness, and Emp are static after first difference.

Table 4. Result for FGLS and PCSE. Economic growth is dependent variable

	Model 1		Model 2		Model 3	
	Baseline Equation		Focus on FDI		Focus on Employment	
	FGLS	PCSE	FGLS	PCSE	FGLS	PCSE
Variables						
Openness	0.584*** (-0.035)	0.429*** (-0.164)	0.447*** (-0.041)	0.787*** (-0.136)	0.300*** (-0.027)	0.537*** (-0.109)
HC	3.877*** (-0.077)	4.116*** (-0.371)	2.181*** (-0.05)	1.848*** (-0.195)	1.980*** (-0.043)	1.796*** (-0.172)
Employment	-0.021*** (-0.004)	-0.049*** (-0.007)	-0.110*** (-0.003)	-0.152*** (-0.008)		
FDI	-0.054*** (-0.004)	-0.075*** (-0.012)			-0.003 (-0.003)	-0.034*** (-0.01)
FDI as interaction						
FDI_hie			0.058*** (-0.011)	0.026 (-0.02)		
FDI_lmie			-0.188*** (-0.006)	-0.126*** (-0.028)		
FDI_umie			-0.115*** (-0.004)	-0.002 (-0.017)		
Employment as interaction						
Emp_hie					0.036*** (-0.005)	0.170*** (-0.023)
Emp_lmie					-0.043*** (-0.003)	0.042*** (-0.015)
Emp_umie					-0.012*** (-0.003)	0.077*** (-0.015)
Constant	1.606*** (-0.055)	2.303*** (-0.2)	4.069*** (-0.083)	4.131*** (-0.197)	2.670*** (-0.064)	0.841** (-0.338)
R-squared		0.984		0.997		0.996

Note: *** $p < .01$, ** $p < .05$, * $p < .1$. Standard error are in parentheses. We estimate the FGLS model using panel specific AR 1 auto correlation structure. We assume heteroscedasticity across the panel and autocorrelation within the panel. For PCSE, standard PCSE is estimated. So the reported standard error is panel corrected standard error.

Source: Authors' estimates.

5.2. Long run estimate (FGLS)

Based on analysis provided above we now estimate our model using second generation estimator like FGLS. FGLS and PCSE can be validly applied in presence of cross section dependence and slope heterogeneity. The result of both the estimator shows that human capital, Openness, FDI and employment are significant. Human capital and Openness have significant positive impact on economic growth, whereas employment and FDI negatively influence economic growth in overall sample of the study. The high elasticity coefficient of human capital and significance level indicates the importance of human capital to economic growth in BRICS and ASEAN economies. Result indicates that one percent increase in globalization and human capital causes an increase of 0.34% and 3.78% in economic growth respectively. This implies BRICS and ASIAN economies need to invest more on human capital and should focus on the encouraging aspect of globalization. The negative influence of FDI could be due to the lack of infrastructure, underdeveloped financial market. The PCSE estimation also provide similar output.

Table 5. Result for FGLS and PCSE. Employment is dependent variable

Variable	Model 1		Model 2	
	Baseline Equation		Focus on FDI	
	FGLS	PCSE	FGLS	PCSE
HC	1.437*** (-0.13)	1.015** (-0.473)	2.013*** (-0.073)	0.33 (-0.359)
GDP	0.651*** (-0.027)	0.603*** (-0.119)	0.547*** (-0.026)	0.643*** (-0.12)
Wage	-0.975*** (-0.027)	-1.125*** (-0.097)	0.150*** (-0.026)	-1.23*** (-0.157)
FDI	-0.049*** (-0.006)	0.070*** (-0.02)		
FDI as interaction				
FDI_hie			-0.002 (-0.012)	0.048** (-0.024)
FDI_lmie			-0.148*** (-0.01)	0.083 (-0.062)
FDI_umie			-0.123*** (-0.006)	0.123*** (-0.026)
Constant	17.626*** (-0.115)	18.827*** (-0.504)	12.522*** (-0.087)	19.491*** (-0.718)
R-squared		0.999		0.999

Note: *** $p < .01$, ** $p < .05$, * $p < .1$. Standard error are in parentheses. FGLS model is estimated using panel specific AR 1 auto correlation structure. We assume heteroscedasticity across the panel and autocorrelation within the panel. For PCSE, standard PCSE is estimated. So, the reported standard error is panel corrected standard error.

Source: Authors' estimates.

Additionally, we take dummy for two reasons, first our sample constitute varieties of economies, so we take the three dummies on the basis of income classification made by World Bank secondly, the negatively impact of FDI on economic growth that whether the impact of FDI depend upon the development of economy or not. These dummies are high income economies (HIE), upper middle-income economies (UMIE) and low middle-income economies (LMIE). We estimate two separate model one with interaction of FDI with dummy and second the interaction of employment with dummy. The study finds the positive significant impact of FDI and employment on economic growth in high income

economies. Whereas it is negative and significant for upper middle income and low middle-income economies. In the baseline model FDI is negatively impacting economic growth. This is probably due to a smaller number of high-income economies in the panel. However, the coefficient of FDI is significant for HIE. This implies that certain level of development is necessary to achieve the growth objective of FDI.

