Foreign Direct Investment: It's Role in the Economic Growth of Transition Economies

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Abstract

The mechanism through which Foreign Direct Investment (FDI) affects growth and vice versa is an aspect of growth developed on in the endogenous growth model, taking into cognisance the impact of human capital and its spill over effects on transition economies .This paper, using panel data estimation methods seeks to understand the impact of FDI on economic growth in transition economies and how this FDI performs with the spill over effects from human capital in the economy.

In addition, this paper also seeks to understand how the political discretion of the preferences of political actors in a nation affects the performance of FDI on growth, focussing on the economies in transition.
Key Words: Foreign Direct Investment, Transition economies, Economic growth

Introduction

Theories on the impact of FDI on economic growth are rampant, but the empirically proven analyses have provided varied results not in congruence with the theory. De Mello(1999) finds that FDI, only impacts positively and significantly in OECD countries where domestic and foreign capital are treated as complements, while Carkovic et al (2002), do not find any robust causal links between FDI and growth. Campos et al (2000) suggests this disparity exists, as a result of theory treating FDI as technology transferred, instead of the extent to which it surpasses just technology.

The impact of FDI runs far deeper than just the technology it attracts into the host country, the endogenous growth model sets a framework upon which the determinants of FDI are affected by FDI and furthermore their impact on economic growth. Previous papers have analysed the impact of FDI on economic growth through this model using technological advancement and the human capital level (absorptive capacity) (Borensztein et al, 1995), this paper looks at the endogenous growth model through the eyes of human capital, domestic investment and political discretion.

In this paper we seek to understand how the determinants of FDI, based on the endogenous growth model which for the sake of this paper are the initial conditions, political stability and human capital, affect the economic growth in transition economies.Our main finding shows that FDI significantly affects economic growth directly, The effect of human capital on economic growth though insignificant as a stand alone, but highly significant when you interact it with FDI as it shows a complimentary effect in line with the findings of Borensztein et al (1995).I also find the existence of a significant relationship between political discretion of preferences of individuals on the economic growth rate. The paper proceeds in four sections: Section II presents the Background, Theoretical framework and literature review; Section III follows with the methodology and testing; Section IV proceeds with the empirical results; and Section V, with the conclusion remarks.

Theoretical Framework

The framework upon which this paper is developed on, is the endogenous model of growth, it differs from the neoclassical growth model which lays more emphasis on capital and does not differentiate between domestic or foreign capital. The endogenous growth model is premised on the fact that growth in any economy is brought through technological deepening which depends not only on capital as propounded by the exogenous growth models but also on economic decisions which may include the behaviour of investment, savings, human capital, government expenditure, level of development etc. FDI is regarded as part of the growth function through its impact on technology and how it attracts knowledge and other spill over effects. It is a long run variable as its effects in the economy are felt much long after the inflow it self might have been exhausted, satisfying the endogenous growth model. The major difficulty of the traditional endogenous model is its inconsistency with empirics on convergence, in order to include convergence; I employ one of the extensions of the endogenous models Barro (2004). This model can combine the AK endogenous growth features with the convergence behaviour in the neoclassical models.

The production function is therefore:

$$Y = F(K, L) = AK + \Omega(K, L)$$

Where Ω (K, L) satisfies the properties of the neoclassical production function generating convergence and the AK part satisfies the endogenous growth model

Where:

Y=Aggregate output

K= Aggregate Capital

L= Efficiency units of Labour

A= Baseline technology (determined by the preferences of political individuals and affects the long run growth rate)

Note that the production function above is not neoclassical because it violates one of the Inada conditions i.e.

$\text{Lim}_{K\to\infty} K [\partial Y/\partial K] = A > 0$

Literature review

Foreign direct investment forms a major part of the three aspects of capital inflows into any economy, the other two, are loans from banks and portfolio capital. Together all three aspects, are empirically understood to be one of the factors of economic growth, capital. The role of FDI in an endogenous growth model far outweighs that obtainable in the exogenous models as its effects are not felt only in the steady states, but throughout the period in which it flows into the economy.

