

## Investigating the Impact of Inflation on Foreign Direct Investment in Southern Africa

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**Abstract:** This paper investigated the impact of inflation on foreign direct investment (FDI) and also explored if financial development is a channel through which the impact of inflation on FDI in Southern Africa could be moderated using panel data analysis. Under fixed effects, inflation was found to have had a non-significant positive influence on FDI, random effects show that inflation negatively but non-significantly impacted on FDI whereas under the pooled OLS, inflation had a significant negative influence on FDI in Southern Africa. Both fixed effects and pooled OLS found that the interaction between inflation and financial development had an insignificant negative impact on FDI whereas random effects framework shows that FDI was positively but non-significantly affected by the interaction between inflation and financial development in Southern Africa. The policy implication of the study is that Southern African countries needs to implement inflation lowering policies in order to be able to attract FDI inflows. The study also urges Southern African countries to implement policies that ensures a balance of low inflation environment and a developed financial sector in order to sustainably ensure FDI inflows.

**Keywords:** Inflation; Financial Development; Foreign Direct Investment; Southern Africa

**JEL Classification:** E31; E44; F21; N17

### 1. Introduction

**Background of the study:** The contribution of FDI on economic growth is no longer a disputable matter in finance and economics as emphatically supported by United Nations Conference on Trade and Development (UNCTAD. 2017), UNCTAD (2012), Calvo and Sanchez-Robles (2002), Romer (1986), Lucas (1988), Kumar and Pradhan (2002), Solow (1956), Swan (1956) and Nath (2005). In summary, they argued that FDI bring in additional capital, technology, skills, training of labor and market access thereby enhancing the productive capabilities of firms in the host country. It is the reason behind which the impact of FDI on economic growth has in recent years received a lot of attention from empirical researchers and policymakers. The chicken and egg question that is still far from being settled is: Does FDI

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influence economic growth or it is economic growth which affects FDI? Although it is quite clear from the ownership, location and internalisation (OLI) framework of the eclectic paradigm hypothesis (developed by Dunning, 1973) that inflation is one of the economic locational advantages of FDI, the direct inflation-FDI nexus has so far been pursued by very few empirical researchers. The mixed findings on inflation led FDI hypothesis observed by the few existing researchers on the subject matter necessitated the current empirical investigation. Southern African countries deserve a separate study on the relevancy of the inflation led FDI hypothesis because they have got their own unique financial, economic, political and human capital development characteristics that have a bearing on both inflation and FDI. Moreover, the existing findings of a previous study on South Africa carried out by Valli and Masih (2014) cannot be generalized for all the Southern African countries. The study is useful to Southern African countries as it guides the crafting of inflation targeting policies which are favourable to FDI and consequently economic growth.

**Research gap and Contribution of the study:** Majority of studies in the subject matter have so far explored the impact of the complementarity between inflation and FDI on economic growth and stayed away from investigating the direct impact of inflation on FDI. Overwhelmingly, literature shows that inflation has a negative impact on FDI. (Nnadi & Soobaroyen, 2015; Sayek, 2009; Andinuur, 2013; Xaypanya et al, 2015) Despite the fact that the influence of financial development on FDI is no longer a disputed matter as supported by Klein et al (2000), Guiso et al (2004), Havrylchuk and Poncet (2007), Kaur et al (2013), Ezeoha and Cattaneo (2012), no study has so far attempted to investigate the effect of the complementarity between inflation and financial development on FDI to the best of the author's knowledge. Moreover, the few empirical studies on the direct impact of inflation on FDI shows mixed and divergent views: (1) inflation has a positive impact on FDI, (2) inflation negatively influence FDI, (3) there is no relationship between inflation and FDI, (4) inflation and FDI complement each other in influencing economic growth and (5) there is a feedback effect between inflation and FDI. Apart from a study that was done by Valli and Masih (2014) on South Africa, no study on inflation and FDI has been done on Southern Africa despite the fact the region comprises some of the countries hardest hit by high levels of inflation and FDI fluctuations in the recent history. It is against this backdrop that the current study seeks to empirically investigate the relationship between inflation and FDI in Southern Africa.

