

# Capital Flows to Least Developed Countries: What Matters?

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This paper analyses determinants and persistency of capital flows (foreign direct investment, debt and official aid) to least developed countries (LDCs) for the period 1991-2012. The results indicate that capital flows to LDCs, particularly FDI and external debt, are associated with various factors, such as macroeconomic stability, financial sector development, trade openness, natural resource abundance and political environment. However, the determinants of capital flows vary significantly across regions. While FDIs are of natural resource seeking type in Africa, it is mostly efficiency seeking in Asia. The results suggest for appropriate policies aimed at improving macroeconomic and financial environment along with political stability in order to ensure more capital flows to LDCs.

**Keywords:** Capital Flows, LDCs, GMM Estimator, BPoA, IPoA

**JEL Classification:** E44, F20, F34

## I. INTRODUCTION

One of the important agenda of the Brussels Program of Action (BPoA), adopted in 2001, was to improve least developed countries' (LDCs)<sup>1</sup> share in global trade, foreign direct investment (FDI) and financial flows during 2001-2010. The Program sets specific targets and policy actions to be adopted by the LDCs and their development partners in support of the goals. A review of the Program, however, highlighted that commitments made by both LDCs and their development partners were largely remain unfulfilled (UNESCAP 2010). While

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<sup>1</sup>Least Developed Countries (LDCs) are defined based on the following 3 criteria: (i) *Low-income criterion* based on a three-year average estimate of the gross national income (GNI) per capita (under \$750 for inclusion, above \$900 for graduation), (ii) *resource weakness criterion* involving a composite Human Assets Index (HAI) based on indicators of: (a) nutrition; (b) health; (c) education; and (d) adult literacy, and (iii) *Economic vulnerability criterion* based on indicators of the instability of agricultural production; the instability of export of goods and services; the economic importance of non-traditional activities (share of manufacturing and modern services in GDP); merchandise export concentration; and the handicap of economic smallness. There are now 49 countries in the LDC group.

the donor countries did not fulfill their commitment (in the BPoA) on the disbursement of official development assistance (ODA) equivalent to 0.2 per cent of their GNP during the decade, LDCs too could not meet some of the requirements attached to receive additional fund. Against this backdrop, global financial crisis in 2007-2008 and subsequent recession in developed countries put LDCs in a more vulnerable situation because of their higher reliance on exports, aid and external debt. Taking lessons from all these challenges faced in implementing BPoA, the Istanbul Programme of Action (IPoA) has been adopted for the subsequent decade 2011-2020, which charts out strategies for the sustainable development of LDCs with focus on enhancing their productive capacities. In the context of IPoA, one of the important strategies for LDCs would be to attract more capitals (both private and official), which critically depends on understanding of the underlying factors influencing capital flows in these countries. The objective of this paper is therefore to identify the factors that influence capital flows to this group of developing countries and examine how persistent they are.

A widespread view holds that foreign direct investment, portfolio equity, foreign aid and external debt in a country's external finance are important determinants of economic performance, and, to some extent, propensity to crises. Then, what are the determinants of capital flows? Recipient countries receive funds for investment which are not normally available from domestic sources, while investing countries receive a higher return than that of the developed world. In this context, interest rate differentials could explain capital flows. On the other hand, official funds from donor agencies or countries are available only when receiving countries could fulfil certain conditions, such as improvement and liberalisation of their financial sector, privatisation, good governance and macroeconomic stability.

It is apparent in the empirical literature that while a set of studies focus on the determinants of capital flows, other sets of studies focus on the persistence of capital flows. From analytical perspective, these two issues imply dynamic characteristics of capital flows. Moreover, proper care is necessary to encounter endogeneity bias in explaining capital flows. If the dynamic capital flows are analysed in a static model, it will not provide an unbiased assessment of the factors associated with capital flows. This paper thus takes into account of these problems in estimation by applying the Arellano-Bond GMM dynamic panel regression model to capital flows to a panel of 48 LDCs (the list is given in Appendix II) for the period 1991-2012. The GMM estimator considers the explanatory variables and the difference of the lagged dependent variables as instrument in the level equation. The lagged dependent variable is the instrument

in the first-difference equation. Hence, the Arellano-Bond GMM estimator provides unbiased estimates of coefficients by encountering both persistency and endogeneity issues in the model.

