Does foreign direct investment lead or lag employment ? an ARDL approach

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Does foreign direct investment lead or lag employment ? an ARDL approach

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Abstract

The aim of the paper is to investigate and analyse the short-run and long-run relationship between employment levels and foreign direct investment(FDI) using the ARDL approach in South Africa. The South African economy is designed in a way that it endorses FDI inflow for all sectors of the economy to ensure growth and creation of jobs, like all other free market economies. The primary focus was to ascertain if FDI influx contributes to employment creation in the perimeters of the South African economy. The results from the ARDL utilising error correction model and variance decomposition suggest that FDI has an insignificant negative relationship with unemployment rate in the of South African context. The interesting inference from the results is that inflation rate is the most exogenous variable, clearly indicating that the authorities should look at inflation (not FDI) in order to enhance employment creation since employment is driven by inflation and followed by FDI. The study would thus recommend that the authorities should better manage the inflation rate as the South African Reserve Bank already employs inflation targeting.

Keywords: Employment levels, Foreign Direct Investment, inflation, ARDL, South Africa

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1. Introduction

The republic of South Africa is facing multiple and serious challenges, one of which is the high unemployment rate, poverty and inequality. The growth of any nation is fueled by investment; hence it needs to be prioritized in an emerging market like South Africa. The amount of advance that can be played by foreign direct investment (FDI) in a country economy is substantial. They have been numerous policies put forward by the government and have been reviewed time after time, throughout the last 20 years to tackle unemployment, poverty and inequality. The extent of ground covered by these policies to enhance the economy of South Africa leaves a lot to be desired as the unemployment rate remains after two decades of freedom. Foreign direct investment in international economics has been a debated subject. As asserted by Chinyelu (2014) FDI is the flow of capital coming from investors nation to that of the outside county enterprise, that operates, and investment will be placed.

There are numerous studies that have been carried out that point to the role played by FDI to promote economic growth and employment creation as vital part of the South African economy. The more general view from economics is that inward FDI promotes growth and boosts employment creation the nation of host. It has been established that FDI tends to be favourable in developing nations when dealing with employment creation and/or possess good effects (Carp,2012; Tshepo 2014; Chinyelu, 2004; Huang & Ren, 2013 and Mpanju, 2012. On the other hand (Wei,2013 and Onimisi,2014; Jenkins, 2006; Pinn et al.,2011) amongst others, institute that there is an inverse relationship between FDI and employments levels. Furthermore, other scholars amid others advocate the notion of FDI impacting on employment and economic growth may vary across dissimilar economic sectors where the investment is directed more by investors (Okoro & Johnson, 2014; Wei 2013; Inekwe,2013).

According (J.P Pradhan, 2000) a foreigner can either procure an existing company through acquisition or by completely instituting a new venture into a host country. The form of FDI for entry one which is acquiring an existing entity is called brownfield FDI and thee second form of entry which is establishing a new company is called greenfield FDI. Host countries should strategize into attracting greenfield FDI as oppose to brownfield FDI, as greenfield FDI is considered high quality FDI, for reasons like technological knowledge transfer, and knowledge transfer in enhancing skills. Greenfield FDI is likely to bring more favourable employment creation to a host country as compared to brownfield FDI. There has been an increase in brownfield FDI in developing countries and they has been an increase in greenfield FDI in developing nations (Krugman, 2015).

South Africa has been attracting inward FDI from as early as the first period of globalization in 1870-1914, primarily from England (Dominic, 2014). In the past two decades, they have

been evidence of FDI growing sharply. Several authours have noted this phenomenon from the 1980s (Lalt, 1983; Page 1988; Aykut and Ratha, 2003; and UNCTAD, 2004). The flow of FDI inflow in South Africa gas increased compared to other emerging markets overtime. The inflow rests low besides the exceptional tears of 1997, 2001, 2005, and 2010. By hierarchy the divisions that have benefited mostly are, mining sector, service sector, and manufacturing sector. The bulk of FDI inflows into South Africa are from Europe, the United States and Asia. On the other hand, sectorial analysis indicates that the financial service sector gets the majority of inward FDI in South Africa. A shift is perceived as FDI motives are moving more towards FDI markets as oppose to natural resources seeking FDI. They must be diversified inward FDI in South Africa to attract more and quality FDI inflows.