**Organization of the paper:** The remainder of the paper is organized into seven sections. Section 2 discusses both theoretical and empirical literature on the impact of inflation on FDI. Section 3 is the theoretical literature on the impact of financial development on FDI. Section 4 describes the impact the other variables have on FDI whereas section 5 is the research methodology (data description, pre-estimation

diagnostics, data analysis and interpretation). Section 6 summarizes the study, section 7 provides the reference list while section 8 is the Appendix section.

## **2. The Influence of Inflation on Foreign Direct Investment – Literature Review**

There are three theoretical rationales which explains the impact of inflation on FDI: (1) Nnadi and Soobaroyen (2015) and Andinuur (2013) observed that inflation is a measure of macro-economic instability and that higher inflation rate could chase away prospective and already existing foreign investors, (2) inflation rate increase in host country reduces FDI as it erodes the value of the profits made by foreign firms (Sayek, 2009, p. 423) and (3) low inflation reduces nominal interest rates and consequently pushes down the cost of capital for foreign investors. On the contrary, Obiamaka et al (2011) noted that it is possible that inflation in the host country can have a positive impact on FDI inflows on condition that it does not exceed a certain threshold level.

The different rate of return hypothesis developed by Popkin (1965) explains in an indirectly way the relationship between inflation and FDI. It postulates that FDI is a result of international differences in the real rates of return (inflation adjusted). The theory says that FDI flows from countries whose investment real rate of return is low into countries which are characterised by higher real rates of investment return. Studies that supported the different rate of return hypothesis were done by few authors. (Ali & Guo. 2005; Fedderke & Romm, 2006; Asiedu, 2002) In summary, the theoretical framework says that a surge in marginal real rate of return (due to low inflation) on foreign assets increases the ratio of the stock of foreign to domestic capital holdings.

In a bid to test the theoretical framework, Fedderke & Romm (2006) studied the impact of the net rate of return and risk on FDI location decision in South Africa (SA) with annual aggregate time series data ranging between 1956 and 2003 using vector error correction model (VECM). Higher net real rate of return, risk profile, lower political risk, ensuring property rights, higher level of trade openness, lower labour cost, lower corporate tax and bigger market size attracted FDI into SA, thus supporting the different rate of return, eclectic paradigm and the market size hypothesis. (Fedderke & Romm, 2006, 757) Moreover, exchange rate stability, low inflation, labour cost and corruption levels were found to have had a positive effect on FDI inflows in developing countries. (Kahai, 2004, p. 48)

Table 1 summarizes the empirical literature on the impact of inflation on FDI

**Table 1. Inflation led foreign direct investment – Empirical literature**

Author	Country/Countries of study	Methodology	Results
Mason and Vracheva (2017)	Developing and developed countries	Panel data analysis	Inflation targeting had a more significant positive impact on FDI in developed than developing countries. Inflation targeting was also found to have had a more positive influence in lower middle income developing countries in comparison to upper middle income developing countries.
Valli and Masih (2014)	South Africa	Time series analysis	No causality was found to exist between inflation and FDI in South Africa
Alshamsi et al (2015)	United Arab Emirates	Autoregressive Distributive Lag (ARDL)	Inflation was found to have had no significant influence on FDI in the United Arab Emirates
Huybens and Smith (1999)	None –Theoretical literature based paper.	None – Theoretical literature based paper.	FDI was found to be a channel through which inflation influences economic growth.
Boyd et al (2001)	97 countries	Panel threshold regression analysis	FDI influenced the impact of inflation on economic growth
Andinuur (2013)	Ghana	Time series regression analysis	Lower levels of inflation provided a favourable economic environment which in turn guarantees significant FDI inflows into Ghana
Obiamaka et al (2011)	Nigeria	Multiple time series regression analysis	Inflation rate had no influence on FDI in Nigeria.
Xaypanya et al (2015)	ASEAN countries	Multiple panel regression analysis	FDI was negatively influenced by inflation in the ASEAN region.
Omankhanlen (2011)	Nigeria	Multiple time series regression analysis	Inflation was found to have had no impact on FDI in Nigeria.
Sayek (2009)	Developing countries	Quantitative analysis approach	The negative influence of inflation in the economy was found to have been reduced by FDI inflows.
Amoah et al (2015)	Ghana	Vector Error Correction Model (VECM)	Both FDI and inflation were found to have had no influence on each other in Ghana.
Bibi and Rashid (2014)	Pakistan	Dynamic ordinary least squares	FDI and inflation alongside trade openness and stable exchange rates played a critical positive influence on economic growth in Pakistan.