There are two important qualifications of this paper. *First*, it estimates the determinants and persistency effect of capital flows—whether capitals are temporary or irreversible. *Second*, it assesses the determinants of capital flows to these countries, which is important particularly in the context of BPoA and IPoA. As this group of countries is diverse in nature (e.g., natural-resource endowment, land locked, island, etc.) and level of economic development, some of them receive higher capitals, but others do not. Why? This paper attempts to provide answer to this question.

The results suggest that macroeconomic stability, trade openness, financial sector development, natural resource abundance and political stability are the key determinants of capital flows (FDI and debt) to LDCs. While FDI flows are of natural resource seeking in African LDCs, it is mostly efficiency-seeking (related to financial sector development) in Asia. The paper also finds a positive link between capital inflows and political institutions, which is consistent with some recent studies for emerging and developed countries (see, for example, Faria and Mauro 2009). For official aid flows, secondary school enrolment has been emerged as an important determinant. The GMM estimators suggest that capital flows in LDCs are less persistent, implying a limited scope of capital flows for financing development activities in LDCs.

The rest of the paper is organised as follows. Section II reviews the literature on capital flows. Section III describes the data, presents the empirical strategy, and reports the main results. Section IV concludes the paper.

## II. A BRIEF REVIEW OF LITERATURE ON CAPITAL FLOWS

Capital flows to developing countries can be classified into four broad categories: (i) portfolio equity flows consisting of bond and equity (i.e. developing country company share purchase); (ii) commercial bank lending from developed to developing countries; (iii) FDI, physical investment by non-residents to developing countries; and (iv) official flows consisting aid, grants, and concessional and non-concessional credits given to developing countries by donor agencies and countries. Among these four types of capital flows, first two are less relevant to LDCs because of their underdeveloped financial sector and capital market. In the cases of most LDCs, there are restrictions in place on foreign commercial bank borrowing as well as portfolio investment, particularly from the fear of crisis due to sudden reversals. However, FDIs and official flows are two major sources of capital flows to developing countries.

Many previous studies have sought to identify the determinants of capital flows including FDI flows. Studies based on interest rate differentials provide evidence that such differentials could explain capital mobility only among developed countries (Montiel, 1993). In contrast, both net and gross capital flows to developing countries respond to economic fundamentals, official policies and financial market imperfections. In a cross-section of 40 advanced and developing countries, Alfaro, Kalemli-Ozcan and Lotosovych (2008) find that institutional quality is a key determinant of total capital flows. In a panel of advanced and developing countries, Albuquerque (2003) finds the share of FDI in total flows to be negatively and significantly associated with good credit risk ratings, but unrelated to indicators of institutional quality. Contrastingly, in a cross-section of advanced and developing countries, Hausmann and Fernández-Arias (2000) consider the determinants of the share of FDI flows in total flows, using averages for 1996–98, and find no relationship with institutional quality. Applying a gravity model of bilateral FDI stocks (drawn from OECD data) and bank loan stocks to a sample of about 10 source countries and 20 recipient countries, Wei (2001) finds that weaker institutions are associated with less FDI and more bank loans.

In a recent cross-section study, Faria and Mauro (2009) find that equity-like liabilities as a share of countries' total external liabilities are positively and significantly associated with indicators of educational attainment, openness, natural resource abundance, and institutional quality. Regarding the nature of capital flows, Sarno and Taylor (1999) show that equity, bond and official flows are relatively less persistent than bank credit and FDI flows. This finding is important from the perspective of sudden stops and reversals of capital flows.

Empirical investigation of the relationship between economic and institutional indicators and countries' capital flows has reached a variety of results. In a cross-section of countries (including advanced economies), Hausmann and Fernández-Arias (2000) document no relationship or a negative relationship between the ratio of FDI inflows to total private capital inflows and institutional quality. In contrast, Wei (2000a, 2000b; 2001) and Wei and Wu (2002) find that weak institutions tilt capital inflows towards bank loans and away from FDI, consistent with their hypothesis that foreign direct investors are less likely to be bailed out than are foreign banks in the event of a crisis.

Other studies have identified a number of additional factors that may influence FDI. Such factors include human capital, natural resources, economic size, and openness. Human capital may act as a stronger "pull" factor for FDI (Borensztein, De Gregorio and Lee 1998) than other forms of capital such as portfolio equity or debt. Natural resources may also attract FDI to a greater extent

(Hausmann and Fernandez-Arias 2000, Lane and Milesi-Ferretti 2001b). Larger economic size (proxied by measures such as total GDP) also attracts FDI, which provides an opportunity to better serve the local market (possibly circumventing trade barriers). Finally, openness may reduce the need for “tariff hopping” FDI, though countries having quota-free market access of products may be an attractive destination for FDI, which may be called “efficiency-seeking” FDI.

