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The Impact of Foreign Direct Investment [FDI] on Poverty Reduction in Nigeria

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Abstract
Many developing countries are competing to attract foreign direct investment with a belief that it can be a tool for poverty reduction because it serves as supplements to domestic savings and it is often accompanied with technology and managerial skills which are indispensable in economic development. Foreign direct investment can contribute in significant ways to breaking of growth – poverty vicious circle and there lies Nigerian hope. The Nigeria government has opened several economic sectors to foreign investors and issued several investment incentives. Since the market oriented economic reforms took place in Nigeria emphasis has been given to attracting FDI. In this study, the relationship between FDI and poverty reduction is analyzed empirically. It is based on secondary data which was collected from the central Bank of Nigeria and the World Bank's world development indicators. The period covered in the study is 1980-2012. The model was estimated using the Ordinary Least Square Estimation Approach. The results show that FDI has a positive but not significant impact on real per capita income and hence does have the potential of reducing poverty in the country. The insignificant impact on the Nigerian economy may be due to the under development of human capital, backward institutions, crowding out of domestic investment or other reasons which require further investigation, the fact that FDI does not have a significant impact on poverty reduction has an important implication for policy markers, especially trade and FDI policies must be checked in order to make FDI growth enhancing in Nigeria.

A: INTRODUCTION

The importance of foreign capital, most especially FDI, to developing countries cannot be over emphasized. It serves as a supplement to their domestically mobilized savings and it is often accompanied with technology and managerial skills which set the pace for economic development. Foreign direct investment (FDI) can contribute in various ways to economic development in developing nations, most importantly breaking the vicious circle of poverty. The trends of the flows of Foreign Direct Investment (FDI) globally and the distribution of its attendant effect across the regions of the world have been a subject of empirical decisions over the past decades (Akinmulegun, 2012). Several studies have provided evidence of upsurge and increasing degree of the international capital mobility among the developed and developing economies of the world.

Despite how desirable is the inflow of FDI to developing nations; many critics of this capital inflow also allege that multinational companies tend to locate production in countries or region with low wages, low taxes and weak environmental and social standards. They argue that FDI thus contributes to a ''**race to the bottom**'', where countries are forced to lower their standards so as not to lose investments and jobs. It is certainly true that these features of the business environment play a significant role in the decisions of multinationals. However, these items are all first part of the cost side of a business. In the end it is not cost that matter, but profit (Klein et al, 2001). Foreign investors balance cost considerations with others that determine the productivity of operations in a particular country. Overall, FDI flows to places where costs are lowest. This is reflected in the basic fact that about three-quarters of FDI flows to developed countries and not to low cost developing nations. It is the priority of investors to locate business where productivity is high, thus FDI will only flow into countries with low productivity when wages and other costs are low enough to offset the productivity disadvantage.

In actualizing the Millennium Declaration, which gave birth to the Millellium Development Goals [MDGs], which is essentially the top priority of the world leaders. The MDGs is made up of eight objectives to be reached by the end of 2015. The achievement of these Goals will contribute to improved human development and notable poverty reduction. Unfortunately, at present, most African countries are off-track on meeting these Goals and require significant levels of capital investment to help them to get back on track. In Nigeria for instance, it is discovered that there exist a wide gap between the domestically available supply of savings, investment, foreign exchange, government revenue, skills and the planned level of the resources necessary to achieve these development targets that will lead to poverty alleviation in the country. Thus, this gap necessitates the need for external resources to augment the domestic resources in the country; and a major source of this external resource

is Foreign Direct Investment (FDI). Hence, we are confronted with the following questions: Has FDI impacted on poverty reduction in Nigeria? Is there any significant relationship between FDI and the poverty level in Nigeria? Does FDI granger cause poverty in Nigeria and vice versa?

From the foregoing therefore, the general objective of this study is to assess the contribution of foreign direct investment to poverty reduction in Nigeria. However, the specific objectives include the investigation of the impact of FDI on poverty level in the country; the examination of the causal relationship that exists between FDI and poverty and to advance some policy recommendations that are expected to improve the contribution of FDI on poverty reduction in Nigeria.

This study has five sections. After the above introduction, section two provides a review of theoretical and empirical literature related to FDI and its linkage between with poverty and growth. The data types and sources, model specification and estimation techniques (i.e. the research methodology and theoretical framework) are discussed in the third section. Section four reports the results of the empirical analysis; and section five presents the summary, conclusion, limitations of the study and policy recommendations.

B: LITERATURE REVIEW

Both FDI and poverty have motivated vast amounts of theoretical and empirical work. However, these streams of research have developed independently, with little effort to bring to the forefront any direct link between FDI and poverty; instead literatures have paid significant attention to the impact, on average, of FDI on economic growth as measured by GDP. While some recent efforts to bridge this gap do exist (Jalilian and Weiss, 2001; Nunnenkamp, 2004), the need for further research is all too obvious. This chapter deals with the review of some related literatures on this topic. It tries to survey the findings of some scholars, researchers and writers. Majorly, this section is divided into two major subheadings: theoretical & empirical review.

Theoretical Review

Economic theories attempt to explain the conditions that are necessary for growth to occur, and weigh up the relative importance of particular conditions. It has usually been characterized by an aggregate production function, which describes the technological relations between various inputs and outputs.

There are different schools of thought that have discussed the causes of growth and development and they are:

Various economic theories have been put forward to explain the key determinants of economic growth and how such growth translates to development. Robert Solow around 19th century explained that a sustained increase in capital investments will increase growth rate temporarily and this also explain the variation in growth rates among countries.

Lucas and Romer in 1980s attempt to get away from conventional Solow-Swan postulation that the long term capital increase growth arises from exogenous technical progress. They held that improvements in productivity can be attributed directly to a faster pace of innovation and extra investment in human capital. They stressed the need for government and private sector institution to encourage innovation and provide incentives for individual and business to be inventive.

In the late 80s, Harrods and Domar also theorized that economic growth is achieved when more investment leads to more growth. Investment according to the model generates income and also augments the productive capacity of the economy by increasing capital stock.