*Source: Author compilation*

Quite conflicting findings are coming out from the summarised empirical literature in Table 1. In fact, the findings can be divided into categories: (1) inflation has a positive influence on FDI inflows, (2) there is no relationship at all between inflation and FDI, (3) inflation and FDI complement each other in positively influencing economic growth and (4) inflation influences FDI through some channels such as financial development, among others.

### **3. The Impact of Financial Development on FDI –Theoretical Literature Review**

Theoretical literature on the influence of financial development on FDI is divided into three groups, namely the liquidity easing, economic efficiency and allocative channel perspectives. According to Antras et al (2009), shallow financial markets reduces the number and level of foreign companies' activities because they cannot raise adequate capital from financial markets and have to over depend on finance from the parent company. Empirical studies which supported the liquidity easing perspective include Kholdy and Sohrabian (2008), Seghir (2009) and Levine (1997).

The economic efficiency perspective which was propagated by Bartels et al (2009) argued that developed financial markets provide more efficient, timely and cost-cutting information to potential international investors thereby enhancing the flow of FDI into the host countries. A study done by Shahbaz and Rahman (2010) found out that the economic efficiency perspective was relevant in the case of Pakistan. The allocative channel perspective which was supported by Kaur et al (2013), Klein et al (2000), Havrylchyk and Poncet (2007) and Guiso et al (2004) says that developed financial markets allocates scarce financial resources towards more productive projects for economic growth thereby enhancing the productivity levels of foreign capital. On the contrary, Hailu (2010) observed that in a developed financial sector environment, foreign investors might opt for portfolio investment rather than direct investments hence crowding out FDI. Financial development is therefore expected to have either a positive or negative effect on FDI.

#### 4. Other Variables that have an Impact on FDI

**Table 2. Theory intuition and a priori expectation**

Variable	Proxy used	Theory intuition	Expected sign
Economic growth (GROWTH)	GDP per capita	The output and market size hypothesis developed by Jorgenson (1963) argued that FDI is positively attracted by the market size of the host country as proxied by gross domestic product (GDP) or gross national product (GNP). The view was supported by Moosa (2010: 483) who observed that a host country characterised by larger market size as proxied by its GDP attracts more FDI.	+
Trade openness (OPEN)	Total of exports and imports (% of GDP)	Denisia (2010) noted that location advantages which influences FDI include economic, political and social policies of the host country. According to Denisia (2010:108), trade openness is a political location advantage of FDI within the eclectic paradigm hypothesis which arises from unfavourable or favourable government's economic policies. On the other hand, Baltagi et al (2009) argued that higher levels of trade openness have a negative impact on economic growth due to the fact that big corporates choose to purchase their inputs from abroad despite the fact that they could be locally available.	+/-
Population growth (POP)	Population growth (annual %)	Aziz and Makkawi (2012:66) explained that large populations in the host country attract FDI in three different ways: (1) provides a large skill base, (2) provides a large market for the products offered by the multinational enterprise and (3) provide a large labour force.	+
Unemployment rate (UNEMPL)	Total unemployment (% of total labour force)	On the theoretical front, high levels of unemployment mean that the market size in that particular host country is small thereby dissuading the flow of FDI in line with the market size hypothesis proffered by Jorgenson (1963). On the other hand, high levels of unemployment attract FDI because multinational enterprises will incur low labour costs as the labour force can easily be replaced if they demand unreasonable wages.	+/-

