XVII

Volume XVII, Number 1, May 2014

Journal of Applied Economics

William Gabriel Brafu-Insaidoo
Nicholas Biekpe

Determinants of foreign capital flows: The experience of selected Sub-Saharan African countries

UCEMA

Edited by the Universidad del CEMA
Print ISSN 1514-0326
Online ISSN 1667-6726

Journal of Applied Economics. Vol XVII, No. 1 (May 2014), 63-88

DETERMINANTS OF FOREIGN CAPITAL FLOWS: THE EXPERIENCE OF SELECTED SUB-SAHARAN AFRICAN COUNTRIES

William Gabriel Brafu-Insaidoo and Nicholas Biekpe*
University of Cape Town

Submitted October 2011; accepted May 2013

This study investigates the major determinants of international capital flows in selected countries in Sub-Saharan Africa. Both theory and the empirical literature suggest that financial liberalization and regionalism lead to higher levels of capital inflows. By using a dynamic panel data analysis, this research tests these hypotheses. The impact of financial liberalization depends on the type of liberalization implemented. Liberalization of the domestic financial system and the domestic equity market has a positive and significant impact on international capital flows. Aggregate capital account liberalization is not significant, but the elimination of multiple exchange rates significantly affects international capital flows, while other components have a more limited impact: the liberalization of inward FDI directly increases foreign direct investments, whilst the deregulation of offshore borrowing directly causes an increase in foreign debt inflows. Regionalism causes an increase in foreign direct investment inflows but does not affect other forms of capital inflows.

JEL classification codes: F2, F21, F3, F34, F4, F40, F41, F43
Key words: international capital flows, financial liberalization.

I. Introduction

A number of countries across the world have taken steps to encourage cross-border investment flows, based on the notion that increased capital flows bring benefits in the form of increased efficiency in the allocation of global resources

* Nicholas Biekpe (corresponding author): Graduate School of Business, University of Cape Town, Republic of South Africa; tel: +27 21 914 6778; email: nicholas.biekpe@gsb.uct.ac.za. William Gabriel Brafu-Insaidoo: Graduate School of Business, University of Cape Town, Republic of South Africa; email: winsaidoo@yahoo.com

(Kose et al. 2005). This initiative has led to a surge in international investment flows over the past two decades (Agenor 2003; Lane and Milesi-Ferretti 2003; Morrison and White 2004; and Vo 2005). Sub-Saharan Africa has, however, received a comparatively smaller share of the increased global flows.[1] This raises an important issue and policy challenge for the region, namely, how to increase incentives to attract a greater share of the increased global flows.

Kaminsky and Schmukler (2003), Prasad et al. (2003), Campion and Neumann (2004) and Caprio et al. (2001) suggest that countries can increase incentives to attract more international capital flows by de-regulating activities in their domestic financial markets, and liberalizing their capital account transactions and equity markets. They further explain that these policies can cause an increase in international capital inflows by reducing transaction costs and quantitative limits of ownership and investments, and by increasing returns on assets. Another body of literature, including Baldwin (1997), Wakeman-Linn and Wagh (2008), and Garcia-Herrero and Wooldridge (2007), suggests that countries that are active members of regional blocs or signatories to regional free trade and investment agreements tend to attract more foreign investment flows. They further argue that this regional initiative can attract more foreign investments by producing benefits in terms of exploiting wide-ranging scale economies, expanded trade links and enhanced financial development within the regions concerned.

Given their arguments, we can hypothesise therefore that countries that deregulate their domestic financial markets, and liberalise their capital account transactions and equity markets attract greater inflow of international capital. We can also postulate that regionalism causes greater inflows of international capital. Despite the seemingly conventional wisdom in the hypotheses, the empirical literature, including studies on Africa by Delechat et al. (2009), Asiedu and Lien (2004) and the International Monetary Fund (2008), fail to provide any conclusive evidence on the relationship between external financial liberalization and international capital flows. The lack of consensus could stem from the use of aggregated indices or a binary dummy as proxy measures for external financial liberalization, which comprises the liberalization of capital account transactions

[1] Total foreign private capital inflow and official aid inflow to sub-Saharan Africa amounted to 126 billion United States Dollars, accounting for merely 2 percent of total global capital inflows in 2007.

and of the domestic equity market (Edison and Warnock 2006). Conducting a study that disentangles the effect of external financial liberalization on capital flows may be the key to identifying the postulated effects that seem hidden from the empirical front so far. In addition, while studies on the impact of domestic financial liberalization and regionalism abound for America, Asia and Europe (see for example Schmitz 2009; Waldkirk 2002; and Velde and Bezemer 2004), the case is not necessarily so for Sub-Saharan Africa. This study seeks to fill the research gap.

The significance of this study therefore lies in its quest to disentangle the effect of external financial liberalization, looking at its components, and to examine the impact of domestic financial liberalization and regionalism on international capital flows to a sample of thirty-seven selected Sub-Saharan African countries. A subset of thirteen emerging and frontier market economies that developed their domestic financial markets, reduced restrictions on external capital flows and offered competitive investment environments to attract investments are analyzed in more detail.

The rest of the paper is organised as follows. The next section presents and discusses the working hypotheses, the estimated empirical model, the sources and nature of data used for the study and defines the variables used for the study. The estimation results for aggregated and disaggregated foreign capital flows are presented and discussed in Section III. Finally, Section IV of the paper summarises the findings of the research and concludes the discussion by indicating the contribution and the basic limitations of the study while offering some directions for future extensions.

II. Methodology and variable definitions

A. Hypothesis

From a survey of existing theoretical and empirical literature, the following are our broad working hypotheses: (a) Increased domestic financial liberalization creates incentives for greater inflow of international capital; (b) Increased external financial liberalization serves to attract greater international capital inflows; and (c) Regionalism contributes positively to the achievement of international financial integration by emerging and developing economies.

Hypothesis 1: *Increased domestic financial liberalization creates incentives for greater inflow of international capital*.