However, the various theories mentioned above only explain what influences growth without further explaining how such growth will contribute to improvement in the standard of living of the people. Thus, Eaton (1989) carried out an exhaustive review of some theories which he tagged “theories of development assistance”. He uses these theories to explain how foreign transfers affect the macroeconomic variables in the recipient countries. Some of those theories related to this study are: the static trade models; the two-gap model; and the optimization models. The *two-gap approach* introduces the assumption that an imported commodity not produced domestically is essential for the production of investment goods. If the availability of foreign exchange to purchase these imported capital goods constrains the growth of the economy, the growth would be *exogenous*, since it depends on foreign investment goods and technology. McKinnon (1964), Chenery, et al (1966), Findlay (1973).

Empirical Review

Empirical evidence regarding what impact FDI has had on poverty reduction in developing countries is limited, only a few studies tried to analyze empirically this relationship. However, an expanding empirical literature exists on the *growth*-elasticity of poverty. Thus, this sub-section focus on reviewing empirical literatures that link FDI to economic growth, growth to poverty reduction and FDI to poverty reduction. To do this, only current literatures will be considered, specifically from 2000 to date.

Burnside et al (2000) estimated a model using a panel data of 56 countries. They used the TSLS method to estimate simultaneous equations model for growth, aid, and policy. By making identifying assumptions about the exogenous determinants of aid, policy and growth, they found that foreign aid had a robust positive impact on economic growth in a good policy environment. When they entered foreign aid directly into their model, it was

not significant. However, it was significant when interacted with the policy index. Foreign aid was found skewed towards poorly growing countries when interacted with population and donor interest variables.

Hansen and Tarp (2001) examined the relationship between foreign aid and growth in per capita GNP. The average rate of growth of GDP of 56 countries covering the period 1974-1993 was regressed on several policy and institutional control variables and foreign aid. Their results showed that foreign aid in all likelihood increased the growth rate, and this was not conditional on "good" policy (as suggested by Burnside and Dollar, 2000). They however, found decreasing returns to foreign aid, and the estimated effectiveness of foreign aid was highly sensitive to the choice of estimator and the set of control variables.

Kim and Bang (2008) carried out a study to examine the long-run and the short-run relationships between foreign direct investment and economic growth in Ireland. Using an augmented aggregate production function growth model and bounds testing approach to cointegration, the results indicate that foreign capital (FDI), domestic capital, and trade are statistically significant in both the long-run and the short-run, having positive effects on economic growth in Ireland. The causality analysis also suggests that there is a bi-directional Granger causality between GDP and FDI, and thus, they conclude that the FDI-led growth hypothesis is valid for the Irish economy.

In a more recent study, Remla (2012) conducted a study aimed at identifying the impact of foreign direct investment on poverty reduction and whether there exists a causal relationship between FDI and economic growth and poverty reduction in Ethiopia. The study was based on time series data which were collected from secondary sources and cover the period from 1970-2009. Cointegration and Vector Error Correction approaches have been applied for the growth model. Estimated results reveal that real per capita GDP responds negatively to FDI in the long run in Ethiopia. He pointed out that it may be a result of profit repatriation of foreign firms, crowding out of domestic investment because of FDI or low level of human capital in the country. However, in the short run, FDI was found to be insignificant in explaining real per capita GDP.

When we come to Nigeria, there is a dearth of empirical literatures linking FDI to Poverty reduction. However, Adeolu (2007) conducted a study to explore empirically the relationship between FDI and GDP growth in Nigeria and also to ascertain the long-run sustainability of the FDI-induced growth process. Using the ordinary Least Square estimation technique and an augmented Solow production function, his results revealed that FDI in Nigeria induces the nation's economic growth. Although the overall effect of FDI on the whole economy may not be significant, the components of FDI positively affect economic growth and therefore FDI needs to be encouraged.

Omorogbe et al (2007) also conducted a similar study to investigate the impact of FDI on poverty reduction in Nigeria. Using per capita GDP as a proxy for poverty and an ordinary least square regression method, their findings revealed a satisfactory performance of FDI on per capita GDP in Nigeria.

C: THEORETICAL FRAMEWORK AND METHODOLOGY

This section discusses the method and procedures employed in carrying out the research. It contains the procedures of collecting and analyzing data. Generally, specification of economic model is based on economic theory and on the available data relating to the study. Thus, the two-gap model was employed as a theoretical framework in this study to analyze the impact of FDI on poverty reduction in Nigeria.

The theoretical framework of analysis adopted in this study is the TWO GAP MODEL. The two-gap model is an extension of the Harrod-Domar growth model. The theory purports that investment and development are restricted by level of either domestic saving or import purchase capacity. It is rooted in the works of Domar (1939), Harrod (1946, 1947), and Chenery et al, 1966). The Two-Gap model is the precursor and foundation of more elaborated growth models (starting from Solow-Swan, leading to modern endogenous growth models). According to the model, in the absence of any external or internal financing sources, such as borrowing or aid, supply and demand side of the economy should be in equilibrium. Thus, if countries are left to their own devices, particularly poor ones, attaining equilibrium is certainly a simple matter of necessity, but with a huge price. Economic stagnation, or even economic regression, may arise. This is where Chenery, et al (1966) brought in foreign capital as a vehicle to support a certain target growth rate.

The vicious circle of poverty is perpetuated by the lack of capital. The way to break the cycle is to increase savings and therefore increase capital stock which will lead to increased productivity and higher income. With higher income, the vicious cycle will be broken.

Model Specification

The specification of the model in this study takes a lead in the models specified in the works of Omorogbe et al (2007) and Remla (2012). Specifically, Omorogbe et al (2007) and Remla (2012) investigated the impact of FDI on poverty reduction in Nigeria and Ethiopia respectively. Their complete specification is modified in this study as follows:

The functional form of the model can be specified as follows:

RPGDPt = *f (OPEN, GFCF, GOVSIZE , INFR, INFL,UNEMP, HUMCAP, FDI)*

The econometric form of the model can be expressed as:
$PCGDP_t = \beta_0 + \beta_1 OPEN_t + \beta_2 GFCF_t + \beta_3 GOVSIZE_t + \beta_4 INFR_t + \beta_5 FDI_t + \beta_6 UNEMP_t + \beta_7 INFL_t + \beta_8 HUMCAP_t + \mu$
Where: RPGDP = Real per Capital Gross Domestic Product; GFC = Gross Fixed Capital Formation; GOVSIZE = Government Size; OPEN=Trade openness; HUMCAP= Human Capital; INFR =Infrastructure; INFL =Inflation; UNEMP =Unemployment; FDI =Foreign Direct Investment; and μ = the stochastic error term.
In order to develop strong, robust and reliable estimate of the parameters above, the Ordinary Least Square (OLS) estimation technique is adopted and it is upon this model that statistical and econometric test such as stationarity, co-integration, granger causality test, post estimation diagnostic tests, as well as the error correction mechanism will be carried out.