The crucial aspect of FDI can never be overstated as it supplements low domestic savings and delivers considerable portions of the underperformance in investment required to finance economic advancement and expansion. While they are serious dynamics that discourage FDI, high degree of political volatility, fear of policy reversal, high transaction cost, hostile policy framework, high-perceived risk and civil strife and political instability. The mechanisms that can be utilized to drawing more and quality FDI are; steady economic growth, political stability, high returns on investment and attractive and profitable locations for FDI.

The rest of the paper will be organized as follows, section two will cover objective of the study, question of the study and contribution of the study. Section three reviews the theoretical and empirical related literature. Section 4 will focus data and methodology. It will be followed by discussion and dissect empirical results in section 5. The last section will cover the conclusion and the possible policy implications.

2. Objective of the study

The primary purpose of this study is to examine the long run relationship between FDI and unemployment rate in South Africa utilising time and the ARDL approach.

2.1 The question of the study

What is the affiliation between FDI and unemployment rate in South Africa as traces of FDI back to 1870s?

What would be the effect of this correlation on the South African?

2.3 The contribution of the paper

The paper will long at the short and long run which has not been covered in the aspect of FDI and employment levels effects in South Africa.

3. Literature Review

3.1 Theoretical literature review

It is evident that studies carried out in the past utilize numerous methods to investigate as to whether FDI and unemployment are related. A recent study by Cezanne Samuels (2013) points out there is a need to be an investigation the characteristics of corporate FDI in South Africa. She also notes that this will give clear and comprehensive indication on the type of investment the country attracts, and further provide a strong understanding as to what type and kind of investment contributes best in obtaining policies and economic goals of South Africa. The study needs to be carried out on the context of Industrial Policy Action Plan (IPAP), as these areas have been stimulating economic development in South Africa.

The complexity of foreign direct investment is long in South Africa and dates as back far as the 19th century, during the establishment of the Britain colony. On the other hand, Gelb and Black (2004) reveal that FDI has been poor and disappointing in terms of quantitative. In the period of 1990 to 1993, the inflows totaled an average of US$ 46 million per annum. In 1994 there was a rise in inflows after the transition, the average was US$ 1.861 billion per annum until 2002 (UNCTAD). With this being equivalent to a per capita of US$ 41(based on 2001 population), that being 1.4% per capita income in South Africa. When comparing, the average of FDI entering developing countries together was US$ 40.42, that being the same 3.5% per capita income.

As well, in (2007) Pournarakies and Axarloglou scrutinize the impact of FDI inflow across the local sectors in some states on the United States from 1974-1994 on the role FDI plays on local employment. It was evident that the \is variations amongst the industries from the sampled states. Whereas FDI inflow observed positive outlook on some industries in employment, like the subgroups of equipment transportation & instrument, printing & publishing, negative outlook where evident on some subgroup industries like clay, glass and leather. The results of Onaran (2008) reveal that in the manufacturing sector the effect of FDI influx on unemployment were insignificant on unemployment in Central and Eastern European, let alone undesirable.

3.2 Empirical literature review

In the case of South Africa, as outlined by Sandery (2013), reveal that the inward investment of FDI went up. As from 1997 the stock went up from R81, 000million to R1, 016 000 in 2010. The Europeans were dominant as a source of the inward FDI, namely the United Kingdom (UK), Germany, Netherlands, and Switzerland, with all in the top five stocks in 2010. A mouthful has been said about the role the Chinese play when it comes to inflow of FDI to South Africa. The fact is clear that the contribution of FDI is moderate, although increasing, when in comparison with the Europeans in particular. The OECD makes it apparent that FDI inflows have been decreasing in South Africa from 3, 3 percent of GDP in 2008 to 0.3 percent of GDP in 2010.

