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Economic Policies and FDI Inflows to Emerging Market Economies

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Abstract

This paper investigates the determinants of FDI inflows to emerging market economies, concentrating on the effects of economic policies. The empirical analysis also addresses the role of external push factors and of political stability using a domestic conflict events database. The results suggest that lowering corporate tax rates and trade tariffs, adopting fixed or managed exchange rate policies and eliminating FDI related capital controls have played an important role. Domestic conflict events and political instability are found to have significant negative effects on FDI, which highlights the role of incluside policies to promote growth and avoid sudden stops of FDI inflows.

Contents   Page

I. INTRODUCTION AND MOTIVATION

FDI has increasingly been viewed by policy makers in developing and emerging market economies (EMEs) as a tool to finance development, increase productivity and import new technologies.[1] In addition, the relative stability of FDI inflows constitutes a buffer against sharp reversals in portfolio inflows during periods of crisis, such as the one experienced in 2009. The global financial crisis marked the end of a significant inflow episode to EMEs. An important policy question is, therefore, which factors (external and domestic) are important in driving FDI inflows to EMEs. In this paper, we look at this question, studying both the country-specific and the global factors that explain FDI in EMEs. The focus of the analysis is on the effects of policy-driven variables, controlling for other factors such as the global economic environment.

The data sample includes 46 countries and covers the period from 1990 to 2009 for most of them, offering useful time series variation in inflows for individual countries and EMEs as a whole. The sample also captures the global economic crisis and hence offers a preliminary assessment of the effects of the crisis on FDI inflows to EMEs.

This paper is related to the previous literature on FDI inflows.[2] It extends existing work by focusing on the effects of a wide range of economic policies on FDI to EMEs. In addition to using corporate tax rates and tariffs as possible policy variables that can promote FDI, this paper also considers the effects of exchange rate policy and FDI-related capital account restrictions. The paper also makes a careful attempt to quantify the effects of political stability and conflict on FDI, using both professional risk indices and a domestic conflict event database.

Country coverage and sample periods vary across studies, but openness, market size and export orientation are usually found to be significant country-specific determinants of FDI inflows.[3] Regarding the role of institutions and the macroeconomic environment, Walsh and

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[1] There is an extensive empirical literature that has explored the effects of capital inflows and FDI in particular, on economic growth in host countries. Although there is no uniformly strong evidence that FDI inflows promote growth, many recent papers provide evidence that there are positive growth effects of FDI. Kose et. al. (2009) argues that there can be threshold effects of financial and institutional development of an economy on the effects of FDI flows and Alfaro et. al. (2004) finds that the development of financial markets affect whether host countries benefit from FDI inflows.

[2] Dabla-Norris et. al. (2010) use bilateral FDI inflow data from G-7 countries to a set of low and medium income countries. They find that FDI flows are pro-cyclical with respect to growth rates in G-7 countries. The credit conditions in G-7, proxied by the level of the real interest rate, are also found to play a role for both low and medium income countries. The host country specific determinants of FDI such as institutional quality, economic growth and lower government consumption to GDP ratio are found to affect FDI flows, but only for medium-income countries. Campos and Kinoshita (2003) look at the determinants of FDI flows to transition economies.

[3] See for instance Lucas (1993) and Hein (1992).

Yu (2010) point out the importance of distinguishing between inflows into the primary versus the secondary and tertiary sectors such as manufacturing and services, which may have a different set of determinants.[4] Most studies also agree on the significance of business cycles in capital exporting advanced economies. The results in this paper are broadly consistent with the previous literature, especially regarding the role of global push factors. However, the paper finds a more important role of economic policies, especially corporate tax rates, as drivers of FDI inflows.

The organization of the paper is as follows: The rest of this section provides a brief overview of trends in FDI flows to EMEs. The next section discusses the determinants of FDI inflows that will be considered in the empirical part of the paper, presents the empirical strategy and discusses the main results for EMEs as a group. Section III draws some policy conclusions and discusses possible extensions and improvements on the empirical approach.

A. FDI Inflows to Emerging Market Economies

FDI inflows to EMEs increased substantially since the early 1990s. Total inflows as a percentage of total emerging market GDP shows a sustained trend increase (Figure 1).[5][6]

Although FDI inflows are perceived to be more stable compared to other types of foreign capital inflows, they also have fluctuated significantly over the sample period. In particular, it is possible to identify two surge episodes associated with a significant and sharp rise in inflows. The first such episode started in 1990 and reached a peak in 1999. Total flows declined starting in 2000 and reached a trough in 2003. The

Figure 1. FDI Inflows to EMEs 1990-2008

Sources: IMF, *International Financial Statistics*; and author's calculations.

second surge of flows took place during 2003–07 and reached a peak of 4 percent of total emerging market GDP just before the global financial crisis in 2008.
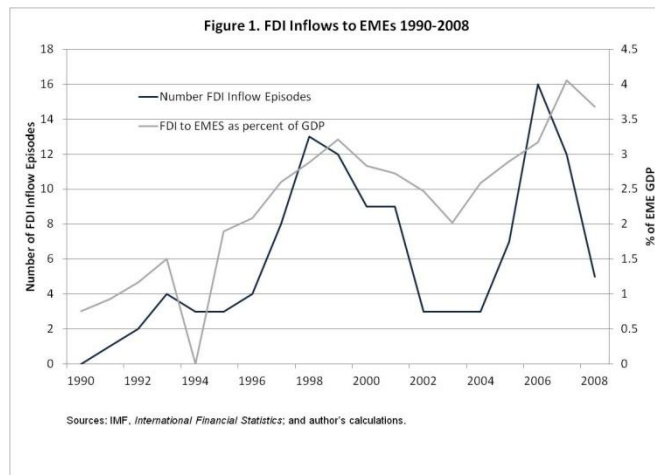
Figure 1 also shows the evolution of the number of EMEs that had an FDI inflow episode during that corresponding year. Inflow episodes are identified following the methodology

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[4] They find that investment flows to the primary sector are not related to macroeconomic variables, consistent with their hypothesis.

[5] Please refer to the Appendix for the list of 46 emerging market countries in the sample.

[6] Foreign direct investment is defined as "Direct Investment in Representative Economy, NIE" and comes from the IMF's International Financial Statistics. Data from the UNCTAD World Investment Report (WIR) is used for the missing years for some countries.

adopted in the October 2007 World Economic Outlook (WEO).[7] The number of countries
that experienced inflow episodes started to increase in 1995 and reached its peak in 1998. Another significant surge of inflows took place during 2004–06, as the number of EMEs that were in an FDI inflow episode reached 16.

Looking at growth rates in G-7 countries—which are major FDI exporters—over this period suggests that FDI inflows to EMEs were indeed related to growth in developed economies (Figure 2). A steady increase in G-7 growth rates during the 1990s coincided with the first surge of flows and the slowdown in 2000–01 seems to have played a role in their decline. The statistical analysis conducted in the next section also captures the pro-cyclicality in FDI inflows with respect to developed country business cycles. In addition, persistently low global interest rates during this period have also played a role, making investment projects and mergers and acquisitions cheaper to finance.

