

Determinants of Foreign Direct Investment Flows to Developing Countries

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Abstract: *In this paper we explore different factors responsible for variation in foreign direct investment to developing countries. We use macro panel data of 57 low and lower middle income countries for last ten years (2000-2009) to empirically address this question. We use instrumental variable technique to correct for reverse causation and omitted variable bias in our estimates. In addition, we also control for country specific and time specific fixed effects. This study finds that market size is the most important determinant of foreign direct investment to developing countries. Further, stable macroeconomic environment, global integration, availability of skilled labor force and developed financial sector also promote foreign direct investment in developing countries.*

JEL classification: F21, F23, F29

Keywords: FDI, developing countries, entity fixed effects, time fixed effects

1. Introduction

Foreign direct investment has an increasingly important role in the development of capital deficient developing countries. This is because, it is not only a stable source of foreign inflows, but it also helps in technological transfer and employment generation (Mottaleb and Kalirajan, 2010). Foreign direct investment also provides a viable way for developing countries to increase their savings and achieve economic growth. However, flows of foreign direct investment have varied across developing countries. While some of the developing countries have been successful in attracting considerable investment, capital inflows still elude most low income countries.

Why is this so? Why have some countries succeeded in attracting foreign direct investment while others have not? This study is an attempt to answer these questions. Specifically, this study examines what characteristics of a country are

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likely to be a magnet for multinational companies and what policies implemented in the country promote foreign capital inflows. Some of the plausible attractions for investors may include the potential markets for their goods and services. This may be due to the fact that a foreign investor may find it more cost effective to produce and sell in the same area rather than incur transportation costs as well as tariffs on importing their products. Another attraction for corporations is an area with natural resources where they can set up their production process close to the raw materials and save the cost of transporting their inputs. Yet other corporations seek more efficiency, a strategically situated location which will allow them to reduce their production costs.

The study uses panel data for 57 low and lower middle income countries from different regions of the world: Sub-Saharan Africa, Eastern Europe, Asia, and Latin America. Compared to most studies on determinants of foreign direct investment, this study looks at a broader set of countries. This paper is interested in looking at characteristics common to the poorer regions that have succeeded in attracting more capital inflows. It would be important to find out how much of these characteristics are due to good policy and can be implemented in the countries with lower FDI flows. Thus it would be interesting to explore the reasons behind this difference.

The study plans to use a model based on previous empirical papers that have been done on the determinants of foreign investment. The relevant factors will include market size, global integration and business friendly environment of the host country. We use GDP per capita as a measure for market size and purchasing power while average tariff on imports are used as a proxy for global integration. Regarding business friendly environment, we use different indicators such as inflation rate for macroeconomic environment, secondary school enrolment rate for availability of skilled labor and M2 to GDP ratio for financial sector depth.

2. Background

As per the recent data of United Nations Conference on Trade and Developments (UNCTAD), global foreign direct investment trends suggest that almost one fifth of the total world foreign direct investment inflows are destined to the developing world. Moreover, they have not been able to increase their share in the last fifteen years. For instance, their share in world total foreign direct investment inflows had slightly declined from 25.1 percent in 1995 to 23.5 percent in 2007. However, this share has slightly increased to 27.6 percent in 2009, probably because the recent financial crisis has affected the investment inflows to developed world more severely than to the developing world.

Within the developing countries, low and lower middle income countries are attracting more than 40 percent of the total foreign direct investment in the developing countries. Moreover, Figure 1b suggests that these countries are not catching up with the upper middle income countries. It appears that as the low income countries were less integrated with the rest of the world, they were relatively less affected by the global financial crises (UNCTAD).

Figure 1a. Foreign Direct Investment Trends (US\$ billion)