There is a positive relationship in the long-run between FDI and employment creation, owing to the inward flow of FDI, more employment opportunities are available as studies conducted by (Malik and Sarwar,2007; Hisarciklar, 2013) utilizing the Co-integration approach. Contrary to that other studies reveal that there is a negative relationship between FDI inflows and employment as discovered by (Craigwell, 2006; Chancy, 2007; Habish and Sarwar, 2013; Ogwemike and Ozoghaln, 2013; Zureck (2011) and Grocer, 2013). Furthermore, in contrast to these views other researchers hypothesizes that there was not necessarily a relationship between inward FDI and employment (Rizvi and Nishat, 2009; Aktar and Ozturk, 2009; and Salami and Oyewale, 2013).

Mehra (2013) concluded that there was they was no positive relationship between FDI and employment in India using the multi-regression analysis. This was because India consist mainly of three dominant sectors which are primary/agriculture sector, secondary/industry sector and tertiary/service sector. On the hand, different results have emanated with regards to FDI and unemployment. In a business set-up, while an argument that foreign investors tend to employ people from their countries for the process of applying strategic innovation, with that leading to employment of the skilled workers in the host nation(ASAFO-ADJET,2007).

As pointed out by Mabanga (2006), the bulk of the deals that were once-off, point in case the Vodafone-Venfin and Barclays-Absa. The UNCTAD "World Investment Report" showed that South Africa attracted $6 billion in 2005, which was a surge from the $8 million in 2004. In the year 2001 there was significant FDI inflow as the deal between Anglo and De Beers transpired. Noticeably the years that never witnessed any massive deals, the FDI levels were very moderate. It had been confirmed by then Head of economics in the presidency Han Hirsch that South Africa has grown to be indifferent to FDI.

4.Methodology

This section will outlay the methodology and detail the procedure that is going to be utilised to investigate the relation between FDI and employment levels in the South African economy. The study employs annual time series data from 1980 to 2015. The data is secondary in nature and sources are the South African Reserve Bank(SARB) and International Monetary Fund(IMF). The study utilises Microfit software for the resolve examination od data and empirical analysis and estimation.

Table 1: List of Variables

Variables	**Definition**
UNEMP	Unemployment rate
FDI	Foreign Direct Investment Inflow
GDP	Growth Domestic Product
INFL	Inflation
FCE	Final consumption expenditure

The first requirement for the study to conduct is to see whether the are in stationary form or not. This was resolved by conduction the Phillip Perron test to ensure that the variables are in stationary form. The study did not find any cointegration between the variables using the Engel-Granger and Johansen multivariate cointegration test. The difference between the Engel-Granger and the Johansen is that Engel-Granger can only identify one cointegration and uses residual approach. Whereas, the Johansen can identify more than one cointegration using maximum likelihood. Both these tests (Engel-Granger and Johansen) did not display any cointegration and that lead one to apply the ARDL approach. The ARDL employed in this study is the approach formed by Pesaran, Shin, and Smith (2001) that will examine as to whether they is dynamic long run relation between the study variables, which are unemployment rate, foreign direct investment, gross domestic product, inflation and final consumption expenditure. The added value of ARDL is that it accounts simultaneously for both the short run and long run parameters are calculated and also ARDL method can be utilised irrespective of whether the integrated order of lags is I (0) or I (1) in the data.

4.1Empirical results and discussion

4.1.1 Unit root results

It is worth to note that the null hypothesis for the Phillip-Perron (PP)test is that the variable is non-stationary. In all except for FDI, the variables in level form, the test statistic is lower than the critical value and hence we can't reject the null. Conversely, in all cases of the variable in differenced form, the test statistic is higher than the critical value and thus we can reject the null and conclude that the variable is stationary (in its differenced form). The results are as expected with FDI being an exception in log form where the variable is already stationary.

Table 2: PP Results

	Variable	T-Stat	C.V.	Result		Variable	T-Stat	C.V.	Result
Log Form	LUNEMP	-2.5245	-3.5664	NS	Differenced Form	LUNEMP	-5.4499	-2.8811	S
	LFDI	-7.1844	-3.5664	S		LFDI	-21.088	-2.8811	S
	GDP	-1.4139	-3.5664	NS		GDP	-4.664	-2.8811	S
	INFL	-3.0417	-3.5664	NS		INFL	-7.8058	-2.8811	S
	FCE	-1.4743	-3.5664	NS		DFCE	-3.9491	-2.8811	S

4.1.2 VAR ORDER

It is worth to note that the study conducted the Akaike Information Criterion (AIC) and the Schwartz-Bayesian Criterion (SBC) to find out the lag order number at optimal through the test. The results reveal that both AIC and SBC are realised at 1 lag.