Figure 2. FDI Inflow Episodes and Real GDP Growth in G-7 Countries

Figure 3. FDI Inflow Episodes and Volatility (VIX Index)

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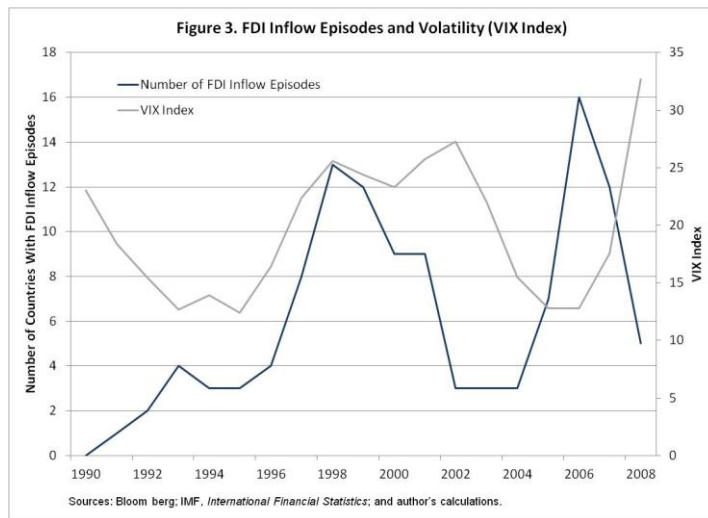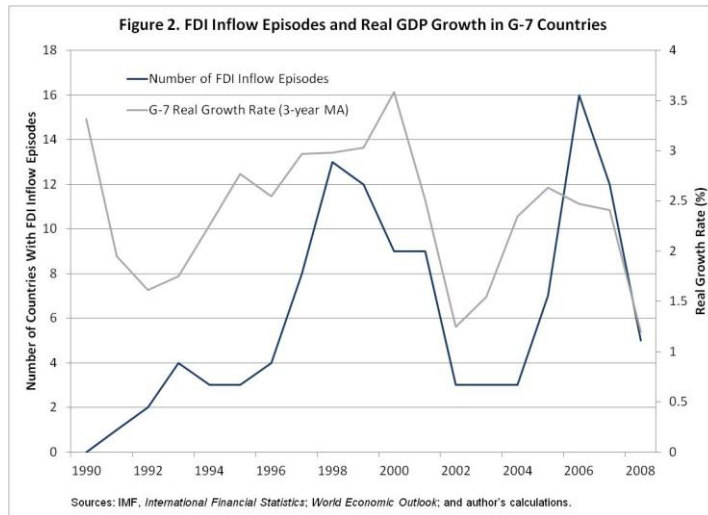
[7] The WEO methodology (see Chapter 3, *Managing Large Capital Inflows*) identifies an inflow episode if in any given year total capital inflows as percentage of GDP exceed trend inflows by more than one standard deviation. Trend inflows for each country are calculated using the HP-filter with a smoothing parameter of 100. If there are less than two years between two inflow episodes, we consider them to be part of the same inflow episode. Please see Appendix for more details on the identification of episodes.

We find that global risk aversion and heightened uncertainty also play a significant role in explaining FDI inflows. The unconditional correlation between the VIX index and FDI inflows is small, but during certain periods such as after 2006, one observes a significant negative relationship.[8] As Figure 3 shows, FDI inflows plunged when uncertainty increased to unprecedented heights.

Although there seem to have been common trends in FDI inflows among EMEs, there was also significant dispersion in terms of the magnitude of inflows. Figure 4 plots the median, the 75th and the 25th percentiles of FDI inflows to GDP for the group of EMEs considered in this paper. During the two surge episodes, the increase in inflows was broad–based, with an increase in FDI inflows as a percentage of GDP across most EMEs. However, the variation

Figure 4. FDI Inflows to EMEs

Sources: IMF, *International Financial Statistics*; and author's calculations.

Figure 5. FDI Inflows to Selected EMEs

Source: IMF, *International Financial Statistics*.

among EMEs also increased as some countries received significantly larger inflows (Figure 5). Looking at the experiences of particular EMEs, one can see that in Egypt, Turkey, Russia, and India inflows were relatively stable until the mid-2000s, when these countries experienced a sharp surge. By contrast, Thailand and China had an initial FDI surge in the 1990s but did not experience another surge after 2005. Differences in the timing of inflow surges can offer useful information on global and domestic determinants of FDI inflows to EMEs.

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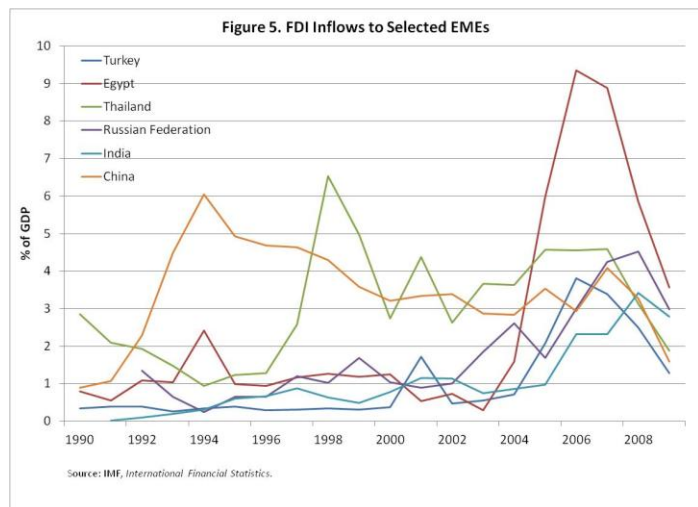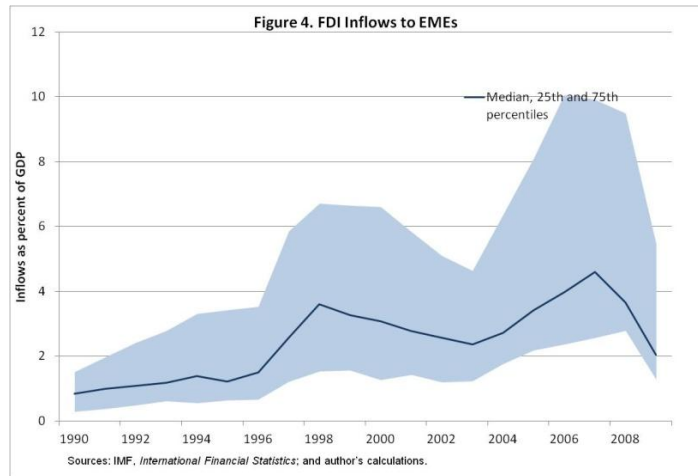
[8] The VIX index is a popular measure of implied volatility of S&P 500 index options. High values of the index imply higher expected volatility.