The reduction of restrictions on activities in the domestic financial market creates incentives for greater inflow of international capital because of its positive effect on different types of international capital inflows, namely foreign direct investments (FDI), portfolio investments and foreign private loans. Firstly, increased domestic financial liberalization attracts more FDI by creating equal opportunity for domestic and foreign firms to compete for funds, increasing the supply of domestic credit and encouraging foreign financial institutions to enter the domestic market (Caprio et al. 2001). Secondly, this policy reform attracts more portfolio investment flows through the creation of positive externalities and the provision of signalling effects of increasing financial development and commitment to further financial reforms (Montiel 2003). Thirdly, the policy reform attracts more foreign loan inflows because the growth of domestic credit outpaces the growth of deposits and, as a result, creates the need to borrow from overseas to meet the shortage in supply of domestic credit. The policy reform can also attract more foreign private loans if the cost of borrowing from the domestic market is higher than the cost borrowing from overseas (Jappelli and Paganor 1994). Thus, domestic financial liberalization should have a strong and positive effect on international capital inflows.

Hypothesis 2: *Increased external financial liberalization serves to attract greater international capital inflows*.

External financial liberalization consists of the liberalization of regulations on FDI inflows, overseas borrowing and equity market activities, and the elimination of multiple exchange rate practices (Kaminsky and Schmukler 2003).

One of the explanations on how the policy reform affects international capital flows concerns the impact of deregulation of inward FDI on FDI inflows. The removal or relaxation of restrictions on inward FDI can cause an increase in FDI inflows through the removal of quantitative limits of ownerships and investments in production, and the provision of tax incentives. In addition, liberalization of FDI can attract more portfolio investment inflows if FDI involves mergers and acquisitions, which normally occur through the stock market (Montiel and Reinhart 1999).

Another explanation on how the policy reform affects international capital inflows relates to the impact of relaxation or removal of restrictions on overseas borrowing. The de-regulation of offshore borrowing can attract more foreign private loan inflows through the removal of quantitative restrictions on overseas borrowing and the provision of tax incentives. The removal of quantitative restrictions on overseas borrowing directly increases offshore borrowing while the provision of tax incentives including the reduction of reserve requirements restrictions reduces transaction costs (Radelet and Sachs 1998; Rana 1998).

A third explanation on how the policy reform affects international capital inflows is associated with the impact of equity market liberalization on foreign investment inflows. Equity market liberalization can cause the attraction of more portfolio investment inflows through the removal of quantitative restrictions on foreigners' acquisition of domestic equity and the provision of tax incentives. The removal of quantitative restrictions on foreigners' purchase of domestic equity directly increases the size of foreign investments in the equity market while the provision of tax incentives reduces transaction costs. In addition, equity market liberalization can attract more portfolio investment flows by causing an increase in stock prices and expected returns in the equity market. Furthermore, equity market liberalization can attract more FDI flows directly by facilitating the process of mergers and acquisitions, and by generating alternative sources of funding to firms (Montiel and Reinhart 1999; Bekaert et al. 2003; Sompornserm 2010).

An additional explanation on the relationship between the policy reform and international capital inflows is linked to the impact of the elimination of multiple exchange rate practices on international capital inflows. The abolition of multiple exchange rate practices can cause the attraction of more foreign capital inflows by eliminating economic distortions, and reducing uncertainties and risk about exchange rate particularly during repatriation of capital or income from capital. Also, this type of policy reform can attract more inflows of international capital by providing a signalling effect of a country's commitment to provide efficient economic policies and market discipline (Xu 2002; Fan 2006).

Four specific propositions can be made from the explanations provided. These propositions are stated as follows: *the de-regulation of FDI inflows; equity market liberalization; elimination of multiple exchange rate practices can attract greater inflows of international capital*; *the de-regulation of overseas borrowing can attract greater inflows of foreign loans*.

Hypothesis 3: *Regionalism contributes positively to the achievement of international financial integration by emerging and developing economies*.

Defined as a formal initiative to integrate trade and financial markets in a regional trade and investment agreement (Sy 2006), regionalism as a process may involve the elimination of restrictions to cross-border trade, investments and financial operations by firms from countries in the same agreement. This may be in addition to the harmonisation of rules, regulations and taxes between the member countries. Consequently, regionalism can contribute positively and significantly to the achievement of international financial integration and the attraction of more international capital inflows. Wakeman-Linn and Wagh (2008), Garcia-Herrero and Wooldridge (2007), and Sy (2006) suggest that regionalism is essential for the achievement of international financial integration. Sy (2006) and Baldwin (1997) also argue that regionalism can promote increased foreign investments inflows because of the potential benefits from regional integration which include expanded trade links, reduced production costs associated with free movement of factors of production, improved market access, increased opportunities for risk sharing and diversification, and region-wide financial development.

B. Estimation model

Following from the above discussions, we estimated a dynamic panel model for identification and analysis of the main determinants of international capital flows in emerging and frontier market economies in Sub-Saharan Africa. The panel data analysis allows the pooling of data, increases degrees of freedom, and permits the analysis of both time and cross-sectional effects and heterogeneous sample units.

The estimation equation used for the analysis of the dynamics of international financial integration is based on the work of Lane and Milesi-Ferretti (2003), Prasad et al. (2003), Delechat et al. (2009), and Garcia-Herrero and Wooldridge (2007) and is presented as follows:

$$GCF_{i,t} = \alpha_i + \beta GCF_{i,t-1} + cDF_{i,t-1} + deq_{i,t-1} + \sum_{k=1}^{Q} \gamma_k CAP_{k,i,t-1} + \delta reg_{i,t-1} + \sum_{k=1}^{Q} \theta_k X_{k,i,t} + u_{i,t}, \quad (1)$$

where $i = 1, 2, \ldots\ldots N$, and $t = 1, 2, \ldots\ldots T$, with N the number of countries and T the number of years. The dependent variable GCF is the ratio of international capital inflows to total GDP. The notations DF and eq respectively represent domestic financial liberalization and equity market liberalization. The notation CAP is a vector of variables representing components or types of capital account liberalization and reg denotes regionalism. The k components or types of capital account liberalization considered in this analysis are foreign direct investment deregulation, offshore borrowing deregulation and the elimination of multiple exchange rate practices. The notation $X_{k,i,t}$ symbolizes a set of control variables, and u_i is an independent error term. The control variables used in the regression analysis are external commodities trade (expressed as share of GDP), oil exports (expressed as share of total exports), mineral exports (expressed as share of total exports) and international interest rates. The parameters β, c, d and γ are coefficients capturing the impact of the previous period's level of capital flows, domestic financial liberalization, equity market liberalization and components or types of capital account liberalization on capital flows in the current period. The notations δ and θ respectively capture the impact of regionalism and other control variables on capital flows. The notation α is an intercept.

