Wakilat Olabisi Balogun[1], Jauhari Dahalan[2], Sallahuddin Hassan[3]
DOES INTEREST RATE LIBERALIZATION MATTER FOR FOREIGN DIRECT INVESTMENT INFLOWS?

The paper investigates the long-run effects of interest rate liberalization for FDI inflows into 7 selected Sub-Saharan African countries using panel dataset for 1990–2013. Employing dynamic heterogeneous panel data analysis with the technique of Pooled Mean Group, we got the results which indicate that liberalizing the interest rate would have desirable and sustainable effect on FDI inflows to the selected SSA countries. Policy makers in the selected SSA economies should ease restrictions on their interest rate policies.

Keywords: foreign direct investment (FDI); interest rate liberalization; Sub-Saharan Africa (SSA).

Вакілат Олабісі Балогун, Джаухарі Дахалан, Саллауддін Хассан
ЧИ ВПЛИВАЄ ЛІБЕРАЛІЗАЦІЯ ПРОЦЕНТНОЇ СТАВКИ НА ПРИПЛИВ ПРЯМОГО ІНОЗЕМНОГО ІНВЕСТУВАННЯ?

У статті досліджено довготерміновий вплив лібералізації процентної ставки на ПІІ, спрямоване в 7 країн Центральної та Південної Африки. В аналізі використано панельні дані за 1990–2013 роки. Застосовуючи динамічний аналіз гетерогенних панельних даних, отримано результати, які вказують на те, що лібералізація процентної ставки має бажаний та стійкий ефект на приплив іноземних інвестицій у досліджувані країни. Таким чином доведено, що керівництву даних країн варто послабити обмеження щодо процентних ставок.

Ключові слова: пряме іноземне інвестування (ПІІ); лібералізація процентної ставки; Центральна та Південна Африка.
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Вакилат Олабиси Балогун, Джаухари Дахалан, Саллауддин Хассан
ВЛИЯЕТ ЛИ ЛИБЕРАЛИЗАЦИЯ ПРОЦЕНТНОЙ СТАВКИ НА ПРИТОК ПРЯМЫХ ИНОСТРАННЫХ ИНВЕСТИЦИЙ?

В статье исследовано долгосрочное влияние либерализации процентной ставки на ПИИ, направленное в 7 стран Центральной и Южной Африки. В анализе использованы панельные данные за 1990–2013 годы. Применяя динамический анализ гетерогенных панельных данных, получены результаты, которые указывают на то, что либерализация процентной ставки дает желаемый и устойчивый эффект на приток иностранных инвестиций в исследуемых странах. Таким образом доказано, что руководство данных стран должно ослабить ограничения по процентным ставкам.

Ключевые слова: прямое иностранное инвестирование (ПИИ); либерализация процентной ставки; Центральная и Южная Африка.

Introduction. Desirability of FDI inflows to the nascent economies of the Sub-Saharan African cannot be overemphasized. This led the neoliberalists to recommend financial liberalization as the panacea to the problems of low inflows of capital to developing countries (McKinnon, 1973; Shaw, 1973). Liberalization has however led to series of crises in the SSA region (Calvo and Reinhart 1998; Yartey and Adjasi, 2007; Yartey, 2010). Proponents of liberalization opine that less developed countries face inadequate supply of funds rather than demand for such funds. The demand for

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investible funds is not an issue in developing countries as there are different invest-ment projects that need to be actualized. Opening up the financial sectors of deve-loping countries would integrate these economies into the global market and attract the much needed funds for investment. It is thus advised that less developed economies should liberalize their financial markets in order to attract the necessary funds for investment too.

FDI inflow is one of the three main components of capital inflow, the remaining two are equity and bond portfolio inflows followed by long- with short-term debts inflows. Foreign investment inflow is presumed to transfer technology to recipient countries through manpower training of domestic labour. This implies that human capital is upgraded thereby increasing the contribution of human capital development to growth (De Mello, 1999). Another benefit of FDI to a recipient economy is that it avails domestic citizens the opportunity of greater varieties in goods (Prasad et al., 2003). However FDI has been criticized on the notion that the need to attract these foreign investments may at times lead to jeopardizing domestic economic policy even up to the extent of threatening sovereignty of democratic governments (Jensen, 2003). Studies have shown the linkage between interest rate liberalization and FDI inflows. The increase in foreign investment in a domestic economy triggered by inter-est rate liberalization will lead to FDI inflows with confidence building up in return on their investment.