### III. EMPIRICAL ANALYSIS

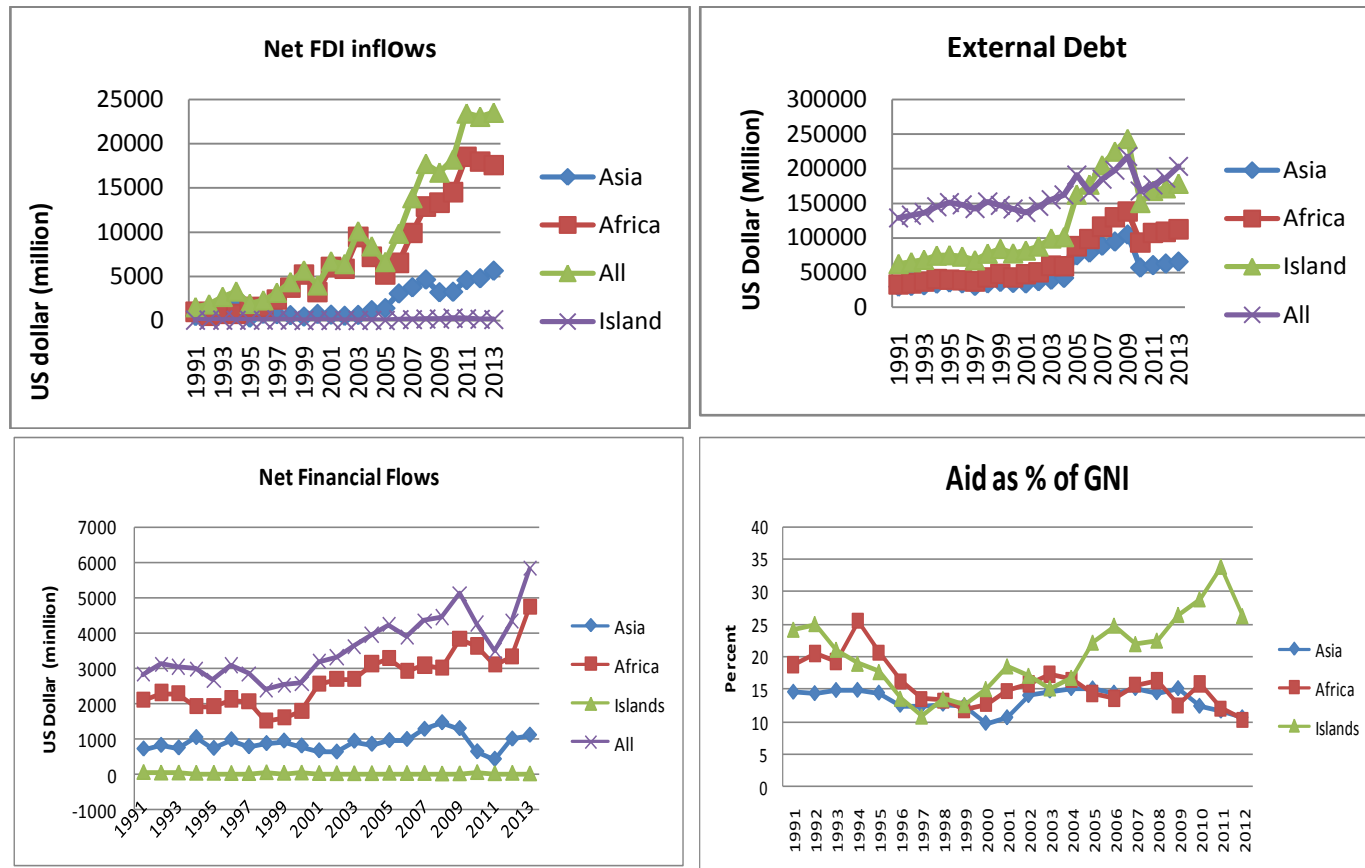
This section briefly describes the data, empirical strategies and the results. Appendix-I describes the data sources and variables in greater detail.

#### 3.1 Description of Variables and Data Sources

The objective of this study is to examine the determinants of capital flows to LDCs. Hence, the following three dependent variables are considered: (i) net FDI inflows, (ii) net external debt, and (iii) official aid flows. We use the World Bank definition of these variables. *FDI* is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. *Total external debt* is debt owed to non-residents repayable in foreign currency, goods, or services. *Total external debt* is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Therefore, external debt includes bank borrowing also. *Net official development assistance (ODA)* consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 per cent (calculated at a rate of discount of 10 per cent). The data covers the period 1991-2012.