There is a lot of empirical and theoretical analysis of the impact of FDI on economic growth, earlier studies hold that the impact on growth was negative, as most of the benefits are enjoyed by the MNC's[6] originating country, however recent studies has shown that the gain from FDI runs deeper than profits, but is highly available in the technological know how gained in the host country, managerial skills, employee training and human capital enhancement (Borensztein et al,1995:Campos et al,2000). The dependency school argues that FDI benefits only the industrial economies while the host countries suffer, however recent studies (Campos et al,2000;Borensztein et al, 1995) have observed that the host economies also gain from the investment through knowledge spill overs and technology. The host economies are also seen to benefit, taking the Murphy Shleifer and Vishny model into consideration that propounds that when one firm modernizes all other firms will modernize and start to enjoy the benefits of modernization. Research has cited the various new directions of growth recovery in transition economies to many factors ranging from economic liberalisation, inflation stabilisation, to the initial role of initial conditions (De Mello, 1997).

Havrylyshyn et al (2003) is of the opinion that the institutional development also affects the market environment. De Mello (1997) suggests that economic reform can be simplified in transition economies with the change in political structures and this change can range from institutional reforms to political constraints on individuals in an economy. De Mello (1997) cites the importance of Institutional factors to include not, just politics and government intervention, but also property rights, bottleneck bureaucratic procedures and the rights of foreign firms legally. Ariun-Erdene (2009) also holds that "the economic and political dimensions of governance seem to have a stronger positive influence on human development outcomes, with political governance having the largest impact in the Baltics and the CEE countries". However, Carkovic and Levine (2002) using the Arellano and Bond GMM specification and a portfolio inflow of Capital as FDI find that there is no robust causal link between FDI and economic growth. The growth of transition economies and the speed with which economies successfully transition into market economies has been attributed to technological advancement resulting from foreign capital, Campos and Kinoshita (2000) show a significant relationship between fast growth in transition economies and foreign direct investment brought about through technological improvement.Balatsky (1999) suggests that the solution to recession and shocks is a significantly increased foreign owned sector i.e. FDI in transition economies.

In order to understand the role of FDI on economic growth in transition economies, we employ the endogenous growth model, hence taking into perspective, the impact of convergence, human capital and, political discretion.

Human capital refers to the skills and capacities in an individual or work force gained through improved education, nutrition, health and training (World Bank, 1995). This human capital is what Becker (1962) suggests is one of the most important requirement for economic development. Transition economies, especially as they once were centrally planned are generally enriched with a high level of human capital. Gros and suhrcke (2000) finds that these economies have a lot higher secondary and tertiary education level than their initial per capita

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[6] MNC-Multinational company Multi-national Companies , One of the most common forms of foreign direct investment(horizontal), It is more preferred to the vertical FDI as the host country stands to gain more through spill over and technological advancement.

GDP predicts. Barro and Sala-i-Martin (2004), Lucas (1998) and a host of others all find a significant effect of human capital levels on economic growth. Aghion (1999) however holds that the role of human capital development on economic growth is an important one, but its mechanism remains unclear. More so with transition economies the impact of human capital on growth remains a topic for more research for conciseness and clarity.

The impact of foreign direct investment on economic growth as suggested by various writers comes through the technological advancement such foreign capital brings, however, in order for this MNC-driven technology to bring about the needed growth a certain requisite level of human capital is required. Borensztein et al (1995) finds that the performance of FDI far outweighs that of domestic investment, but only with a certain level of absorptive capacity. He goes on to suggest the existence of a complimentary relationship between FDI and human capital, determined through an interaction of FDI and human capital.[7]

Finally, in assessing the impact of FDI on economic growth, we look at the role of politics in transition economies, this is one area that is been advocated for more empirical research upon, as it has become quite glaring that the political state of a nation is a heavy determinant of the FDI inflows and also a relevant indication as to how FDI performs in the economy. Aslund (2000) is of the opinion that the major problem inherent in post-communist states is the misuse of public power solely for private gain; the report also suggests that for successful transition to take place, a new state with higher constraints on political individuals need to be created.

Campos (2001) suggests that more empirical work into this area may be the enlightenment necessary to fully understand and predict transition economies and growth. Spagat (2005) holds that returns to education lies heavily on the politics in the economy and not only on market or foreign investments. Hess (2004) finds that those transition countries with a more democratic outlook are closer to a successful transition, countries with more autocratic governments are further away and countries caught in between democracy and autocracy are in a paradox. Biglaiser and Brown (2004), on the other hand find that political stability does not affect the in flow of FDI, but that what counts more importantly are economic reforms.[8] The political implication of the ascension into the European Union may also serve as an attraction for FDI, because of the implications (politically). Estrin and Bevan (2000).