The object of this paper is not to examine the determinants of foreign investment inflows. Research on this area abounds in the literature on FDI inflows. However research on the long-term influence of interest rate liberalization on FDI is sparse. The situation where financial liberalization is part of the drivers of foreign investment inflows to developing countries, the issue borders on the sustainability of such flows. Policy makers in developing countries have learnt real lessons (e.g., from the 1997 Asian crises or too recent 2007—2008 world crisis) on the adverse effects of short-term flows.

Studies have also discussed extensively the undesirable impact of short-term flows to recipient countries (Singh, 2003; Stiglitz, 2000). The present paper investi-gates the long-term influence of interest rate liberalization on FDI inflows to the selected SSA economies. The countries of interest are: Botswana, Cote d'Ivoire, Ghana, Kenya, Mauritius, Nigeria and South Africa. The choice of these countries is dictated by data availability. The remainder of the paper is thus structured: the next section provides details on the trends of foreign investment inflows to the SSA region. This is followed by the concepts of financial liberalization and FDI inflow in Section Three. Section Four contains the review of past studies and followed by theoretical framework in Section Five. Data and methodology are discussed in Section Six. Section Seven concerns the result interpretation while the final section concludes.

Trends in FDI Inflows to the SSA countries. FDI inflows to developing countries have been more tilted towards the South-East Asia and Latin America (De Mello, 1997). In a study carried out by E. Asiedu (2002) for the periods of 1980—1989 and 1990—1998 the foreign investment flows to SSA increased by 59%. This statistics is compared with other regions for the same period: Europe and Central Asia — increase by 5,200%; East Asia and Pacific — 942% increase; South Asia — an increase by 740%, while Latin America and the Caribbeans — the increase by 455%.

These statistics is an indication of low volume of foreign investment flows to the SSA. This low trend is not peculiar to FDI alone. The general trends of all foreign capital inflows are such that the inflows to SSA region are negligible (Calvo and Reinhart, 1998). In (Fernandez-Arias, 1996) it is stated that low creditworthiness may be responsible for these low trends of inflows to the SSA. In terms of FDI inflows it can be interpreted as country risks, SSA region is perceived to be risky and thus tend to drive FDI away (Asiedu, 2002). In spite of this some countries in the region like Nigeria, South Africa, have received FDI inflows recently most probably because these countries are resource-rich countries (Asiedu, 2006).

Theories of liberalization and FDI. *The concept of interest rate liberalization.* Financial liberalization is the non-restriction of capital account, deregulation of the financial sector and non-restriction of the stock market sector as distinct from the banking sector unit of the financial sector (Cobham, 2002; Kaminsky and Schmukler, 2003). Liberalization theory was brought to the limelight by R.I. McKinnon (1973) and E.S. Shaw (1973). The theory establishes the relationship among the key variables of savings, deposit and lending interest rates, investment and output. It is based on the assumption that savings are positively influenced by deposit interest rate, and that output growth is also dependent on savings. It is also assumed that investment is negatively related to lending interest rate but the same investment is a positive determinant of output growth rate. According to R.I. McKinnon and E.S. Shaw henceforth (M-S) when interest rate is fixed low by authorities in developing countries, the result is that savings are reduced and consumption is encouraged. Low interest rate leads to insufficient funds for investment purposes and this leads to investment in low risk and inefficient investment. Investing in inefficient projects tends to choke off output growth (Arestis and Caner, 2004).

Theory of foreign direct investment. Foreign direct investment is regarded an international inter-firm cooperation with real equity stake in foreign enterprises (De Mello, 1999). The theory of FDI emanates from the history of multinational enterprises (MNE). These are large corporations that establish industries in foreign lands motivated by high returns inter alia. Theoretically, recipient countries are expected to benefit from technological transfers, new skill acquisition from technologically advanced countries to young developing countries. However it has been argued that MNEs try to close out market competition by establishing barriers to entry through such means as superior knowledge and product differentiation (McClintock, 1988). FDI is the consequence of an investment strategy of firms battling with worldwide competition where large differences in cost structures and rewards for factor inputs dictate cross-country investment.