Results for FGLS indicate that human capital and economic growth have positive impact on employment. Whereas FDI and wage negatively influence employment. However, result for PCSE indicates positive impact of FDI on employment in both models.

Table 6. Pairwise Dumitrescu-Hurlin panel non causality tests results

Null hypothesis	W statistics	Z-bar statistics	Z-bar tilde	P-Value
GDP FDI	11.19	9.52	5.85	0.03
FDI GDP	13.20	12.17	7.65	0.00
GDP EMP	7.49	4.62	2.53	0.20
EMP GDP	9.75	7.61	4.56	0.05
HC GDP	16.46	16.49	10.57	0.01
GDP HC	19.71	20.79	13.49	0.00
Openness GDP	10.04	8.00	4.82	0.03
GDP Openness	9.04	6.67	3.92	0.07
EMP FDI	6.49	3.29	1.63	0.50
FDI EMP	6.33	3.08	1.49	0.35
EMP HC	9.21	6.89	4.07	0.15
HC EMP	7.70	4.90	2.72	0.52
Wage EMP	7.50	4.63	2.54	0.22
EMP Wage	12.31	11.00	6.85	0.01
FDI HC	21.33	22.92	14.93	0.00
HC FDI	8.79	6.33	3.69	0.22

Note: Null hypothesis is that the dependent variable does not Granger cause independent variable and the alternate is it does Granger cause for at least one panel var. P-value is computed using bootstrap replication which is useful in presence of cross section dependence.

Source: Authors' estimates.

6. Discussions

The section is dedicated to in-depth discussion on the empirical findings. Our estimation of growth equation suggests FDI negatively impact economic growth. However in HIE, FDI positively impact economic growth. The conformation of negative effect of FDI on economic growth is in congruent with (Saltz, 1992) in context of developing economies, (de Mello, 1999) for 32 developed and developing countries, (Mencinger, 2003) for eight transition countries. Alfaro et al. (2004) for a panel of 71 developing countries find the same result. However author attributed this to the less developed financial market. Wang (2009) for the 12 Asian Economies found FDI inflows in non-manufacturing sectors do not enhance growth. Anyanwu and Yameogo (2015) for West African nations revealed negative impact of FDI on economic growth. Bagli and Adhikary (2014) concludes the similar result. However some studies revealed weak or insignificant impact of FDI on economic growth. For instance, Levine and Carkovic (2002) for 72 countries for the period 1960-1995 find a weak link between FDI and economic growth. Sarkar (2007) for a panel of 51 less developed countries based on ARDL report no significant effect of FDI. Herzer et al. (2008) for 28 developing countries during 1970-2003, (Nath, 2009) for 13 transition

economies of Central and Eastern Europe, and the Baltic region during the period 1991-2005 (Louzi and Abadi, 2011) for Jordan for the period 1997-2006; (Tekin, 2012) for the case of least- developed countries during the period 1970-2009; (Belloumi, 2014) for the case of Tunisia during the period 1970-2008; (Mahembe and Odhiambo, 2016) for the case of low-income SADC countries during the period 1980-2012; and recently, (Golitsis et al., 2018) for Albania during the period 1996-2014 report a weak or no significant impact of FDI on economic growth. Most of the studies attributed that the negative effect is owing to the transferring of benefits by the MNC to the country of origin. Secondly the developed financial market, high human capital is the determining factor. This implies that certain level of development is required to affectively absorb technology from foreign investor (Blomstrom et al., 1992) However our findings are in contradiction with (Borensztein et al., 1995; Zhang, 2001) etc. these studies suggested that FDI exhibit significant positive relationship with economic growth. We observed bidirectional causality between economic growth and FDI. Our findings are consistent with (Samad, 2009; Mehrara et al., 2012) (Hansen and Rand, 2006) for developing economies. Pegkas (2015) for Eurozone countries. This is not surprising as researcher hypothesized 'FDI led growth hypothesis' and 'market led hypotheses based on direction of causality.

The result suggest that employment negatively impact economic growth. As in the case of FDI in HIE dummy for employment indicates employment increases economic growth. However, this is not staggering. As most of the emerging economies are agrarian in nature. In these economies, agriculture is associated with low productivity. Additionally, large share of the economy is informal in nature, labour is low skilled. This implies encouraging the labour-intensive activities instead of capital intensive (growth enhancing in nature) causes decline in economic growth. Probably this may be the reason that FDI is failed to promote economic growth. As per the causality test, we observed bidirectional causality between employment and economic growth.

Human capital in each model suggests high elasticity with respect to economic growth. This shows the importance of human capital to stimulate the growth. The results are in congruent with the previous research. Further there is bidirectional causality between human capital and economic growth. This supports the feedback hypothesis.

The result suggest that globalization positively impact economic growth. So, the result is in consistent with the previous studies. This make stronger the hypothesis of export led growth, and the results suggest that openness is the best alternative to boost the growth for emerging economies.

