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Institutions, Foreign Direct Investment, and Domestic Investment: crowding out or crowding in?

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(ii) Testing the econometric relationship between institutional measures and long term growth;
(iii) Exploring through a series of country case studies the historical relationship between processes of economic accumulation, forms of political organisation, and social cohesion;
(iv) Discussing conceptual frameworks for making sense of the interaction between political, social and economic forces in the process of development;
(v) Developing methodologies for political economy analyses.

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Institutions, Foreign Direct Investment, and Domestic Investment: crowding out or crowding in?*

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Abstract

Studies of the relationship between FDI and domestic investment levels reach contradictory findings. We revisit this empirical relationship and argue that some of the conflicting evidence may be explained by the use of poor proxies for the true underlying variables and by questionable methodological choices. Using more appropriate proxies and statistical models, we conclude that FDI inflows contribute positively to domestic investment levels. We also find weak evidence that 'good governance', proxied with using the Worldwide Governance Indicators (and two rent seeking indicators we built), encourages investment. Theoretical arguments support either positive or negative interaction effects of 'good governance' and FDI on investment, invoking either technological spillovers or rent seeking behaviour. We tend to conclude that the negative rent seeking effect is dominant.

Keywords: Investment, FDI, Institutions, Technology spillover, Rent seeking JEL Classification: E02, F21, F62, O11, O30, O57

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1 Introduction

Foreign direct investment (FDI) is the type of capital inflow from abroad that is most directly related to the productive capacity of a country. Its effect of transferring foreign know-how, creating additional investment funds and even improving labour standards is often seen as one of the important benefits of globalization for growth and development of relatively poor countries. According to Kosovà (2010, pp. 861), "since the mid-1990s, FDI has become the main source of external finance for developing countries and is more than twice as large as official development aid". In order to build domestic capacity, some countries have adopted special policies targeting foreign investors, including investment treaties, preferential taxation schemes and preferential loans. Busse et al. (2010) and Büthe and Milner (2008) provide evidence about the effectiveness of such policies in attracting FDI.

However, the role of FDI is not uncontroversial. It implies control of foreign firms over the domestic productive capacity, including technological knowledge. For some of the dynamic Asian economies that were growing rapidly in the second half of the 20th century, this was a reason to limit inward FDI, and instead focus on other channels for technology transfer (e.g., licensing or 'arms-length' relationships with foreign firms). This seems to have been the case for Japan (Goto and Odagiri, 2003), Korea (Kim, 2003, 1997) and Taiwan (Aw, 2003). On the other hand, in Singapore (Wong, 2003) and more recently China, inward FDI seems to be encouraged by policy makers.

The academic debate does not show any consensus on the benefits of FDI either. Here, two issues are central to the debate: whether or not FDI has positive productivity spillovers (through transfer of know-how) on domestic firms, and which effect FDI has on (private) domestic investment. With regard to the latter, one may either expect "crowding in", which means that FDI will lead to more investment from (private) domestic sources, or "crowding out", which is the opposite, i.e., FDI leads to less domestic (private) investment. Crowding in can be interpreted as beneficial for economic growth, but the effect of crowding out on economic growth is ambiguous. On this topic of crowding in or crowding out, it is sometimes argued that market entry of foreign owned firms pushes less efficient domestically owned firms out of the market, which may be beneficial for productivity, but implies a negative effect on investment and productive capacity. And, when foreign firms gain significant competition power, markets become less efficient, with a potentially negative effect on growth and investment. Crowding out is more likely to occur in markets with limited investment opportunity such as markets where competition is dependent on firm-specific assets, i.e. medium-tech and high-tech industries (Amsden, 2011). Moreover, crowding out is more likely when domestic firms have limited absorptive capacity and foreign firms have relatively more know-how, experience, innovation capacity, monitoring skills, better access to finance and skilled labour, and when foreign firms are relatively more productive.

In terms of the empirical evidence, some scholars find that increases in FDI crowd out domestic investment, implying that FDI has a limited effect on the development of domestic productivity capacity and growth (Morrissey and Udomkerdmongkol, 2012; Mutenyo et al., 2010; Titarenko, 2005). Other scholars find that FDI stimulates (or crowds in) private domestic investment (Al-Sadig, 2013; Ramirez, 2011; Ndikumana and Verick, 2008; Tang et al., 2008; de Mello, 1999; Bosworth and Collins, 1999; Borensztein et al., 1998). Several scholars find mixed evidence when using several lags for FDI or when splitting the country sample according to geographic region (Adams (2009); Apergis et al.

(2006); Agosin and Mayer (2000); Misun and Tomsik (2002); Agosin and Mayer (2000)), or find no effect of FDI on domestic investment (Lipsey (2000)).[1]

Similarly, the productivity spillovers of inward FDI is disputed in the literature. For example, Wooster and Diebel (2006) provide an overview of 32 econometric studies of the impact of FDI in developing countries (among which they include transition countries in Eastern Europe), covering a publication time span of 1983–2004. They find positive effects of spillovers in about half of the included observations (an observation is a regression result, of which there are generally more than one per paper analyzed), and slightly less than half of the reported coefficients—both positive and negative—are statistically significant.

At a more basic level, one may also ask whether, in a particular country context, the performance of foreign-owned firms differs from domestically-owned firms. Huang and Shiu (2009) study the effect of foreign ownership on stock market performance in Taiwan and find that stocks of firms with high foreign ownership rates outperform. Based on data from firms located in Venezuela, Aitken and Harrison (1999) find that small firms with a higher share of foreign ownership have relatively higher productivity than small firms that do not have foreign ownership. Related research on investment by Koo and Maeng (2006) shows that firms in Korea with high foreign ownership have relatively higher investment levels than firms with domestic ownership. Nevertheless, domestically owned firms may have better access to market knowledge and be more entrepreneurial (Amsden, 2011; Koo and Maeng, 2006). FDI inflow can free domestic capital and gives domestic investors more opportunity to invest in new business opportunities (Lipsey, 2000).

Further controversy lies in the role of institutions and governance in FDI and domestic investment, and their relationship (crowding in or crowding out). It is generally accepted that both foreign and domestic investors will prefer investing in countries with secured property rights and a stable institutional setting and, for this reason, 'good governance' is expected to have a positive effect on overall investment. However, what role institutions and governance may have on whether FDI crowds in or crowds out domestic private investment, is less clear. Morrissey and Udomkerdmongkol (2012), hereafter M&U, estimate an equation for domestic private investment, and use FDI, a number of governance variables, and an interaction term between governance and FDI as explanatory variables. They find a negative coefficient both for the direct effect of FDI on domestic private investment, and for the interaction term between governance and FDI. This leads them to conclude that FDI crowds out domestic private investment, and that it does so in a stronger way in countries with 'good governance'.

The theoretical model that M&U use for justifying their regression approach starts from the assumption that foreign investors may insulate domestic investors from 'capital unfriendly' regimes. FDI may thus (partly) offset the negative effect of bad governance on (domestic) investment. While this may be a valid theoretical starting point, there are also other effects that FDI may have on (domestic) investment. Rent seeking (which is typically associated with 'bad governance') may play a role, with asymmetric effects between FDI and domestic investment. Or, one may hypothesize that FDI spillovers are

[1] Similarly, cross-country evidence on the impact of public investment (e.g. investment by national governments, the World Bank, and the International Monetary Fund) on private sector investment also shows mixed results of crowding in and crowding out (Cavallo and Daude, 2011; Belloc and Vertova, 2006; Erden and Holcombe, 2006; Atukeren, 2010; Bird and Rowlands, 2001; Butkiewicz and Yanikkaya, 2005).

likely to be stronger in countries with more developed institutions, because such countries offer better protection of intellectual property. If this effect is strong, institutions have a positive mediating effect on the relation between FDI and domestic investment. For example, Fu et al. (2011) find that benefits from technology spillovers are dependent on domestic market development as well as institutional development. This suggests that developing countries with relatively poor institutions and governance may lack the absorption capacity for domestic industry to benefit from FDI inflow.

The role that institutions play in mediating the effect of FDI on domestic investment (crowding in or crowding out) is the primary topic of this paper. We seek to investigate whether such a mediating effect exists, and whether, in our sample of developing and emerging economies, crowding in or crowding out dominates. We do not seek to develop new theory on this matter, but instead will briefly summarize the empirical perspectives that are found in the literature, and subsequently interrogate the data to find out which of the effects that are identified in the literature dominates. In formulating our regressions models, we will also ask critical questions about the variable definitions that have been used in the empirical literature. We especially question some of the definitions that have been used for domestic private investment, and experiment with alternative definitions to investigate whether the results in the literature are robust to such definitional changes. Finally, we question the way in which some studies in the field implement estimation methods, especially GMM, and experiment with alternative implementations, again with the aim to test robustness of the results found in the literature.

Overall, our results suggest that the accuracy of the results in the literature (in particular the work of M&U) are severely compromised by the empirical difficulty in disentangling foreign capital formation from domestic capital formation, and by methodological problems related to the implementation of the GMM method. Using alternative definitions and estimation methods, we find no robust evidence that FDI crowds out private investment. Instead we conclude that foreign investment has a positive effect on investment. In addition, we find weak evidence indicating that 'good governance' is positively related to private investment. And, on the basis of an interaction between 'good governance' and FDI, we find some evidence that there is a negative mediating effect on investment. We interpret this finding as an indication that the negative effect of rent seeking interests in the provision of preferential treatment of foreign investors on investment is stronger than the positive spillover effect on investment and/or is stronger than the effect of rent seeking interests that deter foreign investors from entering markets.

2 Institutions, FDI and Domestic Investment

Mauro (1995) found that corruption has a negative effect on private investment and that therefore corruption reduces growth. Subsequently, several studies have found a significant effect of institutional characteristics on investment as well as on FDI. Several scholars find evidence of a positive relation between foreign direct investment (FDI) on the one hand and institutions on the other hand, e.g. legal protection, rule of law, investment treaties, and trade agreements, political stability, government efficiency, control of corruption, and financial supervision (see Buchanan et al. (2012); Morrissey and Udomkerdmongkol (2012); Ali et al. (2010); Javorcik and Wei (2009); Daude and Fratzscher (2008); Daude and Stein (2007); Busse and Hefeker (2007); Benassy-Quere et al. (2007)).