Literature review. There are enormous researches on FDI ranging from its determinants to its desirability for host countries. E. Borensztein et al. (1998) analysed the impact of FDI on growth from developed countries to 69 developing countries, 1970−1989. Their results indicate that foreign investment is the means of technological transfer to developing countries and that FDI's contribution to growth is more than domestic investments contribute to growth. The authors also discovered that the contribution of foreign investment to growth is strengthened by the state of human development in these countries. N. Hermes and R. Lensink (2003) using data for the period 1970−1995 on 67 developing countries tried to establish complementarity

between FDI and financial sectors with the view to strengthening the pace of technological diffusion thus increasing economic growth. Their results showed that FDI interacting with financial sector has positive significant relationship with growth. However, the result of the regression of foreign investment variable alone on growth is negative implying that positive impact of FDI on growth is going through the interaction of financial markets.

M.N. Jensen (2003) employed data for 114 countries trying to establish whether preconditions like political institutions and economic policies influence changes in foreign investment inflows in the period 1970−1997. The results indicated that democratic political institutions are positively related to FDI inflows. E. Asiedu (2006) analysed the determinants of foreign investment to Africa. The author employed panel data analysis covering 22 countries in the period 1984−2000. The paper investigated the effects of natural resources, market size human capital development, the recipient country's investment policies, the legal system in a country, physical infrastructure on FDI. The findings showed that economies with natural resources and large markets are better able to attract foreign investments. Furthermore, less corruption, sound infrastructure and better human development are the factors attracting FDI inflows to Africa.

M. Bengoa and B. Sanchez-Robles (2003) employed panel data analysis for 18 Latin American countries, 1970−1999 to analyse the relationship between economic freedom, foreign investments and growth. Using the fixed effects technique, these authors found that the index of economic freedom is positively related to foreign investment in these countries. L. Alfaro et al. (2000) examined the relationship among foreign investment, financial sectors and growth. Using the data for 39 developed to developing countries, the authors examined the relationship between foreign investment and growth. The findings indicate that FDI has positive effect on growth. M.V. Carkovic and R. Levine (2002) examine the relationship between foreign investment and growth by employing data on 72 countries for the period 1960−1995. The authors used the technique of Generalized Method of Moments to find that the exogenous component of FDI does not have positive influence on growth.

A cursory look at all the reviewed papers indicates that very few of them are on the SSA region. Among those that are on this region there is none to investigate the effect of long term interest rate liberalization on FDI. E. Asiedu (2006) analysed the determinants of FDI in Africa by examining among other factors the effect of human development on growth via FDI. However the paper did not analyse the influence of interest rate liberalization on FDI inflows. The theoretical link between interest rate liberalization and foreign investments is such that market determined interest rate consequent upon liberalization of interest rate boost the level of savings. High level of savings implies that more loanable funds are available for investment projects with both domestic and foreign investments (McKinnon, 1973; Shaw, 1973).

Theoretical framework. Consequent upon the previous discussion on the concept of foreign investment the present paper adopts the capital inflow model of E. Fernandez-Arias (1996) to form the analytical model for the present study. Capital inflow would be represented by FDI inflow in our study as the dependent variable.

$$F_{it} = \omega_i - \alpha r_t + \partial p_{it} + u_{it}. \tag{1}$$

In equation (1) of Fernandez-Arias F_{it} is the capital inflow; r_t is the international interest rate; w_i is the country's specific effect; p_{it} is the level of prices while uit is the usual error term.

The existing model of Fernandez-Arias would be used to form our analytical model based on the theory of determinants of FDI:

$$lFDI_{it} = \alpha_i + \beta_1 lIntreslib_{it} + \beta_2 lRGDP_{it} + \beta_3 lUSTB_{it}$$
$$+ \beta_4 lInstitu_{it} + \beta_5 lInflat_{it} + u_{it}, \tag{2}$$

where $i = 1, 2, ...\ N$ and $t = 1, 2, ...\ T$; i stands for individual country in the 7 selected SSA countries; t is the time period.