D: MODEL ESTIMATION AND INTERPRETATION OF RESULTS

Stationarity Test: Regression of a non stationary time series data on another non stationary time series may cause a spurious regression or claptrap regression. That is, they may indicate a relationship between variables which does not exist. Since a spurious regression is not desirable, thus all the series are examined for stationarity using the ADF test and the result is summarized below:

Table 4.1: Augmented Dickey-Fuller (ADF) Unit Root Test

VARIABLES	LEVEL		1ST DIFFERENCE		I(d)
	Critical values	ADF-Test Statistics	Critical values	ADF-Test Statistics	Order of Integration
RPCGDP	-0.525990	-2.960411	-2.983598	-2.963972	I(1)
FDI	-0.236917	-2.957110	-7.437618	-2.960411	I(1)
OPEN	0.398044	-2.960411	-7.907684	-2.960411	I(1)
HUMCAP	-0.038218	-2.957110	-5.728605	-2.960411	I(1)
INFR	0.693233	-2.963972	-7.309503	-2.963972	I(1)
INFL	-2.020612	-2.957110	-3.231076	-2.960411	I(1)
GOVSIZE	0.230506	-2.957110	-6.499478	-2.960411	I(1)
UNEM	0.355274	-2.957110	-5.322812	-2.960411	I(1)
GFCF	1.65811	-2.991878	-3.867172	-2.998064	I(1)

The result above shows that all the variables are not stationary at the level but they all became stationary after taken their first difference.

Co-Integration Test: The stationarity test results presented previously indicate that all the variables are not level stationary. This suggests that regression based on the level variables may produce an unreliable outcome. However, the Granger representation theorem states that it is possible for non-stationary variables to produce a stationary relationship if they are co integrated. This would imply that there is a meaningful long run relationship among the variables. Thus, the presence and the number of such co-integrating relationships are checked using the trace and the maximum Eigen value methods.

Table 4.2: Johansen Co-integration Test Result

Hypothesized No. of CEs	Eigen value	Trace statistic		P-Values	Maximum Eigen value statistic		P-Values
		t-statistic	Critical value		t-statistic	Critical value	
None *	0.939128	292.0704	159.5297	0.0000	86.76827	52.36261	0.0000
At most 1 *	0.876502	205.3021	125.6154	0.0000	64.83756	46.23142	0.0002
At most 2 *	0.834984	140.4646	95.75366	0.0000	55.85305	40.07757	0.0004
At most 3 *	0.690808	84.61152	69.81889	0.0021	36.38755	33.87687	0.0245
At most 4 *	0.510226	48.22398	47.85613	0.0461	22.12815	27.58434	0.2139
At most 5	0.460143	26.09582	29.79707	0.1259	19.10999	21.13162	0.0937
At most 6	0.201761	6.985830	15.49471	0.5793	6.985757	14.26460	0.4908
At most 7	2.35E-06	7.29E-05	3.841466	0.9943	7.29E-05	3.841466	0.9943
*Trace test indicates 4 co- integrating eqn(s) & Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level*							
***Results are prepared on the basis of estimation conducted by authors on the basis of collected dataset with the help of E-views*							

We can see from the above table that the trace test suggests that there are four co-integrating equations while the maximum Eigen value test indicates that there are three co-integrating equations at the 0.05 level of significance.

Long Run Model:

Table 4.3: Summary of Estimated Long Run Model; Dependent variable: RPGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29.71939	18.29267	1.624661	0.1173
FDI	0.000301	0.000336	0.893490	0.3805
GFCF	0.061836	0.097558	0.633839	0.5322
GOVSIZE	-0.157415	0.054116	-2.908899	0.0068
INFL	-0.128709	0.131276	-0.980449	0.3366
INFR	0.022989	0.005202	4.419433	0.0002
OPPNNESS	8.63E-05	3.09E-05	2.793310	0.0101
HUMCAP	-0.616284	3.768193	-0.163549	0.8715
UEMP	-1.055944	1.248889	-0.845507	0.4062
R-squared 0967424		**F-statistic 89.09272**		
Adjusted R-squared 0.956566		**Prob(F-statistic) 0.000000**		
Durbin-Watson stat 2.018941				
**Results are prepared on the basis of estimation conducted by authors on the basis of collected dataset with the help of E-views*				

We can rewrite the long run equilibrium equation as follows:

*PCRGDP = 29.7193938076 + 0.00030053999849*FDI + 0.0618360314195*GFCF - 0.157415326372*GOVSIZE - 0.12870946497*INFL + 0.0229890049832*INFR + 8.62503315116e-05*OPPNNESS - 0.616284165082*TER - 1.05594417072*UEMP +μ*

The above result shows that the long run impact of FDI on real per capita GDP is found positive but not significant. This implies that it has little impact on real GDP in the long run. Similar results have been found from other studies; Omorogbe et al. (2007) found a positive but insignificant relationship between the two variables. Blomstrom et al.(1994), also reported that FDI exerts a positive effect on economic growth. On the other hand, Falki (2009),Akinlo (2004); Carkovic and Levine (2002), found a negative and insignificant relationship by studying the effect of FDI on growth in Pakistan, Nigeria and Latin America respectively.

Short Run Relationships:

Table 4 shows the results of the *DRPCGDPI* equation in the error-correction model, from which the short-run impact of FDI, openness, infrastructure, human capital, inflation, unemployment, gross fixed capital formation and government size on real per capita GDP can be analyzed.