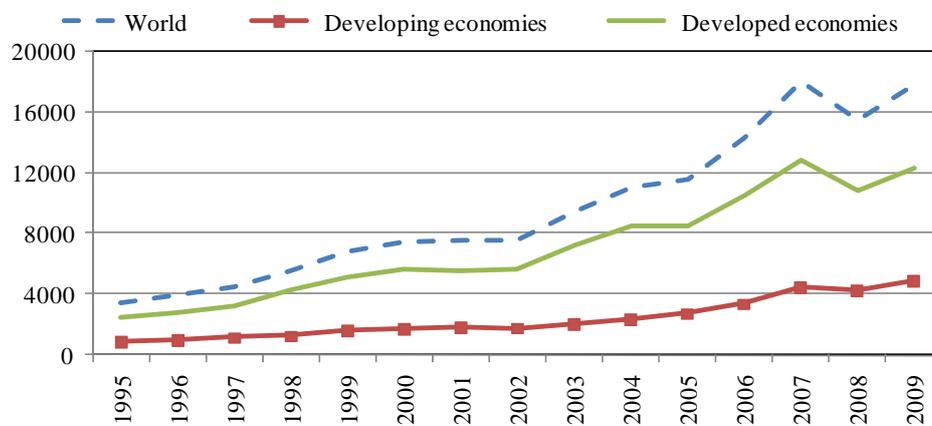
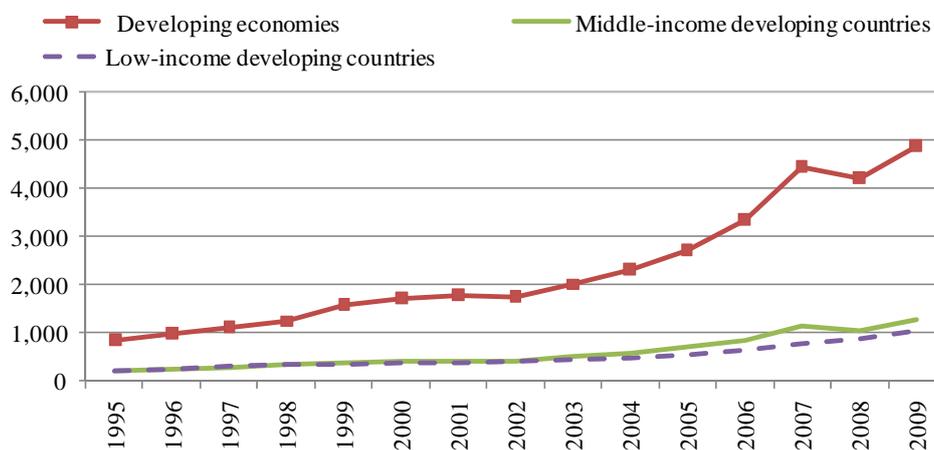


Figure 1b. Foreign Direct Investment Trends in Developing countries (US\$ billion)



Moreover, World Bank data set of World Development Indicators suggests that within low and lower middle income countries foreign direct investment inflows are concentrated in a small number of countries. For instance, more than 80

percent of the foreign direct investment inflows to the low and lower middle income countries were concentrated in only 10 out of 96 countries (Appendix 1). Likewise, some of the countries are experiencing increase in foreign direct investment while others are witnessing a decline. Specifically, compared with 2000, FDI inflows to China and Thailand declined in 2009 while FDI inflows to the rest of top ten countries have increased during the same period. This increase in FDI is more pronounced in case of India that has been able to triple it in the last ten years while China has witnessed the largest decline in these inflows during the period.

The cross country varying trends of foreign direct investment inflows raise the question of why some countries are attracting more investment than others. There may be different possible reasons behind this variation. For example, higher investment inflows to China and India may suggest that market size is important. Moreover, considerable increase in foreign direct investment to India and persistent fall in investment to China in the last ten years may also suggest that improvement in institutional quality also plays some role.

3. Literature review

Different studies have tried to answer this question. These studies can broadly be categorized into two strands of literature i.e investor surveys and econometric or in-depth case studies. Regarding investors surveys, in 1998, World Bank conducted survey of 173 Japanese multinationals in Asia. The survey results shows that size of the market, cost of the labor, industrially literate workers, and repatriations of earnings are the most important attractors for Japanese multinational investment in Asia.

Likewise, A.T. Kearney, a global management consulting firm, conducted a foreign investor's survey between Jul and October, 2011. The respondents included the senior executives of the world's leading corporations. The survey cites that one quarter of the respondents are increasing investment in emerging markets. According to the respondents, size and growth of the consumer markets, sourcing needs for talent and quality issues, need to diversify to improve supply chain resilience and sourcing needs for cost reasons are the most important factors affecting their investment decisions.