Definitions and Measurement of variables. All the variables are put on the equal scale through logging. From equation (2) $lFDI_{it}$ is the dependent variable and it represents the net inflow of investment. Net inflow of FDI is used in our estimation rather than gross FDI because it gives the actual inflows of foreign capital to the respective SSA economies. *lIntreslib* represents the logarithm of index of interest rate liberalization. *Intreslib* is a major explanatory variable of interest in this study. *lRGDP* is the logarithm of real GDP, measured at 2005 constant prices. *lUSTB* is the log of foreign interest rate and it is proxy by 6 months US Treasury bills. *lInstitu* is the index measuring institutional quality. u_{it} signifies the usual error term. *Inflat* is a consumer price index.

Data. Considering the fact that liberalization started in the SSA region in the 1990s, the effect of liberalization would be observed from 1990 to 2013. The data is obtained from the World Development Indicators (WDI), 2015.

The index of interest rate liberalization is computed using the chronology of G.L. Kaminsky and S.L. Schmukler (2008) K-S. The different dates of interest rates liberalization by individual countries are obtainable from the IMF Annual Report on Exchange Arrangements and Exchange Restrictions IMF (AREAR). Following the chronology of K-S, values are assigned based on the policy of a country, liberalizing or restricting. According to the categorization by K-S, the criterion for full interest rate liberalization is when there is no control on both borrowing and lending rates. Here 3 point is awarded. For partial interest rate liberalization there are controls on either lending, or borrowing interest rates. The value of 2 is awarded for partial liberalization. For no liberalization or full restriction, there are controls on both lending and borrowing rates, 1 value is allotted for full restrictions or no liberalization. The essence of this is to show the intensity of interest rate liberalization.

Institutional quality is measured by the political risk index computed by the International Country Risk Group (ICRG). Political risk consists of different components such as law and order, corruption and military in politics. In this analysis the focus would be only on law and order measuring supervisory and regulatory frameworks. Maximum of 100 points is awarded for a country with law and order. High value is awarded for low risk country, country with good quality institution while a lower value is awarded for a country with poor quality institutions, that is high risk country. Institutional quality is measured in points up to the maximum of 100 points. This index is widely used in literature (Meldrum, 2000; Yartey, 2004, 2008). The human capital data is derived from the WDI; it measures secondary school enrolment as a proxy for educated populace in the selected countries. USTB is the 6 months US

Treasury bill is the proxy for foreign interest rate. RGDPS is the real GDP at 2005 constant prices.

Method of analysis. The present paper employs dynamic panel data method by using the technique of Pooled Mean Group (PMG) of M.H. Pesaran et al. (1999). The PMG approach is to restrict the long-run coefficients while freeing the intercept, short-run variances and short-run coefficient to assume different values among panel members. The M.H. Pesaran and R.P. Smith (1995) Mean Group (MG) method allows heterogeneity of intercepts, slopes and short-run variances. The MG estimates the coefficients from the ARDL models for each country; the average from such estimation of individual ARDL models is thus computed to represent the coefficient for the entire group in the panel. The dynamic fixed effect allows for homogeneity of the slope, long- and short-run coefficients while allowing only the intercept to be different among units in the panel. PMG takes a middle position by restricting only long-run coefficients and allowing individual member in the panel to different intercept, slopes and adjustment mechanism.

Assumption of a similar long-run coefficient is justified by the fact that the group of countries in the panel are all developing countries according to the World Bank rating. The countries are on the same level of economic development. While it may be appropriate to assume common long-run coefficients among these countries, it may not be in good order to assume that all the countries would have the same speed of adjustment. An advantage of PMG on the DFE is that individual countries are allowed to have different adjustment mechanisms (Pesaran et al., 1999).

Recent empirical research shows that both MG and PMG have been employed by many authors. E.F. Blackburne and M.W. Frank (2007) used this technique to estimate consumption through income and inflation in 24 OECD countries, 1960−1993. C. Bangake and J.C. Eggoh (2012) used the method to examine the relationship between savings and investment rates for 37 African countries for the period 1970 to 2006. A. Bassanini and S. Scarpetta (2001) investigated the effect of human capital development on the growth in a panel of 21 OECD countries over the period of 1971−1998 using MG and PMG techniques. The results showed a positive and significant effect of human capital development on growth.