Estimation of the dynamic panel model involved the use of the system dynamic panel data estimator.[2] This corrects for potential endogeneity biases that may arise from the inclusion of the lagged dependent variable in the equation. In addition, the system estimator enhances the precision and efficiency of the estimates

C. Data and variable definitions

Annual data for thirty-seven (37) selected countries in Sub-Saharan Africa were collected for the study. Out of the sampled countries, thirteen (13) are referred to as emerging and frontier market economies. The study was in two stages. The first stage involved an econometric analysis of the entire sample of 37 selected countries covering a period of 30 years (from 1980 to 2009). The second stage involved an

[2] The weakness with the application of this kind of estimation approach to a dynamic panel data model with a large time series and a comparatively small cross-section of countries is the possible existence of a high time series bias in the data construct. Data constraints did not permit a wider coverage, in terms of the cross-section of countries covered for the sample period chosen in the first estimation.

econometric analysis of the 13 emerging and frontier market economies in Sub-Saharan Africa covering a period of 35 years (from 1975 to 2009).[3]

Compared with other countries in Sub-Saharan Africa, the emerging and frontier market economies have developed and deregulated their domestic financial markets, reduced restrictions on external capital flows and offered competitive investment environments to attract investments. One of the objectives for these initiatives is to attract greater inflows of foreign capital. According to the definition of the International Monetary Fund (IMF), emerging markets refer to economies with financial and capital markets that are beginning to bear the features of matured stock markets in advanced countries. Other hall-marks of emerging market economies include the achievement of a stable macroeconomic environment, strong economic growth, substantial international reserves and low debt ratio. Emerging markets have attracted the interest of investors because of the prospect of high returns and usually have sufficient financial infrastructure, but have less liquid equity and debt markets than the advanced economies. By this categorization, South Africa is the only country that is considered as a truly emerging market economy in South Africa. Frontier market economies, on the other hand, refer to a group of low and middle-income economies with financial and capital markets that have started gaining the attention and interest of foreign investors. They exhibit a relative openness to and accessibility for foreign investors, but the financial sectors are still small and exhibit low liquidity. They are in the early stages of financial market development, but the continued existence of market restrictions makes it difficult for them to be classified as truly emerging markets, and they are usually referred to as second-generation emerging market economies (International Monetary Fund 2008). By this categorization, Botswana, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Tanzania, Uganda, Zambia, Zimbabwe, Angola, and Senegal are considered as the frontier market economies in Sub-Saharan Africa.

[3] The countries chosen for the study are Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, The Gambia, Guinea, Lesotho, Madagascar, Malawi, Mali, Mauritania, Niger, Sierra Leone, Swaziland, Togo, Botswana, Ghana, Kenya, Mauritius, Mozambique, Nigeria, South Africa, Tanzania, Uganda, Zambia, Zimbabwe, Angola and Senegal.

The rationale for collecting data on the diverse category of countries in the sub region for the study is to help investigate the importance of the emerging and frontier market economies in attracting international capital flows to Sub-Saharan Africa. Data constraints also informed the choice of sample of 37 countries, including the 13 emerging and frontier market economies for the regression analysis.

The definitions and measurements of the variables are based on a review of existing literature. An overview of the basic underlying theories and review of existing empirical studies suggests that conceivable propositions can be considered regarding a large number of potential determinants. However, this study focuses on the impacts of types of financial liberalization and regionalism on international capital flows in the selected countries. It builds on the work of Reinhardt et al. (2010) and Sompornserm (2010).

The volume of international capital flows is measured as the total value of international capital inflows (that is the sum of foreign direct investment, external debt and portfolio investment inflows), expressed as share of GDP. The indicator reflects the de facto quantity-based measure of the evolution of international financial integration and allows for cross-country comparison. Foreign direct investment (FDI) inflows refer to direct investments in productive assets by foreign companies or entities. Non-FDI inflows consist of external debt and portfolio investment inflows. Data on international capital inflows was obtained from the IMF's International Financial Statistics.

Financial liberalization refers to the easing of regulatory restrictions on domestic financial sector activities, the relaxation of regulatory restrictions on foreigners' participation in the domestic equity market and reduction of restrictions on cross-border capital movements. In this study, we adopt the chronology used by Kaminsky and Schmukler (2003) for the construction of the liberalization indexes. In Tables A3, A4 and A5 of the Appendix, we present the criteria for determining the extent of liberalization of the domestic financial sector, the domestic equity market and the capital account transactions.

The value '3' is assigned when there is full liberalization; '2' is assigned when there is partial liberalization; and '1' is assigned when there is high restriction. In this study, we examined the impacts of domestic financial liberalization, equity market liberalization and capital account liberalization on international capital flows. In addition, we analyzed the separate effects of deregulating offshore borrowing, liberalizing inward foreign direct investments, reducing restrictions

on foreigners' acquisition of domestic equity and eliminating multiple exchange rate practices on international capital inflows. The construction of the index for domestic financial liberalization, equity market liberalization and capital account liberalization involved sourcing qualitative data from the IMF's Annual Reports on Exchange Arrangements and Exchange Restrictions and the IMF African Department.

Regionalism refers to active membership of active regional blocs or participation in regional free trade and investment agreements. In his study for Mexico, Waldkirch (2002) used the tariffs between the North American Free Trade Agreement countries (NAFTA) and a NAFTA dummy that indicates reduction in tariff and non-tariff barriers and changes in institutional arrangement. However, there were difficulties in obtaining sufficient data on Free Trade Agreement (FTA) tariffs used by the different regional blocs to which each country belongs. Consequently, we used the number of active regional blocs or FTA's to which each respective country belongs or is a signatory to as proxy for regionalism. The regionalism index value ranges from '0' to any positive number. The value '0' implies that a given country does not participate in any regional bloc or free trade and investment agreement. Any value greater than '0' indicates the number of regional blocs to which the country belongs or the number of regional free trade and investment agreements to which the country is a signatory. The index for regionalism was constructed using information on active membership of active regional bloc obtained from the United Nations Conference on Trade and Development's *Economic Development in Africa 2009 Report*.