Regarding the second strand of literature, there are numerous studies on the subject. Although there is no consensus on most of main determinants of foreign direct investment, market size appears to be the most important and robust and positive determinant of FDI. The studies which find market size as the significant

determinant of FDI include Shatz and Venables (2000), Fung *et al.*(2000), Billington (1999), Dees (1998), Branard (1997), Loree and Guisinger (1995), Wheeler and Mody (1992), Contractor (1991), Kravis and Lipsey (1982), Reuber *et al.* (1973), Hasen and Gianluigi (2009), Mottaleb and Kalirajan (2010), Nigh (1985), and Nasser and Gomez (2009).

The literature has no consensus on most of the other determinants of FDI. These other determinants can broadly be categorized as: (a) comparative advantage such as input prices, quality of input, geographic location and abundance of natural resources; (b) macroeconomic policy and reforms such as trade liberalization, capital account convertibility and price stability, etc.; (c) institutions which affect business environment including both economic costs of investment as well as non-economic costs such as bribery and time wasted in dealing with local authorities; and (d) agglomeration to benefit from positive externalities of co-locating near other economic units.

Some of the studies on the aforementioned determinants and their findings are reviewed here. To start with the comparative advantage, empirical evidence on labor costs is mix while most of the reviewed literature suggests that skilled labor is an important attractor for FDI. For instance, Feenstra and Hanson (1997), and Dees (1998) find that low labor costs is significant determinant of FDI while Mody *et al.* (1998) and Fung *et al.* (2000) find that average labor costs is insignificant determinant of FDI. On the other hand, Noorbakhsh *et al.* (2001), Mody *et al.* (1998) and Fung *et al.* (2000) find that skilled labor is a significant determinant of FDI. On the contrary, Kinoshita and Campos (2003) find the level of education as insignificant determinant of FDI. In the same way evidence on the role of natural resources in attracting FDI is mixed. While Asiedu (2006) using a panel of 22 African countries finds that natural resources promote FDI, Basu and Srinivasan (2002) find that some African countries attracted FDI not because of natural resources, but through a broad improvement in the business environment.

Regarding empirical evidence on macroeconomic policy and reforms, Schneider and Frey (1985) find inflation and high balance of payments deficit negatively affecting FDI. Likewise Apergis and Katrakilidis (1998) find that inflation and inflation uncertainty adversely affect FDI. Hasen and Gianluigi (2009) also find that measurement of government mismanagement such as inflation and high fiscal deficit act as disincentives for FDI to Arab Maghreb Union (AMU) countries. Yartey and Adjasi (2007) and Asiedu (2002) find a negative significant effect of inflation on FDI inflows. In sharp contrast to aforementioned studies, Alfaro *et al.* (2009) demonstrates that increased domestic inflation rate increases

foreign investment via changes in the intertemporal consumption pattern of the agent. The empirical evidence on the role of trade liberalization in promoting FDI is also mixed. Dees (1998), Singh and Jun (1995), Lecraw (1991), Kravis and Lipsey (1982), Mottaleb and Kalirajan (2010), Hasen and Gianluigi (2009), Ang (2008), Onyeiwu and Shrestha (2004), and Asiedu (2002) find positive effect of trade openness on FDI while Brainard (1997) and Wheeler and Mody (1992) find that FDI inflows are positively correlated with trade restrictions.

Role of institutions in attracting FDI is another factor explored in the literature on the subject. The empirical evidence on these factors is again mixed probably because of different measures used for strength of institutions. Development of financial institutions is found to promote FDI. For instance, Alfaro *et al.* (2008), Lee and Chang (2009), Al Nasser and Gomez (2009) and Ang (2008) find that level of financial sector development promote FDI. The results for regulatory, bureaucratic red tape and judicial transparency are inconclusive; it may be on account of many different indicators used. For example, Wheeler and Mody (1992) use Business International index of various factors including bureaucracy and red tape, quality of the legal system, and corruption. They find this index to be insignificant determinant for US manufacturing FDI. Business Environment Risk Intelligence (BERI) is used by Singh and Jun (1996). This index covers a broader set of indicators such as political continuity, attitude towards foreign investors, enforceability of contracts and economic factors such as economic growth, balance of payment performance and currency convertibility. They find this index to be significantly positive in determining FDI in some models. Kinoshita and Campos (2003) use rule of law and quality of bureaucracy as indicators for institutions development. The former depicts strength and impartiality of the legal system and popular observance of the law while the latter mainly shows level of corruption and ease of regulations. Using these indicators, they find strong indication that countries with good financial institutions attract more FDI inflows.