However, in empirical work looking at the effect of FDI on domestic investment, it is not customary to take into account the effect of institutions. Only some researchers in this field control for the relation between institutions and investment. For example, Ndikumana and Verick (2008) analyze correlations between FDI and democracy and autocracy on the basis of data from Marshall and Jaggers (2009). These authors find a significant relation between democracy and domestic investment, but, because the coefficient is relatively small, Ndikumana and Verick (2008, pp. 720) conclude that "there is little evidence that FDI inflows are higher in countries that are more democratic". Adams (2009) and Borensztein et al. (1998) control for the effect of institutions on domestic investment (both using data describing political risk from ICRG) and find positive and significant effects. Blonigen (2005) explains that the lack of focus on the institutional dimension is a result of the difficulty in measuring institutions and/or corruption. If institutions and good governance are an important explanatory factor of FDI and the FDI domestic investment relation, failure to control for the effect of institutions causes omitted variable bias.

A major step forward in this respect is the analysis by M&U. These authors attempt to empirically study the institutional dimension as an explanatory factor in the relation between FDI and investment. They follow the theoretical model of Dalmazzo and Marini (2000), which starts from the idea that governance impacts domestic investment. Thus, an "investment unfriendly regime" will tend to discourage investment from domestic sources. Although M&U do not specify exactly what constitutes an "investment unfriendly regime", it is clear that this encompasses a range of indicators on governance and institutions, and that "investment (un)friendly" can be seen"as good (bad) governance".

The theory then assumes that the effect of investment unfriendly regimes can be mitigated by foreign investors. Foreign investors are assumed to be able to use political leverage (e.g., through their home governments). If a domestic investor turns to a foreign partner, i.e., seeks FDI to support her investment project, the project can be protected from the effects of bad governance. Should a corrupt regime attempt to seize investments, foreign ownership can protect against this by international trade agreements. In terms of the regression that M&U estimate, this leads to an interaction term between FDI and governance. Their dependent variable is domestic private investment (i.e., excluding FDI). Obviously, governance is one explanatory variable (to test the investment - governance relationship), and FDI is another one (to test crowding in or crowding out). While the expected effect of 'good governance' on investment is positive, (i.e., the effect of bad governance is negative), FDI will (partially) offset this effect, thus the interaction term is expected to be negative. Obviously, the interaction term adds both to the (marginal) effect of governance on investment, and to the (marginal) effect of FDI on investment, hence it also affects the conclusions on crowding in or crowding out. A negative (positive) interaction term between FDI and governance would make crowding out (in) stronger in countries with 'good governance'.

Overall, M&U conclude that crowding out is greater in countries with better governance and higher political stability, i.e., the interaction term between FDI and (good) governance is negative. This is not a surprising result in light of the theoretical model that is the starting point of their analysis, because this model treats domestic and foreign investment sources as substitutes, and identifies governance and institutions as the factor that steers the substitution trade-off.

The theoretical starting point of M&U, although in principle interesting, appears to us as slightly limited. Other factors may influence the relationship between domestic

investment, FDI and institutions and governance, and possibly there are effects that are adverse to the ones hypothesized by M&U. One additional theoretical approach lies in the theory on political elite rent seeking, which can provide additional explanation for cross-country differences in the degree to which domestic private sectors' opportunities are different than foreign investors' opportunities. Rent seeking is broadly defined as the use of elite relations with the aim to generate rents and/or to distribute rents for personal gain. Rent seeking behaviour is practiced by both political and economic elite.[2] Whereas the impact of political elite rent seeking has been studied in relation to e.g. foreign aid (Asiedu et al., 2009; Svensson, 2000), efficiency in the banking sector (Morck et al., 2011), and the onset of financial crisis (Wei and Wu, 2002; Johnson, 2009; Mishkin, 1996; Reinhart and Rogoff, 2009), the impact of rent seeking behaviour on investment has not been extensively explored using cross-country analysis.[3]

A revived interest on the impact of elite rent seeking in explaining the variation of economic growth is due to the contribution of North et al. (2009) who investigate the role of elite behaviour in regulating economic activity and social structure. North et al. characterize the 'Limited Access Order' (LAO) as a developmental state in which elite capture rents by reducing competition, differentiating rights, limiting access to trade and access to resources, and by restricting the entry and exit to organizations. Furthermore, the elite are described as protecting social order in order to accumulate future rents. Case studies on the application of LAO framework provide evidence of several channels elite use to collect economic rents: i.e. countries' regulatory framework in controlling competition and assuring dominance of firms and unions, the financial system, natural resources, foreign aid flows, political participation, and policies including land and property rights reform, privatization, and preferential taxation (North et al., 2009) Also, Keefer and Knack (2007) find public investment a powerful channel for rent seeking.[4]

Rent seeking may have a stronger negative effect on either domestic investors or on foreign investors. A tentative explanation of why rent seeking may have a stronger negative effect on domestic investors runs as follows. Domestic elite interest groups may have reasons to grant foreign investors preferential market access. Amsden (2007) finds that foreign firms operating in developing countries with resource intensive industries have a high degree of market power as well as political power. As a result, domestic investors who do not have access to dominant political elites are excluded and may be crowded out. In particular, domestic market potential can be rapidly destroyed when foreign firms operate in extractive industries or seize large amounts of land. Financial repression caused by elite rent seeking behaviour may also impede domestic investors. For example, as found in the work of Diaz-Cayeros (2013), elites in Mexico use personal connections to regulate economic activity and entrepreneurs and medium-sized companies have limited

[2] E.g. see La Porta et al. (1999) on the dominance of economic elite in the corporate sector and Johnson et al. (2000) on rent seeking behaviour (the diversion of corporate resources such as expropriation and transfer pricing) in the corporate sector. Rent seeking by the political elite can also be referred to as crony capitalism. Wei (2001, pp. 21) describe crony capitalism as following: "an economic environment in which relatives and friends of government officials are placed in positions of power and government decisions on the allocation of resources and judicial judgment on commercial disputes are distorted to favour these friends and relatives."

[3] For example, Morck et al. (2011) find that, because of rent seeking costs, economic elite controlled banking and state controlled banking both create relatively larger efficiency losses than widely-held banks.

[4] Alternatively, Keefer and Knack (2007) do not exclude the possibility that public investment is higher in countries with weak institutions because government seeks to compensate for poor investment climate.

access to financial markets because capital allocation is skewed in favour of the dominant elite. If rent seeking behaviour is positively related to FDI inflow, rent seeking can have a positive mediating effect on the relation between FDI inflow and domestic investment. As a consequence, the negative effect of bad governance on total investment is lessened by the positive interaction between high rent seeking and FDI at the cost of domestic market development.

On the contrary, domestic elite interest groups may also have reasons to oppose financial globalization and foreign investors from entering markets. Countries with high levels of rent seeking may have stronger restrictions on foreign ownership in industries where elites collect large rents. This implies that (in certain industries) high rent seeking may be negatively related to FDI and that the interaction between governance and FDI inflow has a positive effect on countries' level of investment. If rent seeking has both a positive and a negative relation with FDI, and if rent seeking is related to institutions and governance, it will be hard to disentangle the empirical relations between domestic investment, governance and FDI.

An additional theoretical perspective on the role of institutions in the relationship between domestic investment and FDI is found in the literature on spillovers of FDI. Large spillovers from FDI to domestic producers suggest higher domestic investment, because they raise the rate of return to (domestic) investment. Thus, if spillovers are high, we may expect that FDI crowds in rather than crowds out domestic investment. Whether FDI generates large spillovers may depend on institutions and governance. Weak intellectual property rights protection may be associated with an overall lower level of FDI inflow and with a relatively lower level of high technology investments (Crespo and Fontoura, 2007). For example, if intellectual property rights are not protected well, foreign firms may choose to not involve their R&D or high-tech manufacturing activities in FDI. The resulting FDI is then likely to imply fewer spillovers, and hence the crowding in effect will be weaker. This suggests that an interaction term of the type that M&U use would have a positive sign, instead of the negative one that they assume.

Thus, we argue that there are arguments supporting both a possible negative and positive effect of institutions and governance on the crowding out or crowding in effect of FDI on domestic investment. M&U find that there is a negative interaction effect between institutions and FDI on domestic investment, which suggests crowding out. On the basis of rent seeking theory, we argue that if there is a negative interaction effect between FDI and the development of institutions, this effect can be interpreted as a sign that FDI is motivated (partly) by rent seeking and deters domestic investment. On the other hand, and also on the basis of rent seeking theory, we argue that a positive interaction between 'good governance' and FDI may be interpreted as a sign that, especially in countries with weak institutions, rent seeking interests deter foreign investors from entering markets. And, looking from the point of view of FDI spillovers, we would expect a positive sign on the interaction term between FDI and governance, leading to crowding in. With these contradictory effects associated with various theoretical arguments, whether the sign on the interaction terms is positive or negative is a matter of which effect is stronger than the other. This is what we set out to investigate using a regression framework for a sample of developing and emerging countries in the next section.

3 Macroeconomic Evidence on Crowding in and Crowding out

Table 17 in the Appendix provides an overview of existing research on the effect of FDI on investment. The last column in the table presents the overall conclusion on whether FDI crowds in (CI) or crowds out (CO) investment.[5] In order to implement our empirical estimations, we start from the empirical approach of M&U, who use GMM to estimate the following model:

$$DPI_{i,t} = \beta_0 + \beta_1 DPI_{i,t-1} + \beta_2 FDI_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 PUBLIC_{i,t} + \beta_5 WGI_{i,t} + \beta_6 WGI_{i,t} \times FDI_{i,t} + \epsilon_{i,t}$$

Here, DPI is domestic private investment as a fraction of GDP, FDI is FDI as a percentage of GDP, $PUBLIC$ is public investment as a percentage of GDP, $GROWTH$ is past GDP growth, and WGI is one of several indicators on governance and institutions. The βs are parameters (to be estimated), and ϵ is a disturbance term with the usual characteristics. Our main interest is in the β_2 parameter (positive for crowding in and negative for crowding out), the β_5 parameter (expected to be positive, indicating a relation between investment and 'good governance'), and the β_6 parameter (expected to be either negative of positive, depending on the nature of the mediating effect). We use the dataset that was constructed by M&U, and which was kindly provided to us by these authors.

We start, below, by providing an overview of some estimation issues related to the above equation, and related approaches found in the literature. We then discuss some issues related to the data, including definitional issues that lead us to propose several new dependent variables. Finally, we present the empirical estimations.

3.1 Methodology

Several different methods are implemented in the literature on FDI crowding out or crowding in investment: one-step general method of moments (GMM) (Arellano and Bond, 1991), system general method of moments (GMM) (Blundell and Bond, 1998), pooled estimations of seemingly unrelated regressions (SUR), fixed-effect estimations, OLS, instrumental variable regression, VAR system with error correction model, and fully modified OLS. Some methods of estimation are more adept for dealing with a dynamic model. The advantage of GMM over fixed-effects estimations is that successful implementation of the dynamic model allows controlling for dynamic panel bias.