Table 3: PP Results

Order	AIC	SBC	p-Value	C.V.
1	102.478	88.3432	[.000]	0.05

4.1.3 F-TEST Long Run Relation.

Table 4: Cointegration Results

Models	**F-statistics**
FLUNEMP (LUNEMP | LFDI, LGDP, LINFL, LFCE)	0.64721
FLFDI (LFDI | LUNEMP, LGDP, LINFL, LFCE)	36.3701
FLGDP (LGDP| LUNEMP, LFDI, LINFL, LFCE)	0.96052
FLINFL (LINFL | LUNEMP, FDI, LGDP, LFCE)	1.3532
FLFCE (LFCE| LUNEMP, LFDI, LGDP, LINFL)	1.2739
F-stat- Lower bound: 2.649 Upper bound: 3.804 At 95%	

The test for cointegration is usually carried out to establish the long relationship equilibrium among the variables. The notion put forward by that the null hypothesis is applied is that they cointegration and alternative there is no cointegration in the variables. the F-statistic will depict to us as asserted by Pesaran et al (2001). The approach is that is our if our F- static is higher than the upper bound there is cointegration and when the F-statistic is beneath the lower bound they is no cointegration. Lastly when the F-statistic fall in between the lower and upper bound the F-static is found to be inconclusive. The ARDL bound test above in table 4 reveals FDI is the only variable that is cointegrated as it falls above the upper bound seating 36.3701, when it is made the dependent variable. The rest of the variables did not show any cointegration, these are unemployment rate(UNEMP), inflation(INFL), final consumption expenditure (FCE).

4.1.4 Results of Estimated Long-Run Coefficients using the ARDL Approach

Table 5: Coefficient Results

LONG RUN AIC					
	LUNEMP	LFDI	LGDP	LINFL	LFCE
K	Model 1	Model 2	Model 3	Model 4	Model 5
LUNEMP		-0.29366	-0.04644	-1.1263	-0.014696
LFDI	0.02445		-0.0034974	0.010995	0.0083193
LGDP	-3.4200	-43.1269		-0.45791	1.0541
LINFL	-0.16234	3.7921***	0.012625		-0.090292
LFCE	2.9399	43.3428	0.88691***	-0.11676	
INPT	12.2438	33.8001	2.3544	13.7711	-1.2704

*Significant at 10%
**Significant at 5%
***Significant at 1%

The study shows that they seem is to be no significant relationship between the unemployment rate and foreign direct investment. These results suggest that should FDI increase by a percentage, they would a decrease in unemployment level 0.02%. These results are in accordance with the "Jobless Growth" theory that was expressed by Ricardo (1821) asserting states that there is a negative relationship between investment, output expansion and job creation because capital investment is a perfect substitute for labour in the economy. There is a significant relationship between FDI and inflation rate inferring that a percentage increase in inflation will results in FDI to increase by 3.79%. They also seem a positive

relationship between final consumption expenditure and GDP. This would mean that should there be a percentage increase in final consumption expenditure will increase GDP by 0.88%. This clearly shows that the more households consume the is contribution GDP growth in the country.

4.1.5 Error Correction Model of ARDL

In the following table, the ECM's representation for the ARDL model is selected with AIC Criterion.

Table 6: ECM results

cm1(-1)	Coefficient	Standard Error	T-Ratio [Prob.]	Significance	C.V.	Result
DUNEMP	-0.28553	0.096909	-2.9464[.006]	significant	1%	Endogenous
DFDI	0.78236	0.16805	-4.6555[.001]	significant	1%	Endogenous
DGDP	-0.25758	0.11086	-2.3235[.027]	significant	5%	Endogenous
DINFL	-0.73138	0.19073	-3.8347[.241]	significant	1%	Exogenous
DFCE	-.22359	.10642	-2.1011[.044]	not significant	5%	Endogenous