Last but not the least, agglomeration (clustering) is also found to be one of the important determinants of FDI in the literature. For example Wheeler and Mody (1992) find highly significant impacts of agglomeration on US manufacturing FDI. Likewise, Barry and Bradley (1997), Fung *et al.* (2000), Morgan (1998), Loree and Guisinger (1995), Agodo (1978), Root and Ahmed (1979) and Kinoshita and Campos (2003) also find positive impact of agglomeration on FDI.

Although vast literature is available on the determinants of FDI, most of this is about developed countries while that on developing countries is relatively scant.

Further, literature on the latter is specific to only small group of developing countries or specific regions. Limited data availability seems to be one of the most important factors for this scarcity of literature. In order to fill this gap, our strategy is to cover the broader set of developing countries. Thus despite limited data; relatively broader coverage of the countries increases our sample size. So we have considerable information to explore the determinants of FDI in these countries.

4. Empirical strategy

To empirically address the question of why some developing countries attract more foreign direct investment than others, it will be useful to discuss the major considerations behind the investor's decisions. The prime objective of the foreign investors is to maximize their profit. Therefore, they will be making investment in those economies where they have higher return on their investment. They can maximize their profit by either producing more or by lowering their costs of production. In the former case, the investors must be looking at market size while in the latter case they will be curious to know about the input costs and business friendly environment of the economy. Moreover, the investors can also maximize the profit by producing more if the host economy is well integrated with the rest of the world. In this case, the investor can realize economies of scale by exporting to the rest of the world.

In view of the above, we can broadly specify the determinants of foreign direct investment as:

$$FDI = f(\text{market size, global integration, business friendly environment})$$

In this study, we use gross domestic product per capita on purchasing power parity basis as the proxy for market size and purchasing power. Global trade integration is proxied by the tariff rate on imports. Business friendly environment is captured by a number of indicators. For instance, inflation rate is used as a proxy for overall macroeconomic environment where stable and moderate inflation indicates economic stability and vice versa; secondary school enrolment is used for the availability of skilled labor while M2 to GDP ratio is used to measure the financial sector depth which reduces the cost of financial transactions. Moreover, foreign direct investment is taken as percent of GDP.

In estimating the effect of these factors on foreign direct investment, Ordinary Least Squares (OLS) strategy may suffer from bias. This is because of the two reasons. First, there could be two-way causality between GDP per capita and foreign direct investment. Specifically, an increase in foreign direct investment

not only increases the GDP per capita through factor accumulation (increase in physical capital) but also through increase in total factor productivity emanating from transfer of technology.

Second, there may be some measurement error in the GDP per capita on purchasing power parity basis. In particular, purchasing power parity exchange rate is calculated by using world average ratio of tradable to non-tradable. As tradable to non-tradable ratio varies from country to country, there are fair chances of measurement error in purchasing power parity exchange rate and resultantly in the measurement of GDP per capita on purchasing power parity basis. As measurement error makes the estimates too small, it will cause attenuation bias in the OLS results.

To avoid the bias inherent in OLS estimation, in this study we use an instrumental variable approach, using military expenditure as percent of GDP as the instrument. Military expenditure is a good instrument as it is strongly correlated with GDP per capita and it affects foreign direct investment only through GDP per capita. Moreover, foreign direct investment does not appear to affect military expenditure.

In order to eliminate other potential sources of bias, particularly those arising from country specific unobserved characteristics which may not only affect FDI but may also be correlated with the independent variables, we use a fixed effects strategy. For instance, cross country differences in geographic location and marginal propensities to consume not only affect foreign direct investment but are also correlated with the GDP per capita. Similarly, common external shocks (e.g. global business cycles) not only affect the foreign investment inflows but are also correlated with other independent variables. In this situation, the estimates become biased. In order to control for these factors, we have introduced entity fixed and time fixed effects in our model.