This paper considers the similar set of explanatory variables that are used in Faria and Mauro (2009). The explanatory variables considered include the level of economic development (GDP per capita in U.S. dollars at constant 2000 prices), openness (sum of imports and exports over GDP), natural resources (exports of fuels, and/or metals and ores exports), human capital (percentage of population over 25 that has attended some secondary schooling), financial development (private credit to GDP or M2 to GDP), inflation, real exchange rate, political system and electoral competitiveness (EIEC).

Figure 1: Trend of Capital Inflows, 1991-2013



The source of data, in most cases, is the World Development Indicators of the World Bank. Data on political variables is collected from Data on Political Indices (DPI) of the World Bank (Beck et al., 2001, updated in 2013). The sources and definitions are discussed in Appendix-I in greater detail. Table I reports correlation between variables used in this study. The trend of different forms of capitals is shown in Figure 1.

The focus of the analysis is on capital flows to the least-developed countries. Therefore, the whole sample consists of 48 countries defined as LDCs by the United Nations. In addition, two groups of countries, namely African and Asian LDCs, are analysed separately. The reason for looking at both samples separately is twofold. First, LDCs in these two regions are characterised by diverse geo-political and economic conditions. For example, some Asia-Pacific LDCs are land-locked and island countries, which are highly vulnerable to external shocks because of their dependence on highly concentrated exports and tourism. On the other hand, some African LDCs have been suffering from civil war, which are vulnerable to domestic real shocks. Second, the bulk of FDIs in Africa is of the resource-seeking type, as it was mainly diverted to oil and other natural resource extraction, while FDI directed towards Asian LDCs is mostly efficiency and quota-seeking, as it was mainly diverted to manufacturing sector. Hence, such grouping of countries will help control heterogeneity among developing countries of the same region in the analysis.

### 3.2 Methods of Analysis

For estimating capital flows to LDCs, a dynamic panel GMM estimator has been applied. The reason is that a generalised method of moments (GMM, or difference GMM) estimator can encounter endogeneity problem as well as short-panel bias. Arellano and Bond (1991) make a first-difference to the panel data and then use the endogenous (or predetermined) lagged variables' levels to instrument for the transformed lagged dependent variable. The lagged levels provide little information about the first differences when the underlying series are relatively stationary and, therefore, are weak instruments (Arellano and Bover 1995, Blundell and Bond 1998). To overcome the problem, Arellano-Bover and Blundell-Bond GMM employs additional moment conditions based on the lagged variables' first differences (in addition to their levels) to increase the efficiency of the estimation. Therefore, to increase the efficiency of the estimates as well as to capture dynamics of capital flows, the Arellano-Bover/Blundell-Bond GMM model has been applied in the analysis. The regression model is thus specified as:

$$CI_{it} = \alpha + \beta x_{it} + \gamma PI_{it} + \lambda FI_{it} + \varepsilon_{it} \quad (1)$$

where  $\alpha$  is the constant factor,  $x_{it}$  represents a vector of macroeconomic factors, PI represents political institutional factors and FI represents financial institutions related factors.

The Arellano–Bover/Blundell–Bond GMM model provided tests for AR(1) and AR(2) in first differences. The model introduces first order serial correlation; however, the test for “no second order serial correlation” for the disturbances of the first-differenced equations is important for testing the consistency of the GMM estimates. It has been observed that there exists first order serial correlation, but not the second order serial correlation in the estimated results. Further, the Sargan (1958) test has been applied to test the joint validity of moment conditions (the presence of over-identification) and to identify optimal lag. The tests confirm that the instruments used are orthogonal to the error term, that is, over-identification is rejected.

### **3.3 Results**

The determinants of capital flows—net FDI flows, external debt (gross capital flows) and official aid (as % of GNI) — are reported in Tables II, III and IV respectively. The Arellano-Bond GMM estimates show a clear sign of persistence in capital flows to LDCs.