GMM is a technique aimed at data samples with a large number of 'individuals', here countries, and a small time dimension (Roodman, 2009a). The dataset constructed by M&U, and used again here, consists of a balanced 12 year panel and 46 countries, which is a relatively small number of countries for GMM. In addition, M&U use *system* GMM, which requires additional moment conditions. M&U (2012, pp.5) stress that "system GMM can exhibit the problem of too many instruments if the number of instruments is greater than the number of cross-section observations." This is consistent with the discussion in (Roodman, 2009b, pp. 140), leading to a rule of thumb that the number of instruments used in GMM estimation should be lower than N (in our case 46).

[5] Table 17 in the Appendix is completed to the best of our knowledge. Some studies did not specify the definition of investment data and method.

M&U do not report the exact number of instruments used in their estimations, and neither do Agosin and Machado (2005), who use one-step difference GMM analysis with the robust estimator of the covariance matrix on the basis of data for the years 1971-2000 and 12 countries. Moreover, the latter authors do not report Hansen statistics for validity (exogeneity) of instruments, which is more appropriate under heteroskedasticity than the Sargan statistics that they do report.[6] We replicate the M&U estimations, using two-step system GMM. The variables FDI, $GROWTH$, and $PUBLIC$ are treated as endogenous, only the second lags are used as instruments in the transformed equation and only the first differences are used as instruments in the levels equation. The WGIs and the interaction terms are assumed strictly exogenous and therefore serve as standard instruments in the GMM estimations. These assumptions may be incorrect. Although M&U limit the number of lags used for the instrumental variables to two, the instrument count remains high. In particular, in our replication of the M&U estimations, the instrument count runs up to around 90, which is clearly higher than the number of countries (46). Also, the two covariance matrices of moment conditions for our replications (reproduced in tables 2 and 3) are singular.[7] This evidence is in contradiction with the authors' argument that "the number of instruments is larger than the cross-section dimension so the excess instruments problem does not apply" (M&U, 2012, pp.2). Moreover, the Hansen test statistics reported by the authors and those documented on the basis of our replication exercise below have a p-value of 1, which indicates that the results suffer from instrument proliferation which M&U do not identify. Following Roodman (2009b), numerous instruments - instrument proliferation - can cause the instrumented variables to be over-fitted. This biases the coefficient "estimates towards those from non-instrumenting estimators" (Roodman, 2009b, pp. 139).

A next methodological issue lies in the fact that M&U use the two-step system GMM estimator, which uses a weighting matrix that is more asymptotically efficient than the one-step estimator but the coefficient standard errors "tend to be severely downward biased when the instrument count is high" (Roodman, 2009b, pp.141). Although Windmeijer (2005) proposes a correction for this problem, as far as we can see, this correction was not used by M&U. Finally, as described by Roodman (2009b, pp. 128), "the autocorrelation test and the robust estimates of the coefficient standard errors assume no correlation across individuals in the idiosyncratic disturbances." By including time dummies in the estimation, this assumption becomes more plausible. Yet M&U omit time dummies in their estimations. As a result, however precise the conclusions of M&U are formulated, we fear that these are drawn on the basis of biased results.

In order to overcome these methodological problems, we propose several modifications to the system GMM specification. First, in order to avoid contemporaneous correlation, time dummies are included to remove the time-related shocks from errors in GMM analysis. Next, we use the Windmeijer robust estimator for the two-step covariance matrix. Because M&U assume that FDI is endogenous and treat FDI as endogenous in the GMM regression analysis we also treat the interaction term between FDI and WGI as endogenous.[8] Finally, in addition to capping the lags of the instrumental variables,

[6] The Sargan test statistic is inconsistent when non-sphericity in the errors is suspected as is the case in multi-country data Roodman (2009b).

[7] Following Roodman (2009b), the matrix of moments becomes singular when data is limited and the number of instruments approaches N.

[8] We maintain the assumption that WGI is exogenous in order to preserve comparability with the analysis of M&U.

the instrument matrix is collapsed to reduce instrument proliferation. As a result, the instrument count is reduced to 21 or slightly more (depending on the specific model), which is well below the number of countries (46). We also compare the results of GMM estimations to the results of fixed-effect estimations (FE), and to the results of pooled OLS (POLS) estimations.[9] The FE and POLS results include cluster-robust variance estimates.

3.2 Data

Most scholars acknowledge that the estimations of the effect of FDI on domestic investment are severely troubled by the challenges related to separating foreign domestic investment from private domestic investment.[10] M&U (2012) separate foreign investment from domestic private investment by subtracting net FDI inflow and public investment from gross fixed capital formation (GFCF). Adams (2009) takes a similar approach to that of M&U and subtracts FDI inflow from GFCF to measure domestic investment. However, the comparison of foreign investment and domestic investment on the basis of data on FDI and data in GFCF is problematic.

As noted by Agosin and Machado (2005), FDI is a financial balance of payments concept whereas GFCF is a concept that is part of countries' national accounts, which implies that these two types of data are constructed using different conceptual frameworks. In fact, while the notion of GFCF starts from the idea of measuring how much new capital is added to the production capacity of a country, FDI does not start from such a notion. FDI measures investments of foreign firms in domestic productive capacity, and this includes existing capacity as well as newly installed capacity. This is related to the notion of greenfield FDI, which is, roughly, defined as setting up previously non-existing production capacity. Non-greenfield FDI means that foreign firms take ownership (either fully or partially) of existing domestic firms, and hence take control over existing capacity. In other words, non-greenfield FDI is not part of GFCF.

On the other hand, greenfield FDI is conceptually part of GFCF, but it is not the only part of GFCF that is under control of foreign ownership. If a firm that is foreign owned invests, this investment is part of GFCF, but not part of greenfield FDI. The latter point touches upon the issue of whether a stock or a flow variable of FDI needs to be used. While the idea of a stock of FDI is obviously not consistent with the idea of the (flow of) GFCF it is still likely that when the stock of FDI is large (relative to the domestic capital stock), a larger part of GFCF will be under foreign control.

As a result of these definitional problems, the measurements for domestic private investment that M&U construct contain negative observations, which are obviously

[9] In a simple autoregressive (AR) model, the fixed-effect and POLS estimates provide an estimated lower and upper bound, respectively, for the autoregressive coefficient. Although the present context is more complicated, since the AR model is extended with a regressor that may not be strictly exogenous, we still propose to use those two estimates as rough benchmarks, giving a likely range for consistent estimates.

[10] An exception is the work of Tang et al. (2008, pp. 1302) who study the Chinese economy and argue that their measure of domestic investment does not include any type of foreign investment. As such, for some countries it may be possible to separate FDI from private domestic investment. Nevertheless, cross-country studies are limited in this respect. Another exception is the research by Titarenko (2005); Misun and Tomsik (2002) where the dependent variable is represented by the sum of domestic investment and FDI. Whether the authors construct the dependent variable by adding domestic investment and FDI inflows remains unclear.

difficult to interpret.[11] This view is also shared by Ndikumana and Verick (2008, pp. 719) who argue that subtracting FDI from domestic private investment does not yield a more accurate measurement and that, by construction, such measure "would be negatively correlated with FDI". The latter observation relates to the fact that, in terms of the variables in our model, $DPI \equiv GFCF$ - $PUBLIC$ - FDI. Since FDI and $PUBLIC$ appear as explanatory variables, subtracting them on the left hand side of the equation will tend to subtract 1 from the respective coefficients ($\beta_1$and β_2) on the right hand side, thus biasing these coefficients towards the negative domain. If FDI is relatively highly volatile, this may lead to an extreme downward bias in the estimated effect.

Because M&U (2012) subtract *net* FDI inflow and public investment from GFCF (instead of subtracting FDI inflow), they conceptually aggravate the problem with the measure for private investment because this measure now also contains private disinvestments that are transfers of ownership from domestically owned establishments to foreign investors. Following the summary statistics of the authors, the minimum amount of net FDI is -14.4 and the overall effect of net FDI outflow on private domestic investment within the context of crowding out and crowding in remains unexplained. As a result, we suspect that the dependent variable used by M&U is a poor measure for total private domestic investment. Therefore, we will experiment with different dependent variables. We will add FDI, and later on $PUBLIC$, to the dependent variable of M&U, thereby obtaining again, respectively, total private foreign controlled and domestic) and total investment (GFCF). This does not change the expected sign of the estimated coefficients (e.g., a negative sign on FDI would still indicate crowding out).

The explanatory variables used in the study of M&U (2012) are lagged domestic private investment (the dependent variable), FDI, growth ($GROWTH$), public investment ($PUBLIC$), and governance. M&U measure governance using data from the Worldwide Governance Indicators (hence the variable name WGI) collected by Kaufmann et al. (2009). The governance indicators are the following: voice and accountability (VA), political stability and absence of violence (PS), government effectiveness (GE), regulatory quality (RQ), rule of law (RL), and control of corruption (CC). M&U do not report results for the effect of government effectiveness on investment. The WGIs have missing data for the years 1997, 1999, and 2001. But, as reported in the appendix of M&U, the authors use an unobserved components model to calculate estimates for the years 1997-2009 using data from 1996-2009. On the basis of the revised WGIs, the authors construct dummies for each governance indicator representing whether a country has either high (1) or low (0) governance. This classification is determined by whether a country scores higher than the 50th percentile on the governance indicator. The dataset used by M&U consists of 46 countries and a balanced 12 year panel.[12] The first section of Table 1 provides an overview of the data used by M&U.

[11] Following the summary statistics of M&U, the minimum amount of domestic private investment over GDP is -37.4. The authors offer no interpretation of this negative value.

[12] The following countries are included in the analysis: Argentina, Azerbaijan, Bangladesh, Belize, Bolivia, Brazil, Bulgaria, China, Chile, Colombia, Comoros, Costa Rica, Dominica, Dominican Republic, Ecuador, Egypt, Grenada, Guatemala, Guyana, Haiti, Indonesia, India, Kenya, Lithuania, Madagascar, Malawi, Malaysia, Mauritania, Mauritius, Mexico, Morocco, Namibia, Nicaragua, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Seychelles, South Africa St. Lucia, St.Vincent, Thailand, Uruguay, and Venezuela.