The specification of the ARDL equation for $t = 1, 2, ..., T$ specific time and $i = 1, 2, ..., N$, countries for the dependent variable Y is:

$$Y_{it} = \sum_{j=i}^{p} \lambda_{ij} y_{i,t-j} + \sum_{j=i}^{q} \gamma'_{ij} X_{i,t-j} + \beta_i + \varepsilon_{it}, \qquad (3)$$

where $X_{i,t-j}$ is the (k x 1) vector of explanatory variable for group i and β_i is the fixed effect $y_{i,t-j}$ is the lagged dependent variable; λ_{ij} represents the scalar coefficient of the lagged value of the dependent variable; γ'_{ij} shows the vector coefficient of the lagged value of the explanatory variable. The model can be reparameterized as a Vector Error Correction Method (VECM) system:

$$\Delta y_{it} = \varphi_i (Y_{i,t-1} \vartheta'_i X_{i,t-1}) + \sum_{j=1}^{p-1} \lambda'_{ij} \Delta Y_{i,t-j} + \sum_{j=1}^{q-1} \gamma'_{ij} \Delta X_{i,t-j} + \beta_i + \varepsilon_{it}, \qquad (4)$$

where ϑ_i is the long run coefficient while ϕ_i is the adjustment mechanism. The main interest of PMG technique is the short-run adjustment mechanism and the long run coefficient.

The long-run FDI inflow model is presented as:

$$FDI_{it} = \alpha_i + \beta_1 Intreslib_{it} + \beta_2 RGDP_{it} + \beta_3 USTB_{it} + \\ + \beta_4 Institu_{it} + \beta_5 Inflat_{it} + u_{it}, \tag{5}$$

where $i = 1, 2, ..., N$; $t = 1, 2, ..., T$.

The assumption is that each of the variables in (5) are $I(1)$ and are cointegrated making their residuals u_{it} to be stationary $I(0)$ for all i. The maximum lag of one is also assumed making the ARDL (1,1,1,1,1,1) specification of equation (5) to be:

$$FDI_{it} = \kappa_i + \delta_{10i} Intreslib_{it} + \delta_{11i} Intreslib_{i,t-1} + \delta_{20i} RGDP_{it} + \delta_{21i} RGDP_{i,t-1} + \\ \delta_{30i} USTB_{it} + \delta_{31i} USTB_{i,t-1} + \delta_{40i} Institu_{it} + \delta_{41i} Institu_{i,t-1} \\ + \delta_{50i} Inflat_{it} + \delta_{51i} Inflat_{i,t-1} + \lambda_i FDI_{i,t-1} + \varepsilon_{it}. \tag{6}$$

The error correction specification of equation (6) above is:

$$FDI_{it} = \varphi_i (FDI_{i,t-1} - \vartheta_{0i} - \vartheta_{1i} Intreslib_{it} - \vartheta_{2i} RGDP_{it} - \vartheta_{3i} USTB_{it} - \\ - \vartheta_{4i} Institu_{it} - \vartheta_{5i} Inflat_{it}) - \delta_{10i} \Delta Intreslib_{it} - \delta_{20i} \Delta RGDP_{it} - \\ - \delta_{30i} \Delta USTB_{it} - \delta_{40i} \Delta Institu_{it} - \delta_{50i} \Delta Inflat_{it} + \varepsilon_{it}, \tag{7}$$

where $\vartheta_{0i} = \dfrac{\kappa_i}{1-\lambda_i}, \vartheta_{1i} = \dfrac{\delta_{10i}+\delta_{11i}}{1-\lambda_i}, \vartheta_{2i} = \dfrac{\delta_{20i}+\delta_{21i}}{1-\lambda_i}, \vartheta_{3i} = \dfrac{\delta_{30i}+\delta_{31i}}{1-\lambda_i}, \vartheta_{4i} = \dfrac{\delta_{40i}+\delta_{41i}}{1-\lambda_i},$

$\vartheta_{5i} = \dfrac{\delta_{50i}+\delta_{51i}}{1-\lambda_i}, \varphi_i = -1(1-\lambda_i).$

In order to establish a long-run relationship between foreign investment inflow and interest liberalization on one hand and foreign investment and school enrolment, the speed of adjustment ϕ_i must be negative and significant. The approach in this study is to estimate the model (5) using 3 techniques of DFE, MG and PMG. The estimated results of these 3 techniques are presented in Table 1.