Ahmed et al. (2005), Asiedu (2002), and Lane and Milesi-Ferretti (2003) show that openness to international trade in commodities plays a very important role in attracting foreign investments. Investors who focus on direct production do not only target the local market, but are also interested in the international market and hence engage in export-oriented activities. In addition, financial transactions such as trade credit, transportation costs and export insurance usually accompany international trade in goods and services (Lane and Milesi-Ferretti, 2003). Thus, we included an indicator for international trade openness as one of the control variables in our model to capture the impact of international trade on international capital inflows. We measured openness to international trade as the ratio of imports and exports to GDP. Data on the ratio of international trade to GDP was obtained from the World Bank's *World Development indicator 2010*.

Edison and Reinhart (2001), Prasad et al. (2003), and Vo (2005) suggest that one of the main reasons why foreign investors go to developing countries is to exploit the natural resources available (usually crude oil and mineral ores) in these countries. They indicate that countries endowed with natural resources attract significant volumes of foreign investment. Hence, we included two proxy indicators in our model to capture the impact of natural resource availability on foreign investment inflows. These are the share of fuel exports in total exports and the share of mineral exports in total exports. Data on the share of oil and mineral exports in total exports were obtained from the United Nations Statistics database.

We also included international interest rates as control variables in our model. International interest rates reflect the international returns on investment, and consequently, the opportunity costs of foreign investments (Calvo et al. 1993; Fernandez-Arias 1996; and Ahmed et al. 2005). Thus, a rise in international interest rates is expected to reduce foreign investment flows to developing countries. We use the United States' long-term interest rate (which is the 10-year Treasury bond yield at constant maturity) and short term interest rate (3-months Treasury bill rate) as measures of international interest rates. Data on international interest rates were obtained from the U.S. Federal Reserve Bank's online database.

The recent financial crisis, which started with the housing industry crisis in the United States in 2007, is considered to have assumed a more global dimension than previous episodes of financial turmoil (the International Monetary Fund IMF, 2009). In Sub-Saharan Africa, its impact on international capital flows has been largely felt in frontier and emerging markets because of their closer linkages with global financial markets. In this study, we present evidence that the global financial crisis period has been characterised by a fall in capital inflows. To capture this evidence, we included a dummy variable for the 2008-2009 global financial crisis period in the estimation model.

Lastly, we introduced a one-period lagged value for capital flows as ratio of GDP to capture the 'agglomeration' effect. Existing theory, including the work of Kamaly (2002), postulates that past success in attracting foreign capital inflows has a significant influence on the ability to attract foreign investments in the current period.

D. Estimation results

A causality test was done to determine the causal relationship between international capital flows and the different forms of external financial liberalization and domestic financial liberalization. The test results indicate that the direction of causality does not run from international capital flows to the different types of external financial liberalization and domestic financial liberalization (see Tables A1 and A2). This implies that the volume of international capital flows is not the cause of the implementation of the different types of external and domestic financial liberalization. It also confirms that the determination of the policy of financial liberalization is at least weakly exogenous.

In this section, results from the estimation of the model for the 37 selected SSA countries and the 13 SSA emerging and frontier market economies are reported. The diagnostic tests for the specification indicate that the model is well specified. The new residuals for the specification are, at times, auto-correlated of order 1, but not auto-correlated of order 2. The system estimator was combined with the sandwich variance estimator. The sandwich variance estimator produces unbiased estimates and is robust to some types of misspecifications.

Detailed discussions and explanations of the results for the unrestricted and restricted samples are presented next.

E. Estimation results for the thirty-seven Sub-Saharan African countries

The estimation results for the 37 Sub-Saharan African (SSA) countries are shown in Table 1. The results indicate that domestic financial liberalization is an important determinant of international capital flows. The estimated coefficient on the domestic financial liberalization index is positive and significant in the specifications for aggregate foreign capital inflows and non-FDI inflows. This means that the deregulation of activities in the domestic financial market generates incentives that lead to the attraction of international capital flows, particularly non-FDI inflows (portfolio investment and foreign loan inflows). The results are similar to the findings of Schmitz (2009) who studied the impact of domestic financial reforms on international capital inflows for 21 emerging and European economies. The absence of a significant coefficient on the domestic financial liberalization index in the specification for foreign direct investment (FDI) inflows could mean that foreign direct investments bypass the domestic

financial market. The finding also confirms the suggestion by Montiel (2003) that FDI inflows are not intermediated through the domestic financial system, and hence are not affected by changes in domestic interest rates arising from the liberalization. The results also indicate that the coefficient on the index for equity market liberalization is positive and statistically significant in all the specifications for the unrestricted sample. This suggests that the relaxation of restrictions on foreigners' participation in the domestic equity market is good for the attraction of more international capital flows to Sub-Saharan Africa. The results further reveal that the coefficient on the aggregate index for capital account liberalization is not statistically significant, except in the specifications for non-FDI capital inflows. The results for the aggregated capital account liberalization index are similar to the findings of Delechat et al. (2009) which suggest that capital account liberalization is not a strong determinant of aggregated capital flows. The results may also reflect the fact that the use of an aggregated (or averaged) index conceals details on the impact of different forms of capital account liberalization on foreign capital flows.

The estimation results further show differences in the estimated coefficients on types of capital account liberalization. The results indicate that the deregulation of foreign direct investment directly causes an increase in FDI inflows, whilst the relaxation of regulatory restrictions on offshore borrowing directly causes an increase in foreign loan (debt) inflows. The elimination of multiple exchange rate practices causes an increase in all forms of international capital inflows. This suggests that the elimination of multiple exchange rate practices is the only type of capital account liberalization that brings about an increase in all forms of capital inflows to the Sub-Saharan African countries. The elimination of multiple exchange rate practices causes an increase in international capital inflows by eliminating distortions, creating incentives and reducing transaction costs.

The results also indicate that the coefficient on the index for regionalism is positive and significant in the specification for FDI inflows. This means that participation in regional trade and investment agreements has enabled countries in Sub-Saharan Africa to attract more FDI. The results further reveal that regionalism is yet to have any significant impact on other forms of foreign capital inflows.

The external trade openness indicator is positively and strongly associated with the international capital flows indicator in all the specifications for the unrestricted sample. The results are consistent with the findings of Ahmed et al. (2005) which confirm the hypothesis that greater openness to international trade arguably promotes higher capital mobility.