II. EMPIRICAL FRAMEWORK AND DATA

A. What Explains FDI Inflows?

The set of explanatory variables that we will use to explain cross-country and over-time variations in FDI inflows can be split into two categories: global push factors and country-specific pull factors. Many studies have concluded that global push factors are important in explaining capital flows to emerging market economies. It is therefore important to control for their effects in considering the role of domestic policies. The role of global economic conditions has also gained importance with the recent global economic crisis and the subsequent decline in FDI inflows. In our empirical strategy, common time trends across countries with different fundamentals help identify the effects of such push factors. The country-specific pull factors that we will consider are grouped under four main categories: 1) fixed or structural factors such as whether the country is an oil exporter or not, its location and the average level of education; 2) political factors including existence of conflict, labor strikes, and/or protests; 3) macroeconomic factors such as inflation, the share of exports, and the real exchange rate; and finally 4) economic policy variables including corporate tax rates, tariff rates, exchange rate policy, and whether there are capital account restrictions.

Global Push Factors:

Growth in capital exporting countries: Real income growth in G-7 countries is used to capture the effects of economic growth in capital exporting countries on FDI flows to EMEs.[9] The expected effect of economic growth in G-7 countries on FDI flows to EMEs is somewhat ambiguous. While higher income growth in G-7 countries provides an environment that is more conducive to expansions into other markets and associated with easier internal financing conditions, it may also make investment in the domestic economy relatively more attractive. We use the 3-year moving average of real GDP growth in G-7 countries to account for lag effects due to implementation and planning times associated with FDI.

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[9] G-7 countries have originated approximately 56 percent of total global FDI outflows during 2000-2008 according to FDI outflows data in the World Investment Report (2009) published by UNCTAD.

International liquidity: To capture the effects of credit conditions in advanced countries on FDI flows, we use the average real (ex-post) interest rates in G-7 countries. Lower interest rates are expected to increase FDI flows, making it easier for firms to finance investment projects.[10]

Risk environment: The global risk appetite is also mentioned and used in the literature as a common push factor that could affect FDI flows to EMEs. We use the natural logarithm of the VIX index to capture the role of global risk appetite if any on FDI flows.

Country Specific Pull Factors:

1.   Fixed or Structural Factors:

Size of domestic market: The size of the domestic market can play a role in attracting horizontal FDI, where firms decide to invest in the host country to capture a share of the domestic market. We use the log of the PPP-adjusted gross domestic product per capita in the host country in 1989 to capture the effect of the size of the domestic market on FDI inflows.[11] But this variable is also related to the capital-to-labor ratio and, hence, the productivity of capital. Countries with a low level of per capita income might attract more inflows, consistent with a higher marginal product of capital.

Education: We use the average years of school attainment in 1990, using a dataset constructed by Barro and Lee (2010).

Role of Oil Sector: Given the importance of hydrocarbon sector related inflows for certain EMEs, we control for this factor through a dummy which equals one if the share of oil exports in total exports exceeds 20 percent.

Location: We construct dummies based on the location of the countries, including the Middle East and North Africa, Asia, Latin America, and Central and Eastern Europe.

2.   Political Environment and Institutions:

Legal, political and the institutional environment: A possible determinant of foreign direct investment in a country is the quality of its legal, political and institutional environment. Legal rights, contract enforcement, protection of investor rights are likely to be important for an investor's decision regarding bringing capital into a foreign country. Political stability and whether there are internal or external conflicts also play a role since they affect economic uncertainty, safety of invested capital and economic prospects of the host economy. There

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[10] Calvo, Leiderman and Reinhart (1996) found evidence for the effects of low US interest rates on foreign investment in the 1990s.

[11] We also considered population as a variable but it was highly insignificant.

are many sources of cross-country data that aim to capture differences across countries along these dimensions, based on different sources of information. Most of these studies have found an effect of political risk or corruption on FDI.[12] However, it is important to note that political risk and its relationship with FDI is complex and hard to quantify. We use several political risk ratings published by ICRG.[13] These ratings are subjective; however, they are calculated consistently over time and across countries. The following components of political risk are considered separately and also together as a composite: government stability, internal and external conflict, law and order and bureaucracy quality.[14] The ratings range from 0 to 12 or 0 to 4 depending on the particular risk component. For all components, a higher rating indicates lower risk.

Conflicts, revolutions and labor strikes based on events: Given that the interpretation of conflict indices can be challenging, it may be useful to use event based variables to look at the effects of labor strikes, riots, and protests on FDI inflows.[15] We use four domestic conflict event variables from the Cross-National Time-Series Data Archive (CNTS).[16] General strikes (captures major strikes involving 1,000 or more workers and more than one employer aimed at national government policies); major government crises (a rapidly developing situation that threatens to bring down the current regime; revolutions (forced change in the top government elite) and anti-government demonstrations.

3.   Macroeconomic Environment

The macroeconomic environment and policies in EMEs improved consistently over the sample period and in particular during the last decade, which can help explain the overall positive trend and the sharp rise in inflows during the second half of 2000s. However, an important challenge in looking at the effects of macroeconomic variables on FDI is the feedback effect from FDI to macroeconomic variables, especially to economic growth.

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[12] Wei (2000) found that corruption played an important role in explaining bilateral FDI flows during 1994–1996 from industrialized to developing countries. Faria and Mauro (2004) find that institutions affect the stock of FDI using 55 developing and emerging market economies. Campos and Kinoshita (2008) find that financial reform efforts, privatization, level of development and quality of infrastructure are significant determinants of FDI in Eastern Europe and Latin America, and that reform efforts tend to be more powerful determinants of FDI than reform outcomes.

[13] ICRG is a company that produces risk ratings for a large group of countries and evaluates countries on the basis of political, economic and financial risks. Alfaro et. al. (2004) also uses ratings for several ICRG components to measure institutional quality.

[14] See Appendix for a more detailed description of the components of political risk index.

[15] Other empirical analyses that have explored the effects of different proxies such as the number of strikes or riots (Schneider and Frey (1985)) and episode dummies for certain political events (Lucas (1993)).

[16] See Appendix for the exact definition of the variables.

Real GDP Growth: High real GDP growth rates can attract FDI inflows, indicative of high productivity in an economy. As mentioned above, there can also be feedback effects from FDI (both current and past) on economic growth in return.

Inflation: We use a dummy variable that equals one if inflation during that year has been higher than 10 percent.[17] The inflation performance of EMEs, measured by the share of countries that had less than 10 percent annual inflation improved significantly during the sample period and several studies, including Dabla-Norris et. al. (2010), find a positive impact of a low inflation environment on FDI inflows.

Exports to GDP: One of the key determinants of FDI inflows is the export orientation and competitiveness of an economy. We use the share of exports to GDP (export) as a proxy for the export orientation of a country over time. As noted by other studies as well, the effect of export orientation on FDI inflows may be ambiguous since it would depend on whether FDI-related production is meant to serve the export or the domestic market (in other words whether it is vertical or horizontal FDI).