Methodology and Testing

Data description

In this section we describe the data employed in our analysis and their sources. It is however, important to take note of the problem of data availability when interpreting the results, especially for the political constraint variables. Even though the human capital variables were not entirely available, but the general year to year trend is the same and as such missing data may not have significant effects on the data interpretation. Typically all variables used are in growth rates, Reichart and Weinhold, (2001) suggests two reasons for this, one to control for time invariant country specific characteristics and secondly to curb the risk of having spurious results. The variables employed in this paper are basically consists of the explanatory variables and the control variables, but the paper also includes variables generated from an interaction effect, according to Borensztein et al(1995) to check for complementary or substitution relationship between selected variables.

Data and Data Sources

In the analysis, data on twenty one transition economies are gathered with time periods from 1989-2007(18 years), the choice to use a cross sectional time series data, is to control for the country specific time invariant fixed effects (Reichart and Weinhold,2001).The choice of the twenty one transition economies is based on the availability of relevant data and also a healthy representation of the various types of transition economies i.e. Baltic region, Common Wealth of Independent states and the Central European Economies. The data is sourced from the Penn World tables, UNCTAD, WBDI and the Henisz 2000 data.

The dependent variable, Economic growth rate is measured in percentages and is sourced from the PENN world tables; it is measured as the Annual growth rate of real GDP per laspeyres2 per capita at constant prices.[9]

We have employed the use of logged Initial GDP per capita in all the countries across the period, It is sourced from the Summer and Heston Penn world data table (6.3)

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[7] De Mello (1997)also holds that in order to justify investments and technology transfer, labour has to be well educated and trained(human capital)

[8] These results are evidenced from a case study of Latin American countries

[9] Laspeyres2 per capita: Fixed based index using reference year shares, employing the use of the growth rate of domestic absorption and applying it to the reference year domestic absorption to derive real domestic absorption in each year(reference year -2005)

This paper also uses the investment share as a percentage of GDP to proxy for domestic investment in the countries, to analyse the effect of foreign direct investment and domestic investment (capital) on economic growth. It is also available from the Summer and Heston Penn world data table (6.3)

Data for foreign direct investment as a percentage of GDP was sourced from the United Nations Conference on trade and development statistical website (UNCTAD)

A measure of the total male secondary school enrolment rate was used to proxy for human capital; this data was sourced from the World Bank Development Indicators (WBDI)

Finally, the variable employed in this work, to measure institutions is the political discretion measure, which estimates the feasibility of policy change "whose strength lies in the fact that it is derived structurally from a simple spatial model of political interaction which holds data on the alignment and heterogeneity of political actors in the institutions"(Henisz,2002).The data was obtained from the Henisz 2000 data set, and is included in this analysis to see the impact of political influence on the performance of foreign direct investment on economic growth. It measures the extent to which a change in any one preference of political actors affects government policy. The measure ranges from 0 to 1. It is calculated by subtracting the level of political constraints of preferences of individuals from 1, where discretion is operationalized to 1, hence political constraints is equal to 0, implying that the highest level of political discretion is one and the lowest is zero. It is premised on the fact that investors face a high level of uncertainty based on preferences of the executives or political actors.

Hypothesis, Summary statistics, and the Correlation matrix

The null hypothesis to be tested is:

Ho: No Significant relationship between FDI and growth rate in transition economies.

Ha: Significant relationship between FDI and growth rate in transition economies

Evident from the correlation matrix table above (table 2) it can be seen that the data employed in this analysis show no serious problems of multicollinearity except where the explanatory variables have a correlation greater than 0.50. This multicollinearity is observed between investment and the natural log of initial GDP with a correlation coefficient of 0.5571. A high correlation is also observed between FDI and its interaction effects i.e. 0.9483 with FDIEDUC and 0.8389 with FDIPOL. High correlation is also observed between political constraint and its interaction with FDIGDP, with a coefficient of 0.8194. All other variables employed in the analysis show an acceptable level of correlation and are not likely to result in multicollinearity in their results.

Empirical testing

This paper is modelled closely on Aleksynka et al (2003) empirical analysis.