Table 1: Data

Label	Variable	Construction	Source
	SECTION 1		
DPI	Domestic private investment		M&U
PUBLIC	Public investment		M&U
GROWTH	Growth of real output		M&U
FDI	Net foreign direct investment		M&U
WGIs	VA, RQ, RL, PS, CC		M&U
	SECTION 2		
WGI	1st factor of WGIs	Factor analysis	M&U
PI	Private investment	DPI + FDI	M&U
GFCF	Gross fixed capital formation	PI + PUBLIC	M&U
GFCF*	Gross fixed capital formation		WDI
GCF	Gross capital formation		PWT
STOCK	Stock of FDI		UNCTAD

In order to provide a broader overview of the determinants of investment we complement the data from M&U with alternative data. First, as explained above, we construct a measurement for private investment (PI) and for $GFCF$ on the basis of data from M&U. We add FDI to the measure for private domestic investment to capture the original measure for 'private investment', i.e., $PI = DPI + FDI$. Then we add public investment to PI to measure $GFCF$, i.e., $GFCF = DPI + FDI + PUBLIC$. The results of analysis using $GFCF$ are also compared with the results of analysis using data on GFCF from the World Development Indicators database, which is also the primary source for M&U.[13] We refer to the data on GFCF (as a percentage of GDP) from the WDI as '$GFCF^*$'. In addition, we use investment data from the Penn World Table (PWT 7.1) (Heston et al., 2012). This variable is denoted GCF.[14]

The WGIs are broad measures of highly correlated governance indicators, especially considering the purpose of the study, which does not specify a very precise notion of governance.[15] As an alternative to testing the sensitivity of the effect of the individual governance indicators on investment, we use the Kaufmann et al. data which M&U treated using an unobserved components model and construct a composite governance indicator. In the regression results, this will be denoted as WGI, whereas the individual variables of which this is made up will be denoted by their names as introduced above (VA, PS, RQ, RL, CC). WGI is constructed by estimating the first principal component of the governance indicators used by M&U prior to the authors' data conversion to dummies. This approach is similar to that of e.g Faria and Mauro (2009) who calculate a simple average of the governance indicators.

The principal component is denoted $WGIPC$, and, as M&U, we construct a dummy variable that has the value *1* when a given country scores higher than the 50th percentile on $WGIPC$ (in every year). The dummy variable is denoted WGI.

Although not always clearly indicated, the literature uses a wide range of definitions of

[13] These data have missing observations for Haiti (all years), Belize (2009) and Malawi (2002).

[14] GCF is defined as the investment Share of PPP Converted GDP Per Capita and is measured on the basis of 2005 constant prices.

[15] The WGI of Kaufmann et al. are based on data from 33 sources and 30 institutes. In order to construct the indicators Kaufmann et al. (2009) aggregate the underlying data giving more weight to data sources that have a closer correlation based on the premise that this data is more reliable.

foreign direct investment in order to measure the effect of foreign investment on domestic investment: FDI stock, FDI inflow, and net inflows of FDI. Furthermore, Ramirez (2011, pp. 39) 'deflates' gross FDI inflows by subtracting repatriation of profits and dividends with the aim to measure the effect of the "net contribution of FDI to the financing of private capital formation."We control for the sensitivity of the definition of FDI by substituting the data on net FDI inflows by data of the stock of FDI as a ratio to GDP ($STOCK$). These data are taken from UNCTAD.[16]

3.3 Replicating and checking robustness of the M&U estimations

We start by replicating the estimations by M&U. Table 2 presents the results without the interaction terms between FDI and the governance variables. Table 3 presents the results with the interaction terms. These results are obtained by the GMM estimation method that is closest to M&U, which suffers from the problems that we identified above. We have similar findings as M&U, i.e., FDI crowds out domestic private investment (a negative and highly significant sign on FDI). Moreover, overall, the coefficients intended to measure the direct effect of governance on domestic investment are positive, with the exception of CC. In table 3, these results are essentially unchanged, and the coefficients of the interaction terms between FDI and the governance indicators are also generally significant (with the exception of RL). The interaction terms for voice and accountability, regulatory quality, and control of corruption are negative and the coefficients for the interaction term with rule of law and political stability are positive.

In Table 4, we experiment with alternative estimation methods. We drop the separate governance indicators in order to save space, and substitute them with the single WGI dummy variable. Columns 1 and 2 of Table 4 present the results of the GMM analysis that is closest to the method used by M&U (i.e., the same method as in the previous two tables), but using WGI instead of the individual governance indicators. Here, we find that both the coefficient of WGI and the coefficient of the interaction term between WGI and FDI are positive. The coefficient of FDI is negative. Hence, the results in these two columns are close to the results in the previous two tables, and in M&U.

The other columns in Table 4 investigate how robust these findings are to changes in the estimation method. Columns 3 and 4 of Table 4 present the analysis using the alternative system GMM method (GMM*) as outlined in section 3.1. In comparison to the results presented in columns 1 and 2, the significance level of the estimations is lower, although the sign of the estimations does not change (except for the coefficient of WGI, column 4 which is insignificant). The significance of both lagged dependent variables decreases and the lagged dependent variable turns insignificant in column 3. Moreover, we no longer find a significant effect of $GROWTH$, the direct effect of governance and of the interaction term (the latter only in the equation with the interaction term). As expected, there is evidence of first-order serial correlation (AR1) (in column 2 only). However, we find no evidence of second-order serial correlation (AR2). The p-value of the Hansen test statistic remains insignificant, although now at more reasonable levels than the 1 in columns 1 and 2. For model 3 and 4, the difference-in-Hansen test statistic,

[16] Following UNCTAD statistics the stock of FDI for the Dominican Republic for 1998 amounts to a negative accumulation of inflows (the exact level of FDI stock was not reported). We recode this observation to zero. Observations for Indonesia prior to 2003 include data on the stock of FDI in Timor-Leste.

which provides additional information on the validity of instruments for the endogenous variable sub-group (D-in Hansen (levels)), yields a test statistic of zero because the model is exactly identified. As a result, we cannot detect invalid instruments based on this test statistic. Overall, the difference-in-Hansen test statistics for each of the endogenous variables' instrument subset, e.g. D-in Hansen (DPI_{t-1}), indicate no further problems. Even though these diagnostics look much better than those in columns 1 and 2, we still want to check how the results hold up if we resort to fixed-effect estimations (despite the weakness of this method in the estimation of a dynamic model).

The fixed-effect results are displayed in columns 5 and 6 and indicate that FDI is negatively related to DPI. And, in contrast to the results displayed in columns 3 and 4, both coefficients of WGI are positive. The interaction term (column 6) is significant and negative. All other explanatory variables are not significant. An interesting feature of the FE estimations is that the R^2 is close to 1. We take this as potential evidence of spurious correlation due to the definitional issues related to the dependent variable DPI that were outlined above. The results of the POLS estimations methods are displayed in columns 7 and 8. On the basis of this method we find that all explanatory variables are significantly related to DPI, except $PUBLIC$ in model 7 and 8, $GROWTH$ in model 7, WGI in model 8 and the interaction variable in model 8.

3.4 Robustness analysis with alternative dependent variables

So far, using the dependent variable DPI, we consistently find a negative effect of net FDI on domestic private investment. In this section, we investigate whether this result is robust to using other dependent variables. As already stressed before, in terms of the effect of governance on investment, and either crowding in or crowding out of domestic investment by FDI, we do not expect that these definitional changes lead to any different signs of the explanatory variables. The results of the estimations using PI, $GFCF$, $GFCF^*$, and GCF as the dependent variables are presented in Tables 5, 6, 7, and 8, respectively.

The conclusion on crowding in or crowding out changes drastically with PI as the dependent variable (Table 5). The coefficient of FDI turns positive, pointing to crowding in rather than crowding out. This coefficient is significant is the case in the GMM specification that is most closely to that of M&U (columns 1 and 2) and with fixed-effects (columns 5 and 6). The results for other variables also change, but these are less systematic. We do find that the GMM method of M&U is most optimistic on the general significance level, and that the other methods together do not provide strong support for any other variable affecting PI, except $GROWTH$, which is significantly positive in GMM, GMM*, and POLS estimations. Following analysis with fixed-effects WGI is significant and positive and the interaction term is negative and significant. The p-values of the Hansen test statistics remain implausibly 'perfect' for the GMM models reported in columns 1 and 2, and are lower for the models reported in columns 3 and 4. The p-values of the Hansen test statistic reported in column 3 and 4 are 0.29 and 0.16 which suggests that the instruments are appropriately uncorrelated with the errors. However, the difference-in-Hansen test statistics of the lagged dependent variable instrument subset (D-in Hansen PI_{t-1}) reported in column 3 and 4 reveal that these instruments are not valid. Likewise, the difference-in-Hansen test statistics for FDI and FDI_WGI are significant.

When using $GFCF$ as the dependent variable (Table 6) we find similar results as with

the analysis using PI as the dependent variable, with the exception of $PUBLIC$. While the coefficient on this variable was consistently negative before, we now find a positive and significant coefficient following analysis with FE, POLS, and M&U's GMM specification without interaction effect (column 1). GMM analysis including the interaction terms (column 2 and 4) reveals that the coefficients of $PUBLIC$ are insignificant and remain negative but their order of magnitude is relatively lower. This is clearly related to the fact that with $GFCF$ as the dependent variable, we do not deduct $PUBLIC$ on the left hand side, and hence do not have a downward bias on the coefficient of this variable on the right hand side of the equation. The coefficient of FDI is positive and significant in the GMM specification of M&U and with fixed effects. The other estimations find no significant effect of FDI on this dependent variable. WGI is positive and significant when using fixed effects and M&U's GMM specification (column 1 only). The coefficient of the interaction term is negative and significant but only when using fixed effect analysis.

Table 7 presents the results of the analysis using data on GFCF retrieved from the WDI, i.e., the dependent variable $GFCF^*$. Although this should not make a real difference (M&U's source for $GFCF$ is also WDI), it turns out that there is a clear difference.[17] The coefficient of FDI is now positive and significant in all estimation methods, i.e., we find strong evidence for crowding in with this variable. Moreover, on the basis of the fixed-effect estimations and POLS estimations displayed in columns 6 and 8, we find that the variable WGI is positive and significant and the interaction term between FDI and WGI is negative and significant. Thus, for fixed effects and POLS, we find that 'good governance' encourages investment, but this holds to a lesser extent for FDI, i.e., the effect of rent seeking on GFCF seems larger than the effect of technology spillovers. The order of magnitude of the coefficient of WGI is considerably larger than the coefficient of the interaction term. In model 5 we also find a positive effect of WGI on $GFCF^*$ although this coefficient is lower than the coefficient of WGI in model 6. And, when using POLS and when not controlling for the interaction between FDI and WGI, we find no direct effect of governance on investment (column 7). Thus, the positive effect of 'good governance' may be underestimated when not controlling for the interaction between governance and foreign investment. The coefficient of WGI of the GMM analysis presented in columns 1-2 has a negative sign in column 1 and has a positive sign in column 2 which includes the interaction term. Model 2 also suggests that the interaction term FDI_WGI is negatively related to investment. The results of the analysis using GMM* (columns 3 and 4) only partially confirm these results: the coefficient of the interaction term is significant and negative but the coefficients of WGI remain insignificant in these models.