Real Exchange Rate: We use the change in the real exchange rate to assess the effects of competitiveness on FDI flows. This may be more important if the investment is oriented towards the export market.

4.   Economic Policies:

Trade policy: We use the tariff rates imposed on manufactured goods as a proxy for the extent of trade liberalization. The effect of tariffs on FDI may be different depending on its nature (orientation toward the domestic market or exports).

Exchange rate classification: As previous studies have emphasized, exchange rate volatility and flexibility can affect capital inflows. We thus use IMF's de facto classification of exchange rate arrangements which has 8 different regime classifications with higher numbers corresponding to higher flexibility and combine them into three categories: fixed (classifications 1-4), managed (classifications 5-7), and floating (classification 8) and construct dummies for the different classifications.

Restrictions in capital account transactions related to FDI: Another potential determinant of FDI inflows is the existence of FDI related capital account restrictions. We use two indicators that exist in the AREAR database of IMF to account for the effects of such restrictions: 1) whether there were any restrictions on FDI inflows 2) whether there were any

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[17] Many countries in the sample had episodes of hyper inflation during the sample. Also the relationship between FDI and inflation is conjectured to be nonlinear; therefore, we use a binary indicator of inflation performance.

controls on liquidation of direct investment.[18] Most studies use measures of capital account restrictions in general, but given the differences across restrictions on different types of inflows and the focus of this note on FDI inflows, we use these more specific measures of capital account restrictions.

Corporate Tax Rates: Taxation of corporate income has a direct effect on the returns that are realized by the firm that makes an investment in the host country and hence should be an important determinant of FDI inflows. In addition, lowering corporate taxes has been used by many emerging market economies to attract more investment inflows. Although Ireland is not in our sample, corporate tax rates were a key item in its recent negotiations with the EU and the IMF, whereby Ireland explicitly argued that its low corporate tax rates was integral for attracting foreign investment into its economy. The corporate tax rates are available after 1999 from KPMG's database and we extend this dataset using IMF's Fiscal Affairs Department's database on tax rates for most countries in the sample going back to mid-1990s.[19]

Ideally, one would consider a larger set of policy variables or reform actions to capture their effect on FDI inflows. Data availability and comparability of reforms or policies across countries pose a big challenge for such analysis. For instance, the ease of doing business or the business environment in general could yet be another important determinant of FDI inflows, but it is hard to find policy measures that are readily available and measured consistently across countries.[20]

B. Panel Regressions

Empirical Model:

We model FDI inflows using a dynamic, partial adjustment model, in the spirit of Singh and Jun (1995), Chen and Kwan (2000) and Campos and Kinoshita (2003). This is consistent with the observation that FDI flows are more persistent and less volatile compared to other types of inflows, as well as the fact that there might be planning and implementation lags associated with FDI. We assume that the equilibrium level of FDI (expressed as a percentage

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[18] We supplement the Financial Integration Database of Schindler (2009) which is also constructed using the IMF's AREAR database to include some of the countries that are in this sample but not covered in his database and also extend the time coverage of the dataset to 2008. The results for restrict2 are not reported as they were not significant in any of the specifications.

[19] One caveat with this variable is that many countries offer special tax incentives for FDI that are not captured by the statutory corporate tax rates.

[20] Most cross-country measures of the ease of doing business start in the 2000s. We also experimented with using the cost of registering a business expressed as a percentage of gross national income from the World Bank's Doing Business database but the short sample period, measurement and identification issues restricts the explanatory power of this variable and is not included in the results.

of GDP) is a function of a set of push (X_t) and pull $(Y_{t,i}, Y_i)$ factors, as well as unobserved fixed and time varying factors.

$$fdi_{t,i}^* = c_o + \alpha X_t + \delta Y_{t,i} + \gamma Y_i + e_i + \varepsilon_{t,i}$$

The change in FDI flows is a function of the difference between this equilibrium FDI and FDI flows in the previous year.

$$fdi_{t,i} - fdi_{t-1,i} = (1-\rho)(fdi_{t,i}^* - fdi_{t-1,i})$$

$$fdi_{t,i} = \rho fdi_{t-1,i} + (1-\rho) fdi_{t,i}^*$$

The estimated model in its reduced form is given by:

$$fdi_{t,i} = \beta_0 + \beta_1 fdi_{t-1,i} + \beta_2 X_t + \beta_3 Y_{t,i} + \beta_4 Y_i + u_i + \upsilon_{t,i}$$

Where the $\beta_1 = \rho$ parameter determines the speed of adjustment to the equilibrium level of FDI. If it equals zero, there is immediate adjustment and as it approaches one, FDI inflows become more persistent.

Given that the lagged FDI inflows and $Y_{t,i}$ are correlated with the unobserved country fixed effects, standard fixed effects methods would yield biased estimates especially if the time dimension of the panel is small.[21] In our panel data, we have a relatively long time series (20 years) for most variables but the time dimension is still small relative to the cross-section dimension of the data (46 countries), and the time dimension drops in many specifications. Therefore, we prefer to use the GMM system estimator as opposed to fixed effects methods. Another important issue is the possible correlation between ($Y_{t,i}$) and ($\upsilon_{t,i}$) which requires that we find appropriate instruments for the endogenous variables in ($Y_{t,i}$). We therefore use the two-step system GMM estimator of Blundell and Bond (1998); which is a popular method for estimating dynamic panel models with fixed effects and endogenous regressors, as in our benchmark method.

We assume that some country-specific pull factors ($Y_{t,i}$) such as the corporate tax rate, tariff rates and political risk are pre-determined with respect to the unobserved country specific effects ($u_i + \upsilon_{t,i}$). We use lags of exports to GDP ratio, real GDP growth, inflation dummy and real exchange rate as instruments to account for a possible correlation between these

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[21] See Roodman (2006) for more details on estimation bias using fixed effects estimator.

variables and the unobserved fixed effects. Finally, the time-varying common push factors (X_t) are assumed to be exogenous.

Results:

The results of the dynamic panel regression are shown in Table 1. We first include only the global push factors and later add the country-specific structural or fixed factors.[22] The first column shows results for a specification where we include three common exogenous factors (the 3-year moving average of the GDP weighted G-7 growth rate, the real average interest rate in G-7 countries, and the VIX index to capture the effects of global uncertainty and the risk environment). Consistent with previous studies, we find that FDI flows are pro-cyclical with respect to growth in G-7 countries (a one percent increase in G-7 growth rates increased FDI inflows by 0.4 percent of GDP), whereas an increase in real interest rates tends to lower FDI flows. Market volatility and heightened uncertainty has a negative effect on FDI flows but it is not significant in this specification. The second column runs the same regression with time dummies to account for any correlation across countries that is not captured by the three global factors. The results are not very different, except that the real interest rate becomes insignificant in this specification.