Table 4: Summary of Estimated Short Run Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.608411	2.343859	1.112870	0.2783
DFDI	0.000256	0.000157	1.631199	0.1178
DGFCF	0.082337	0.049956	1.648176	0.1142
DGOVSIZE	-0.098784	0.052223	-1.891579	0.0724
DINFL	0.012272	0.003764	3.259911	0.0037
DINFR	-0.282095	0.068637	-4.109980	0.0005
DOPPN	4.32E-05	1.50E-05	2.882765	0.0089
DHUMCAP	0.341092	2.815755	0.121137	0.9047
DUEMP	-0.206146	0.837834	-0.246047	0.8080
ECM(-1)	-0.331591	0.122792	-2.700430	0.0138
R-squared 0.738874		**F-statistic 6.602342**		
Adjusted R-squared 0.626963		**Prob(F-statistic) 0.000183**		
Durbin-Watson stat		**1.653280**		
**Results are prepared on the basis of estimation conducted by authors on the basis of collected dataset with the help of E-views*				

The coefficient of the error correction term for the equation is negative and significant as expected. This tells us that there is a reasonable adjustment towards the long run steady state. This guarantees that although the actual real per capita GDP may temporarily deviate from its long-run equilibrium value, it would gradually converge to its equilibrium. The error correction term of -0.331591shows that about 33.2 percent of the deviation of the actual real per capita GDP from its equilibrium value is eliminated every year; hence, full adjustment would require a period of about three years. As reveal above, FDI is insignificant in the short run model indicating that it does not have a major impact on real per capita GDP in the short run, just like in the long run.

Granger Causality Tests: According to (Axarloglou, 2007), causality in econometrics is somewhat different to the concept in everyday use; it refers more to the ability of one variable to predict (and therefore cause) the other. In order to investigate the mixed reaction as to whether FDI influences poverty reduction or the allegation that

multinationals situate their investment in a country where there is high level of poverty with the intention to exploit the people further; the granger causality test is conducted to investigate this claim on the Nigerian economy.

Null Hypothesis	Obs	F-Statistic	Prob.
FDI does not Granger Cause RCPGDP	31	1.10415	0.3465
RCPGDP does not Granger Cause FDI		1.35690	0.2751

Since our probability in the two hypotheses above is greater than 0.05, it indicates that there is no causal relationship between FDI and real per capita GDP in Nigeria. This literarily means that the level of poverty in Nigeria does not have any influence on foreign capital flown, in form of FDI, into the country as claimed by the antagonist of foreign direct investment.

Post estimation diagnostic test: We have also tested for autocorrelation, normality and heteroscedasticity and the results are reported in the Appendix. With a Durbin-Watson Statistic of 2.0, it implies that the model is free from serial correlation. The alternative test to check the problem of autocorreltion, such as the LM test and the Correlogram test also indicate that the model is free from autocorrelation problem while White test for heteroscedasticity fails to reject the null hypothesis of homoskedastic variance.

E: CONCLUSION

This study aimed at identifying the impact of foreign direct investment on poverty reduction and whether there exists a causal relationship between FDI and poverty reduction in Nigeria. The study was based on time series data which were collected from secondary sources and cover the period from 1980-2012.the OLS estimation technique has been applied to estimate the mode and Co integration as well as Error Correction mechanism test were also carried out. Estimation results reveal that FDI responds positively to real per capita GDP both in the long run and short run but with no effect. Thus, we concluded that this may be a result of profit repatriation of foreign firms, crowding out of domestic investment because of FDI or low level of human capital in the country.

Despite how desirable the inflow of FDI is to developing countries, care should be taken when attracting foreign investments and they should be directed to the productive sectors of the economy. Also government should create a competitive environment so as to maximize the benefits of FDI because by exposing foreign investors to an even playing field with indigenous investors, this will enable domestic companies to upgrade their management and technology. Finally, the revenue fortune accruable to federal government by way of taxes paid by foreign investors should be directed to productive activities in the real sectors of the economy, especially agriculture.

It is expository from this study that the economic benefits of FDI are real and numerous. FDI can assist a country like Nigeria to achieve the higher growth rates that generally emanate from a faster pace of gross fixed capital formation which in turn brings about improvement in real per capita GDP and reduces poverty level in the country.

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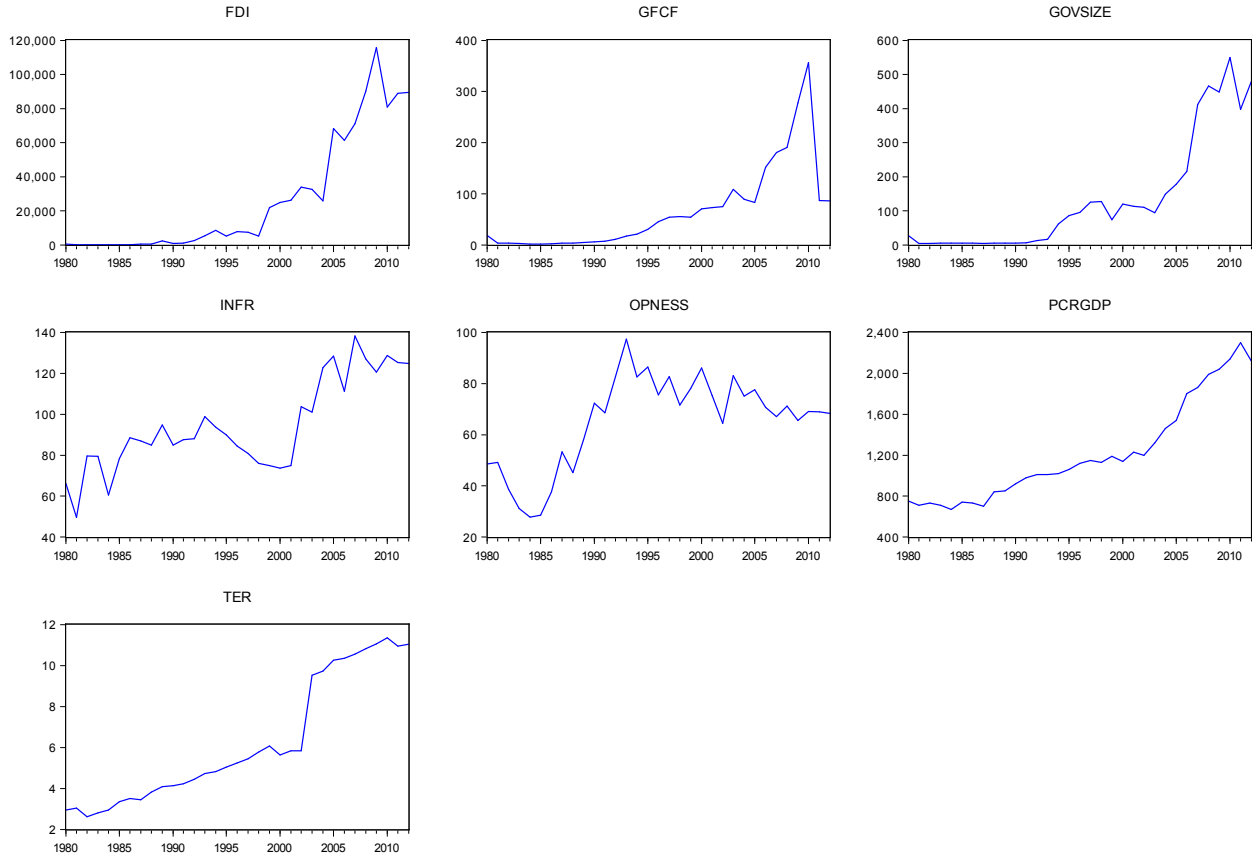
APPENDICES