Specifically, the model to be estimated looks as follows:

$$FDI_{it} = \beta_0 + \beta_1 marketsize_{it} + \beta_2 inf_{it} + \beta_3 tariff_{it} + \beta_4 educ_{it} + \beta_5 (M2/GDP)_{it} + \lambda_1 S_i + \lambda_2 T_t + \varepsilon_{it} \quad (1)$$

Where FDI_{it} is the foreign direct investment as percent of GDP in country i at year t , $marketsize_{it}$ is the GDP per capita on purchasing power parity basis, inf_{it} is the inflation rate, $tariff_{it}$ is the tariff rate on imports, $educ_{it}$ is the higher

secondary enrollment rate, $(M2/GDP)_it$ is the broad money supply to GDP ratio, and S_i and T_t are the country specific and time specific dummies respectively.

5. Preliminary data analysis

This study is based on data collected from 57 low income and lower middle income countries from 2000 to 2009. This is an unbalanced panel as some of the observations are missing. Alternatively, if we had used balanced panel data by artificially creating missing observations the resulting data would not have been the representative of its population. All the data is taken from World Bank dataset of World Development Indicators. Likewise the definition of low income and lower middle income countries is taken from World Bank classification of countries as per their income. It may be pointed out that initially, we planned to collect the data of all the 97 low and lower middle income countries as defined by World Bank. However, because of data unavailability of some of the countries we have to restrict our sample to 57. Importantly, this sample is still representative of almost all the regions of low and lower middle income countries.¹

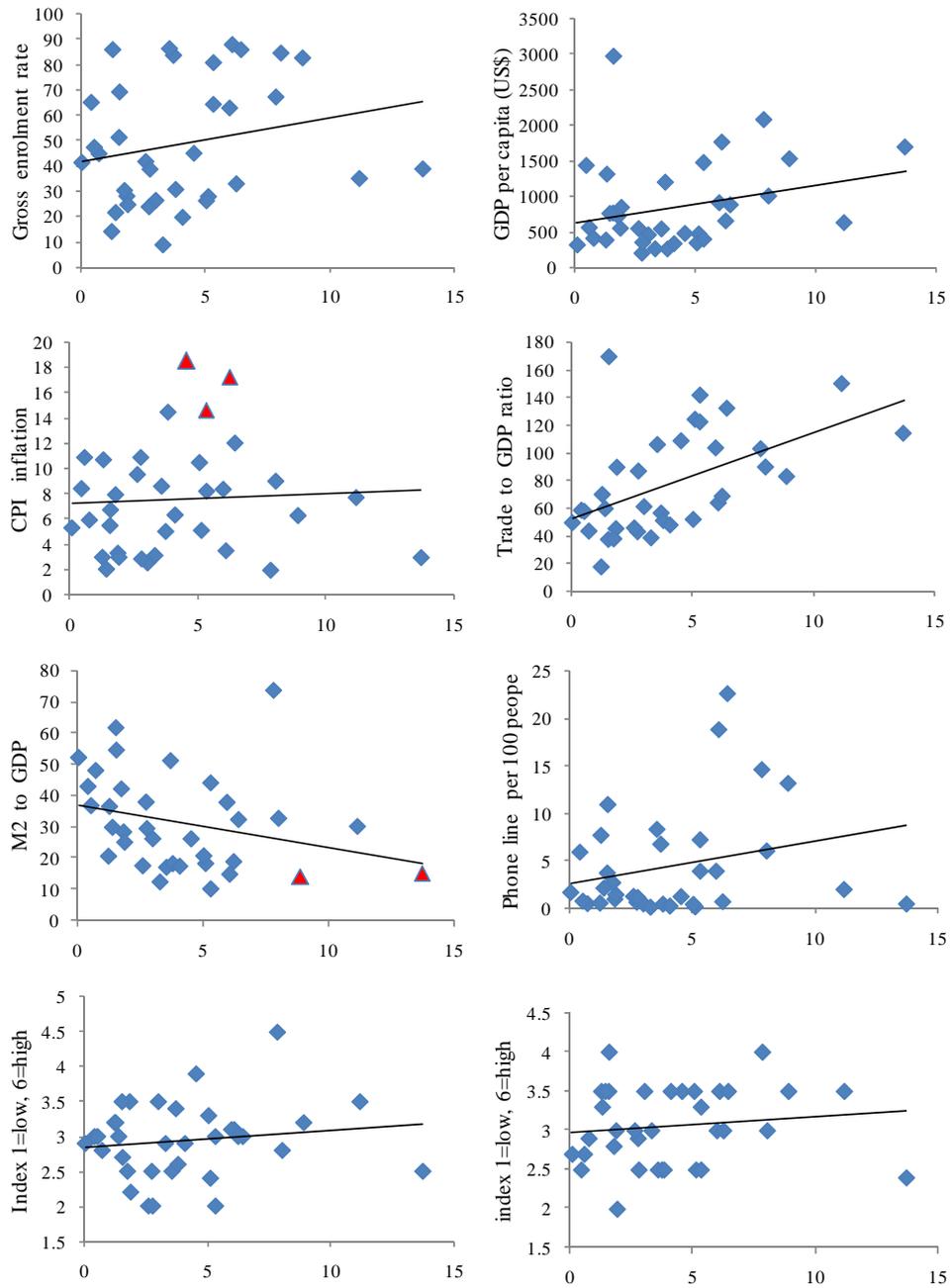
Preliminary data analysis is shown in the scatter plots. These scatter plots suggest that FDI relationship with the GDP per capita, secondary school enrolment rate and trade openness is in line with economic theory. However, its relationship with inflation rate and broad money to GDP ratio is counter intuitive (Figure 2).