The study alluded earlier that cointegration will inform us of whether they is a long-term relationship between the variables, however it falls short as it cannot reveal the endogeneity and exogeneity levels. To resolve this, the study will use error correlation model. We need to be mindful of the fact that they might be short-run deviation from the long-run equilibrium. The results above reveal that all variables are endogenous and only one is exogenous which is inflation at 1%. The exogenous variables would receive market shocks and convey the effects of those shocks to other variables. The extent of ECM is that it revels the extent of absolute endogeneity and exogeneity of variables, they however can not inform us of the relative endogeneity and exogeneity. Hence, the next step would be to proceed to variance decomposition as this will reveal relative endogeneity and exogeneity. The authorities have to be careful when handling variables that have great impact to the levels of unemployment, like inflation. The leading variable is inflation and the followers are unemployment rate, foreign direct investment, gross domestic product and final consumption expenditure.

4.1.6 Variance Decomposition

The main reason for the study to conduct Variance Decomposition (VDC) is to ascertain what will transpire when you shock one variable and the impact it will have on the other variables in the entire structure. VDC possesses the ability to measure the extent of forecast error variance in a variable which is then explained by impulse and or innovation in the system through other variables. Point in case, it will reveal as to what proportion of changes when a specific variable can be connected to variation in the other lagged variables. Thus, in a situation where a variable explains its own shock, for example it is considered exogenous, in other words it does not permit the variance of other variables to contribute to its explanation and hence it is referred to as relatively exogenous. The VDC has two forms, firstly it would be orthogonalized and followed by the generalised. The distinction between the two is that orthogonalized VDC is biased to the particular order of the variables in the variance and it further assumes that when a particular variable is being shocked, all other variables in the system are switched off. In the case of generalized VDC it does not depend on the ordering of the variables in the variance. Furthermore, generalized VDC does not assume that the other

variables are switched off. The advantage of generalized VDC is that it allows one to perform a robust correlation of the size, strength, and persistence of shocks from a single equation to another as asserted by Payne (2002), which enforces our reason to utilise the generalized VDC as oppose to employing orthogonalized VDC. The table 7 below the, we can witness that from 4-year horizon, inflation is the most exogenous one and whereas gross domestic product is the most endogenous variable. The standing of the results was constant till the 12-year horizon, were inflation retained it place as the most exogenous and gross domestic product also still the most endogenous. The sequence of effect of the variables will be inflation affecting unemployment, which in turn will impact on foreign direct investment. Then foreign direct investment will affect final consumption expenditure, which will lastly affect growth domestic product. These results indicate that inflation has an impact on levels of employment and it also has an impact on above-mentioned variables.

Table 7: Coefficient Results

Generalized								
	Horizon	DUNEMP	DFDI	DGDP	DINFL	DLTOP	total	Rank
DUNEMP	4	68.26%	5.08%	12.68%	2.35%	11.62%	100%	2
DFDI	4	4.04%	62.65%	14.40%	0.63%	18.29%	100%	3
DGDP	4	13.26%	5.58%	44.72%	3.81%	32.63%	100%	5
DINFL	4	3.12%	3.16%	7.36%	70.21%	16.15%	100%	1
DFCE	4	12.34%	10.43%	25.47%	3.67%	48.10%	100%	4

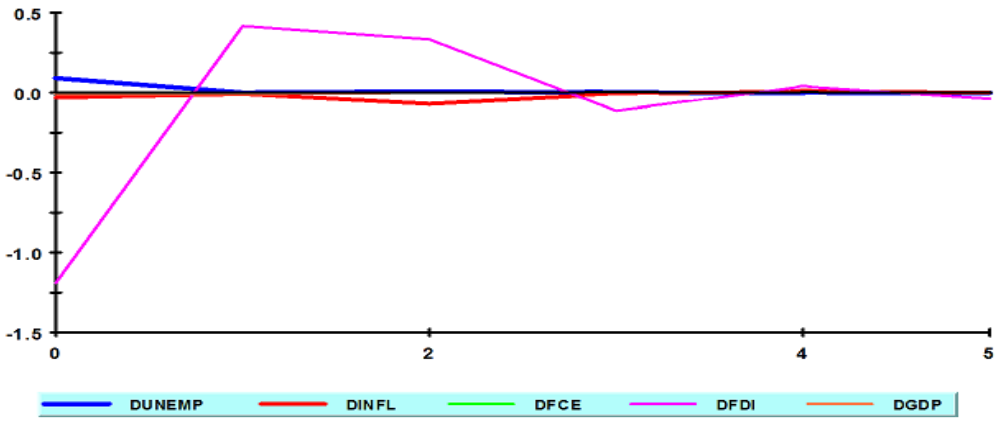
Generalized								
	Horizon	DUNEMP	DFDI	DGDP	DINFL	DLTOP	Total	Rank
DUNEMP	8	68.26%	5.08%	12.68%	2.35%	11.62%	100%	2
DFDI	8	4.03%	62.63%	14.42%	0.63%	18.29%	100%	3
DGDP	8	13.26%	5.58%	44.72%	3.81%	32.63%	100%	5
DINFL	8	3.12%	3.17%	7.36%	70.19%	16.15%	100%	1
DFCE	8	12.34%	10.43%	25.47%	3.67%	48.10%	100%	4