*Source: Author compilation*

#### 5. Research Methodology

**Data and Data Sources:** The study used annual secondary data for Southern African countries ranging from 1995 to 2014 which was extracted from International Monetary Fund, World Bank, African Development Bank, World Development Indicators and International Financial Statistics databases. The Southern African countries included in the study include Zimbabwe, South Africa, Namibia,

Swaziland, Malawi, Mauritius, Mozambique, Madagascar, Seychelles and Tanzania. Data availability considerations played a major part in the choice of the sample.

**Pre-estimation diagnostics:** In Table 3 (Appendix section), inflation and financial development were separately found to be negatively but non-significantly correlated with FDI whereas population growth and unemployment were individually found to be positively related with FDI. As expected, a significant positive correlation between (1) FDI and economic growth and (2) trade openness and FDI was detected in the case of Southern African countries. All the findings are backed by theoretical literature (refer to Table 3 - Appendix section). In line with Stead (1996), the multicollinearity problem among the variables studied does not exist. This is because the maximum correlation between any two variables is 65.67%, which coincides with trade openness and economic growth.

In Table 4 (Appendix section), the standard deviation for inflation and economic growth is 3 069 and 3 395 respectively, evidence that there exists abnormal or extreme data in the two variables. Evidence that the data for all the variables is not normally distributed lies in the fact that the probabilities of the Jarque-Bera criterion is 0. To address these econometric issues, the current study first transformed the data for all variables into natural logarithms before using it for main data analysis, following Hair et al (2014).

**Panel unit root and co-integration tests:** Not all variables were significant at level whereas all the variables were found to be significant at first difference (see Table 5 –Appendix section). In econometric terms, it means that all the variables were stationary at first difference or integrated of order 1, a condition which should be met before any co-integration tests are performed. Using Johansen Fisher Panel Co-integration test (see Table 6-Appendix section), the null hypothesis which says that there is no co-integration among the variables is rejected. In other words, there are at most six co-integrating vectors, a finding which shows the existence of a long run relationship among the variables studied.

**General and Econometric Model Specification:** Following literature review (section 2, 3 and 4), equation 1 represents the general model specification of the FDI function.

$$FDI=f(INFL, FIN, GROWTH, OPEN, POP, UNEMPL) \quad [1]$$

In econometric terms and in line with the prime objective of the current study, equation 1 is converted into equation 2.

$$FDI_{i,t} = \beta_0 + \beta_1 INFL_{i,t} + \beta_2 X_{i,t} + \mu_i + \varepsilon_{it} \quad [2]$$

**Table 7. Signs and interpretations**

FDI	Foreign direct investment as measured by net FDI as a ratio of GDP.
INFL	Inflation as proxied by inflation consumer prices (annual %).
X	Control variables and these include financial development, economic growth, trade openness, population growth and unemployment rate.
$\mu_i$	Time invariant and unobserved country specific effect.
$i$	Country
$t$	Time
$\varepsilon_{it}$	Error term
$\beta_0$	Intercept term
$\beta_1$	Co-efficient of inflation variable
$\beta_2$	Co-efficient of the control variables

Source: Author compilation

$$FDI_{i,t} = \beta_0 + \beta_2 INFL_{i,t} + \beta_3 FIN_{i,t} + \beta_4 (INFL_{i,t} \cdot FIN_{i,t}) + \beta_5 GROWTH_{i,t} + \beta_6 OPEN_{i,t} + \beta_7 POP_{i,t} + \beta_8 UNEMPL_{i,t} + \mu_i + \varepsilon_{it} \quad [3]$$

The interaction term ( $INFL_{i,t} \cdot FIN_{i,t}$ ) in equation 3 enabled the author to address the second question: Is financial development a channel through which the negative impact of inflation on FDI could be reduced or overturned? The theoretical expectation is that financial development reduces the negative influence of inflation on FDI.