We begin by focusing on the determinants of the net FDI flows to LDCs in the whole sample for the whole period, and sub-periods: 1991-2000 and 2001-2012 (Table II). For the whole sample, per capital GDP, financial development, proxied by domestic credit to GDP ratio, and trade openness (total export and import to GDP ratio), fuel export and political system (-ve sign indicates presidential system) are significantly associated with FDI inflows to LDCs. Inflation rate and per capita GDP are negatively and significantly associated with FDI inflows. While the same variables are significant for FDI inflows in 1991-2000, only openness, human capital development and financial sector development are significant for the period 2000 onward. The results show that net FDI flows are moderately persistent—the effect is 0.38, indicating that last year’s net FDI inflows will amplify current FDI inflows by 38 per cent. However, for the period 2000-2012, FDI flows are least persistent. Thus, the behaviour of FDI inflows in LDCs has changed in the 2000s as FDI inflows are not directed towards countries having natural resources, rather it were diverted to LDCs having higher trade openness, human capital and financial depth. The results are consistent with Faria and Mauro (2009) and Hausmann and Fernández-Arias (2000).

Regional variations have been significantly evident in the case of FDI inflows. While per capita GDP, trade openness, fuel export, secondary school enrolment ratio (human capital) and political system are the determinants of FDI inflows in Africa, only per capita GDP and human capital are found to be significant for Asian LDCs. FDI inflows are slightly more persistent in Asian LDCs than African LDCs. It appears that FDI inflows in Africa are associated with more stringent conditions than those in Asia.



TABLE I  
PAIR-WISE CORRELATIONS OF VARIABLES (AVERAGES)

	Net capital inflows	External debt	FDI	GDP	GDP per capita	Institutional quality	Openness	Natural resource	Political system	LIEC	Financial development (M2/GDP)(1)	Financial development (Credit/GDP)(2)
External debt	0.49***	1.00										
FDI	0.07**	0.36***	1.00									
GDP	0.67***	0.74***	0.25***	1.00								
GDP per capita	-0.19***	-0.17***	0.30***	-0.06	1.00							
Institutional quality	0.02	-0.27***	-0.21***	-0.12***	0.05	1.00						
Openness	-0.29***	-0.28***	0.18***	-0.22***	0.50***	0.08**	1.00					
Natural resource	-0.04	0.15***	0.22***	-0.02	0.16***	-0.45***	0.10	1.00				
Political system	0.07**	-0.02	0.04	-0.04	0.03	0.03	0.01	-0.42***	1.00			
Financial development (1)	-0.09***	-0.09***	-0.08**	-0.04	0.00	-0.07*	0.20***	-0.14***	0.01	-0.02	1.00	
Financial development (2)	-0.07*	-0.03	-0.06	-0.04	-0.08**	-0.21***	0.01	0.02	0.02	0.01	0.90***	1.00

Note: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively.

TABLE II  
DETERMINANTS OF NET FDI INFLOWS

	All (1991-2012)	All (2001-2012)	All (1991-2000 )	Africa ( 1991-2012)	Asia (1991-2012)
Lagged FDI flows	0.38 (0.037) <sup>***</sup>	0.13(0.11)	0.36(.04) <sup>***</sup>	0.36(0.04) <sup>***</sup>	0.41(0.07) <sup>***</sup>
Per capita GDP	0.22(0.047) <sup>***</sup>	0.0011(0.062)	0.33(0.06) <sup>***</sup>	0.20(0.05) <sup>***</sup>	0.20(0.07) <sup>***</sup>
Inflation	-0.00025(0.00022)	-0.00017(0.00017)	-0.025(0.02)	-0.0003(0.0002)	-0.007(0.02)
Openness	0.14 (0.02) <sup>***</sup>	0.17(0.03) <sup>***</sup>	0.18(0.02) <sup>***</sup>	0.20(0.02) <sup>***</sup>	0.006(0.14)
RER	0.00015(0.0003)	0.00046(0.0009)	0.00002(0.0003)	-0.0004(0.0006)	0.00005(0.0002)
Fuel export	0.086(0.03) <sup>***</sup>	-0.006(0.06)	0.13(0.04) <sup>***</sup>	0.14(0.04) <sup>***</sup>	-0.045(0.04)
Ore and metal export	0.018(0.02)	0.017(0.03)	0.05(0.03)	0.008(0.02)	0.095(0.12)
Financial development	0.013(0.03)	-0.11(0.04) <sup>***</sup>	0.03(0.03)	-0.004(0.03)	0.02(0.03)
Enrol-Sec	-0.014(0.04)	0.22(0.06) <sup>***</sup>	0.10(0.05) <sup>**</sup>	0.12(0.06) <sup>**</sup>	-0.07(0.03) <sup>**</sup>
Political system	-2.14(0.90) <sup>**</sup>	-0.50(0.90)	-2.15(2.03)	-2.83(1.13)	-1.7(1.3)
EIEC	-0.096(0.20)	-0.24(0.25)	0.05(0.29)	-0.02(0.24)	0.14(0.34)
constant	-6.48(1.74) <sup>***</sup>	0.35(1.78)	-15.32(2.91) <sup>***</sup>	-11.07(2.02) <sup>***</sup>	4.97(2.3) <sup>***</sup>
N	499	206	293	369	130

Note: \*\*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively.