Appendix A: Time Series Plots

YEAR	FDI	GFCF	GOVSIZE	INFR	OPNESS	PCRGDP	TER
1980	328.3769	18.21678	27.07231	66.14742	48.57131	750.0	2.950000
1981	56.90622	3.134102	3.695675	49.48188	49.11076	710.0	3.044000
1982	51.07532	3.022421	4.209775	79.63715	38.65359	730.0	2.610000
1983	54.88540	2.773432	4.789482	79.51193	31.14045	710.0	2.800000
1984	30.03368	1.899108	4.608321	60.40034	27.80373	670.0	2.950000
1985	85.27087	1.728939	4.657463	78.33044	28.53790	740.0	3.350000
1986	74.86963	2.176917	4.575630	88.52172	37.59273	730.0	3.510000
1987	479.1180	2.974237	3.937565	87.01482	53.28098	700.0	3.440000
1988	314.0869	3.210910	5.144258	84.94435	45.14848	840.0	3.810000
1989	2370.975	4.566679	5.256500	94.67748	57.85016	850.0	4.080000
1990	713.5180	6.058311	5.224216	84.99052	72.24051	920.0	4.130000
1991	1074.666	6.879536	5.993240	87.52213	68.55252	980.0	4.220000
1992	2440.611	11.14199	12.20314	88.04744	82.73972	1010.0	4.450000
1993	5289.291	17.27906	17.02723	98.74055	97.32115	1010.0	4.720000
1994	8515.207	20.96557	61.59697	93.64127	82.51749	1020.0	4.810000
1995	5036.338	30.25938	86.25838	89.76983	86.47216	1060.0	5.040000
1996	7788.290	45.56846	95.45151	84.41789	75.58982	1120.0	5.240000
1997	7318.083	54.06163	125.0831	80.71574	82.70230	1150.0	5.450000
1998	5247.413	55.24773	126.5873	75.88358	71.59202	1130.0	5.780000
1999	21751.85	54.09683	74.08848	74.81098	78.03021	1190.0	6.070000
2000	24755.49	70.39936	119.5543	73.64466	86.00481	1140.0	5.635000
2001	26171.74	73.07319	112.9162	74.78806	75.28294	1230.0	5.828333
2002	33754.01	74.39796	110.4085	103.6644	64.42089	1200.0	5.828333
2003	32648.13	108.9750	94.33696	101.0317	83.14267	1320.0	9.530000
2004	25844.69	89.15768	148.9490	122.6545	75.00881	1460.0	9.730000
2005	68194.17	83.31289	178.5100	128.4406	77.58412	1540.0	10.26000
2006	61318.55	151.8437	215.4005	111.1282	70.59714	1800.0	10.35000
2007	71000.85	180.9187	411.2882	138.3314	66.95937	1860.0	10.56000
2008	90215.69	190.3706	466.2508	126.9101	71.16845	1990.0	10.83000
2009	115843.2	277.1898	448.1695	120.5077	65.61129	2040.0	11.05000
2010	80800.21	356.2140	549.4983	128.5830	69.14128	2140.0	11.35000
2011	88939.03	86.76817	397.5386	125.3336	68.88903	2300.0	10.94750
2012	89518.69	86.10467	480.2964	124.8081	68.35388	2117.5	11.04438



Appendix B: Correlation Matrix

	FDI	GFCF	GOVSIZE	INFR	OPNESS	PCRGDP	TER
FDI	1.000000	0.337798	0.438927	0.214908	0.257002	0.951047	0.425451
GFCF	0.337798	1.000000	0.475331	0.692616	0.277427	0.828418	0.328167
GOVSIZE	0.438927	0.475331	1.000000	0.456817	0.261163	0.650557	0.492072
INFR	0.214908	0.692616	0.456817	1.000000	0.340180	0.840587	0.570385
OPNESS	0.257002	0.277427	0.261163	0.340180	1.000000	0.414825	0.438131
PCRGDP	0.951047	0.828418	0.950557	0.840587	0.414825	1.000000	0.961660
TER	0.425451	0.328167	0.492072	0.570385	0.438131	0.961660	1.000000

Appendix C: Unit Root Test

Null Hypothesis: RPCGNI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.971258	0.9952
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RPCGNI)
Method: Least Squares
Date: 01/14/14 Time: 18:47
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RPCGNI(-1)	0.030104	0.030995	0.971258	0.3392
C	6.948494	39.51856	0.175829	0.8616

R-squared	0.030486	Mean dependent var	42.73438
Adjusted R-squared	-0.001831	S.D. dependent var	80.75590
S.E. of regression	80.82980	Akaike info criterion	11.68303
Sum squared resid	196003.7	Schwarz criterion	11.77464
Log likelihood	-184.9285	Hannan-Quinn criter.	11.71340
F-statistic	0.943341	Durbin-Watson stat	1.923418
Prob(F-statistic)	0.339186		