**Main Data Analysis:** This stage involved estimating equations 2 and 3 using the pooled fixed effects, random effects and pooled OLS, results of which are presented in Table 8, 9 and 10 respectively.

**Table 8. Fixed effects**

	Without interaction variable (Model 1)			With interaction variable (Model 2)		
	Co-efficient	Std. Error	t-statistic	Co-efficient	Std. Error	t-statistic
INFL	0.0104	0.0652	0.1604	0.0542	0.3006	0.1803
FIN	-0.3002	0.4504	-0.6665	-0.2111	0.7491	-0.2818
INFL.FIN	-	-	-	-0.0335	0.2250	-0.1491
GROWTH	1.0620***	0.2574	4.1251	1.0640***	0.2585	4.1162
OPEN	0.5908*	0.3297	1.7920	0.5907*	0.3306	1.7871
POP	0.1201	0.1408	0.8531	0.1187	0.1415	0.8389
UNEMPL	0.7825**	0.3920	1.9962	0.7802**	0.3933	1.9838
Adjusted R-squared 0.6514			Adjusted R-squared 0.6673			
F-statistic 7.19			J-statistic 7.43			
Probability(F-statistic) 0.0000			Probability(J-statistic) 0.0000			

Source: Author's compilation from E-Views



Notes: GDP per capita is the dependent variable. \*\*\*, \*\* and \* denote 1%, 5% and 10% levels of significance, respectively.

Under the fixed effects, inflation had a positive but non-significant impact on FDI in both model 1 and 2, in line with Obiamaka et al (2011) whose study noted that it is possible that inflation in the host country can have a positive impact on FDI inflows on condition that it does not exceed a certain threshold level. Financial development was found to have had a negative but insignificant influence on FDI in contradiction to most theoretical explanations. The finding however resonates with Hailu (2010) who argued that developed financial markets crowds out FDI as more foreign investors are inclined towards portfolio investment rather than direct investments participation. Although the impact of the interaction between inflation and financial development on FDI was still negative and non-significant, the size of the interaction term shows that inflation managed to reduce the negative impact of financial development on FDI, consistent with Obiamaka et al's (2011) argument.

**Table 9. Random effects**

	Without interaction variable (Model 1)			With interaction variable (Model 2)		
	Co-efficient	Std. Error	t-statistic	Co-efficient	Std. Error	t-statistic
INFL	-0.0335	0.0634	-0.5277	-0.0471	0.2964	-0.1589
FIN	0.3927	0.4280	0.9175	0.4078	0.7268	0.5611
INFL.FIN	-	-	-	0.0164	0.2221	0.0740
GROWTH	0.5353***	0.1971	2.7158	0.6179***	0.2096	2.9479
OPEN	0.3505	0.3108	1.1279	0.3906	0.3164	1.2347
POP	0.1310	0.1385	0.9461	0.1278	0.1396	0.9156
UNEMPL	0.0734	0.2615	0.2807	0.1715	0.2885	0.5946
Adjusted R-squared 0.61			Adjusted R-squared 0.63			
F-statistic 4.15			F-statistic 4.82			
Probability(F-statistic) 0.0000			Probability(F-statistic) 0.0000			

*Source: Author's compilation from E-Views*

Notes: GDP per capita is the dependent variable. \*\*\*, \*\* and \* denote 1%, 5% and 10% levels of significance, respectively.

Under the random effects approach, inflation had a negative influence on FDI in line with Sayek (2009) who explained that higher inflation in host country decrease FDI inflows as it erodes the value of the profits made by foreign firms. On the other hand, financial development was found to have had a non-significant positive impact on FDI, a finding that resonates with the economic efficiency rationale (Shahbaz & Rahman, 2010; Bartels et al., 2009) which says that a well-developed financial market is better placed to decrease transaction costs incurred by foreign investors and speed up the flow of information thereby attracting foreign FDI. Moreover, the interaction between inflation and financial development had a non-significant positive influence on FDI. As expected and in line with theoretical predictions, the positive influence of financial development on FDI reduced the negative impact of inflation on FDI.