This may be because it is a simple correlation where we are not controlling for other factors. Further if we adjust for outliers (triangular dots) then relationship with inflation and broad money appears in line with economic intuition.

It may also be pointed out that we also looked at the other important variables for physical infrastructure and quality of institutions. Although we could not include these variables in the final regression because of limited availability of data, the scatter plots of all these variables also make economic sense (Figure 2).

¹ Countries included are Armenia, Bangladesh, Belize, Benin, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, China, Congo, Djibouti, Ecuador, Egypt, El Salvador, Ethiopia, Gambia, Georgia, Ghana, Guatemala, Honduras, India, Indonesia, Jordan, Kenya, Kyrgyz Republic, Lao PDR, Lesotho, Malawi, Mali, Mauritania, Moldova, Mongolia, Morocco, Mozambique, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Paraguay, Philippines, Rwanda, Senegal, Sierra Leone, Sri Lanka, Sudan, Swaziland, Syrian Arab Republic, Tajikistan, Thailand, Tunisia, Uganda, Ukraine, Yemen.

Figure 2. Scatter Plots of FDI as % of GDP (X-axis) with Different Indicators (Y-axis)



6. Results

Table 1 shows the results obtained from both OLS as well as TSLS. In both the regressions all the variables have signs in accordance with economic theory. However, compared with OLS, the impact of most of the variables is higher when the instrument is used. This suggests that OLS estimates are too small because of attenuation bias (measurement error). Furthermore, all the variables (except financial deepening) become statistically significant when instrument is used.

TSLS estimates suggest that market size (GDP per capita) and global integration (tariff)² have FDI enhancing effects while an unstable macro environment (high inflation) hampers foreign direct investment inflows to developing countries. Moreover, availability of skilled labor (secondary school enrolment rate) and developed financial sector promote foreign direct investment (Table 1). The latter (financial sector development), however, is not statistically significant.

Table 1. Determinants of Foreign Direct Investment

	Dependent Variable log (fdi)			
	OLS		TSLS	
	I	II	I	II
log(gdp)	0.422 (0.467)	0.422 (0.649)	2.754 (1.300)	2.754 (1.400)
Inflation	-0.009 (0.011)	-0.009 (0.011)	-0.010 (0.005)	-0.010 (0.006)
Financial System Depth	0.003 (0.014)	0.003 (0.016)	0.001 (0.016)	0.001 (0.020)
Tariff rate on import	-0.009 (0.009)	-0.009 (0.010)	-0.004 (0.001)	-0.004 (0.001)
Secondary school enrolment rate	0.011 (0.014)	0.011 (0.020)	0.015 (0.007)	0.015 (0.009)
Country/Time fixed effects	Yes	Yes	Yes	Yes
Robust standard errors	Yes	Yes	Yes	Yes
Clustered standard errors	No	Yes	No	Yes
Observations	247	247	215	215
R ²	0.82	0.82	0.81	0.81

Standard errors are in parentheses

² Decrease in tariff means increase in global integration.