Generalized								
	Horizon	DUNEMP	DFDI	DGDP	DINFL	DLTOP	Total	Rank
DUNEMP	12	68.26%	5.08%	12.68%	2.35%	11.62%	100%	2
DFDI	12	4.03%	62.63%	14.42%	0.63%	18.29%	100%	3
DGDP	12	13.26%	5.58%	44.72%	3.81%	32.63%	100%	4
DINFL	12	3.12%	3.17%	7.36%	70.19%	16.15%	100%	1
DFCE	12	12.34%	10.43%	25.47%	3.67%	48.10%	100%	4

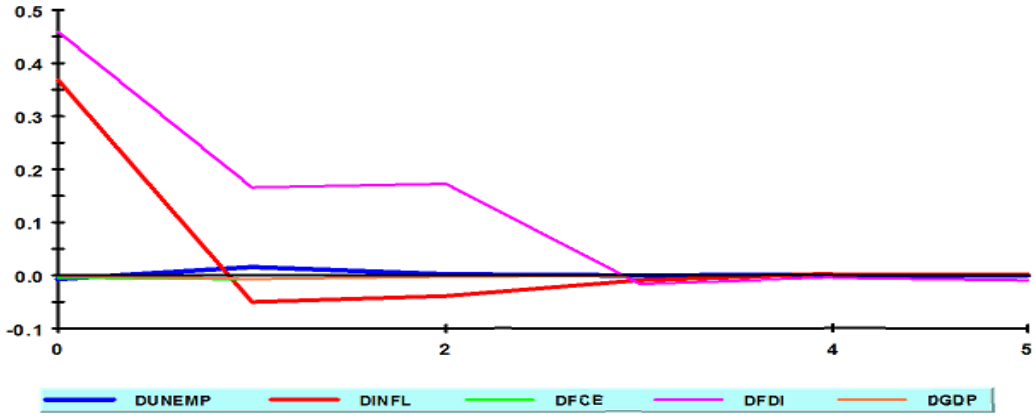
4.1.7 Impulse response Function

The impulse response will revel the same results at the ones we found in the VDC, however these will be presented in the graphical form. It becomes apparent that the generalised impulse response will to a great extent measure the response from an innovation to a variable. Form the observation of the graph, it is apparent that all the variables take seem to take on average three years in order to normalise following a “shock”. It is worthwhile to that that the shocks of other variables FDI fluctuates extremely. This reveals to us that our FDI is endogenous and will depend on other variables. The exogenous variables are less affected as seeing with inflation. The policy makers will need to make decision on employment levels based on inflation rate because changes in inflation will affect unemployment rate, as the leading variable is inflation rate.