The fixed and random effects approach also observed that trade openness played a crucial role in positively influencing FDI in congruence with Denisia (2010)'s propositions (see Table 2). Fixed effects approach found out that unemployment had a significant positive impact on FDI whereas random effects had a non-significant positive influence on FDI. The findings make theoretical sense because high levels of unemployment mean that multinational enterprises can employ desperate labour force in the host country at a low cost thereby attracting FDI. The theoretical rationale resonates with the OLI framework of the eclectic paradigm hypothesis proffered by Dunning (1973).

**Table 10. Pooled OLS**

	Without interaction variable (Model 1)			With interaction variable (Model 2)		
	Co-efficient	Std. Error	t-statistic	Co-efficient	Std. Error	t-statistic
INFL	-0.1202*	0.0691	-1.7403	-0.0398	0.3265	-0.1220
FIN	-0.8361**	0.3705	-2.2567	-0.6860	0.7021	-0.9772
INFL.FIN	-	-	-	-0.0612	0.2429	-0.2519
GROWTH	0.3251**	0.1480	2.1973	0.3187**	0.1505	2.1174
OPEN	-0.0104	0.2787	-0.0372	-0.0040	0.2805	-0.0144
POP	0.1804	0.1514	1.1918	0.1802	0.1518	1.1876
UNEMPL	-0.2206*	0.1240	-1.7790	-0.2194*	0.1244	-1.7643
Adjusted R-squared 0.54 F-statistic 5.72 Probability(F-statistic) 0.0000				Adjusted R-squared 0.56 F-statistic 7.16 Probability(F-statistic) 0.0000		

*Source: Author's compilation from E-Views*

Notes: GDP per capita is the dependent variable. \*\*\*, \*\* and \* denote 1%, 5% and 10% levels of significance, respectively.

Under pooled OLS, both inflation and financial development had a separate significant negative influence on FDI whereas the interaction between inflation and financial development (model 2) had a non-significant negative effect on FDI in Southern Africa. The finding means that host countries characterised by high levels of inflation and financial development experiences negative outflows of FDI or finds it difficult to attract FDI. The finding also implies that the interaction between high inflation and high financial development reduces the rate of FDI outflows but does not lead to net positive FDI inflows.

Under the pooled OLS framework, unemployment was found to have had a significant negative influence on FDI. The finding is in line with Jorgenson's (1963) argument that high levels of unemployment shrinks the market size (number of potential buyers of the products) in the host country thereby having a deleterious effect on FDI. Supporting Baltagi et al (2009) who argued that trade openness has an indirect negative influence on FDI through its deleterious influence on economic growth, pooled OLS approach found out that trade openness affected FDI in a non-significant negative manner.

Economic growth had a positive and significant influence on FDI under the pooled OLS, fixed and random effects in line with Jorgenson's (1963) output and market size hypothesis which argued that FDI is positively attracted by the market size as proxied by GDP. Under the pooled OLS, fixed and random effects, population growth had a non-significant positive impact on FDI in line with Aziz and Makkawi (2012:66) whose study argued that large populations attract FDI into the host country through provision of a large market, large skill base and large labour force.

## 6. Conclusion

This study had two major aims: (1) to investigate the impact of inflation on FDI and (2) to explore the influence of a combination between inflation and financial development on FDI in Southern Africa. Majority of available studies on the subject matter have so far focused on the complementary effect of inflation and FDI on economic growth and have shied away from investigating the direct impact of inflation on FDI. It is against this background that the current paper investigated the relevancy of the inflation led FDI hypothesis in Southern Africa.