Appendix D: Co integration Test
Date: 01/14/14 Time: 18:57
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Trend assumption: Linear deterministic trend
Series: RPCGNI FDI GFCF GOVSIZE INFR OPNESS TER
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.886773	211.1132	125.6154	0.0000
At most 1 *	0.782381	143.5841	95.75366	0.0000
At most 2 *	0.755271	96.30882	69.81889	0.0001
At most 3 *	0.622196	52.67309	47.85613	0.0165
At most 4	0.400834	22.49829	29.79707	0.2716
At most 5	0.190083	6.619594	15.49471	0.6223
At most 6	0.002708	0.084076	3.841466	0.7718

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.886773	67.52910	46.23142	0.0001
At most 1 *	0.782381	47.27526	40.07757	0.0066
At most 2 *	0.755271	43.63572	33.87687	0.0025
At most 3 *	0.622196	30.17481	27.58434	0.0227
At most 4	0.400834	15.87869	21.13162	0.2320
At most 5	0.190083	6.535519	14.26460	0.5455
At most 6	0.002708	0.084076	3.841466	0.7718

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Appendix E: Estimated Long run & Short run Model

Dependent Variable: RPCGDP
Method: Least Squares
Date: 01/14/14 Time: 18:13
Sample: 1980 2012
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	450.9556	96.90590	4.653541	0.0001
FDI	0.002810	0.001523	1.844728	0.0765
GFCF	0.779135	0.367562	2.119737	0.0437
GOVSIZE	-1.433939	0.283836	-5.051996	0.0000
INFR	0.022989	0.005202	4.419433	0.0002
OPNESS	2.506642	0.981875	2.552913	0.0169
TER	66.73497	17.52823	3.807286	0.0008

R-squared	0.977664	Mean dependent var	1216.894
Adjusted R-squared	0.972510	S.D. dependent var	488.5370
S.E. of regression	80.99976	Akaike info criterion	11.81260
Sum squared resid	170585.0	Schwarz criterion	12.13004
Log likelihood	-187.9079	Hannan-Quinn criter.	11.91941
F-statistic	189.6776	Durbin-Watson stat	2.063624
Prob(F-statistic)	0.000000		

Dependent Variable: DRPCGDP
Method: Least Squares
Date: 01/14/14 Time: 17:54
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.73702	11.99646	1.978668	0.0594
DFDI	3.79E-05	0.000865	0.043769	0.9655
DGFCF	-1.006713	0.285735	-3.523244	0.0017
DGOVSIZE	0.783942	0.296382	2.645041	0.0142
DINFR	0.100479	0.868354	0.115712	0.9088
DOPNESS	0.882989	1.237550	0.713497	0.4824
DTER	46.13402	17.05350	2.705252	0.0124
ECM(-1)	-0.324163	0.056564	-5.730853	0.0000

R-squared	0.620034	Mean dependent var	42.73438
Adjusted R-squared	0.509210	S.D. dependent var	80.75590
S.E. of regression	56.57468	Akaike info criterion	11.12132
Sum squared resid	76816.66	Schwarz criterion	11.48775
Log likelihood	-169.9411	Hannan-Quinn criter.	11.24278
F-statistic	5.594783	Durbin-Watson stat	1.563040
Prob(F-statistic)	0.000649		

Appendix F: Diagnostic Test

SERIAL CORRELATION TEST

BREUSCH-GODFREY SERIAL CORRELATION LM TEST:

F-statistic	1.387483	Prob. F(2,23)	0.2698
Obs*R-squared	3.552822	Prob. Chi-Square(2)	0.1692

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/07/13 Time: 13:11
Sample: 1980 2012
Included observations: 33
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.367116	17.40390	-0.423303	0.6760
FDI	-4.20E-05	0.000328	-0.127939	0.8993
GOVSIZE	-0.040630	0.083404	-0.487147	0.6308
GFCF	0.005725	0.014713	0.389108	0.7005
INFR	0.004432	0.005513	0.803933	0.4297
OPPNNESS	1.10E-05	2.88E-05	0.381242	0.7065
TER	-2.526079	3.906729	-0.646597	0.5243
RESID(-1)	-0.399227	0.245010	-1.629428	0.1168
RESID(-2)	-0.227348	0.233030	-0.975620	0.3394

R-squared	0.107661	Mean dependent var	1.73E-14
Adjusted R-squared	-0.241515	S.D. dependent var	14.62771
S.E. of regression	16.29868	Akaike info criterion	8.665092
Sum squared resid	6109.878	Schwarz criterion	9.118579
Log likelihood	-132.9740	Hannan-Quinn criter.	8.817677
F-statistic	0.308330	Durbin-Watson stat	1.501517
Prob(F-statistic)	0.964257		

HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.155837	Prob. F(7,25)	0.3621
Obs*R-squared	8.068642	Prob. Chi-Square(7)	0.3266
Scaled explained SS	19.11232	Prob. Chi-Square(7)	0.0078

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/07/13 Time: 13:15
Sample: 1980 2012
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	1090.442	614.5532	1.774365	0.0882
FDI	8.87E-05	0.011947	0.007425	0.9941
GOVSIZE	3.558610	2.849843	1.248704	0.2233
GFCF	2.693782	4.322085	0.623260	0.5388
INFR	-0.317859	0.176330	-1.802641	0.0835
OPPNNESS	-0.000685	0.001008	-0.680153	0.5027
TER	84.05419	131.4722	0.639331	0.5284

R-squared	0.244504	Mean dependent var	207.4860
Adjusted R-squared	0.032965	S.D. dependent var	605.3635
S.E. of regression	595.3018	Akaike info criterion	15.82323
Sum squared resid	8859607.	Schwarz criterion	16.18602
Log likelihood	-253.0833	Hannan-Quinn criter.	15.94530
F-statistic	1.155837	Durbin-Watson stat	0.831060
Prob(F-statistic)	0.362126		

Heteroskedasticity Test: Harvey

F-statistic	1.229150	Prob. F(7,25)	0.3243
Obs*R-squared	8.449386	Prob. Chi-Square(7)	0.2946
Scaled explained SS	7.159891	Prob. Chi-Square(7)	0.4124