Among the structural or fixed country-specific effects, GDP per capita in 1989 is significant with a negative sign suggesting that the marginal productivity of capital might explain differences in FDI inflows among emerging market economies. Education has a significant positive effect on FDI; every additional year of schooling increases the FDI-to-GDP ratio by about 0.3 percentage points. The oil and some of the location dummies are insignificant. It is important to note that the Central and Eastern Europe dummy is highly significant and positive (1.3–1.4 percent of GDP). This is not very surprising given their geographic proximity to the European market and other unobserved characteristics that might be playing a role such as institutions.

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[22] The Arellano-Bond test for autocorrelation rejects the existence of auto-correlation at conventional levels, which suggests that the dynamic model's moment assumptions are not violated. We use time restrictions to limit the number of instruments. See Roodman (2008) for more on the issue of too many instruments in dynamic panel models.

Table 1. System GMM Estimates - With Push and Fixed Pull Factors

Dependent Variable: FDI as percent of GDP	Push Factors [1]	Push Factors [2]	Fixed Pull Factors [3]	Fixed Pull Factors [4]
FDI/GDP (Lag)	0.452***	0.381***	0.417***	0.345***
	[0.086]	[0.078]	[0.09]	[0.085]
Real Growth Rate in G-7 (3-year MA)	0.413***	0.673***	0.393***	0.616***
	[0.062]	[0.189]	[0.062]	[0.204]
Real Interest Rate in G-7	-0.316***	-0.379	-0.28***	-0.316
	[0.071]	[0.376]	[0.069]	[0.382]
Log of Vix index	-0.159	-0.205	-0.219	-0.478
	[0.282]	[1.451]	[0.281]	[1.485]
Log of GDP per capita in 1989 (PPP)			-0.408	-0.455
			[0.287]	[0.327]
Education (years) on 1990			0.319**	0.351**
			[0.106]	[0.123]
Oil ExporterDummy			0.180	0.197
			[0.601]	[0.669]
MENA Dummy			0.711	0.780
			[0.574]	[0.655]
Latin America Dummy			0.743*	0.83*
			[0.421]	[0.483]
Central and Eastern Europe Dummy			1.322***	1.438**
			[0.501]	[0.572]
N	841	841	822	822
Num. of Countries	46	46	45	45
Year Dummies	No	Yes	No	Yes
Num. of Instruments	6	22	12	28
Arellano-Bond Test (AR(2), p-level)	0.92	0.86	0.81	0.75

Note: Standard errors in parantheses are the Windmeijer WC-robust standard errors.
The significance of coefficients denoted by *, **, *** refer to significance at the 10, 5 and 1 percent respectively.

Many studies on the determinants of capital inflows point out to the effects of institutions and the political environment. In the next set of results (Table 2) we consider the effects of political environment and other institutional factors using both the indices constructed by ICRG and the conflict events database. The first two columns show the estimates using a variable called political risk which is a composite of different political and institutional factors including conflict, government stability, law and order and bureaucracy quality.[23] The estimate is positive and significant, which suggests that a more favorable political and institutional environment leads to more FDI inflows. The second column replicates the same regression but using year dummies as well. The one thing to note is the fact that the sample size declines in this specification, which explains the difference in the estimates of the lag of FDI between this specification and the results in Table 1.

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[23] Please see Appendix for variable definitions.

Table 2. System GMM Estimates Political Factors

Dependent Variable: FDI as percent of GDP	Political (ICRG) [1]	Political (ICRG) [2]	Political (ICRG) [3]	Political (ICRG) [4]	Political (Events) [6]	Political (Events) [7]
FDI/GDP (Lag)	0.748***	0.719***	0.756***	0.719***	0.415***	0.349***
	[0.055]	[0.058]	[0.054]	[0.057]	[0.091]	[0.092]
Real Growth Rate in G-7 (3-year MA)	0.320**	-0.366	0.252	-0.353	0.402***	0.628***
	[0.147]	[2.541]	[0.155]	[2.548]	[0.059]	[0.185]
Real Interest Rate in G-7	-0.075	0.762**	-0.045	0.766**	-0.252***	-0.357
	[0.099]	[0.367]	[0.097]	[0.365]	[0.067]	[0.389]
Log of Vix index	-0.909***	-0.645	-1.09***	-0.618	-0.202	-0.425
	[0.28]	[3.329]	[0.321]	[3.335]	[0.285]	[1.433]
Education (years) on 1990	0.170***	0.173***	0.201***	0.18***	0.255***	0.279**
	[0.047]	[0.050]	[0.052]	[0.053]	[0.072]	[0.080]
Political Risk	0.038**	0.044**				
	[0.017]	[0.020]				
Conflict			0.05*	0.069**		
			[0.029]	[0.03]		
Government Stability			0.115*	0.033		
			[0.063]	[0.081]		
Law and Order			-0.105	-0.018		
			[0.083]	[0.09]		
Bureaucracy Quality			0.011	-0.014		
			[0.126]	[0.133]		
General Strikes (lagged)					-0.26***	-0.195**
					[0.078]	[0.091]
Major Government Crises					-0.295***	-0.314**
					[0.098]	[0.099]
Revolutions					-0.232*	-0.191
					[0.119]	[0.132]
Anti-Government Demonstrations					-0.071**	-0.064
					[0.035]	[0.035]
N	745	745	745	745	821	821
Num. of Countries	45	45	45	45	45	45
Year Dummies	No	Yes	No	Yes	No	Yes
Num. of Instruments	8	22	11	25	11	27
Arellano-Bond Test (AR(2), p-level)	0.18	0.16	0.17	0.16	0.83	0.77

Note: Standard errors in parantheses are the Windmeijer WC-robust standard errors.
The significance of coefficients denoted by *, **, *** refer to significance at the 10, 5 and 1 percent respectively.

In columns 3-4 we look at the effects of the disaggregated components of political risk. Conflict and government stability both have positive and significant estimates, whereas law and order, and bureaucracy quality are not significant.[24] Constructing measures of law and order and bureaucracy quality that are consistent over time and across countries are inherently more difficult than government stability and conflict. Therefore, it is very plausible that the insignificant effects of law and order and bureaucracy are related to measurement issues. Although the estimate for the conflict variable is reasonable, it is hard to interpret the coefficient as it is just an index. Results in columns 6-7 try to go beyond the political stability indices (conflict and government stability variables) and look at the effects of different types of events on FDI inflows. The occurrence of general strikes lower FDI as percent of GDP by about 0.20 with a lag, whereas major government crisis lead to a 0.3 percent of GDP decline in inflows. Revolutions also reduce FDI by about 0.2 percent of GDP, whereas peaceful anti-government demonstrations have a slightly smaller negative

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[24] The conflict variable from ICRG is higher if there is less conflict and hence we would expect it to have a positive coefficient.

effect.[25] The results using both the ICRG indices and the events database suggest that presence of conflict or major political instability has a large and negative effect on FDI inflows.