Table 1. Capital flows to thirty-seven Sub-Saharan African countries

	Foreign capital inflows (% GDP)		FDI inflows (% GDP)		Non-FDI inflows (% GDP)	
1ST order lag dependent variable	0.086***	0.092***	0.061*	0.262*	0.170***	0.179***
	(3.90)	(4.97)	(1.81)	(1.84)	(6.36)	(3.92)
Domestic financial liberalization index (1-period lag)	0.927*	1.491**	1.795	0.177	0.227**	0.810***
	(1.73)	(2.11)	(1.51)	(1.01)	(2.42)	(3.30)
Equity market liberalization index (1-period lag)	6.337***	1.211***	1.764*	1.279**	0.718*	0.257*
	(4.85)	(3.01)	(1.83)	(2.18)	(1.90)	(1.93)
Capital account liberalization index (1-period lag)	0.250		0.534		1.080*	
	(1.15)		(0.83)		(1.83)	
FDI liberalization index (1-period lag)		0.846		0.666*		0.288
		(1.01)		(1.72)		(1.39)
Overseas borrowing deregulation index (1-period lag)		0.525		0.614		0.170*
		(1.40)		(0.92)		(1.71)
Elimination of multiple exchange practices		0.952*		5.990**		1.810*
		(1.78)		(2.04)		(1.96)
Regionalism index (1-period lag)	0.348	0.259	2.008*	0.759*	-1.721	0.940
	(1.12)	(0.32)	(1.82)	(1.72)	(-1.44)	(1.49)
External trade (% of GDP)	0.263***	0.267***	0.213*	0.279***	0.026**	0.035***
	(4.02)	(3.96)	(1.80)	(3.43)	(2.20)	(3.13)
Share of fuel exports in total exports (%)			0.126**			
			(2.32)			
Share of mineral exports in total exports (%)			0.117**			
			(1.99)			
U.S. long-term interest rate (%)			-2.059			
			(-0.26)			
U.S. short-term interest rate (%)	-0.097**	-0.144*			-0.041**	-0.104*
	(-2.21)	(-1.73)			(-2.12)	(-1.85)
2007-2009 global financial crisis dummy	-0.503	-0.469	4.427*	7.366*	-2.959	-1.260
	(-1.09)	(-0.87)	(1.80)	(1.72)	(-1.07)	(-1.56)
Dummy for emerging and frontier markets	0.121	0.101	1.612	1.422	1.142*	1.021*
	(0.91)	(0.85)	(0.42)	(0.61)	(1.82)	(1.79)
Constant	-1.888*	-1.827**	1.413		-1.767	-3.710**
	(-1.69)	(-2.39)	(1.55)		(-1.22)	(-2.29)
Serial correlation test (1st order)	0.062	0.062	0.000	0.228	0.002	0.000
Serial correlation test (2nd order)	0.493	0.491	0.783	0.305	0.435	0.462
Number of observation	971	971	971	971	755	968
Number of cross sections	37	37	37	37	37	37

Note: The method of estimation was the system dynamic panel data estimation. The one-step system robust (sandwich) variance estimator was used to correct for remaining biases associated with some types of misspecifications. Estimation of all equations included time dummies, not shown here. The t-statistics are in parentheses. ***, **, and * indicate significance at 1, 5 and 10% respectively.

The estimation results further confirm the importance of natural resource endowment in the attraction of foreign direct investments to Africa. The coefficients on oil and mineral exports are positive and statistically significant in the specification for FDI inflows. The results are consistent with the findings by Asiedu (2002) and Ahmed et al. (2005). The estimated coefficients on the long and short-run international interest rates are negative and statistically significant. This suggests that lower levels of international interest rates reduce returns on investments in international markets, which in turn compels foreign investors to move their resources to developing countries where returns on investments are comparatively higher. The 2008-2009 global financial crisis dummy has a positive and statistically significant coefficient in the specification for FDI inflows. The results could be influenced by increased interest in Africa by foreign investors from the previously non-traditional trading partners including China and India, whose actions are in turn motivated by their increased demand for natural resources. The dummy variable for frontier and emerging market economies in Sub-Saharan Africa is also positive and statistically significant in the specification for non-FDI inflows. This confirms the assertion that emerging and frontier market economies attract a significant share of foreign portfolio investments and foreign loan inflows to Sub-Saharan Africa. This result is consistent with the fact that emerging and frontier market economies attract not less than 85 per cent of portfolio investment flows to Sub-Saharan Africa.

III. Emerging and frontier market economies

The estimation results for the 13 emerging and frontier market economies are shown in Table 2. The results indicate that the coefficients on the indexes for domestic financial liberalization and equity market liberalization are positive and significant in all the specifications for the restricted sample (this differs from the complete sample, where domestic financial liberalization did not affect foreign direct investment significantly).

Table 2. Capital flows to thirteen emerging and frontier market economies

	Foreign capital inflows (% GDP)		FDI Inflows (% GDP)		Non-FDI inflows (% GDP)	
1ST order lag dependent variable	0.348***	0.305***	0.457*	3.988*	0.395***	0.330***
	(6.27)	(5.91)	(1.72)	(1.84)	(3.73)	(6.30)
Domestic financial liberalization index (1-period lag)	0.301**	0.245*	0.919**	1.653*	0.920*	0.549*
	(2.57)	(1.85)	(2.55)	(1.82)	(1.90)	(1.72)
Equity market liberalization index (1-period lag)	2.686*	1.312*	1.335*	3.547*	1.612**	1.462*
	(1.84)	(1.69)	(1.72)	(1.82)	(1.99)	(1.82)
Capital account transactions liberalization index (1-period lag)	-0.385		0.154		0.504**	
	(-0.55)		(1.57)		(2.07)	
Foreign direct investment liberalization index (1-period lag)		-0.301		0.623*		-0.424
		(-1.33)		(1.68)		(-0.12)
Overseas borrowing deregulation index (1-period lag)		0.579		0.133		0.815*
		(1.38)		(0.83)		(1.69)
Elimination of multiple exchange practices		0.651*		0.214**		0.316**
		(1.68)		(2.83)		(2.27)
Regionalism index (1-period lag)	0.498	0.152	0.128*	0.449*	-0.497	0.190
	(0.76)	(1.31)	(1.83)	(1.81)	(-0.69)	(0.11)
External trade (% of GDP)	2.703**	1.115**	0.116*	0.199*	0.191*	0.898
	(2.34)	(1.99)	(1.97)	(1.83)	(1.73)	(0.77)
Share of fuel exports in total exports (%)			0.066*			
			(1.93)			
Share of mineral exports in total exports (%)			0.036*			
			(1.81)			
U.S. long-term interest rate (%)			-0.106**	-0.415*		
			(-2.27)	(-1.81)		
U.S. short-term interest rate (%)	-2.891**	-2.898			-1.801	-0.404
	(-2.75)	(-0.42)			(-0.80)	(-0.81)
2007-2009 global financial crisis dummy	-1.068	-1.370	-1.454	-1.353	-0.769*	-0.436*
	(-1.65)	(-0.61)	(-1.54)	(-0.81)	(-1.69)	(-1.74)
Constant	3.019**	-1.109	0.704	2.655	-0.875*	0.581
	(2.26)	(1.09)	(0.71)	(0.98)	(-1.93)	(0.15)
Serial correlation test (1st order)	0.436	0.469	0.664	0.000	0.590	0.567
Serial correlation test (2nd order)	0.271	0.713	0.245	0.201	0.284	0.842
Number of observation	431	432	432	422	432	432
Number of cross sections	13	13	13	13	13	13