TABLE III  
DETERMINANTS OF EXTERNAL DEBT, 1991-2012

	All (1991-2012)	All (2001-2012)	All (1991-2000 )	Africa (1991-2012)	Asia (1991-2012)
Lagged ext.debt	0.56(0.036) <sup>***</sup>	0.64(0.06) <sup>***</sup>	0.56(0.05) <sup>***</sup>	0.54(0.04) <sup>***</sup>	0.83(0.06) <sup>***</sup>
Per capita GDP	-0.56(0.34) <sup>*</sup>	-0.22(0.30)	-0.15(0.64)	-0.65(0.4)	-0.7(0.4)
Inflation	0.0042(0.0014) <sup>***</sup>	0.04(0.08)	0.004(0.002) <sup>**</sup>	0.004(0.002) <sup>***</sup>	-0.05(0.09)
Openness	0.44(0.13) <sup>***</sup>	-0.09(0.11)	1.36(0.30) <sup>***</sup>	0.62(0.2) <sup>***</sup>	-0.05(0.08)
RER	-0.002(0.002)	-0.0009(0.001)	-0.008(0.006)	-0.002(0.004)	-0.002(0.0007)
Fuel export	-0.60(0.3) <sup>***</sup>	-0.17(0.34)	-0.24(0.60)	-0.6(0.33) <sup>***</sup>	0.44(0.34)
Ore and metal export	-0.12(0.2) <sup>***</sup>	-0.43(0.20) <sup>**</sup>	-0.08(0.30)	-0.13(0.2)	-2.81(2.6)
Financial development	0.71(0.2) <sup>***</sup>	0.52(0.20) <sup>**</sup>	0.10(0.40)	0.90(0.2) <sup>***</sup>	0.5(0.2) <sup>**</sup>
Enrol-Sec	-1.25(0.43) <sup>***</sup>	-1.01(0.34) <sup>***</sup>	-2.34(0.95) <sup>***</sup>	-2.73(0.62)	0.7(0.2) <sup>**</sup>
Political system	-1.81(6.7)	6.04(7.3)	-13.55(9.8)	-1.3(9.17)	47.13(22.7) <sup>**</sup>
EIEC	-0.25(1.43)	1.4(1.6)	-1.6(2.32)	0.75(1.65)	-20.83(8.07) <sup>***</sup>
constant	38.59(14.34) <sup>***</sup>	45.94(16.22) <sup>***</sup>	18.03(26.6)	49.97(13.95) <sup>***</sup>	25.11(15.01) <sup>*</sup>
N	377	164	213	283	94

Note: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively.

TABLE IV  
DETERMINANTS OF OFFICIAL AID FLOWS, 1991-2012

	All (1991-2012)	All (2001-2012)	All (1991-2000)	Africa (1991-2012)	Asia (1991-2012)
Lagged aid_gni	0.50(0.03)***	0.5(0.03)***	0.43(0.08)***	0.53(0.04)***	0.71(0.04)***
Per capita GDP	-0.005(0.08)	0.14(0.08)	-0.13(0.15)	-0.004(0.9)	0.5(0.11)
Inflation	0.0002(0.0004)	-0.01(0.03)	0.0002(0.0004)	0.0002(0.0004)	-0.04(0.04)
Openness	-0.04(0.03)	-0.09(0.03)***	0.2(0.08)***	0.04(0.04)	0.0002(0.03)
RER	-0.001(0.0004)	-0.0009(0.0004)	-0.002(0.002)	0.002(0.0007)	-0.0007(0.0003)
Fuel export	0.02(0.05)	0.008(0.06)	-0.04(0.13)	0.03(0.07)	0.03(0.07)
Ore and metal export	0.003(0.03)	0.009(0.04)	-0.02(0.06)	0.01(0.04)	0.04(0.20)
Financial development	0.005(0.04)	0.008(0.05)	-0.2(0.09)**	0.07(0.05)	0.2(0.05)***
Enrol-Sec	-0.13(0.06)**	-0.09(0.07)	-0.4(0.2)**	0.2(0.1)**	-0.2(0.07)***
Political system	0.6(1.5)	-1.97(2.0)	0.99(2.5)	0.5(2.3)	0.6(1.4)
EIEC	-0.05(0.3)	1.06(0.4)***	-0.97(0.5)*	0.07(0.35)	0.2(0.54)
constant	14.9(2.6)***	12.93(3.7)***	15.44(5.43)***	14.6(3.24)**	3.6(3.91)
N	502	289	213	368	134

Note: .\*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively.