In the next set of results (Table 3) we consider the effects of the macroeconomic environment on FDI inflows. The first column shows the effect of inflation on FDI inflows, whereby we use a dummy to indicate whether inflation was in single digits or not. The estimates suggest that high inflation has a negative impact on FDI, but it is not statistically significant at conventional levels. Although the choice of the inflation threshold is somewhat arbitrary, it is meant to capture whether having single digit inflation has any effect on FDI and also accounts for the conjecture that inflation has non-linear effects on FDI. In fact, in other specifications (not reported) where we use the level or a moving average of the level of inflation, the estimates become highly insignificant. Second and third columns add exports to GDP and the real exchange rate respectively. In all of these specifications we use second and third lags of the endogenous macroeconomic variables as instruments. The results also suggest a positive but insignificant effect of exports to GDP. Real exchange rate appreciation has a negative effect on FDI; however, it is also not significant.

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[25] We also tried to look at the effects of these events separately and got similar estimates and looking at their cross correlations, one can see that they are not strongly correlated.

Table 3. System GMM Estimates - Macroeconomic Environment

Dependent Variable: FDI as percent of GDP

	[1]	[2]	[3]
FDI/GDP (Lag)	0.427***	0.477***	0.349***
	[0.081]	[0.072]	[0.115]
Real Growth Rate in G-7 (3-year MA)	0.635***	0.617**	0.184
	[0.219]	[0.255]	[0.398]
Real Interest Rate in G-7	-0.326	-0.375	0.282
	[0.397]	[0.396]	[0.691]
Log of Vix index	-0.463	-0.879	-1.347
	[1.506]	[1.748]	[2.211]
General Strikes (lagged)	-0.102	-0.014	-0.062
	[0.078]	[0.118]	[0.273]
Major Government Crises	-0.383***	-0.392***	-0.350
	[0.100]	[0.134]	[0.229]
Inflation Dummy (inflation less than 10 percent)	-0.239	-0.342	-0.448
	[0.686]	[0.766]	[0.796]
Exports of goods and services/GDP		0.017	0.086
		[0.023]	[0.066]
Change in Real Effective Exchange Rate			-0.031
			[0.039]
N	833	833	827
Num. of Countries	46	46	46
Year Dummies	Yes	Yes	Yes
Num. of Instruments	27	30	33
Arellano-Bond Test (AR(2), p-level)	0.92	0.98	0.81

Note: Standard errors in parantheses are the Windmeijer WC-robust standard errors.

The significance of coefficients denoted by *, **, *** refer to significance at the 10, 5 and 1 percent respectively.

In the final set of results (Table 4) we consider the effects of economic policies, first separately and later as a group. The first column shows that higher tariff rates have a negative effect on FDI inflows, but its estimated effect is not very large. Cutting tariff rates by 10 percentage point leads to a predicted increase in FDI of about 0.22 percent of GDP. The second column shows the effect of corporate tax rates, suggesting a highly significant effect on FDI, consistent with evidence from other studies and the evidence on tax competition among emerging markets. [26] [27]

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[26] Simplicity, transparency and stability of tax systems and a uniform low statutory tax rate are considered to be more effective in attracting investment than special tax incentives. Tax incentives also create distortions on investment choices and enforcement and compliance costs can be high. Zee et. al (2002) offers a review of costs and benefits of special tax incentives for investment.

[27] Tax competition among industrialized and emerging market economies have been studied in various papers. Devereux et. al. (2008) has found that during 1982–1999 and among industrialized OECD countries, a one percentage point change in other countries' weighted average statutory CIT rate resulted in a 0.67 percentage point change in the CIT rate of the home country. Slemond (2004) also find suggestive evidence that international competitive pressures have been associated with convergence in corporate tax rates. Klemm and Parys (2009) find strong evidence in their sample of developing countries, that there is significant tax competition for attracting FDI inflows and that CIT rates have positive and significant effect on FDI inflows in a sample of 43 developing countries.

Table 4. System GMM Estimates - Economic Policies

Dependent Variable: FDI as percent of GDP	Tariff Rates	Corporate Tax	Exchange Rate Policies	Capital Account Restrictions (1)	Capital Account Restrictions (2)	All Economic Policies (1)	All Economic Policies (2)
FDI/GDP (Lag)	0.670***	0.368***	0.364***	0.728***	0.727***	0.598***	0.635***
	[0.069]	[0.114]	[0.089]	[0.057]	[0.059]	[0.113]	[0.103]
Real Growth Rate in G-7 (3-year MA)	0.648**	0.521***	0.708***	0.037	0.011	0.647***	0.214
	[0.285]	[0.186]	[0.186]	[2.472]	[2.472]	[0.271]	[0.152]
Real Interest Rate in G-7	0.650	-0.464	-0.539	0.729**	0.729**	0.335	0.078**
	[0.632]	[0.397]	[0.382]	[0.37]	[0.37]	[0.585]	[0.143]
Log of Vix index	0.422	-1.088	0.138	-0.134	-0.174	0.064	-0.713**
	[1.901]	[1.509]	[1.431]	[3.230]	[3.226]	[1.90]	[0.313]
Major Government Crises	-0.301**	-0.358***	-0.353***	-0.312**	-0.329**	-0.26**	-0.222**
	[0.132]	[0.112]	[0.111]	[0.13]	[0.130]	[0.138]	[0.140]
Average Tariff Rate Manufactured Goods	-0.022*					-0.012	-0.024
	[0.012]					[0.017]	[0.016]
Corporate Tax Rate		-0.11***				-0.096***	-0.105***
		[0.027]				[0.018]	[0.019]
Exchange Rate Fixed			0.609**			0.518**	0.558**
			[0.298]			[0.253]	[0.266]
Exchange Rate Floating			-0.247			-0.253	-0.241
			[0.282]			[0.30]	[0.278]
Restriction on FDI inflows 1				-0.465*			
				[0.28]			
Restriction on FDI inflows 2					-0.416		
					[0.257]		
N	673	714	841	642	642	593	593
Num. of Countries	46	44	46	46	46	44	44
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	No
Num. of Instruments	23	24	25	18	18	26	11
Arellano-Bond Test (AR(2), p-level)	0.14	0.67	0.85	0.17	0.17	0.26	0.29

Note: Standard errors in parantheses are the Windmeijer WC-robust standard errors.

The significance of coefficients denoted by *, **, *** refer to significance at the 10, 5 and 1 percent respectively.

In the next column, we consider the effect of exchange rate policies, captured by two dummy variables for having a fixed and floating exchange rate respectively. The results imply that having a fixed exchange rate increases equilibrium inflows by 0.96 percent of GDP, whereas a floating exchange rate has a negative impact. This result captures the fact that having a fixed or managed exchange rate leads to lower exchange rate risk. The last set of policy variables we consider are controls on FDI inflows and outflows. These two variables are highly correlated, so we include each one separately. The first variable captures whether there are controls on inflows of FDI, mainly in the form of restrictions on foreign ownership, and it has a significant negative effect on FDI. The second variable captures restrictions on outflows and also has a negative effect, but it is not statistically significant. Finally the last two columns show a specification where all policies are included (except capital controls, which were highly insignificant, possibly due to correlation with other explanatory variables and the change in the sample size).