In order to understand the role of FDI in the economic growth of transition economies, I have divided my test into four specifications:

- Direct effect of FDI on growth
- The role of FDI on growth taking into consideration the threshold effects of human capital, achieved by interacting FDI and human capital (FDIEDUC).
- The role of FDI on growth considering the interaction effects of FDI and political discretion(FDIPOL)
- The impact of stage of development on the role of FDI on economic growth is by dividing my panel of twenty one transition economies into two, panel A and panel B, where panel A consists of successfully transitioned economies and panel B of transitioning economies

The analysis employs both the Ordinary least squares (OLS) method treating the samples as pooled data (because we are interested in the stable difference across the cross section units) and the Generalised least squares estimation method. We also employ the use of the "Hausmann test" to determine which of the effects (Random or Fixed) to be used. The use of both the OLS pooled data and the GLS method is to check for the robustness of the results.

According to the Hausmann test if the P-value is below 0.05 i.e. significant results, we should reject the null hypothesis that there is no significant difference between the coefficients of the fixed effects model and the random effects model, implying that the results of the fixed effects model are more valid for the estimation. If on the other hand the hausmann test results in a P-value greater than 0.05, we cannot reject the null, hence implying the use of the random effects model of estimation. It is imperative to note that both the fixed and the random effects model have their own advantages, with the fixed effects model producing more consistent results while the random effects been a more efficient estimator[10].

Empirical Results

The purpose of this paper is to understand the role of FDI on economic growth in a selection of transition economies. The four specifications as stated in the data methodology above have resulted as follows:

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[10] http://dss.princeton.edu/online

Direct effect of FDI on growth for all transition economies

The equation to estimate for this specification is[11]:

$$grwgdp_{i,t} = \alpha_i + \beta(L.linigdp_{i,t}) + \xi(fdigdp_{i,t}) + \varsigma(invgdp_{i,t}) + \rho(edusec_{i,t}) + \mu(poldis_{i,t}) + \epsilon_{i,t}$$

The first model employed (OLS for pooled data) showed a positive highly significant relationship between FDI and growth. An increase in FDI as a percentage of GDP by 1% point increases the growth rate by almost 0.11%, it is evident from the results in table 3 below that this relationship is highly significant with a 99.9% level of significance.

The second method employed in line with the results of the Hausmann test, is the fixed effects model, this also showed a positive highly significant relationship with a percentage point increase in FDI leading to about a 0.17% point increase in the growth rate.

The null hypothesis that no significant relationship exists has to be rejected at a 99.9% level of significance for both methods, the similarity of both methods in regards to FDI and growth rate could attest for the robustness of the tests employed (Aleksynka et al, 2003).

In both regressions (table 3) we find that Initial GDP has a negative insignificant relationship with the growth rate, this is in line with the convergence theory, where countries that are expected to grow faster are those with lower initial GDP. However Barro (1992) suggests that there exists no convergence in transition economies because of the difference in their technological capacities which should result in more of a divergence.

Domestic Investment in the OLS method show an insignificant negative relationship with the growth rate, while in the generalised least squares method there exists a positive insignificant relationship. This finding (insignificance) is in line with Havrylyshyn et al (2003) who suggests based on their own findings that output growth has little or none to do with investment.

Human Capital shows a positive insignificant relationship in both estimation methods. This insignificancy goes against the Nelson Phelps approach that growth should increase with increase in the level of education

The political discretion variable in the GLS method shows a positive highly significant relationship with the growth rate, indicating that the more able a political individual is able to change laws in a state, the increase in the growth rates of the economy. This is based on the measure of the political discretion variable which indicates that political discretion increases as the value goes to 1 and decreases as the values go to 0 With a 1% point increase in the political discretion of individuals resulting in a 0.129% point increase in the growth rate..[12]Using the OLS we find that even though there is a positive relationship it is not significant.

Interaction effect of human capital and FDI on growth

The equations to be estimated in this specification:

$$grwgdp_{i,t} = \alpha_i + \beta(L.linigdp_{i,t}) + \xi(fdiedu_{i,t}) + \varsigma(invgdp_{i,t}) + \mu(poldis_{i,t}) + \epsilon_{i,t} \quad .....(1)$$

For the purpose of the second test, I have interacted the FDI as a percentage of GDP with human capital, i.e. FDIEDU =FDIGDP*EDUSEC..In the same empirical style employed in the first specification, both methods are applied to the interaction between human capital and FDI, using all the other explanatory variables (equation1) shows that a 1% point increase in the synergy between FDI and human capital results in a 0.001% point increase in economic growth, see table 4. In this test, we have used all three estimation methods because of the results of the Hausmann test. The resulting p-value for the Hausmann test(0.0492) is approximately 0.05,therefore the uncertainty as to whether to reject or accept the null, We ,however find that both results of the fixed and the random effects model are similar

The result of this test in respect to the interaction effect implies a complimentary effect between FDI and human capital in line with the findings of Borensztein, de Gregorio and lee (1995) which suggests that only countries with a certain level of human capital can show a positive effect of FDI on growth.