Table 1. **Estimated results of FDI inflow model,** *authors'*

Dep. Var. lFDI	DFE	MG	PMG
Variables	Coeff.	Coeff.	Coeff.
lintreslib	-.27	.88	.69**
	(-0.36)	(0.62)	(2.34)
lRgdp	3.53***	2.91**	2.27***
	(4.21)	(2.86)	(10.6)
lustb	.07	.12	.19***
	(0.49)	(1.04)	(3.84)
linstitu	2.19	1.84*	-.16
	(1.52)	(1.73)	(-0.28)
inflat	.00	-.05	.02***
	(0.10)	(-0.55)	(4.73)
Cons.	-45.7***	-50.8**	-21.4***
	(-3.24)	(-2.01)	(-3.66)
Short run (ec)	-.66***	-1.06***	-.56***
	(-7.91)	(-7.52)	(-3.77)

Values in parentheses are t-statistics. *** and ** are significant levels at 1 and 5% respectively, while * is significant at 10%.

Results' interpretation. Estimated results of the model presented in Table 1 indicate that PMG is appropriate implying that there is a long-run relationship between interest rate liberalization and foreign investment inflows in the selected SSA economies. PMG findings reveal that liberalizing the interest rate in the 7 selected SSA countries by 1% would lead to 69% increase in FDI inflows in the long-run.

The result of foreign interest rate is however not conforming to theory. Theory postulates that low rate of interest in industrial countries is one of the factors pushing inflow to developing countries. Our findings however suggest otherwise. Interpretation of out result shows there are different factors responsible for foreign investment inflow to host countries. The effects of other factors like market size, liberalization, availability of natural resources and foreign investors' appetite for risk (Brana and Lahet, 2010) are more overbearing than the effect of high foreign interest rate that drive inflows to countries. Another interesting revelation is the consumer price index measured in inflation which is both significant and positive. A unit increase in the general level of prices would lead to 2% increase in the level of foreign investments for the selected 7 SSA nations. Theoretically, very high level of inflation is inimical to business activities, however, moderate inflationary level is necessary to ginger both local and foreign investors. Real GDP is another determinant that has a positive significant effect on foreign investment inflows.

On the average level for the 7 selected SSA countries, the coefficient of adjustment mechanism is significant and appropriately signed using all the three techniques. DFE shows that on average 66% of the disturbance from long-run equilibrium of interest liberalization and the other explanatory variables would be restored within one year. PMG result indicates that on average 56% of the shock would be restored within the year.

Table 2. **Individual countries estimates, PMG,** *authors'*

Dep. Var. lFDI	Botswana	Cote d'Ivoire	Ghana	Kenya	Mauritius	Nigeria	South Africa
Variables	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
lintreslib	–	1.01 (1.27)	.64 (0.79)	.79 (0.59)	-.44 (-0.36)	-1.58*** (-4.82)	-1.87 (-0.60)
lrgdp	3.84 (0.68)	2.47 (1.02)	12.5* (1.92)	9.85 (1.20)	-2.02 (-0.19)	-2.73*** (-4.24)	23.9 (1.00)
lustb	-.23 (-0.64)	.24 (1.50)	.03 (0.11)	-.52 (-1.52)	-.13 (-0.33)	-.20** (-2.63)	-.91 (-1.42)
linstitu	-1.33 (-0.31)	-.26 (-0.15)	.17 (0.11)	-4.38* (-1.85)	1.21 (0.55)	.01 (0.02)	-7.86* (-1.77)
inflat	.06 (0.78)	-.03 (-1.58)	.00 (0.24)	.03 (1.34)	.01 (0.10)	-.01* (-1.95)	.15 (1.06)
Cons.	-17.9** (-2.23)	.89 (0.14)	-10.5* (-1.92)	-45.3*** (-4.77)	-14.9** (-2.09)	-32.4*** (-3.93)	-29.8*** (-3.57)
Shortr-run(ec)	-.52** (-2.26)	.03 (0.15)	-.30** (-2.03)	-.94*** (-6.74)	-.46** (-2.26)	-.90*** (-6.85)	-.75*** (-4.09)

Values in parentheses are t-statistics. *** and ** are significant levels at 1 and 5% respectively, while * is significant at 10%.