III. CONCLUSIONS

The global financial crisis has led to a substantial contraction in FDI inflows to emerging market economies. Although other short-term inflows have resumed (at least more broadly), FDI inflows have remained subdued in many countries. The extent to which inflows are driven by domestic policies or other country-specific factors is an important policy question given the role of FDI in financing investment. This paper found that both global push factors and economic policies had a significant effect on FDI inflows for the set of emerging market economies in our sample, especially during 2008–09 as G-7 growth rates declined and uncertainty regarding future economic prospects increased.

Among the set of pull factors that were considered, lowering corporate tax rates and tariffs and a stable exchange rate were found to be statistically important determinants of FDI inflows. Accounting for the effects of policy changes or shifts was found to be useful in explaining sharp increases in FDI inflows. Among other country-specific variables that are more structural in nature, and hence changing more slowly education was found to be highly significant. Political stability also appears to be a crucial factor in attracting FDI inflows. Countries that are more prone to domestic conflict and political instability have experienced lower FDI than other countries with similar characteristics. Although the analysis in this paper does not concentrate on the sources of domestic conflict and instability, the significant negative effects of domestic conflict on FDI suggests that economic policies that promote inclusive growth may be highly important. Countries that experience repressed instability may in the future face sudden stops of inflows, reversing previous gains from prudent macroeconomic policies.

The empirical exercise presented in this paper fails to consider many potentially relevant policy measures because of data limitations. Going forward, expanding the set of policy variables included in the empirical exercise may yield useful insights. Our empirical work also focuses exclusively on the impact of policies on FDI inflows, but does not investigate factors that link higher FDI inflows with growth and social outcomes. As has been noted elsewhere, the growth benefits of FDI accrue mainly through technology transfers, imports of knowledge and managerial expertise, and spillovers to other industries and competition. Additional actions are usually needed to ensure that these conditions materialize and that the benefits of higher, FDI-induced growth are widely shared. Such measures include investments in infrastructure and human capital (which also attract more FDI); improvements in governance, labor market performance, and financial sector intermediation; and the establishment of social safety nets to protect the most vulnerable.

REFERENCES

Alfaro, Laura, Areendam Chanda, Sebnem Kalemli-Ozcan and Selin Sayek, 2004, "FDI and Economic Growth: The Role of Local Financial Markets," *Journal of International Economics*, 64, 2004, pp. 84-112.

Alfaro, Laura, Sebnem Kalemli-Ozcan and Vadym Volosovch, 2007, "Capital Flows in a Globalized World: The Role of Policies and Institutions," in *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences*, edit. by Sebastian Edwards, May 2007, pp. 19–72.

Barro, R. and Jong-Wha Lee, 2010, "A New Data Set of Educational Attainment in the World, 1950–2010, NBER Working Paper No. 15902.

Blundell, Richard and Stephen Bond, 1998, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics*, Vol. 87, pp. 115–143.

Borensztein, E., J. DeGregorio, and J-W. Lee, 1998, "How Does Foreign Direct Investment Affect Economic Growth?" *Journal of International Economics*, Vol. 45, pp.115–135.

Calvo, Guillermo, Leonardo Leiderman and Carmen M. Reinhart, 1996, "Inflows of Capital to Developing Countries in the 1990s, *The Journal of Economic Perspectives*, Vol. 10, No. 2, (Spring, 1996), pp. 123–139.

Campos, Nauro F. and Yuko Kinoshita, 2003, "Why Does FDI Go Where It Goes? New Evidence From the Transition Economies," IMF Working Paper 03/228.

Campos, Nauro F. and Yuko Kinoshita, 2008, "Foreign Direct Investment and Structural Reforms: Evidence from Eastern Europe and Latin America," IMF Working Paper 08/26.

Cheng, L. and Y. Kwan, 2000, "What are the Determinants of the Location of Foreign Direct Investment? The Chinese Experience," *Journal of International Economics*, Vol. 51, pp. 379–400.

Chai, Jingquing, and Rishi Goyal, 2008, "Tax Concessions and Foreign Direct Investment in the Eastern Caribbean Currency Union," IMF Working Paper 08/257.

Dabla-Norris, Era, Jiro Honda, Amina Lahreche and Genevieve Verdies, 2010, "FDI Flows to Low- Income Countries: Global Drivers and Growth Implications," IMF Working Paper 10/132 (Washington: International Monetary Fund).

Demekas, Dimitri G., Balazs Horvath, Elina Ribakova and Yi Wu, 2005, "Foreign Direct Investment in southeastern Europe: How (and How Much) Can Policies Help?" IMF Working Paper 05/110(Washington: International Monetary Fund).

Devereux, M. P., B. Lockwood and M. Redoano, 2008, "Do Countries Compete Over Corporate Tax Rates," *Journal of Public Economics*, 92, pp.1210–1235.

Faria, Andre and Paolo Mauro, 2004, "Institutions and the External Capital Structure of Countries," IMF Working Paper, 04/236(Washington: International Monetary Fund).

Hein, S., 1992, "Trade Strategy and the Dependency Hypothesis: A Comparison of Policy, Foreign Investment, and Economic Growth in Latin America and East Asia," *Economic Development and Cultural Change* 40 (3): 495–521.

International Monetary Fund, 2007, *World Economic Outlook, Chapter 3, October 200:Managing Large Capital Inflows* (Washington).

International Monetary Fund, 2010, Western Hemisphere Department Regional Economic Outlook, Spring 2010.

Klemm, Alexander and Stefan Van Parys, 2009, "Empirical Evidence on the Effects of Tax Incentives," IMF Working Paper, 09/136 (Washington: International Monetary Fund).

Kose, Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei, 2009, "Financial Globalization: A Reappraisal," Staff Papers, International Monetary Fund, Vol. 56 (1), pp.8–62.

Kose, Ayhan, Eswar Prasad, and Ashley Taylor, 2009, "Thresholds in the Process of Financial Integration," NBER Working Paper No. 14916.

Lucas, R., 1993, "On the Determinants of Direct Foreign Investment: Evidence from East and Southeast Asia" *World Development*, 21 (3): 391–406.

Piatkowski, Marcin and Mariusz Jarmuzek, 2008, "Zero Corporate Income Tax in Moldova: Tax Competition and Its Implications for Eastern Europe," IMF Working Paper, 08/203 (Washington: International Monetary Fund).

Roodman, David, 2006, "How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata," Center for Global Development Working Paper No: 103.

Roodman, David, 2008, "A Note of the Theme of Too Many Instruments," Center for Global Development Working Paper No: 125.

Rummel, Rudolph J., 1963, "Dimensions of Conflict Behavior Within and Between Nations," *General Systems Yearbook*, VIII, 1963, 1–50.

Schindler, Martin, 2009, "Measuring Financial Integration: A New Data Set," *Staff Papers*, International Monetary Fund, Vol. 56, No.1, 2009, pp. 222–238.

Schneider, F. and B. Frey, 1985, "Economic and Political Determinants of Foreign Direct Investment," *World Development*, 13 (2): 161–175.