Specifically, TSLS regression shows that on average one percent increase in GDP per capita will increase the foreign direct investment net inflows as percent of GDP by 2.75 percent. Similarly one percentage point increase in secondary school enrolment rate and M2 to GDP ratio will increase the FDI as percent of GDP, on average, by 1.5 percent and 0.1 percent respectively. On the other hand, one percentage point increase in inflation rate and tariff rate on imports will decrease the FDI as percent of GDP by one percent and 0.4 percent respectively.

Importantly, we also allow for serial correlation by using standard errors that are clustered by countries as well as robust to heteroskedasticity. Column I of the table depicts the results with robust standard errors. In this regression, most of the variables (except financial sector development) are significant at the conventional level of significance. However, in column II when we allow for serial correlation by using standard errors that are clustered by countries as well as robust to heteroskedasticity, GDP per capita and tariff rate remain significant at 5 percent level of confidence while inflation rate and secondary school enrolment become insignificant at a 10 percent level of significance. Thus with the exception of financial sector development, all the determinants of foreign direct investment are statistically significant at 10 percent level of significance even after we allow for serial correlation and heteroskedasticity in the standard errors. This shows the robustness of our estimates.

The results also suggest that country specific characteristics play a statistically significant role in attracting foreign direct investment. Likewise, common shocks to foreign direct investment across the countries over time (as depicted by time fixed effects) are also crucial for affecting foreign direct investment to low and lower middle income countries.

It may also be insightful to compare our findings with the reviewed literature on the subject. In line with the earlier literature, we find that host country market size is a significant determinant of FDI. Further, trade policy is found statistically important determinant of FDI as is also found by many other studies like Mottaleb and Kalirajan (2010), Dees (1998), Singh and Jun (1995), Lecraw (1991), Kravis and Lipsey (1982), Ang (2008), Onyeiwu and Shrestha (2004) and Asiedu (2002). However it is contrary to findings of Hasen and Gianluigi (2009), Brainard (1997) and Wheeler and Mody (1992).

Our results on the significant role of stable business environment for attracting FDI inflows are similar to that of Mottaleb and Kalirajan (2010) and Frenkel *et al.* (2004). Further, like Noorbakhsh *et al.* (2001) we also find that availability of skilled labor force is important for attracting FDI.

On the flip side, it may be pointed out that data availability is one of the major limitations of our study. In particular, we had the possibility of a total of 570 observations as we collected data on 57 countries for ten years. However, our regression uses only 215 observations, which means 355 observations were missing. With better availability of data, we might have been able to reduce the size of our standard errors even further.

Moreover, we could not find data on political stability indicators for our set of countries. As political instability may possibly affect both military expenditure as well as foreign direct investment, it may not allow the instrumental variable to meet the exclusion restriction. Controlling for political stability is also likely to improve the results.

Robustness Checks

Using the strong instrument is essential for getting unbiased estimates in Instrumental Variable (IV) approach. Good instrument should be both relevant and valid. Relevancy means correlation with the endogenous regressors whereas validity means no correlation with residuals. The first condition (relevancy) can be assessed by examining the first-stage IV regression. In our case, the partial R^2 is above 0.15 which shows the strength of instrument. Likewise, F-statistics over 10 again indicates that instrument is sufficiently strong (Appendix 2 A).

Checking the second condition of strong instrument, i.e., validity is possible if we have surfeit of instruments. In that case, we may test the over-identifying restrictions to support validity of the instrument. However, as we have only one instrument, that test is not possible. Given this limitation we check the robustness of our estimates by using a different technique called as Limited-Information Maximum Likelihood (LIML). This technique is thought to be better approach, when instruments are weak. For a detailed discussion on this approach see Murray (2006). It can be observed from the Appendix 3B, that our estimates remain unchanged by applying this technique. This indirectly confirms robustness of our estimates and validity of the instrument used in this technique.

Apart from good instrument, we also check robustness of our estimates by allowing heterogeneity in slopes. It may be pointed out that we use fixed effect technique which allows for heterogeneity in intercepts but imposes homogeneity on slopes. In order to check for robustness of our estimates, we also allow heterogeneity in slopes by using random effect model. It can be observed from Appendix 2 B) that our estimates are robust to heterogeneity in slopes as well.