Note: The method of estimation was the system dynamic panel data estimation. The one-step system robust (sandwich) variance estimator was used to correct for remaining biases associated with some types of misspecifications. Estimation of all equations included time dummies, not shown here. The t-statistics are in parentheses. ***, **, and * indicate significance at 1, 5 and 10% respectively.

The results obtained for the aggregated (averaged) index, and disaggregated indexes, for capital account liberalization in the restricted sample are similar to the results obtained in the unrestricted sample. The estimated results also show that regionalism promotes FDI whilst external trade openness attracts all forms of international capital flows. Oil and mineral exports, and lower levels of international interest rates are also leading indicators for the attraction of foreign direct investments in emerging and frontier market economies.

The estimated coefficient on the 2008-2009 dummy variable is not only negative, but now it is significant in the specification for non-FDI capital flows in the restricted sample. The results are consistent with the findings by the International Monetary Fund (IMF) (2009) that the adverse impact of the recent global financial crisis has been largely felt in emerging and frontier market economies because of their closer link with international financial markets.

IV. Conclusions and recommendations

This study examined the impact of different aspects of external financial liberalization, domestic financial deregulation, and regionalism on international capital flows to 37 selected countries in Sub-Saharan Africa.

The study finds evidence to support the hypothesis that domestic financial liberalization creates incentives for the attraction of international capital flows. More specifically, domestic financial liberalization has a strong and positive effect on total international capital inflows, as well as on non-FDI inflows, whereas the impact on FDI is only significant within the subset of emerging and frontier market economies. The results of the study are consistent with findings of Schmitz (2009) for 21 emerging European economies.

Findings from the study also confirm the hypothesis that the relaxation of restrictions on foreigners' participation in domestic equity markets serve to attract greater inflows of international capital, impacting on both FDI and non-FDI inflows. The evidence on the effects of the liberalization of capital account transactions is weaker. A comprehensive liberalization of the capital account transactions only brings about an increase in non-FDI inflows; however, the policy reform does not seem to have any significant influence on FDI and total inflows. Our findings differ significantly from those of Ahmed et al. (2005) which fail to capture the impact of partial liberalization. Our study also finds evidence to support the proposition that different forms of the policy reform affect foreign capital inflows in different

ways. The elimination of multiple exchange rate practices and the relaxation of restrictions on foreigners' participation in domestic equity markets result in an increase in all types of foreign capital inflows. However, the deregulation of inward FDI and offshore borrowing create incentives for the attraction of specific types of international capital. The relaxation of regulatory restrictions on FDI serve as an incentive for the attraction of more FDI whilst the relaxation of regulatory restrictions on offshore borrowing causes the attraction of more non-FDI capital to Sub-Saharan Africa.

The study also finds little evidence in support of the hypothesis that regionalism contributes positively to the achievement of international financial integration. More specifically, regionalism promotes greater FDI inflows but fails to encourage other forms of foreign investments in Sub-Saharan Africa. One possible explanation for this is the small size of most African markets, which serves as a deterrent to foreign investment. Another explanation for this is that a number of SSA countries have active membership of more than one regional bloc. The multiple memberships, in turn, suggest that member countries have to deal with the issue of competing objectives, divergent strategies for liberalising investments and trade, and opposing sets of laws and administrative processes. The ambiguities in regional groupings make it difficult for prospective investors to identify market opportunities and for the full realisation of regional integration in investments and trade.

Thus, the main contribution of our study is that the impact of external financial liberalization on international capital inflows depends on the type of liberalization policy implemented and the type of capital inflows considered. More specifically, one of our contributions is that the elimination of multiple exchange rate practices and the relaxation of restrictions on foreigners' participation in domestic equity markets are important for the attraction of all types of international capital flows to Sub-Saharan Africa. Our next contribution is that the liberalization of inward foreign direct investments directly causes an increase in FDI whilst the deregulation of offshore borrowing directly causes an increase in non-FDI flows to Sub-Saharan Africa.

The basic limitations of the study were the inability to further disaggregate foreign capital inflows and to construct a more comprehensive measure of regionalism. These limitations were due to our inability to obtain sufficient data on portfolio investment inflows to cover the period from 1975 to 2009 and on FTA tariffs. The findings of the study offer some directions for future extensions of the

study. First, future research can be directed at disaggregating the regionalism index to capture the separate impacts of regional trade integration and regional financial liberalization, with focus on a larger sample of countries in the sub-region. The study can also be extended to examine the impact of regional agreements on regional financial integration, with emphasis on regional cross-border capital or investment flows.

Appendix

Table A1. Panel causality test for 13 emerging and frontier market economies

Null hypothesis		F-statistic	Probability
(1)	FDI liberalization does not Granger cause foreign capital inflow	0.037	0.964
(2)	Foreign capital inflow does not Granger cause FDI liberalization	0.210	0.811
(3)	External borrowing deregulation does not Granger cause foreign capital inflow	0.038	0.963
(4)	Foreign capital inflow does not Granger cause external borrowing deregulation	0.174	0.840
(5)	Domestic financial liberalization does not Granger cause foreign capital inflow	0.096	0.908
(6)	Foreign capital inflow does not Granger cause domestic financial liberalization	0.317	0.729
(7)	Equity market liberalization does not Granger cause foreign capital inflow	0.025	0.976
(8)	Foreign capital inflow does not Granger cause equity market liberalization	0.145	0.865
(9)	Multiple exchange rate practices does not Granger cause foreign capital inflow	0.066	0.936
(10)	Foreign capital inflow does not Granger cause multiple exchange rate practices	0.205	0.814
(11)	Regionalism does not Granger cause foreign capital inflow	0.017	0.983
(12)	Foreign capital inflow does not Granger cause regionalism	0.154	0.858

Note: Lags: 2; Sample: 1975 to 2009. No. of observations: 419 (foreign capital inflow and domestic financial liberalization: 418).