Under fixed effects, inflation was found to have had a non-significant positive influence on FDI, random effects show that inflation negatively but non-significantly impacted on FDI whereas under the pooled OLS, inflation had a significant negative influence on FDI in Southern Africa. The mixed findings are all backed by theoretical explanations (see section 5.4). Both fixed effects and pooled OLS found that the interaction between inflation and financial development had an insignificant negative impact on FDI whereas random effects framework shows that FDI was positively but non-significantly affected by the interaction between inflation and financial development in Southern Africa. The overall policy implication of the study is that Southern African countries needs to implement inflation lowering policies in order to be able to attract FDI inflows. The study also urges Southern African countries to implement policies that ensures a balance of low inflation environment and a developed financial sector in order to sustainably ensure FDI inflows.

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## 8. Appendix Section

	FDI	INFL	GROWTH	FIN	OPEN	POP	UNEMPL
FDI	1.00						
INFL	-0.0547	1.00					
GROWTH	0.2477***	-0.0781	1.00				
FIN	-0.0021	0.0656	0.6003***	1.00			
OPEN	0.2560***	0.0038	0.6567***	0.3026***	1.00		
POP	0.0579	-0.0633	-0.5868***	-0.6245***	-0.5946***	1.00	
UNEMPL	0.0112	-0.0779	0.0044	0.0233	0.0359	-0.0960	1.00

Source: Author compilation from E-Views

Note: \*\*\*/\*\*/\* denotes statistical significance at the 1%/5%/10% level respectively.

**Table 4. Descriptive statistics**

	FDI	INFL	GROWTH	FIN	OPEN	POP	UNEMPL
Mean	4.73	323.99	2906.5	3.41	38.91	1.97	12.78
Median	2.91	7.21	1129	3.34	31.87	2.01	7.45
Maximum	54.1	36012	15687	5.26	107.99	3.52	37.6
Minimum	0.01	0.01	142.3	0.53	10.2	0.01	1.30
Standard. deviation	6.68	3068	3395	1.06	20.75	0.93	9.70
Skewness	4.09	10.36	1.47	-0.04	1.09	-0.32	0.47
Kurtosis	24.7	111.6	4.68	2.21	3.63	1.86	1.60
Jarque-Bera	4498	101903	95.4	5.24	42.58	14.30	23.85
Probability	0.00	0.00	0.00	0.07	0.00	0.00	0.00
Observations	200	200	200	200	200	200	200

Source: Author compilation from E-Views

**Table 5. Panel unit root tests –No Trend and Intercept**

	Level				First difference			
	LLC	IPS	ADF	PP	LLC	IPS	ADF	PP
FDI	-1.9535**	-	57.08***	95.47***	-12.8728***	-	166.022***	180.71***
INFL	-2.6933***	-	43.1812***	49.375***	-13.2253***	-	159.135***	184.651***
GROWTH	4.1812	-	2.0935	1.2017	-7.7968***	-	87.5228***	126.463***
FIN	1.5338	-	8.9311	10.5471	-8.1147***	-	93.7077***	175.795***
OPEN	-0.3255	-	8.8225	10.1168	-10.4504***	-	132.285***	168.692***
POP	-1.4506*	-	48.7196***	40.4534***	-7.7513***	-	106.951***	120.33***
UNEMPL	0.6997	-	11.9136	13.1281	-9.4378***	-	115.093***	174.389***

Source: Author's compilation from E-Views

Note: LLC, IPS, ADF and PP stands for Levin, Lin and Chu; Im, Pesaran and Shin; ADF Fisher Chi Square and PP Fisher Chi Square tests respectively. \*, \*\* and \*\*\* denote 1%, 5% and 10% levels of significance, respectively.

**Table 6. Johansen Fisher Panel Co-integration test**

Hypothesised No. of CE(s)	Fisher Statistic (from trace test)	Probability	Fisher Statistic (from max-eigen test)	Probability
None	13.86	0.8374	13.86	0.8374
At most 1	9.70	0.9732	64.97	0.0000
At most 2	2.77	1.0000	150.1	0.0000
At most 3	184.2	0.0000	184.2	0.0000
At most 4	238.8	0.0000	188.3	0.0000
At most 5	91.47	0.0000	74.46	0.0000
At most 6	52.17	0.0001	52.17	0.0001

Source: Author's compilation from E-Views