Test Equation:
Dependent Variable: LRESID2
Method: Least Squares
Date: 08/07/13 Time: 13:17
Sample: 1980 2012
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.130137	2.091987	1.974265	0.0595
FDI	2.53E-05	4.07E-05	0.622571	0.5392
GOVSIZE	0.012866	0.009701	1.326258	0.1967
GFCF	0.005725	0.014713	0.389108	0.7005
INFR	-0.000833	0.000600	-1.388566	0.1772
OPPNNESS	-5.03E-06	3.43E-06	-1.466159	0.1551
TER	0.563507	0.447542	1.259116	0.2196

R-squared	0.256042	Mean dependent var	3.402380
Adjusted R-squared	0.047734	S.D. dependent var	2.076622
S.E. of regression	2.026454	Akaike info criterion	4.457668
Sum squared resid	102.6629	Schwarz criterion	4.820458
Log likelihood	-65.55153	Hannan-Quinn criter.	4.579736
F-statistic	1.229150	Durbin-Watson stat	2.010106
Prob(F-statistic)	0.324267		

Heteroskedasticity Test: ARCH

F-statistic	40.22116	Prob. F(1,30)	0.0000
Obs*R-squared	18.32891	Prob. Chi-Square(1)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/07/13 Time: 13:19
Sample (adjusted): 1981 2012
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	50.05233	28.37516	1.763949	0.0879
RESID^2(-1)	0.280787	0.044274	6.342015	0.0000

R-squared	0.572778	Mean dependent var	109.6117
Adjusted R-squared	0.558538	S.D. dependent var	227.9680
S.E. of regression	151.4679	Akaike info criterion	12.93909
Sum squared resid	688276.0	Schwarz criterion	13.03069
Log likelihood	-205.0254	Hannan-Quinn criter.	12.96945
F-statistic	40.22116	Durbin-Watson stat	2.693438
Prob(F-statistic)	0.000001		

THE LM TEST FOR RESIDUAL AUTOCORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.396767	Prob. F(2,22)	0.2685
Obs*R-squared	3.718173	Prob. Chi-Square(2)	0.1558

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/15/13 Time: 09:52
Sample: 1980 2012
Included observations: 33
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.867197	18.37554	-0.319294	0.7525
FDI	-1.46E-05	0.000331	-0.044094	0.9652
GFCF	0.006490	0.098901	0.065626	0.9483
GOVSIZE	-0.039377	0.085949	-0.458140	0.6513
INFR	0.004234	0.005715	0.740868	0.4666
OPPNNESS	1.01E-05	3.25E-05	0.310692	0.7590
TER	-2.701145	4.044386	-0.667875	0.5112
RESID(-1)	-0.410066	0.246834	-1.661305	0.1108
RESID(-2)	-0.199446	0.243929	-0.817638	0.4223

R-squared	0.112672	Mean dependent var	2.44E-14
Adjusted R-squared	-0.290659	S.D. dependent var	14.50680
S.E. of regression	16.48076	Akaike info criterion	8.703466
Sum squared resid	5975.542	Schwarz criterion	9.202302
Log likelihood	-132.6072	Hannan-Quinn criter.	8.871309
F-statistic	0.279353	Durbin-Watson stat	1.485528
Prob(F-statistic)	0.979358		

GRANGER CAUSALITY TEST

Pairwise Granger Causality Tests
Date: 08/13/13 Time: 06:38
Sample: 1980 2012
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause PCRGDP	31	130405	0.2886
PCRGDP does not Granger Cause FDI		4.01262	0.0303

STABILITY TEST

Ramsey RESET Test
Equation: UNTITLED
Specification: PCRGDP C FDI GOVSIZE GFCF INFR OPPNNESS TER
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.201257	24	0.8422
F-statistic	0.040504	(1, 24)	0.8422
Likelihood ratio	0.055647	1	0.8135

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	11.53617	1	11.53617
Restricted SSR	6847.039	25	273.8816
Unrestricted SSR	6835.503	24	284.8126
Unrestricted SSR	6835.503	24	284.8126

LR test summary:

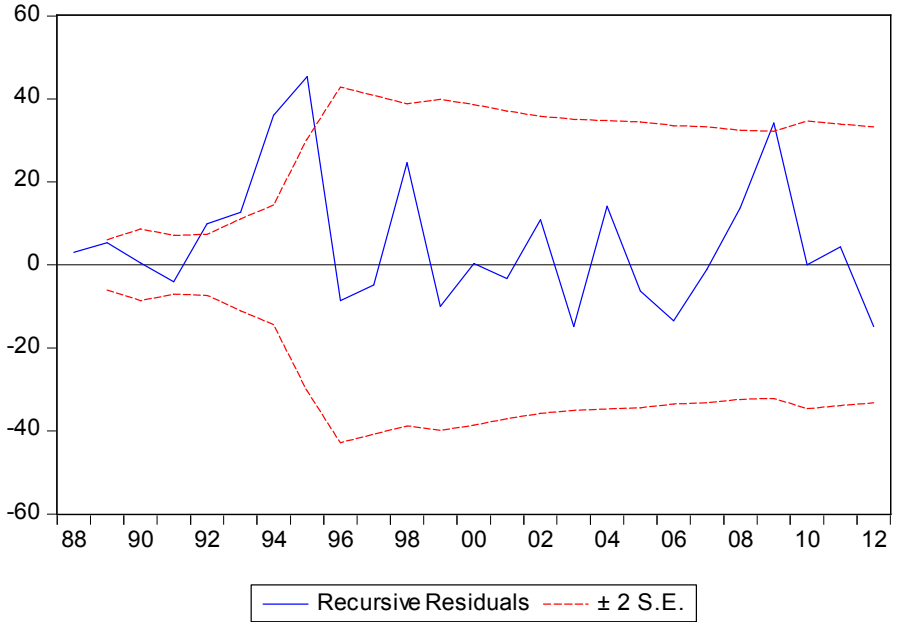
	Value	df
Restricted LogL	-134.8535	25
Unrestricted LogL	-134.8257	24

Unrestricted Test Equation:
Dependent Variable: PCRGDP
Method: Least Squares
Date: 08/07/13 Time: 13:22
Sample: 1980 2012
Included observations: 33