Table A2. Panel causality test for 37 selected SSA countries

Null hypothesis		F-statistic	Probability
(1)	External financial liberalization does not Granger cause foreign capital flow	0.323	0.724
(2)	Foreign capital flow does not Granger cause external financial liberalization	0.310	0.733
(3)	Domestic financial liberalization does not Granger cause foreign capital inflow	0.219	0.803
(4)	Foreign capital inflow does not Granger cause domestic financial liberalization	0.639	0.528
(5)	FDI liberalization does not Granger cause foreign capital inflow	0.253	0.777
(6)	Foreign capital inflow does not Granger cause FDI liberalization	0.376	0.687
(7)	External borrowing deregulation does not Granger cause foreign capital inflow	0.248	0.780
(8)	Foreign capital inflow does not Granger cause external borrowing deregulation	0.394	0.675
(9)	Equity market liberalization does not Granger cause foreign capital inflow	0.008	0.992
(10)	Foreign capital inflow does not Granger cause equity market liberalization	0.624	0.536
(11)	Multiple exchange rate practices does not Granger cause foreign capital inflow	0.039	0.961
(12)	Foreign capital inflow does not Granger cause multiple exchange rate practices	0.239	0.787
(13)	Regionalism does not Granger cause foreign capital inflow	0.201	0.818
(14)	Foreign capital inflow does not Granger cause regionalism	0.438	0.645

Note: Lags: 2; Sample: 1980 to 2009. No. of observations: 1036.

Table A3. Criteria for determining extent of domestic financial liberalization

Criteria for full liberalization
1. Domestic interest rates
No regulatory restrictions are imposed on the lending and deposit (borrowing) rates. In other words, there are no maximum and minimum rates imposed on lending and borrowing activities. Interest rates are largely determined by existing market conditions
2. Non-price indicators
There are possibly no direct controls on credit allocation. In addition, the holding of deposits in foreign currencies is possibly permitted.
Criteria for partial liberalization
1. Domestic interest rates
There are regulatory restrictions on either lending or borrowing rates. In other words, maximum and minimum rates are imposed on either lending or borrowing activities.
2. Non-price indicators
Controls on certain credit allocations or subsidies to certain sectors might exist. In addition, holding of deposits in foreign currencies might not be permitted.
Criteria for no liberalization
1. Domestic interest rates
There are controls on lending and deposit (borrowing) interest rates. In other words, maximum (ceilings) and minimum (floors) rates are imposed on lending and borrowing activities.
2. Non-price indicators
There are possibly controls on the allocation of credit or subsidies to certain sectors on the economy. Holding deposits in foreign currencies is possibly prohibited.

Note: Sourced from Kaminsky and Schmukler (2003).

Table A4. Criteria for determining extent of capital account liberalization

Criteria for full liberalization
1. Overseas borrowing by banks and other corporations
In most cases, banks and other institutions are free to borrow from overseas, and the required minimum maturity should not exceed two years. It may be necessary for them to inform authorities, however, authorization is granted automatically in most cases. Reserve requirements may be imposed, but at rates lower than 10 per cent.
2. Inward foreign direct investments
Most economic activities are open to foreign investments. Foreign residents are also permitted to hold over fifty per cent of shares of enterprises' equity capital in the targeted sectors. In addition, there are no special screening and discriminatory approval procedures. Moreover, foreign nationals are mostly free to get involved in the management and operational controls in these businesses without restrictions.
3. Multiple exchange rate system
No special exchange rates are applied to either the current accounts or capital accounts transactions
Criteria for partial liberalization
1. Overseas borrowing by banks and other corporations
Banks and other institutions are permitted to borrow from overseas, but certain restrictions are imposed on such borrowing. The required minimum maturity range is between two to five years. There might be some limits set on borrowing and certain regulatory requirements applicable to specific sectors. Reserve requirements range between 10 and 50 per cent.
2. Inward foreign direct investments
Some economic activities are open to foreign investments, but foreign residents are permitted to hold less than fifty per cent of shares of enterprises' equity capital in the targeted sectors. In addition, there are special screening and discriminatory approval procedures. Moreover, there are restrictions on foreign nationals' involvement in management and operational controls in these businesses.
3. Multiple exchange rate system
Special exchange rates apply to current account and capital account transactions.
Criteria for no liberalization
1. Overseas borrowing by banks and other corporations
Overseas borrowing by banks and other corporations, in most instances, is not permitted. The required minimum maturity might exceed five years. There might be limits set on borrowing and substantial regulatory requirements applicable to specific sectors. Reserve requirements exceed fifty per cent.
2. Inward foreign direct investments
Most economic activities are not open to foreign investments. Foreign residents are either prohibited or permitted to have less than fifty per cent ownership of enterprises' equity capital in the targeted sectors. In addition, there are special screening and discriminatory approval procedures. Moreover, there are restrictions on foreign nationals' involvement in management and operational controls in these businesses.
3. Multiple exchange rate system
Special exchange rates apply to current account and capital account transactions.

Note: Sourced from Kaminsky and Schmukler (2003) and Koyama and Golub (2006).

Table A5. Criteria for determining extent of equity market liberalization

Criteria for full liberalization
There are no restrictions on foreign investors' acquisition of domestic equity. In addition, capital, dividends and interest can be repatriated within the first two years of the initial investment.
Criteria for partial liberalization
Foreign investors are permitted to hold less than fifty per cent of outstanding equity of each enterprise. There might be restrictions on investing in certain sectors. Furthermore, capital, dividend and interest can be repatriated after 2 years of the initial investment and before five years of the initial investment.
Criteria for no liberalization
Foreign residents are not permitted to invest in domestic equity. Also, capital, dividend and interest cannot be repatriated before five years of the initial investment.

Note: Sourced from Kaminsky and Schmukler (2003) and Koyama and Golub (2006).

References

Ahmed, Faisal, Rabah Arezki and Norbert Funke (2005). The composition of capital flows: Is South Africa different? Working Paper 05/40, Washington, DC, IMF.