Finally, because of the sensitivity to the exact source of the data on GFCF, we decided to use another source, i.e., the PWT. This is the dependent variable GCF, for which the results are presented in Table 8. These results are somewhat similar to those of the analysis using $GFCF^*$ as the dependent variable. On the basis of all methods we find that FDI crowds in investment. Moreover, following the results displayed in Table 8, when using the dependent variable GCF we find a significant positive direct effect of 'good governance' in models 1, 2, 6 and 8. By comparing model 5 and model 6 (fixed effects) and by comparing model 7 and 8 (POLS) we find that the relation between WGI and investment only turns significant when controlling for the interaction term between WGI and FDI. Furthermore, whereas in Table 7 the coefficient of the interaction term

[17] We need to investigate further how this change may have occurred. Possibly, a revision of the data in WDI has taken place.

was always significant and negative, when using GCF as the dependent variable variable this is no longer the case. We only find evidence that the interaction term between FDI and WGI is significantly and negatively related to investment when using M&U's GMM specification. However, we suspect that the results of this GMM analysis are biased as a result of instrument proliferation. The fixed-effect models using $GFCF^*$ and GCF yield a R^2 that ranges from 0.62 to 0.67 which is high but no indication of further complications.

The results of GMM* analysis using both $GFCF^*$ and GCF as the dependent variables support the theory on FDI crowding in investment and, in addition, provide some evidence for the mediating relation between FDI and WGI on investment. Nevertheless, these models do not suggest that governance matters for investment. The p-values of the Hansen test statistics for models 3-4 of Table 7 are 0.67 and 0.28 suggesting that the instruments are valid. Also none of the difference-in-Hansen test statistics for the endogenous variables are significant and thereby do not reject the validity of the additional moment conditions. The p-values of the Hansen test statistics for models 3-4 of Table 8 are reasonable in magnitude and these tests do not raise suspicion about the validity of instrument subsets. Again, the difference-in-Hansen test statistics for the levels equation cannot be computed for the GMM* models (Tables 7 and 8) because the models are exactly identified. We do report the difference-in-Hansen test statistics for each of the endogenous variables' instrument subset. And, some of these tests statistics (D-in Hansen ($GFCF_{t-1}$) and D-in Hansen (FDI)) indicate that the instruments are invalid because they are correlated with the error term.

3.5 Robustness analysis with FDI stocks

Tables 9, 10, 11, 12, 13, present the results using the stock of FDI as a ratio of GDP as a proxy for the effect of foreign investment on domestic investment. As in the previous section, we replicate the analysis using the different dependent variables: DPI, PI, $GFCF$, $GFCF^*$, and GCF.

As before, we conclude that only on the basis of the dependent variable DPI we can find significant indication of a negative relation between FDI (in this case represented by $STOCK$) and a country's level of investment. For DPI as the dependent variable (Table 9), we find negative and significant signs for $STOCK$ for all estimation methods except our own preferred GMM specification (columns 3 and 4) and POLS (columns 7 and 8). Also, column 2 in Table 11 shows a significant and negative coefficient of $STOCK$. The relation between $STOCK$ and the dependent variables $GFCF^*$ and GCF is positive and significant following all methodology except the results displayed in Table 12 column 5, (FE) 7 and 8 (POLS) and the results displayed in Table 13 column 3 and 4 (GMM*) and column 7 and 8 (POLS).

Overall, the choice of a different foreign investment proxy has some effect on the coefficient of WGI and on the coefficient of the interaction term. Whereas the coefficient of the interaction term was significant and negative in column 8 Table 7 we find that this coefficient is no longer significant in column 8 in Table 12 using $GFCF^*$ as the dependent variable. The other results displayed in Tables 12 are similar to those displayed in Table 7 and also indicate that the positive effect of 'good governance' becomes more apparent when controlling for the mediating effect between WGI and $STOCK$. Following Table 13, which presents the analysis using GCF as the dependent variable, both GMM using M&U's specification and FE finds a significant and negative coefficient of the interaction term. This result is not found when using GMM* and POLS estimations.

We maintain that FDI is positively related to investment and that the negative effect of rent seeking dominates the positive effect of technology spillovers.[18] On the basis of GMM* results we find no clear evidence that 'good governance' is positively related to investment.

The p-values of the Hansen statistics remain high in most models and appear sensitive to the choice of dependent variable. As before, following the estimations using the GMM* method, the difference-in-Hansen test statistics for the endogenous variable subset are based on an exactly identified model and as such we cannot assess the validity of this instrument subsets. Yet, for Table 12 columns 3 and 4, we cannot reject the null hypothesis of the difference-in-Hansen test statistics that assess the validity of the instruments for the endogenous variables separately; this supports the models. For Table 13 columns 3, the difference in Hansen test statistic for the instrument subset of $GROWTH$ is significant. Because we can not fully exclude the possibility that the instruments are endogenous we also put some trust in the fixed effect analysis.

3.6 Robustness analysis with rent seeking proxy's

In this final robustness analysis we construct a measure for rent seeking behaviour. We relax the assumption that the WGI is a comprehensive set of proxies which describes 'good governance' and that, as a result, the WGI can indirectly capture the effect of rent seeking behaviour. Scholars have used a wide range of measures for rent seeking; including corruption indexes, trade restrictions, and volatility in public budget.[19] With the objective of constructing a more direct measure for rent seeking behaviour we use perception based indicators from the Global Competitiveness Index (WCI) which is collected by the (World Economic Forum). The WCI perception data use a scale from 1-7 where higher values correspond to e.g. an absence of or low concern for rent seeking. The WCI data allows constructing a short panel for the years 2005-2010 using data for 68 developing countries.[20]

[18] We further test the robustness of these results using a proxy for greenfield investment. This proxy is constructed using data on mergers and acquisitions (M&A) and FDI inflow from the World Investment Report 2011 (UNCTAD, 2011). A significant amount of observations for (M&A) and FDI inflow are coded as 'zero or negligible'. We recode these observations to zero. Both data on FDI inflow and M&A contain negative values. Subtracting the indicator for M&A from that of FDI inflow produces additional negative values for our indicator on greenfield investment. The greenfield data is converted from US dollar amount to a ratio of GDP using data on GDP from WDI. The greenfield data has missing observations for Comoros, Domenica, Grenada, Namibia, and St. Vincent and the Grenadines. Albeit the proxy for greenfield investment may be considered crude, FE and POLS estimations using this proxy support the conclusions drawn on the basis of the analysis using FDI and $STOCK$ as explanatory variables. In particular, the regression results using the dependent variables $GFCF^*$ and GCF and 'greenfield' instead of the variables $STOCK$ and FDI are somewhat similar to the results presented in Tables 7, 8, 12, and 13. When using the dependent variables $GFCF^*$ and GCF and GMM* estimations we find a positive effect of 'greenfield' on investment but no significant effect of the coefficients of WGI and the interaction term. This GMM* analysis is fragile as a result of invalid instruments.

[19] See Del Rosal (2011) for a summary on the empirical literature on rent seeking.

[20] The following countries are included in the analysis: Albania, Algeria, Azerbaijan, Bangladesh, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burundi, Cambodia, Cameroon, Chad, China, Costa Rica, Croatia, Ecuador, Egypt, El Salvador, Ethiopia, Gambia, Georgia, Guyana, Honduras, India, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Latvia, Lesotho, Macedonia, Madagascar, Malaysia, Mauritania, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Pakistan, Panama, Peru, Philippines, Romania, Russia, Senegal, Serbia, South Africa, Sri Lanka, Syria, Tajikistan, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, Uruguay, Venezuela, Zambia, and Zimbabwe. Due to missing observations this

We measure political elite rent seeking behaviour on the basis of four survey questions: (1) the diversion of public funds to companies, individuals, or groups due to corruption, (2) favouritism by government officials to well-connected firms and individuals when deciding upon policies and contracts, (3) the wastefulness (efficiency) in the composition of public spending in providing necessary goods and services, and (4) the effectiveness of anti-monopoly policy in promoting competition. We construct a simple average of the above variables and refer to this rent seeking proxy as $RENT_p$ (rent seeking in the public sector). In addition, because rent seeking behaviour is expected to be more prevalent in countries that lack market competition we construct a second rent seeking proxy using two survey questions. This second rent seeking proxy is measured by (1) countries' degree of intensity of competition in the local markets and by (2) the extent of domination of corporate activity by few business groups. As before, we construct an average of these variables and refer to this rent seeking proxy as $RENT_m$ (rent seeking in the private sector). We complement the WCI dataset with data on GFCF, net FDI, public investment, and GDP growth from the World Bank (2012).[21]

The results using the rent seeking proxy $RENT_p$ are displayed in Table 14 and the results using the rent seeking proxy $RENT_m$ are displayed in Table 15. Columns 1 and 2 present the GMM estimations using our preferred GMM specification with one modification. Because the number of countries in this sample is relatively larger we do not limit the number of available lags to be used as instruments. Depending on the model, the instrument count is 26 or 31. The p-values of the Hansen test statistic range from 0.26 to 0.64 and as such suggest the instruments are valid. However, the difference-in-Hansen test statistic which tests the validity of additional instruments for the levels equation is significant in model 1 and 2 of Table 14 and model 1 of Table 15. This test, as well as the other difference-in-Hansen tests indicate that some of our instruments are not valid. Additionally, the difference-in-Hansen test statistic for instrument validity of $PUBLIC$ in model 2 of Table 15 is significant. Columns 3 and 4 of Tables 14 and 15 present FE estimations and columns 5 and 6 present POLS estimations. As before, the p-values of the FE and POLS results are based on cluster-robust variance estimates.