As expected, external debt is found to be highly persistent in all model specifications—the persistent effect is about 0.60 (Table III), implying that 60 per cent of total debts are not repaid. Financial development is significantly associated with the total foreign debt in all model specifications. Openness and inflation rate are positively significant, indicating that macroeconomic stability and trade liberalisation policies may be crucial for receiving more external debts by LDCs. Natural resource abundance is negative and significant to total external debt, indicating that countries having natural resources are relatively less reliant on external loans or grants. Almost the same results are obtained while they were analysed for African LDCs, however, only financial sector, human capital and political system matter for external debt flows to Asian LDCs. Thus, there have been significant differences between African and Asian LDCs in the determinants of external debts.

Finally, persistence and determinants of aid flows are examined (Table IV). Aid inflows are significantly and moderately persistent for the whole sample period (0.50), as well as for both the regions with higher persistence in Asian LDCs (0.71). That is, aid disbursements have lagged behind commitments as evidenced from the persistency rate causing less than potential development impact and eventual lower rates of return to investments than appraised (Rahman and Hossain 2014). While for African LDCs, only human capital development is significant for receiving higher aid, both financial sector and human capital are significant for Asian LDCs. The reason is that development in social sectors including secondary school enrolment has been deemed as positive outcome of aid in many developing countries. However, it is difficult to tag aid effectiveness with macroeconomic outcome due to data problems and endogeneity biases. Nevertheless, pipeline has been built up with undisbursed aid in many LDCs due to poor project implementation capacity that led to delays and cost escalation. In many cases, both donors and the LDC governments are at loggerheads on various issues related to implementation delay. Is it the stringency of loan conditions that the donor has imposed or the failure of responsible government agencies to fulfil loan conditions agreed upon by both sides? These are the reasons that might have led to the findings that only a few variables can significantly explain aid flows to LDCs.

To summarise the findings, the determinants of various types of capital inflows vary significantly across regions. The result indicates that the behaviour of capital flows to LDCs, particularly FDI and external debt, is contingent upon various factors including macroeconomic stability, financial sector development, trade openness, natural resource abundance and political system or democratic environment. For official aid, secondary school enrolment has been the key

determinant of official aid flows. Since LDCs are constrained by external financing for development, and donors provide differential treatments to different LDCs as part of receipt of external capital, a consistent set of criteria needs to be adopted under the IPoA. As all the LDCs do not have the same level of natural resources, continuous efforts for maintaining macroeconomic stability, developing the financial sector and liberalising trade regime could be important policy options for LDCs in order to receive more capitals in a sustainable manner.

#### IV. CONCLUSION

This paper provides some explanations to the question of why some LDCs receive more capitals than the others. The determinants of both FDI and external debt are almost the same—macroeconomic stability, financial sector development, trade openness, natural resource abundance and political stability. The paper, however, could not find any significant relationship between official aid flows and macroeconomic outcome; rather it establishes a link between aid flows and social sector development. The reason could be that the effectiveness of aid could be better judged in terms of social sector outcome. As all the LDCs do not have the same level of natural resources, continuous efforts for maintaining macroeconomic stability, developing the financial sector and liberalising trade regime could be important policy options for LDCs in order to receive more capitals in a sustainable manner. Thus, the results suggest for appropriate policies aimed at improving macroeconomic and financial environment along with political stability in order to ensure more capital flows to LDCs.

The results reveal that the determinants of capital flows vary significantly across regions. Furthermore, as donors provide differential treatments to different LDCs as part of disbursing external capital, a consistent set of criteria based on the findings of this study could be adopted under the Istanbul Programme of Action for equitable distribution of capital among LDCs. Otherwise, like BPoA, most of the commitments regarding external capital will likely to remain unfulfilled. Though it is evident that natural resource endowed countries have certain comparative advantage to attract more capitals/FDIs, others could capitalise their advantage through proper utilization of export potentials and market size. It is thus important for all LDCs to enhance their productive capacity to attract more foreign capitals, as outlined in the BPoA and subsequent IPoA. The results of this paper thus underscore the need of a set of consistent indicators for successful implementation of Istanbul Programme of Action for enhancing development in LDCs.