The second equation assume employment as dependent. FDI and wage negatively impact employment. The negative coefficient with 0.049 implies weak negative compared to economic growth and human capital. However the result are consistent with (Hisarciklilar et al., 2014; Zdravkovic et al., 2017) and other. However these results are in in contrast with (Albassam, 2015; Kumar et al., 2010; Pheang et al., 2017; Sharma and Cardenas, 2018). This could be due to the inflow to FDI to capital intensive sector, lack of skilled labour, rigid labour market, raised in productivity less developed financial market. However (Nickell, 1997; Kapsos, 2006) indicate impact of labour market regulation is ambiguous. Economic growth and human capital have positive impact on employment. Our

results are consistent with theoretical expectation. HC likewise in previous model indicates high coefficient which is not surprising. Economic growth positively impacts employment with the highly significant coefficient of 0.65. This invalidates the common jargon of 'jobless growth'. However, in previous model employment negatively impact economic growth. This implies merely investing in labour intensive sectors could not be the cure. Authorities should adopt more sophisticated policy so that reasonable economic growth as well as low unemployment could be maintained. Our causality test conforms this ambiguity as there is absence of causality in either direction.

Additionally, we estimate the Pairwise Dumitrescu-Hurlin panel non causality tests for globalization and FDI, FDI and employment, HC and FDI, globalization and employment and HC and FDI to examine the direction of causality. Table 6 report the result for Dumitrescu-Hurlin panel non causality test. We observed the one-way causality between globalization and FDI running from globalization to FDI. This is in consistent with the previous studies. This suggest that globalization increases FDI inflow. KOFGI takes weightage of FDI in composite index. FDI and employment and globalization and FDI does not cause each other in any direction. This imply that globalization in broader context and FDI in particular are independent to employment generation. So, the study supports the hypothesis that globalization or openness and FDI does not increase employment in ASEAN and BRICS nations. Probably this may be one such reason that economic growth and employment generation do not move side by side. That is why the phrase Jobless growth gaining importance particularly in Indian context. We find one way causality running from FDI to HC. This indicates that FDI increases competitiveness and probably creates demand for skilled labour.

7. Conclusion and policy implication

This study examines the casual nexus among FDI, employment and economic growth using the panel data for BRICS and ASEAN nations. The study period spans from 1993 to 2019. The earlier studies report mixed result with regard to FDI and economic growth and FDI and employment. However, this study covers variety of economies for instance high income, upper and lower middle-income economies. The study finds that in high income economies, FDI has positive impact on economic growth. Overall impact of FDI on economic growth is not clear. We observed bidirectional causality between economic growth and FDI. This is not surprising as researcher hypothesized 'FDI led growth hypothesis' and 'market led hypotheses based on direction of causality. Human capital and globalization have positive impact on economic growth. The impact of employment on economic growth is not clear for full panel. However, it is positive in high income economies.

In second model human capital and economic growth have positive impact on employment. FDI overall negatively affect employment in the ASEAN and BRICS nations in FGLS model, whereas PCSE shows opposite sign. However, the negative sign for high income economies is not significant in FGLS and it is positive in PCSE model. In case of low middle-income economies each model shows negative sign. So we conclude that impact of

FDI on employment creation is ambivalent. However human capital and economic growth are essential to reduce unemployment. The coefficient of wage suggest that high wage may increase employment.

The study has several important implications. As Blomstrom et al. (1992), FDI is a source of rapid development only for certain developed countries. The study confirmed from the very fact that FDI has positive impact on economic growth only in high income economies (HIE). So emerging economies must focus on development in their region to reap the benefit from FDI. The negative affect of FDI does not mean to stop or discourage the FDI or globalization. Because openness has positive impact on economic growth which takes the weightage of FDI with other indicators. However, there is need of more sophisticated policy. More focus should be on human capital to boost the economic growth and employment. Moreover, employment negatively impact economic growth whereas economic growth has positive impact on employment. This implies that mere focus on employment creation by investing on labour intensive sector could not be the cure for the problem. However, two-pronged policy is required so that high economic growth as well as high employment rate could be maintained.

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Appendices

Appendix A.1

List of countries selected for the study

ASEAN	BRICS
Brunei	Brazil
Cambodia	Russia
Indonesia	India
Lao PDR	China
Malaysia	South Africa
Philippines	
Singapore	
Thailand	
Vietnam	

Appendix A.2

Correlation matrix

	GDP	Openness	HC	FDI	Employment	wage
GDP	1.0					
Openness	0.67* (0.00)	1.0				
HC	0.76* (0.0)	0.81* (0.00)	1.0			
FDI	0.04 (0.38)	0.28* (0.0)	0.24* (0.0)	1.0		
Employment	-0.13* (0.007)	0.35* (0.0)	0.07 (0.15)	0.40* (0.0)	1.0	
Wage	0.3861* (0.0)	0.15* (0.00)	0.21* (0.0)	-0.26* (0.0)	-0.46* (0.0)	1.0

Source: Authors' estimates.