Following Table 14 and Table 15 and GMM*, FE, and POLS estimations, the coefficient of FDI is positive and significant suggesting that FDI positively contributes to GFCF. The exceptions are the coefficients of FDI following POLS estimations which are insignificant as is indicated in the columns 5 of both Table 14 and 15. Furthermore, we find that the choice of rent seeking proxy ($RENT_p$ or $RENT_m$) generate similar results in terms of sign and significance of the variables. The coefficient of $RENT_p$ is positive and significant in column 2,3,4, and 6 and the coefficient of $RENT_m$ is positive and significant in column 1, 2,3,4, and 6. We conduct a final robustness analysis using the data on 68 countries and a governance proxy (WGI) using a simple average of the 6 Worldwide Governance Indicators i.e. including 'government effectiveness' (Kaufmann et al., 2009) (see Table 16). These results confirm that on the basis of this sample WGI has a positive and significant effect on investment but only for GMM* and POLS estimations when including the interaction term FDI_WGI. Hence, both the results using WGI and the rent seeking proxies show that the direct 'good governance'/'rent seeking' effect on private investment 'increases in significance' when controlling for the interaction between 'good governance'/'rent seeking' and FDI. Because the coefficients of our rent seeking proxies behave similar to the coefficients of WGI it is likely that (control of) rent seeking and

sample excludes some countries that were included in the previous analysis.

[21] $PUBLIC$ = GFCF - GFCF to the private sector.

'good governance' are related. The coefficients of the interaction terms FDI_RENT_p, FDI_RENT_m, and also FDI_WGI are negative and significant following estimations with GMM*, FE, and POLS and therefore these results provide additional support for the hypothesis that foreign investors may benefit from rent seeking behaviour at the expense of domestic market development.

4 Conclusion

We critically reviewed the results of the empirical macroeconomic literature on the impact of foreign investment on domestic investment, and the role of institutions and governance in this relationship. We conclude that the results of estimations depend both on the exact dependent variable used (proxy for investment) and on the estimation method. In terms of our preferred methods (properly specified GMM, or fixed effects) and dependent variables (total GFCF), we find that foreign direct investment positively influences a country's overall level of investment. Thus, we find evidence for crowding in, rather than for crowding out. This result strongly contradicts that of M&U, which in many ways has been a benchmark for our methods. Nevertheless, because of the difficulty to separate foreign investment from private investment using macroeconomic data, we suggest that cross-country analysis on the basis of microeconomic data could yield more robust evidence describing the influence of foreign ownership on domestic investment behaviour. Although Koo and Maeng (2006) do this for Korean firms, to the best of our knowledge no cross-country study uses micro data to ask whether foreign investment crowds in or crowds out domestic investment.

We find weak evidence of a positive relation between 'good governance' and higher levels of investment and we find some evidence indicating that the interaction between foreign investment and governance has a negative mediating effect on investment. Unlike M&U, we interpret this negative relationship as evidence that foreign investors have preferential access to industry as a result of elite rent seeking interests. This negative effect of rent seeking may have serious long-term consequences on domestic industry development. Because both FDI spillover and rent seeking are possible determinants of investment behaviour we can not exclude the possibility that the negative effect of rent seeking on investment may be underestimated, or that the positive effect of spillovers may be underestimated. Our results suggest that the negative effect of rent seeking dominates the positive effect of spillovers. In order to assess the overall costs of rent seeking, or the overall benefits of spillovers, further research is needed to distinguish the opposing effects of rent seeking and technology spillovers on investment behaviour. Finally, studying the aggregate effect of rent seeking and technology spillovers on domestic investment remains challenging because rent seeking and technology spillovers may only have a positive (negative) impact on a subset of firms (see also Crespo and Fontoura (2007)). Microeconomic analysis may help to identify which firms are vulnerable to FDI inflow and/or which firms benefit from FDI inflow.

This study does not focus on the role of market dynamics in foreign investment behaviour. Yet, in line with research by Kosovà (2010); Liu (2008); Aitken and Harrison (1999), we expect that the relations between foreign firm market entry, competition, productivity, and technology spillovers are dynamic in nature. Cross-country research based on microeconomic data may provide more insight into the short-run and long-run impact of foreign investment on domestic investment. In particular cross-country

micro analysis may provide insight on whether positive spillover effects in the long-term outweigh possible short run negative effects of foreign firm entry.

An additional open question is whether policy interventions are successful in preventing domestic firms from being crowded-out by foreign firm entry. Further analysis is needed to understand the degree to which policy (at the industry or macro level) has influenced the degree to which FDI has either a negative or a positive effect on domestic investment.

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5 Appendix

Table 2: Replicating M&U (no interaction terms), dependent variable DPI

	(1)	(2)	(3)	(4)	(5)	(6)
		VA	PS	RQ	RL	CC
DPI_{t-1}	0.42***	0.41***	0.41***	0.42***	0.41***	0.42***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	-0.49***	-0.50***	-0.51***	-0.48***	-0.50***	-0.48***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
PUBLIC	-0.03	0.04	-0.04	0.03	-0.03	0.01
	(0.26)	(0.21)	(0.49)	(0.53)	(0.38)	(0.86)
GROWTH	0.15***	0.17***	0.15***	0.17***	0.16***	0.16***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
WGIs		1.15***	0.94***	1.02***	0.80***	-0.01
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	7.75***	6.61***	7.47***	6.48***	7.41***	7.18***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	552	552	552	552	552	552
Hansen J	1.00	1.00	1.00	1.00	1.00	1.00
# of instruments	89	90	90	90	90	90
# of countries	46	46	46	46	46	46
AR(1)	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.28	0.31	0.27	0.29	0.31	0.28

p-values in parentheses; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Replicating M&U (with interaction terms), dependent variable DPI

	(1)	(2)	(3)	(4)	(5)
	VA	PS	RQ	RL	CC
DPI_{t-1}	0.35***	0.37***	0.39***	0.37***	0.38***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	-0.54***	-0.62***	-0.50***	-0.58***	-0.53***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
PUBLIC	-0.14*	-0.16***	-0.08*	-0.08+	-0.00
	(0.01)	(0.00)	(0.03)	(0.07)	(0.94)
GROWTH	0.16***	0.17***	0.18***	0.18***	0.16***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
WGIs	1.37***	0.56***	1.64***	1.20***	0.34
	(0.00)	(0.00)	(0.00)	(0.00)	(0.11)
FDI_WGIs	-0.06***	0.07***	-0.13***	0.00	-0.05**
	(0.00)	(0.00)	(0.00)	(0.83)	(0.00)
Constant	8.81***	9.12***	7.66***	8.24***	7.79***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	552	552	552	552	552
Hansen J	1.00	1.00	1.00	1.00	1.00
# of instruments	91	91	91	91	91
# of countries	46	46	46	46	46
AR(1)	0.00	0.00	0.00	0.00	0.00
AR(2)	0.31	0.31	0.34	0.36	0.29

p-values in parentheses; AR(1), AR(2), and Hansen J test statistics report the respective p-values

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Alternative estimation methods. Dependent variable: DPI

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
DPI_{t-1}	0.42***	0.37***	0.38	0.40+	0.00	0.00	0.66***	0.66***
	(0.00)	(0.00)	(0.22)	(0.10)	(0.87)	(0.88)	(0.00)	(0.00)
FDI	-0.50***	-0.62***	-0.64+	-0.48*	-0.99***	-0.98***	-0.41***	-0.47***
	(0.00)	(0.00)	(0.06)	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)
PUBLIC	0.06	-0.05	0.48	-0.59	-0.35	-0.35	-0.00	-0.01
	(0.42)	(0.29)	(0.53)	(0.34)	(0.23)	(0.23)	(0.95)	(0.91)
GROWTH	0.17***	0.18***	0.28	0.22	-0.00	-0.00	0.19	0.20+
	(0.00)	(0.00)	(0.19)	(0.15)	(0.78)	(0.79)	(0.10)	(0.09)
WGI	1.14***	0.92***	1.40	-0.03	0.41*	0.49*	0.97+	0.47
	(0.00)	(0.00)	(0.23)	(0.98)	(0.05)	(0.03)	(0.10)	(0.42)
FDI_WGI		0.05***		0.16		-0.02+		0.11
		(0.00)		(0.42)		(0.10)		(0.31)
CONSTANT	6.39***	8.21***	5.08	12.51+	17.07***	17.08***	6.08***	6.26***
	(0.00)	(0.00)	(0.35)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)
N	552	552	552	552	552	552	552	552
R^2					0.971	0.971	0.780	0.782
Hansen J	1.00	1.00	0.36	0.50				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (DPI_{t-1})	1.00	1.00	0.40	0.49				
D-in Hansen (FDI)	1.00	1.00	0.45	0.64				
D-in Hansen (GROWTH)	1.00	1.00	0.20	0.71				
D-in Hansen (PUBLIC)	1.00	1.00	0.28	0.43				
D-in Hansen (FDI_WGI)				0.47				
D-in Hansen (iv)	0.04	0.52						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.00	0.00	0.10	0.08				
AR(2)	0.29	0.35	0.50	0.38				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Dependent variable: PI, all estimation methods

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
PI_{t-1}	0.92***	0.92***	0.51+	0.65***	0.11*	0.11*	0.94***	0.94***
	(0.00)	(0.00)	(0.06)	(0.00)	(0.02)	(0.02)	(0.00)	(0.00)
FDI	0.03***	0.01***	0.00	0.07	0.01+	0.02*	0.02	0.01
	(0.00)	(0.00)	(0.97)	(0.22)	(0.09)	(0.02)	(0.14)	(0.31)
PUBLIC	-0.05***	-0.06***	-0.00	-0.68+	-0.38	-0.39	-0.02	-0.02
	(0.00)	(0.00)	(1.00)	(0.06)	(0.20)	(0.20)	(0.32)	(0.31)
GROWTH	0.03***	0.03***	0.30**	0.16+	0.01	0.01	0.07**	0.07**
	(0.00)	(0.00)	(0.00)	(0.06)	(0.37)	(0.35)	(0.01)	(0.01)
WGI	0.09*	0.02	0.97	0.29	0.35+	0.43*	0.11	0.02
	(0.02)	(0.46)	(0.42)	(0.70)	(0.06)	(0.03)	(0.38)	(0.88)
FDI_WGI		0.02***		-0.02		-0.02+		0.02
		(0.00)		(0.87)		(0.09)		(0.31)
CONSTANT	1.25***	1.43***	6.56	9.68*	15.74***	15.76***	0.86+	0.47
	(0.00)	(0.00)	(0.14)	(0.03)	(0.00)	(0.00)	(0.05)	(0.17)
N	552	552	552	552	552	552	552	552
R^2					0.151	0.154	0.939	0.939
Hansen J	1.00	1.00	0.29	0.16				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (PI_{t-1})	1.00	1.00	0.09	0.04				
D-in Hansen (FDI)	1.00	1.00	0.09	0.09				
D-in Hansen (GROWTH)	1.00	1.00	0.17	0.54				
D-in Hansen (PUBLIC)	1.00	1.00	0.41	0.26				
D-in Hansen (FDI_WGI)				0.09				
D-in Hansen (iv)	0.66	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.02	0.02	0.00	0.00				
AR(2)	0.68	0.69	0.97	0.92				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Dependent variable: $GFCF$, all estimation methods