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## APPENDIX I

### A. Dependent variables

Net FDI inflows, external debt and aid inflows as per cent of GNI are used as dependent variables. Data are taken from World Development Indicators (WDI), the World Bank.

### B. Independent variables:

#### *GDP per capita*

Constant U.S. dollars in 2000 for all available years between 1991 and 2007. Source: *World Development Indicators*, World Bank.

#### *Financial development*

Private credit divided by total GDP for all available years between 1991 and 2007. Source: *World Development Indicators*, World Bank.

#### *Natural resources*

Fuel export and per centage of ore, metals and fuels in total exports for all available years between 1991 and 2007. Source: *World Development Indicators*, World Bank.

#### *Openness*

Sum of imports and exports divided by total GDP for all available years between 1991 and 2007. Source: *World Development Indicators*, World Bank.

#### *Human capital*

Per centage of total population over 25 who attended at least some secondary schooling. Sources: *World Development Indicators*, the World Bank.

### C. Political Institutional Variables

The following political institutional variables are taken from the data on political indices (DPI) of the World Bank (see Beck *et al.* 2001, revised in 2013).

#### *Political System*

#### Codes:

Presidential	0
Assembly-elected President	1
Parliamentary	2

Systems with unelected executives get a 0. Systems with presidents who are elected directly or by an electoral college (whose *only* function is to elect the president), in cases where there is no prime minister, also receive a 0. In systems with both a prime minister (PM) and a president, the following factors are considered in order to categorise the system:

- a) *Veto power*: president can veto legislation and the parliament needs a supermajority to override the veto.
- b) *Appoint prime minister*: president can appoint *and* dismiss prime minister and/or other ministers.
- c) *Dissolve parliament*: president can dissolve parliament and call for new elections.
- d) *Mentioning in sources*: If the sources mention the president more often than the PM then this serves as an additional indicator to call the system presidential (Romania, Kyrgyzstan, Estonia, Yugoslavia).

The system is presidential if (a) is true, or if (b) and (c) are true. If no information or ambiguous information on (a), (b), (c), then (d). Countries in which the legislature elects the chief executive are parliamentary (2), with the following exception: if that assembly or group cannot easily recall him (if they need a 2/3 vote to impeach, or must dissolve themselves while forcing him out) then the system gets a 1.

#### *Executive Indices on Electoral Competitiveness (EIEC)*

Executives who are: 1) Elected directly by population, or 2) Elected by an electoral college that is elected by the people and has the sole purpose of electing the executive, are scored on the above scale. • Executives elected by bodies other than these are given the same score that the electing body would get. Even if the electing body is not the actual “legislature” that is tracked in the LIEC (such as an appointed electoral college), the competitiveness of that body is used to score the executive. • This means that competitively elected prime ministers get 6 or 7. The chief executives of Communist nations (the chairman of the Communist Party) is given a 3, because they are elected by the Party Congress, electing bodies which they do not appoint. Executives elected by small, appointed juntas or by appointed electoral colleges get 2.

## APPENDIX II

## List of Sampled 48 LDCs across Regions

Africa (33)		Asia (14)	Latin American and Caribbean (1)
1. Angola	17. Liberia	1. Afghanistan	1. Haiti
2. Benin	18. Madagascar	2. Bangladesh	
3. Burkina Faso	19. Malawi	3. Bhutan	
4. Burundi	20. Mali	4. Cambodia	
5. Central African Republic	21. Mauritania	5. Kiribati	
6. Chad	22. Mozambique	6. Lao PDR	
7. Comoros	23. Niger	7. Myanmar	
8. Congo, Dem. Rep.	24. Rwanda	8. Nepal	
9. Djibouti	25. Senegal	9. Sao Tome and Principe	
10. Equatorial Guinea	26. Sierra Leone	10. Solomon Islands	
11. Eritrea	27. Somalia	11. Timor-Leste	
12. Ethiopia	28. South Sudan	12. Tuvalu	
13. Gambia, The	29. Sudan	13. Vanuatu	
14. Guinea	30. Tanzania	14. Yemen, Rep.	
15. Guinea-Bissau	31. Togo		
16. Lesotho	32. Uganda		
	33. Zambia		

**Note:** \* Maldives and Samoa were in the panel until 2011 and 2014 before their graduation and South Sudan has been included in the list recently. Vanuatu and Equatorial Guinea are set to be graduated within next few years.