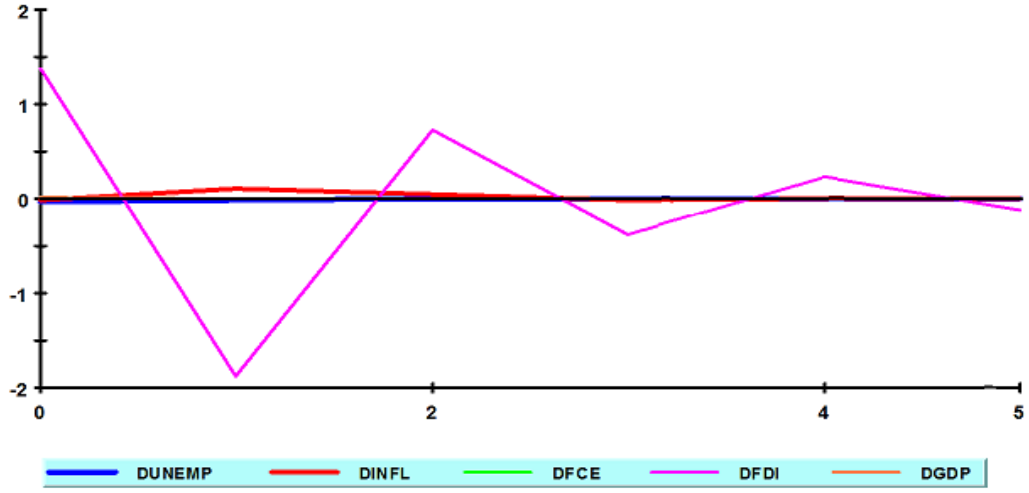
Generalised Impulse Responses to one SE shock in the equation for DUNEMP



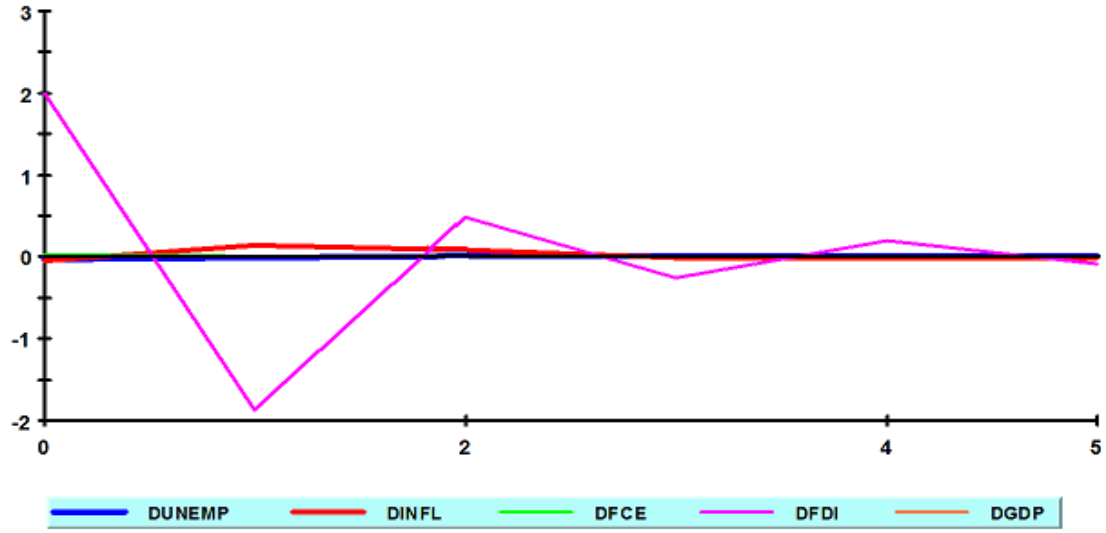
Generalised Impulse Responses to one SE shock in the equation for DINFL



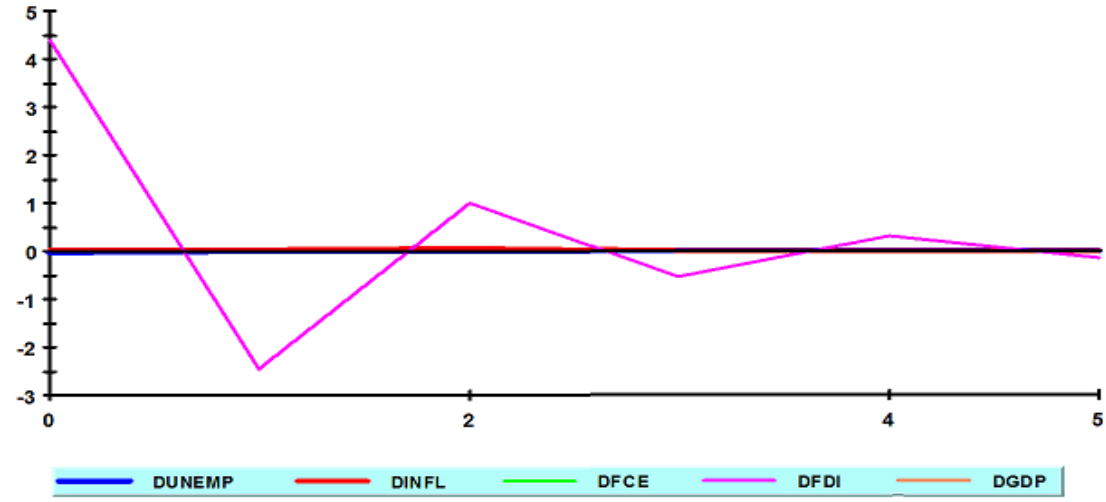
Generalised Impulse Responses to one SE shock in the equation for DGDP