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
$GFCF_{t-1}$	0.93***	0.92***	0.57**	0.71***	0.10+	0.10+	0.94***	0.94***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.05)	(0.05)	(0.00)	(0.00)
FDI	0.03***	0.01***	0.03	0.06	0.01+	0.02*	0.02	0.01
	(0.00)	(0.00)	(0.76)	(0.33)	(0.10)	(0.02)	(0.12)	(0.31)
PUBLIC	0.02***	-0.00	0.17	-0.48	0.62*	0.62*	0.06*	0.06*
	(0.00)	(0.91)	(0.87)	(0.15)	(0.04)	(0.04)	(0.03)	(0.03)
GROWTH	0.02***	0.02***	0.26*	0.11	0.01	0.01	0.08**	0.08**
	(0.00)	(0.00)	(0.01)	(0.12)	(0.38)	(0.36)	(0.00)	(0.00)
WGI	0.07**	-0.01	0.90	0.24	0.34+	0.42*	0.10	0.02
	(0.01)	(0.56)	(0.40)	(0.80)	(0.08)	(0.04)	(0.45)	(0.92)
FDI_WGI		0.02***		-0.00		-0.02+		0.02
		(0.00)		(0.98)		(0.08)		(0.36)
CONSTANT	1.21***	1.48***	7.32	9.35+	15.19***	15.20***	0.27	0.77+
	(0.00)	(0.00)	(0.16)	(0.05)	(0.00)	(0.00)	(0.42)	(0.08)
N	552	552	552	552	552	552	552	552
R^2					0.217	0.220	0.954	0.954
Hansen J	1.00	1.00	0.15	0.09				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen ($GFCF_{t-1}$)	1.00	1.00	0.58	0.30				
D-in Hansen (FDI)	1.00	1.00	0.03	0.03				
D-in Hansen (GROWTH)	1.00	1.00	0.12	0.27				
D-in Hansen (PUBLIC)	1.00	1.00	0.47	0.30				
D-in Hansen (FDI_WGI)				0.10				
D-in Hansen (iv)	1.00	0.89	0.03					
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.00	0.00	0.00	0.01				
AR(2)	0.24	0.24	0.94	0.83				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Dependent variable: $GFCF*$, all estimation methods

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
$GFCF^*_{t-1}$	0.52***	0.49***	0.56***	0.49***	0.50***	0.46***	0.67***	0.65***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	0.40***	0.62***	0.43**	0.61**	0.39**	0.57***	0.23*	0.39***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)
PUBLIC	-0.12**	0.03	-0.54	0.05	0.19	0.14	0.15*	0.18*
	(0.01)	(0.63)	(0.29)	(0.95)	(0.49)	(0.63)	(0.04)	(0.04)
GROWTH	0.23***	0.25***	0.72***	0.79***	0.23***	0.24***	0.23***	0.22**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
WGI	-0.59***	1.46***	0.12	1.96	1.05+	2.85***	-0.14	1.23*
	(0.00)	(0.00)	(0.88)	(0.11)	(0.07)	(0.00)	(0.70)	(0.03)
FDI_WGI		-0.42***		-0.47+		-0.42***		-0.28**
		(0.00)		(0.08)		(0.00)		(0.00)
CONSTANT	9.00***	7.71***	10.73**	8.04	5.94*	7.75**	3.76**	4.14**
	(0.00)	(0.00)	(0.01)	(0.15)	(0.01)	(0.00)	(0.00)	(0.01)
N	537	537	537	537	537	537	537	537
R^2					0.622	0.666	0.779	0.795
Hansen J	1.00	1.00	0.67	0.28				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen ($GFCF^*_{t-1}$)	1.00	1.00	0.38	0.13				
D-in Hansen (FDI)	1.00	1.00	0.36	0.41				
D-in Hansen (GROWTH)	1.00	1.00	0.63	0.11				
D-in Hansen (PUBLIC)	1.00	1.00	0.78	0.49				
D-in Hansen (FDI_WGI)				0.25				
D-in Hansen (iv)	0.40	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.02	0.03	0.01	0.01				
AR(2)	0.35	0.87	0.89	0.83				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Dependent variable: GCF, all estimation methods

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
GCF_{t-1}	0.62***	0.65***	0.72***	0.68***	0.55***	0.55***	0.78***	0.78***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	0.28***	0.37***	0.24**	0.22**	0.31***	0.39**	0.17*	0.24+
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.05)
PUBLIC	0.26***	0.19***	0.14	0.64	0.05	0.02	0.13+	0.14+
	(0.00)	(0.00)	(0.85)	(0.23)	(0.82)	(0.93)	(0.06)	(0.07)
GROWTH	0.34***	0.34***	0.17	0.31**	0.38***	0.38***	0.30**	0.29**
	(0.00)	(0.00)	(0.35)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
WGI	0.60***	1.57***	0.60	1.09	0.64	1.49**	0.45	1.09+
	(0.00)	(0.00)	(0.33)	(0.19)	(0.34)	(0.01)	(0.30)	(0.06)
FDI_WGI		-0.20***		-0.10		-0.20		-0.13
		(0.00)		(0.38)		(0.13)		(0.26)
CONSTANT	3.78***	3.38***	1.28	-1.00	6.53**	6.64**	0.47	0.25
	(0.00)	(0.00)	(0.73)	(0.73)	(0.00)	(0.00)	(0.57)	(0.76)
N	552	552	552	552	552	552	552	552
R^2					0.634	0.643	0.828	0.830
Hansen J	1.00	1.00	0.17	0.21				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (GCF_{t-1})	1.00	1.00	0.07	0.05				
D-in Hansen (FDI)	1.00	1.00	0.10	0.04				
D-in Hansen (GROWTH)	1.00	1.00	0.49	0.33				
D-in Hansen (PUBLIC)	1.00	1.00	0.33	0.30				
D-in Hansen (FDI_WGI)				0.43				
D-in Hansen (iv)	0.04	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.01	0.01	0.01	0.01				
AR(2)	0.16	0.17	0.19	0.22				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Dependent variable: DPI, all estimation methods, stock FDI variables

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
DPI_{t-1}	0.69***	0.68***	1.01***	1.01***	0.29***	0.26***	0.79***	0.79***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
STOCK	-0.01***	-0.05***	0.06	0.08	-0.14***	-0.18***	-0.01	-0.01
	(0.00)	(0.00)	(0.19)	(0.45)	(0.00)	(0.00)	(0.33)	(0.35)
PUBLIC	-0.38***	-0.40***	-0.09	-0.34	-0.56	-0.48	-0.11+	-0.11+
	(0.00)	(0.00)	(0.94)	(0.41)	(0.10)	(0.19)	(0.05)	(0.06)
GROWTH	0.04***	0.05***	0.39+	0.40*	0.02	0.02	0.18*	0.18+
	(0.00)	(0.00)	(0.08)	(0.04)	(0.83)	(0.82)	(0.04)	(0.06)
WGI	-0.36	-1.55***	-1.16	-0.81	-0.55	-2.26	-0.16	-0.38
	(0.17)	(0.00)	(0.23)	(0.61)	(0.37)	(0.14)	(0.65)	(0.43)
STOCK_WGI		0.05***		-0.02		0.06		0.01
		(0.00)		(0.80)		(0.22)		(0.58)
CONSTANT	6.22***	7.44***	-0.52	0.63	16.14***	16.69***	1.59	1.75
	(0.00)	(0.00)	(0.95)	(0.90)	(0.00)	(0.00)	(0.21)	(0.22)
N	552	552	552	552	552	552	552	552
R^2					0.450	0.459	0.693	0.693
Hansen J	1.00	1.00	0.90	0.94				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (DPI_{t-1})	1.00	1.00	0.85	0.89				
D-in Hansen (STOCK)	1.00	1.00	0.84	0.94				
D-in Hansen (GROWTH)	1.00	1.00	0.78	0.74				
D-in Hansen (PUBLIC)	1.00	1.00	0.68	0.73				
D-in Hansen (STOCK_WGI)				0.95				
D-in Hansen (iv)	1.00	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.01	0.00	0.00	0.00				
AR(2)	0.19	0.19	0.29	0.31				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Dependent variable: PI, all estimation methods, stock FDI variables

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
PI_{t-1}	0.91***	0.92***	0.49**	0.49**	0.11*	0.11*	0.94***	0.94***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.02)	(0.02)	(0.00)	(0.00)
STOCK	0.00***	-0.00	0.03	0.03	0.00	-0.00	0.00+	0.00
	(0.00)	(0.52)	(0.21)	(0.18)	(0.94)	(0.71)	(0.07)	(0.91)
PUBLIC	-0.07***	-0.05**	-0.51	-0.68*	-0.38	-0.38	-0.03	-0.03
	(0.00)	(0.00)	(0.35)	(0.03)	(0.20)	(0.20)	(0.28)	(0.29)
GROWTH	0.02***	0.03***	0.21	0.22	0.00	0.00	0.07**	0.07**
	(0.00)	(0.00)	(0.13)	(0.10)	(0.52)	(0.51)	(0.01)	(0.01)
WGI	0.07	-0.13	0.51	0.23	0.35+	0.32	0.08	-0.05
	(0.14)	(0.11)	(0.57)	(0.80)	(0.07)	(0.11)	(0.52)	(0.76)
STOCK_WGI		0.01***		0.01		0.00		0.00
		(0.00)		(0.78)		(0.74)		(0.23)
CONSTANT	1.42***	1.41***	9.73**	10.53***	15.77***	15.77***	0.87*	0.94*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.02)
N	552	552	552	552	552	552	552	552
R^2					0.147	0.148	0.939	0.939
Hansen J	1.00	1.00	0.49	0.63				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (PI_{t-1})	1.00	1.00	0.54	0.67				
D-in Hansen (STOCK)	1.00	1.00	0.20	0.21				
D-in Hansen (GROWTH)	1.00	1.00	0.53	0.82				
D-in Hansen (PUBLIC)	1.00	1.00	0.43	0.42				
D-in Hansen (STOCK_WGI)				0.49				
D-in Hansen (iv)	1.00	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.02	0.02	0.01	0.01				
AR(2)	0.69	0.70	0.86	0.82				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Dependent variable: $GFCF$, all estimation methods, stock FDI variables