Table 2 shows the estimated results of individual countries using PMG. Revelations from these result indicates that different countries with specific features

and characteristics go a long way to discourage inflows of foreign investments to these countries.

Conclusions. Some conclusions can be made using results in Tables 1 and 2. First, the general conclusion is that on average, liberalizing the interest rates in the selected 7 SSA countries attracts more foreign investors to these countries in the long run. Other variables that influence FDI inflows to these countries are real growth rate measured in RGDP and moderate level of inflation. Another general conclusion is that country-specific factors go a long way to discourage foreign investments into the countries under investigation. This is revealed by the results of the constant terms that are negative and mostly significant for all the countries, except Cote d'Ivoire. For the remaining six countries the country specific factors are both significant and negative. The negative sign of the country specific factors show that individual characteristics in each of these countries like political unrest that is prevalent in this area; corruption and hostile enabling environment are inhibiting foreign investors in the selected seven SSA economies.

Furthermore, specific conclusion can be made regarding the Error Correction Mechanism (ECM) for individual countries results. PMG estimates different adjustment mechanism for different countries based on the assumption of this technique and the results are presented in Table 2. Almost all the countries except Cote d'Ivoire have significant and negative adjustment mechanism coefficients. In Cote d'Ivoire the implication of the result is that there is no long-run relationship between interest rate liberalization and foreign investment. For the remaining 6 countries a benchmark value of 50% shock to be eliminated is assumed. Given the different ECM for each country and the benchmark of 50% of shock to be eliminated, t time that it would take each country for the explanatory variables to equilibrate with FDI after the shock is presented: Botswana − 9 months; Ghana − 1 year and 9 months; Kenya − 2 months; Mauritius − 13 months; Nigeria − 3 months and South Africa − 5 months. From this analysis Kenya is the fastest to attain equilibrium between its dependent variable and the independent variables taking just 2 months while Ghana is the slowest country to reach equilibrium (21 months). The detailed analysis on this is given in the appendix. Kenya is adjudged to be one of the countries in the SSA with good financial development and open policies (Odhiambo, 2009) this is corroborated by our result. It is thus recommended that other countries in the SSA should emulate Kenya in order to attract foreign investments through openness. It is also part of the recommendations that these countries should adopt sound democratic government in order to reduce political unrest and other forms of insecurities so as to encourage more FDI inflows.

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Appendix:

Given the formula:

$$(1-\alpha)^t = (1-x),$$

where α – is an absolute value of ECT; x – % of shock required to be eliminated; t – is the time/period spent to eliminate the shock.

$$t \log(1-\alpha) = \log(1-x);$$
$$t = \frac{\log(1-x)}{\log(1-\alpha)}.$$

Assuming there is a benchmark to eliminate 50% of the shock in the long run, then the period time t that it would take each country to eliminate the shock is calculated as:

Botswana:

$$t = \frac{\log(1-50\%)}{\log(1-0.52)} = \frac{\log(.50)}{\log(.48)} = 0.9,$$

which is 9 months.

Ghana:

$$t = \frac{\log(.50)}{\log(.70)} = 1.94,$$

which is equivalent to 1 year 9 months.

Kenya:

$$t = \frac{\log(.50)}{\log(.06)} = 0.25,$$

equal to 2 months.

Mauritius:

$$t = \frac{\log(.50)}{\log(.54)} = 1.12,$$

it takes 13 months for liberalized interest rate to equilibrate with FDI after disequilibrium in Mauritius.

Nigeria:

$$t = \frac{\log(.50)}{\log(.10)} = 0.3,$$

this is equivalent to 3 months.

South Africa:

$$t = \frac{\log(.50)}{\log(.25)} = 0.5,$$

it takes 5 months for interest rate liberalization to attain long-run equilibrium with FDI after the shock in South Africa.