Asiedu, Elizabeth (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development*, 30:107-19.

Asiedu, Elizabeth, and Donald Lien (2004). Capital controls and foreign direct investment. *World Development,* 32: 479-90.

Baldwin, Richard (1997). Review of theoretical developments on regional integration. In Ademola Oyejide, Ibrahim Elbadawi, and Paul Collier, editors, *Regional integration and trade liberalization in sub-Saharan Africa*. London: MacMillan Press Ltd.

Bekaert, Geert, Charles Harvey and Angela Ng, (2003). Market integration and contagion. Working Paper 9510, NBER.

Calvo, Guillermo, Leonardo Leiderman and Carmen Reinhart (1993). Capital inflows and real exchange rate appreciation in Latin America: The role of external factors. *IMF Staff Papers,* 40: 108-151.

Campion, Mary Kathryn and Rebecca Neumann (2004). Compositional effects of capital controls: Evidence from Latin America. *North American Journal of Economics and Finance* 15: 161-178.

Caprio, Gerard, James Hanson and Patrick Honohan (2001). Introduction and overview: The case for liberalization and some drawbacks. In Gerard Caprio,

Patrick Honohan, and Joseph Stiglitz, editors, *Financial liberalization: How far and how fast?* Cambridge University Press.

Delechat, Corinne, Gustavo Ramirez, Smita Wagh, and John Wakeman-Linn (2009). Sub-Saharan Africa's integration in the global financial markets, Working paper 09/114, Washington, DC, IMF.

Edison, Hali, and Carmen Reinhart (2001). Stopping hot money, *Journal of Development Economics* 66: 533-553.

Edison, Hali, and Francis Warnock (2006). Cross-border listings, capital controls and equity flows to emerging markets. Working Paper 12589, NBER.

Eichengreen, Barry (2003). *Capital flows and crisis.* Cambridge, MIT Press.

Fan, Emma Xiaoqin (2006). A note on dual / multiple exchange rates. Policy Brief Series 26. ERD, Asian Development Bank.

Fernandez-Arias, Eduardo (1996). The new wave of private capital inflows: Push or pull? *Journal of Development Economics* 48:389-418.

Garcia-Herrero, Alicia, and Philip Wooldridge (2007). Global and regional financial integration: Progress in emerging markets. *BIS Quarterly Review*, September 2007.

International Monetary Fund (1999). The cross-border initiative in Eastern and Southern Africa. Washington, DC, African and Policy Development and Review Department, IMF.

International Monetary Fund (2008). Regional economic outlook: Sub-Saharan Africa. In *World economic and financial surveys*.

International Monetary Fund (2009). *Impact of the global financial crisis on Sub-Saharan Africa*. Washington, DC, African Department, IMF.

Jappelli, Tullio, and Marco Pagano (1994). Saving, growth and liquidity constraints. *Quarterly Journal of Economics* 109: 83-109.

Kamaly, Ahmed (2002). Behind the surge in FDI to developing countries in the 1990s: An empirical investigation. Unpublished, College Park, Maryland, University of Maryland.

Kaminsky, Graciela, and Sergio Schmukler (2003). Short-run pain, long-run gain: The effects of financial liberalization, Working Paper 03/34, Washington, DC, IMF.

Kose, M. Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei (2005). Financial globalization beyond the blame game. *Finance and Development* 44: 9-13

Koyama, Takeshi and Stephen Golub (2006) OECD's FDI regulatory restrictiveness index: Revision and extension to more economies. Working Paper on International Investment 2006/4, OECD.

Lane, Philip R., and Gian Maria Milesi-Ferretti (2003). International financial integration. Discussion Paper 03, Institute for International Integration Studies.

Montiel, Peter J., (2003). *Macroeconomics in emerging markets*. Cambridge, Cambridge University Press.

Montiel, Peter and Reinhart Carmen. M., (1999). Do capital controls and macroeconomic policies influence the volume and composition of capital flows? Evidence from the 1990s. *Journal of International Money and Finance* 18: 619-635.

Morrison, Alan D., and Lucy White (2004). Financial liberalization and capital regulation in open economies. Working Paper 2004-FE-10, Oxford Financial Research Centre.

Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Kose (2003). Effects of financial globalization on developing countries: Some empirical evidence. Occasional Paper 220, IMF.

Radelet, Steven and Sachs, Jeffrey (1998. The onset of the East Asian financial crisis. Working Paper 6680, NBER.

Rana, Pradummna B., (1998). Controls on short-term capital inflows – the Latin American experience and lessons for DMCs. Briefing Notes 2, EDRC, Asian Development Bank.

Reinhardt, Dennis, Antonio Ricci and Tressel, Thierry (2010). International capital flows and development: Financial openness matters. Working Paper 10/235, Washington, DC, IMF.

Schmitz, Martin (2009). Financial reforms and capital flows to emerging Europe. Discussion Paper 278, Dublin, Institute for International Integration Studies.

Sompornserm, Thana (2010). Financial liberalization and international capital flows. Research paper presented at the Asia-Pacific Economic Association Sixth Annual Conference (APEA) 2010 held at the Hong Kong Baptist University, Hong Kong, July 8-9.

Sy, Amadou R., (2006). Financial integration in the West African Economic and Monetary Union. Working Paper 06/214, Washington, DC, IMF.

UNCTAD, (2009). *Economic development in Africa report 2009: Strengthening regional economic integration for Africa's development,* Geneva, United Nations publications.

Velde, Dirk. Willem. te and Bezemer, Dirk (2004). Regional integration and foreign direct investment in developing countries. A DFID/ EC-PREP funded research project on Regional Integration and Poverty.

Vo, Xuan Vinh (2005). *Determinants of international financial integration.* School of Economics, University of New South Wales.

Wakeman-Linn, John, and Smita Wagh (2008). Regional financial integration: Its potential contribution to financial sector growth and development in sub-Saharan Africa. Article presented at high-level seminar of the IMF institute in Tunis, Tunisia, March 4-5.

Waldkirch, Andreas (2002). The new regionalism and foreign direct investment: The case of Mexico. Mimeo, Department of Economics, Oregon State University.

Xu, Jian (2002). Dual exchange rate regime with fraudulent leakage and its unification: The case of China. Paper published at the International Conference on WTO, China and the Asian Economies, The University of Hong Kong, 9-10 November.