Singh, Harinder and Kwang W. Jun, 1995, "Some New Evidence on Determinants of Foreign Direct in Developing Countries," Policy Research Working Paper No: 1531, World Bank, November 1995.

Slemond, Joel, 2004, "Are Corporate Tax Rates, or Countries, Converging?" *Journal of Public Economics*, 88, 1169–1186.

United Nations Conference on Trade and Development (UNCTAD), 2009, "Assessing the Impact of the Current Financial and Economic Crisis on Global FDI Flows," April 2009.

Walsh, James P. and Jiangyan Yu, 2010, "Determinants of Foreign Direct Investment: A Sectoral and Institutional Approach," IMF Working Paper 10/187.

Wei, S.J., 2000, "Local Corruption and Global Capital Flows," *Brookings Papers on Economic Activity*, 2000 (2), pp.303–54.

Zee, H.H., J.G. Stotsky, and E. Ley, 2002, "Tax Incentives for Business Investment: A Primer for Policy Makers in Developing Countries," *World Development*, Vol. 30(9), pp. 1497-1516.

APPENDIX

Identification of Inflow Episodes

For each country in the sample, we compute the deviation of FDI inflows as percent of GDP from its trend (FDI gap) calculated by the HP-Filter with a smoothing parameter that equals 100. A year is identified as an inflow episode if the FDI inflow during that year has been higher than the trend flow plus one standard deviation of the FDI gap for that country. If there is less than two years between two episodes for any country, we treat all the adjacent years as part of the same inflow episode. The table below lists the episodes that were identified using this method for all the countries in our sample.

Table 1 - FDI Inflow Surges and The EME Country Coverage

Emerging Market Economies in Sample	FDI Infow Episodes
Algeria	2001, 2004
Argentina	1999
Brazil	1998-2000
Bulgaria	2006-2007
Chile	1999
China,P.R.: Mainland	1993-1995
Colombia	1997, 2005-2008
Costa Rica	1998, 2006-2007
Croatia	1999-2001
Czech Republic	1999, 2002, 2005
Dominican Republic	1998, 2008
Ecuador	1998-1999
Egypt	2006-2007
El Salvador	1998, 2007
Estonia	1998, 2005
Guatemala	1998, 2001
Hungary	2007
India	2008
Indonesia	1996-1997, 2005
Israel	2000, 2006
Jamaica	1999-2003, 2008
Jordan	2000, 2005-2006
Kazakhstan	1993, 2001
Korea, Republic of	1998-2000, 2004
Latvia	1996-1997, 2006-2007
Lebanon	1997, 2003
Lithuania	2998, 2006
Malaysia	1992, 2007
Mexico	1995, 2001
Morocco	1994, 2003
Pakistan	1996, 2006-2007
Panama	1997-1998, 2006
Peru	1994-1996
Philippines	1998-2000, 2006
Poland	2000, 2006-2007
Romania	1998, 2004-2006
Russian Federation	1992, 1999, 2007-2008
Slovak Republic	2000-2002
South Africa	1997, 2001
Sri Lanka	1993, 1997
Thailand	1998-1999
Tunisia	1993, 2006
Turkey	2001, 2006-2007
Ukraine	2005
Uruguay	2006
Venezuela, Rep. Bol.	1991, 1997-1998

Table 2. Some Variable Definitions and Data Sources

Variable Definitions	Source
FDI (as % of GDP)	IFS, World Investment Report Database
Real growth rates in G-7 countries weighted by PPP-adjusted GDP shares.	WEO
Nominal interest rate adjusted by inflation, weighted by PPP-adjusted GDP shares.	WEO
Log of the VIX index	Bloomberg
Log of PPP-adjusted GDP per capita in 1989	WEO
Exports to GDP (in %)	WEO
Real effective exchange rate appreciation	INS database
Real GDP growth rate	WEO
Years of Average Education	Barro and Lee (2010)
Dummy variable that equals 1 if the share of oil exports is higher than 20 percent	WEO
Dummy variable that equals 1 if inflation has been above 10 percent	WEO
Effective Tariff Rates on Manufactured Goods	World Development Indicators, World Bank
Exchange rate classification (dummies for floating, managed and fixed exchange rates)	AREAR Database
Dummy for the existence of restrictions on FDI inflows	AREAR Database
Dummy for the existence of restrictions on the repatriation of profits	AREAR Database
Conflict	ICRG
Government Stability	ICRG
Law and Order	ICRG
Bureaucracy Quality	ICRG
General Strikes	Cross-National Time-Series Data Archive (CNTS)
Major Government Crises	Cross-National Time-Series Data Archive (CNTS)
Revolutions	Cross-National Time-Series Data Archive (CNTS)
Anti-Government Demonstrations	Cross-National Time-Series Data Archive (CNTS)
Highest marginal corporate tax rate	KPMG's Corporate and Indirect Tax Rate Survey, PricewaterhouseCoopers's Worldwide Tax Summaries Online, IMF's Fiscal Affairs Department

Definitions of ICRG Political Risk Variables

Political Risk: The composite political risk variable is the sum individual rating scores for law and order, government stability, conflict and bureaucracy quality.

Law & Order: *"Two measures comprising one risk component. Each sub-component equals half of the total. The "law" sub-component assesses the strength and impartiality of the legal system, and the "order" sub-component assesses popular observance of the law."*

Conflict: This variable is the sum of external conflict and internal conflict ratings. Both ratings scores can range between 1 and 12. Therefore the overall conflict rating varies from 2 to 24.
External Conflict*: "A measure of the risk to the incumbent government and to inward investment, ranging from trade restrictions and embargoes through geopolitical disputes, armed threats, border incursions, foreign-supported insurgency and full-scale warfare."*
Internal Conflict*: "A measure of political violence and its actual or potential impact on governance, taking into consideration such factors as whether threats exist, whether they have political objectives, the size and strength of support, and the geographic nature of the conflict."*

Government Stability: The point score ranges from 1 to 12.
"A measure of the government's ability to stay in office and carry out its declared program(s), depending upon such factors as the type of governance, cohesion of the government and governing parties, approach of an election, and command of the legislature."

Bureaucracy Quality: The score ranges from 1 to 4.
"Institutional strength and quality of the bureaucracy is a shock absorber that tends to minimize revisions of policy when governments change. In low-risk countries, the bureaucracy is somewhat autonomous from political pressure."

Definitions of Domestic Conflict Events

Source of the data is the Cross-National Time-Series Data Archive (CNTS) which derives most of its events from the *New York Times*. The event variable definitions have been adopted from Rummel (1963).

General Labor Strikes: *"Any strike of 1,000 or more industrial or service workers that involves more than one employer and that is aimed at national government policies or authority."*

Major Government Crises: *"Any rapidly developing situation that threatens to bring the downfall of the present regime – excluding situations of revolt aimed at such overthrow."*

Revolutions: *"Any illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government."*

Anti-government Demonstrations: *"Any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly anti-foreign nature."*