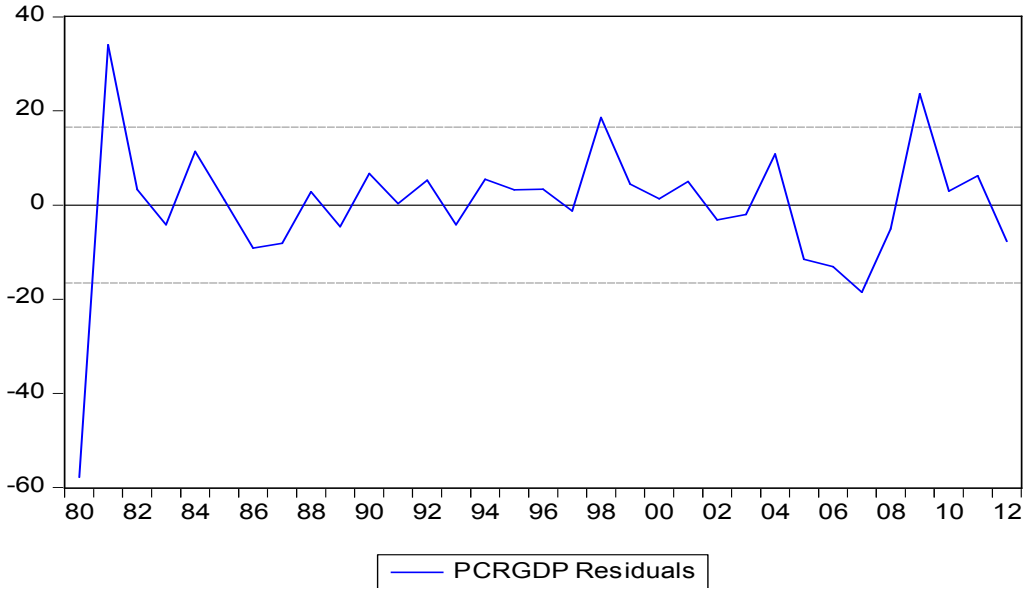
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32.73417	17.83329	1.835566	0.0788
FDI	0.000326	0.000351	0.930439	0.3614
GOVSIZE	-0.144942	0.080804	-1.793758	0.0855
GFCF	0.174301	0.141555	1.231331	0.2301
INFR	0.022821	0.006454	3.535702	0.0017
OPPNNESS	9.94E-05	3.93E-05	2.531172	0.0183
TER	-0.213455	3.735849	-0.057137	0.9549
FITTED^2	-0.000176	0.000876	-0.201257	0.8422

R-squared	0.966935	Mean dependent var	168.8821
Adjusted R-squared	0.955913	S.D. dependent var	80.37548
S.E. of regression	16.87639	Akaike info criterion	8.716709
Sum squared resid	6835.503	Schwarz criterion	9.124848
Log likelihood	-134.8257	Hannan-Quinn criter.	8.854036
F-statistic	87.72937	Durbin-Watson stat	1.972103
Prob(F-statistic)	0.000000		

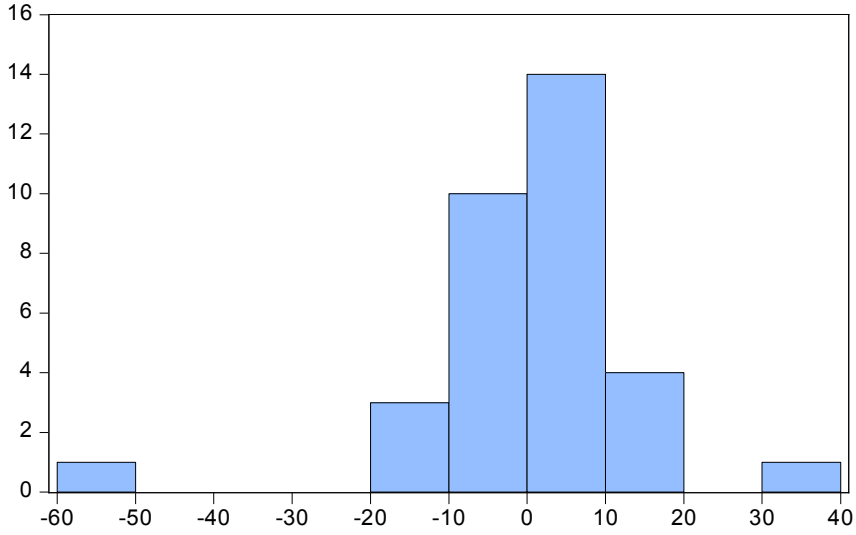
RECURSIVE ESTIMATES



RESIDUAL GRAPH



JARQUE-BERA TEST FOR THE SATBILITY OF THE MODEL



Series: Residuals
Sample 1980 2012
Observations 33

Mean	2.44e-14
Median	1.412771
Maximum	34.89397
Minimum	-57.71356
Std. Dev.	14.50680
Skewness	-1.462514
Kurtosis	9.503154
Jarque-Bera	69.91434
Probability	0.000000

Q-TEST FOR THE RESIDUAL AUTOCORRELATION

Date: 08/15/13 Time: 10:03
Sample: 1980 2012
Included observations: 33

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |** |	. |** |	1	0.295	0.295	3.1405	0.076
. |. |	. *|. |	2	-0.017	-0.114	3.1518	0.207
. |. |	. |. |	3	-0.015	0.027	3.1609	0.367
. |. |	. |. |	4	0.008	0.004	3.1636	0.531
. |. |	. |. |	5	-0.026	-0.035	3.1925	0.670
. |. |	. |. |	6	-0.003	0.019	3.1930	0.784
. |. |	. |. |	7	-0.013	-0.024	3.2006	0.866
. |. |	. |. |	8	-0.028	-0.019	3.2377	0.919
. |. |	. |. |	9	-0.016	-0.002	3.2498	0.954
. |. |	. |. |	10	-0.027	-0.030	3.2877	0.974
. |. |	. |. |	11	-0.030	-0.014	3.3351	0.986
. |. |	. |. |	12	-0.037	-0.029	3.4094	0.992
. |. |	. |. |	13	-0.037	-0.024	3.4887	0.996
. |. |	. |. |	14	-0.044	-0.032	3.6069	0.997
. |. |	. |. |	15	-0.047	-0.033	3.7514	0.998
. |. |	. |. |	16	-0.051	-0.036	3.9274	0.999

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