The significance of the synergy is really important as it points to the existence of spill over effects between the two variables which could imply that the prerequisites for optimum performance of FDI lies primarily on the level of human capital inherent in the economy with a 1% point increase in the synergy resulting in a 0.001% highly significant increase in the growth rate for all three estimation methods.

Regressing equation 2 however shows a different result, with the OLS results showing no significance between all the variables, but a negative relationship between the synergy and economic growth from table 5 below. This indicates a substitution effect existent between human capital and FDI. The random effects model however, shows a positive significant effect of political discretion, and a positive non significant effect of the interaction between FDI and human capital.

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[11] The meaning of the variables are found in the appendix list of variables employed

[12] The measure of the poldis variable ranges from 0 to 1,and growth rate is in percentages, hence the need to calculate the change using proportional allocation(unitary method)

Interaction effect of FDI and the level of political influence on economic growth

The equations to be estimated here is:

$$grwgdp_{i,t} = \alpha_i + \beta(L.linigdp_{i,t}) + \xi(fdipol_{i,t}) + \varsigma(invgdp_{i,t}) + \rho(edusec_{i,t}) + \epsilon_{i,t} \quad ....(1)$$

The interaction of FDI with political discretion is basically to see how the preferences of a political individual in a nation affects the performance of FDI, the interaction term is generated from multiplying FDIGDP with the POLDIS variables resulting in FDIPOL.

Using both estimation methods, we find that there is a highly significant positive effect of discretion of preferences of political individuals on the performance and growth in transition economies, implying that one political individual can significantly determine the state of the economy by his selfish policies. This finding supports Drazen's notion that "policies are the outcome of the interaction of competing individuals and groups whose concern is their own welfare and not necessarily that of any other individuals or the society as a whole" (Drazen, 2000).

From the empirical analyses, using both the random effects model and the OLS pooled data method and excluding the original FDI and POLDIS variables(equation 1), I find that a 1% point increase in the synergy result in a 0.0016% increase in the growth rate of the economy, refer to table 5 in the appendix. This indicates a complimentary effect between the two variables, In the robustness of the results, the same conclusions can be drawn from using the random effects GLS method, as a 1% point increase in the interaction results in a 0.0020% increase in the growth rate. Both results show a highly significant relationship within a 99.9% level in the random effects model and a 99% in the OLS estimation method.

I regress the variables using the fixed effects model including both the original FDIGDP and POLDIS variables (equation 2) and as shown in table 7, I find that there exists a positive and highly significant direct effect of FDI on growth, with a 1% point increase in FDI resulting in about 0.47% increase in growth rate. I also find that the political discretion variable has a negative highly significant effect on growth, with 1%point increase resulting in about 0.0075% decrease in the growth rate.

Conclusion

The essence of this study is to identify the role of foreign direct investment on economic growth in transition economies, while taking into consideration the impact of preferences of political individuals and human capital. We find a positive direct effect of FDI on economic growth in transition economies, implying that for transition economies, attracting FDI will be a good way of growing the economy.

The significant complimentary relationship between FDI and human capital suggests that for FDI to perform optimally there should exist a threshold level of human capital, this is in line with Borensztein et al(1995) results. Transition economies need to build on their human capital, in order to improve their growth through FDI. Based on the fact that the educational enrolment rates in transition economies are generally high, I will suggest a build-up of human capital, through technical knowledge, on hands experience and learning by doing (De Mello, 1997)

The analysis also finds a positive significant effect of discretion of political individuals on the growth of the transition economy. These results are not in line with Aslund (2000), who suggests that the foundation of transition lies on a legal system that functions and binds all individuals, officials and authorities. These findings could imply that the performance of FDI is heavily dependent on the level of political discretion of individuals, and therefore that with more constraints on political individuals the decrease in the performance of FDI and inevitably the fall in the growth rate. The complimentary effect existent between FDI and the political discretion further amplifies this conclusion; however there is still need for a lot of research to understand how political discretion and constraints affect the performance of FDI and economic growth, not only in transition economies, but also in developing and emerging economies.