Lastly, as mentioned earlier we use robust clustered standard errors that corrects for heteroskedasticity and serial correlation in the errors. As an additional check, we use Pagan-Hall test to check for heteroskedasticity. It can be observed from Appendix 2 C) that we fail to reject the null that disturbance is homoskedastic. It implies no heteroskedasticity problems in errors.³

7. Conclusion

In this study, we address the question of why some developing countries have been able to attract more foreign direct investment while others could not. We empirically evaluate this question using panel data on 57 low income and lower middle income countries for ten years, i.e., 2000-2009.

To address the reverse causality and omitted variable problems we use an instrumental variable technique. In particular, we use military expenditure as an instrument for the GDP per capita. Our estimates are also robust to various tests. We find that amongst all the indicators, market size is the most important determinant of the foreign direct investment. Moreover, global integration, availability of skilled labor force and better financial institutions also promote FDI. Likewise, stable macro-economic environment as depicted by low and stable inflation also encourage foreign direct investment inflows. However, affect of better financial institution of foreign direct investment is not statistically significant.

Thus we may conclude that developing countries may be able to attract FDI by focusing on either increasing their market size or following more liberal trade regimes. Moreover, increasing the skilled labor and developing financial institutions with moderate and stable inflation may also enable them to attract foreign direct investment.

However, unavailability of data on the other important determinants like institutions, labor costs and physical infrastructure may be considered as limitation of our study. Likewise, finding data on political stability may also be another improvement. Controlling for political stability may make the instrumental variable work even better. Thus these are the initial results which can be improved further by availability of data on these important indicators.

³ If errors are heteroskedastic and sample size is relatively large, then Generalized Method of Moment (GMM) technique is recommended. However, in our case, errors are homoskedastic and sample size is small, so IV technique with fixed effect is the most suitable technique.

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Appendix 1. Main Recipients of FDI amongst Low and Lower Middle Income Countries

	percent share in total low and lower middle income countries										Average
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2000-09
China	66.6	66.1	63.4	59.1	58.9	54.8	43.9	52.5	49.9	41.2	55.6
India	6.2	8.2	7.2	5.4	6.2	5.3	11.4	9.5	13.9	18.2	9.2
Thailand	5.8	7.6	4.3	6.6	6.3	5.6	5.3	4.3	2.9	3.1	5.2
Egypt, Arab Rep.	2.1	0.8	0.8	0.3	1.3	3.7	5.6	4.4	3.2	3.5	2.6
Ukraine	1.0	1.2	0.9	1.8	1.8	5.4	3.2	3.8	3.7	2.5	2.5
Nigeria	2.0	1.8	2.4	2.5	2.0	3.4	5.0	2.3	1.6	3.0	2.6
Vietnam	2.3	1.9	1.8	1.8	1.7	1.4	1.3	2.5	3.2	4.0	2.2
Indonesia	-7.9	-4.4	0.2	-0.7	2.0	5.8	2.8	2.6	3.1	2.6	0.6
Pakistan	0.5	0.6	1.1	0.7	1.2	1.5	2.4	2.1	1.8	1.3	1.3
Sudan	0.7	0.9	0.9	1.7	1.6	1.6	2.0	0.9	0.9	1.5	1.3

Source: World Development Indicators, World Bank

Appendix 2.

A) First-Stage Regression Summary Statistics

Variable	R ²	Adj R ²	Partial R ²	Robust F(1,146)	Prob>F
lgdp	1.00	0.99	0.16	10.96	0.00

B) Determinants of Foreign Direct Investment

	Dependent Variable log (fdi)		
	2SLS(IV)		Limited-Information
	Fixed Effect	Random Effect	Maximum Likelihood
log(gdp)	2.754 (1.30)	2.72 (1.80)	2.754 (1.30)
Inflation	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Financial System Depth	0.001 (0.02)	0.003 (0.03)	0.001 (0.02)
Tariff rate on import	-0.004 (0.00)	-0.004 (0.00)	-0.004 (0.00)
Secondary school enrolment rate	0.015 (0.01)	0.014 (0.01)	0.015 (0.01)
Country/Time fixed effects	Yes	Yes	Yes
Robust standard errors	Yes	Yes	Yes
Observations	215	215	215
R ²	0.81	0.83	0.81

Standard errors are in parentheses

C) Pagan-Hall general test for Heteroskedasticity

IV heteroskedasticity test(s) using levels of Ivs only

Ho: Disturbance is homoskedastic

Pagan-Hall general test statistic : 82.375

Chi-sq(68)

P-value = 0.1129