Generalised Impulse Responses to one SE shock in the equation for DFCE

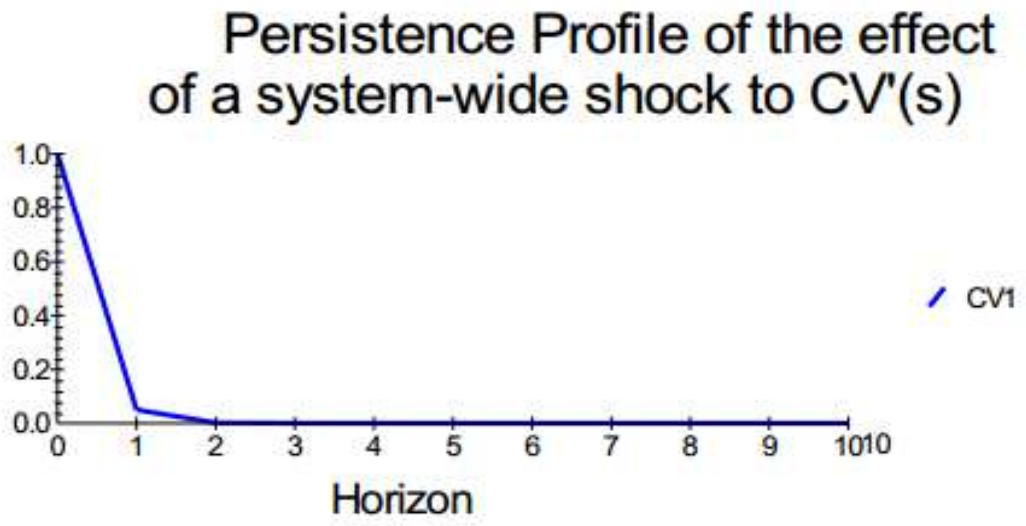


Generalised Impulse Responses to one SE shock in the equation for DFDI



4.1.8 Persistence Profile (PP)

The graphically representation below show the persistence profile from a wide system shock, meaning that we shock all the variables and see the time horizon required for them to get back to equilibrium. It is apparent from the graph below that it will approximately take around two years for the equilibrium to be established again.



5. Conclusion

The paper was set to establish the relationship between employment levels and FDI, using time series technique and ARDL to ensure study robustness, the data was extracted from the perspective of South Africa, from the year 1980-2015. The results revealed cointegration between the variables, and interesting factor was that inflation rate is exogenous variables were the rest of the variables found to be endogenous. The study reveals that FDI inflows, using the VECM and VDC will lead to a reduction in the employment levels. The notion is that as suggest by global research that FDI tends to be more of a capital-intensive more as opposed to being labour intensive, and a such will lead to domestic employment levels to be sacrificed (Fedderke & Room, 2004 and Pinn et al, 2011).

In the results revealed by the study it will be important for the policy makers ensure better care of the most exogenous variable as it has profound impact on the level of employment. The strategy to be employed by policy authorities is to make decisions of employment levels based on GDP. As the South African Reserve bank utilises inflation targeting, which is set to be between 3% to 6%, to ensure inflation does not become extreme as it has great impact to other variables. Future studies will have to look at what happens when inflation is in the range and when not in the range as that will have great effect on the employment levels.

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