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Appendix

List of all countries in the Panel data set

Albania	Uzbekhistan
Armenia	Ukraine
Belarus	Tajikistan
Bulgaria	Slovenia
Cambodia	Slovakia
Croatia	Romania
Czech Republic	Poland
Hungary	Moldova
Kazakhstan	Lithuania
Kyrgyzstan	Latvia
Laos	

Meaning of variables

GRWGDP – Average growth rate

L.LINIGDP- Log of Initial GDP per capita

FDIGDP- FDI as a % of GDP

INVGDP- Investment share of GDP

EDUSEC- Male Secondary school enrolment ratio

POLDIS- Discretion of political individuals in the economy

FDIEDU-FDIGDP*EDUSEC

FDIPOL- FDIGDP*POLDIS

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
Grwgdp	3.149579	6.99047	-29.41687	17.94725	N = 363
L.linigdp	8.673324	0.8015372	7.053883	10.09299	N = 355
Fdigdp	20.84539	18.75846	0	99.83118	N = 370
Invgdp	20.85345	9.721072	2.741321	48.58349	N = 377
Edusec	86.39658	18.25255	22.33062	112.936	N = 245
Poldis	0.31528	0.2195032	0	0.67	N = 375

Table 2: Correlation matrix

	grwgdp	lag_linigdp	fdigdp	invgdp	edusec	poldis	fdiedu	fdipol
Grwgdp	1							
lag_linigdp	0.0808	1						
Fdigdp	0.3900*	0.3253*	1					
Invgdp	0.0932	0.5571*	0.2522*	1				
Edusec	0.0533	0.6298*	0.1173	0.4320*	1			
Poldis	0.1648*	0.4872*	0.2817*	0.3368*	0.2273*	1		
Fdieduc	0.3402*	0.4906*	0.9483*	0.3768*	0.3816*	0.3222*	1	
Fdipol	0.3023*	0.4327*	0.8389*	0.418*	0.2203*	0.5991*	0.8194*	1

*values represent correlation with 95% significance

Table 3: OLS pooled and FE results for direct effects of FDI on economic growth
Test 1

	(1) Grwgdp	(2) grwgdp
L.linigdp	-0.4830 (1.3189)	-3.5657 (2.5006)
Fdigdp	0.1087*** (0.02711)	0.1664*** (0.03087)
Invgdp	-0.04315 (0.05433)	0.009630 (0.08995)
Edusec	0.02367 (0.02795)	0.05166 (0.07460)
Poldis	3.0803 (4.0159)	12.929*** (3.6341)
_cons	3.7753 (8.0917)	22.260 (20.273)
N	231	231
R –square	0.1390	0.1089
Hausmann test(p-value)		0.0147

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001
(1)- OLS pooled regression results
(2)- Fixed effects GLS results

Table 4: Test 2 OLS pooled Fixed effects and Random effects results of the interaction of FDIGDP and EDUSEC (FDIEDUC)
Test 2a: Excluding FDIGDP and EDUSEC

	(1) Grwgdp	(2) grwgdp	(3) grwgdp
L.linigdp	-0.5547 (1.1469)	-1.2806 (0.8916)	-2.8451 (2.4186)
Invgdp	-0.04830 (0.05330)	-0.03979 (0.05926)	0.006285 (0.08740)
Poldis	3.3857 (3.9948)	6.6885** (2.5103)	13.604*** (3.5166)
Fdieduc	0.001130** (0.0003069)	0.001465*** (0.0002524)	0.001766*** (0.0003150)
_cons	6.7221 (7.9387)	11.024 (6.9631)	20.574 (19.983)
N	231	231	231
R-square	0.1312	0.1277	0.1090
Hausmann test(p-value)		0.04920	0.04920

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001
(1)- OLS pooled regression results
(2)- Random effects GLS results

(3)- Fixed effects GLS results
Table 5: OLS pooled and Random effects results for the interaction effect of FDIGDP and POLDIS,
Test 3a: Excluding FDIGDP and POLDIS

	(1) Grwgdp	(2) grwgdp
L.linigdp	0.1701 (0.9125)	-0.1356 (0.9538)
Invgdp	-0.06190 (0.05689)	-0.04828 (0.06123)
Edusec	0.01135 (0.02447)	0.02010 (0.03684)
Fdipol	0.1633** (0.05141)	0.2049*** (0.04769)
_cons	1.8699 (6.0392)	3.1128 (6.6712)
N	231	231
R- square	0.0756	0.0744
Hausmann test(p-value)		0.2480

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
(1)- OLS pooled regression results
(2)- Random effects GLS results

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