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
$GFCF_{t-1}$	0.92***	0.93***	0.55**	0.52**	0.10*	0.10*	0.93***	0.93***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.05)	(0.00)	(0.00)
STOCK	0.00***	-0.00***	0.05	0.05+	-0.00	-0.00	0.00*	-0.00
	(0.00)	(0.00)	(0.14)	(0.07)	(0.97)	(0.64)	(0.05)	(0.86)
PUBLIC	0.03***	0.02	-0.69	-0.46	0.62*	0.62*	0.06*	0.06*
	(0.00)	(0.25)	(0.44)	(0.23)	(0.04)	(0.04)	(0.03)	(0.04)
GROWTH	0.02***	0.03***	0.36	0.27	0.00	0.00	0.08**	0.08**
	(0.00)	(0.00)	(0.21)	(0.10)	(0.54)	(0.53)	(0.00)	(0.00)
WGI	0.08*	-0.19***	-0.11	0.60	0.34+	0.32	0.08	-0.07
	(0.01)	(0.00)	(0.94)	(0.62)	(0.08)	(0.11)	(0.56)	(0.66)
STOCK_WGI		0.01***		-0.01		0.00		0.00
		(0.00)		(0.75)		(0.75)		(0.12)
CONSTANT	1.30***	1.39***	12.35**	11.20***	15.21***	15.21***	0.30	0.38
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.37)	(0.27)
N	552	552	552	552	552	552	552	552
R^2					0.214	0.214	0.954	0.954
Hansen J	1.00	1.00	0.84	0.71				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen ($GFCF_{t-1}$)	1.00	1.00	0.77	0.65				
D-in Hansen (STOCK)	1.00	1.00	0.60	0.56				
D-in Hansen (GROWTH)	1.00	1.00	0.56	0.44				
D-in Hansen (PUBLIC)	1.00	1.00	0.96	0.95				
D-in Hansen (STOCK_WGI)				0.75				
D-in Hansen (iv)	1.00	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.00	0.00	0.06	0.00				
AR(2)	0.24	0.25	0.60	0.68				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Dependent variable: $GFCF^*$, all estimation methods, stock FDI variables

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
$GFCF^*_{t-1}$	0.73***	0.69***	0.68*	0.56**	0.56***	0.49***	0.74***	0.72***
	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
STOCK	0.02***	0.10***	0.06+	0.21*	0.05	0.13*	0.01	0.03
	(0.00)	(0.00)	(0.09)	(0.03)	(0.11)	(0.02)	(0.34)	(0.27)
PUBLIC	-0.12*	-0.05	-0.84	-1.43*	0.20	0.09	0.18**	0.18**
	(0.02)	(0.39)	(0.56)	(0.02)	(0.47)	(0.72)	(0.00)	(0.00)
GROWTH	0.25***	0.23***	0.97**	1.03***	0.22**	0.22**	0.21**	0.21*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
WGI	-0.14+	2.27***	-0.38	2.71	1.33*	4.51**	0.34	1.06
	(0.10)	(0.00)	(0.73)	(0.13)	(0.01)	(0.01)	(0.28)	(0.13)
STOCK_WGI		-0.08***		-0.14+		-0.11*		-0.02
		(0.00)		(0.09)		(0.03)		(0.31)
CONSTANT	5.08***	3.58***	9.30	12.95*	5.46**	6.26**	2.93**	2.64**
	(0.00)	(0.00)	(0.25)	(0.03)	(0.01)	(0.00)	(0.00)	(0.00)
N	537	537	537	537	537	537	537	537
R^2					0.501	0.533	0.743	0.746
Hansen J	1.00	1.00	0.49	0.53				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen ($GFCF^*_{t-1}$)	1.00	1.00	0.98	0.37				
D-in Hansen (STOCK)	1.00	1.00	0.39	0.67				
D-in Hansen (GROWTH)	1.00	1.00	0.45	0.46				
D-in Hansen (PUBLIC)	1.00	1.00	0.38	0.85				
D-in Hansen (STOCK_WGI)				0.70				
D-in Hansen (iv)	1.00	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.06	0.05	0.02	0.02				
AR(2)	0.33	0.33	0.60	0.62				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Dependent variable: GCF, all estimation methods, stock FDI variables

	(1) GMM	(2) GMM	(3) GMM*	(4) GMM*	(5) FE	(6) FE	(7) POLS	(8) POLS
GCF_{t-1}	0.75***	0.76***	0.73***	0.77***	0.58***	0.56***	0.80***	0.80***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
STOCK	0.02***	0.03***	0.08	0.12	0.04+	0.08*	0.01	0.01
	(0.00)	(0.00)	(0.15)	(0.33)	(0.05)	(0.02)	(0.32)	(0.54)
PUBLIC	0.37***	0.29***	-1.47	-1.04	0.07	0.01	0.16*	0.16*
	(0.00)	(0.00)	(0.31)	(0.12)	(0.74)	(0.95)	(0.01)	(0.01)
GROWTH	0.45***	0.44***	0.78	0.47	0.38***	0.37***	0.30***	0.30***
	(0.00)	(0.00)	(0.14)	(0.32)	(0.00)	(0.00)	(0.00)	(0.00)
WGI	0.65***	1.32***	-0.93	1.58	0.91	2.44**	0.75*	0.75
	(0.00)	(0.00)	(0.51)	(0.55)	(0.13)	(0.01)	(0.04)	(0.12)
STOCK_WGI		-0.02***		-0.08		-0.06+		0.00
		(0.00)		(0.41)		(0.09)		(1.00)
CONSTANT	0.33	0.37	10.78	6.53	4.93*	6.56***	0.09	0.09
	(0.60)	(0.49)	(0.29)	(0.25)	(0.02)	(0.00)	(0.90)	(0.90)
N	552	552	552	552	552	552	552	552
R^2					0.562	0.569	0.815	0.815
Hansen J	1.00	1.00	0.24	0.38				
D-in Hansen (levels)	1.00	1.00						
D-in Hansen (GCF_{t-1})	1.00	1.00	0.31	0.22				
D-in Hansen (STOCK)	1.00	1.00	0.23	0.53				
D-in Hansen (GROWTH)	1.00	1.00	0.09	0.22				
D-in Hansen (PUBLIC)	1.00	1.00	0.54	0.87				
D-in Hansen (STOCK_WGI)				0.67				
D-in Hansen (iv)	1.00	1.00						
# of instruments	90	91	21	23				
# of countries	46	46	46	46	46	46	46	46
AR(1)	0.01	0.01	0.01	0.01				
AR(2)	0.18	0.18	0.34	0.30				

p-values in parentheses; models 3-8 contain year dummies; AR(1), AR(2), and Hansen J test statistics report the respective p-values
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Dependent variable: $GFCF^*$

	(1) GMM**	(2) GMM**	(3) FE	(4) FE	(5) POLS	(6) POLS
$GFCF_{t-1}$	0.58***	0.57***	0.40***	0.42***	0.80***	0.79***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	0.33*	2.47**	0.15+	1.01*	0.09	0.86***
	(0.03)	(0.00)	(0.06)	(0.01)	(0.22)	(0.00)
PUBLIC	0.05	0.13	0.61***	0.59***	0.13**	0.14**
	(0.78)	(0.49)	(0.00)	(0.00)	(0.01)	(0.01)
GROWTH	0.13	0.21+	0.25***	0.23***	0.10	0.08
	(0.36)	(0.10)	(0.00)	(0.00)	(0.33)	(0.40)
$Rent_p$	0.37	2.53**	1.35+	2.73***	-0.06	1.11**
	(0.48)	(0.00)	(0.08)	(0.00)	(0.80)	(0.00)
FDI_RENT_p		-0.64**		-0.28*		-0.24***
		(0.00)		(0.02)		(0.00)
CONSTANT	6.17**	-1.68	3.39	-0.78	3.41**	0.12
	(0.00)	(0.68)	(0.16)	(0.74)	(0.00)	(0.91)
N	318	318	318	318	318	318
R^2			0.544	0.575	0.789	0.804
Hansen J	0.26	0.47				
D-in Hansen (levels)	0.07	0.08				
D-in Hansen ($GFCF_{t-1}$)	0.02	0.02				
D-in Hansen (FDI)	0.90	0.16				
D-in Hansen (GROWTH)	0.68	0.86				
D-in Hansen (PUBLIC)	0.04	0.04				
D-in Hansen (FDI_RENT_p)		0.17				
D-in Hansen (iv)	0.34	0.68				
# of instruments	26	31				
# of countries	68	68	68	68	68	68
AR(1)	0.00	0.00				
AR(2)	0.21	0.34				

p-values in parentheses; all models contain year dummies;

AR(1), AR(2), Hansen J, and difference-in-Hansen test statistics report the respective p-values

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15: Dependent variable: $GFCF^*$

	(1) GMM**	(2) GMM**	(3) FE	(4) FE	(5) POLS	(6) POLS
$GFCF_{t-1}$	0.57***	0.58***	0.39***	0.39***	0.79***	0.78***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	0.34*	2.26*	0.15+	1.42**	0.09	1.02**
	(0.01)	(0.02)	(0.05)	(0.00)	(0.21)	(0.00)
PUBLIC	0.09	0.15	0.62***	0.63***	0.14**	0.14**
	(0.54)	(0.26)	(0.00)	(0.00)	(0.00)	(0.00)
GROWTH	0.11	0.16	0.23***	0.24***	0.09	0.10
	(0.35)	(0.13)	(0.00)	(0.00)	(0.36)	(0.29)
$RENT_m$	1.07+	2.50**	2.32**	4.12***	0.41	1.40**
	(0.06)	(0.00)	(0.01)	(0.00)	(0.29)	(0.01)
FDI_RENT_m		-0.48+		-0.33**		-0.24**
		(0.06)		(0.01)		(0.00)
CONSTANT	3.02	-3.71	-1.18	-8.02*	1.76	-2.03
	(0.23)	(0.41)	(0.69)	(0.02)	(0.22)	(0.25)
N	318	318	318	318	318	318
R^2			0.557	0.588	0.790	0.799
Hansen J	0.30	0.64				
D-in Hansen (levels)	0.09	0.16				
D-in Hansen ($GFCF_{t-1}$)	0.02	0.10				
D-in Hansen (FDI)	0.81	0.94				
D-in Hansen (GROWTH)	0.67	0.71				
D-in Hansen (PUBLIC)	0.05	0.08				
D-in Hansen (FDI_RENT_m)	0.92					
D-in Hansen (iv)	0.32	0.34				
# of instruments	26	31				
# of countries	68	68	68	68	68	68
AR(1)	0.00	0.00				
AR(2)	0.22	0.26				

p-values in parentheses; all models contain year dummies;

AR(1), AR(2), Hansen J, and difference-in-Hansen test statistics report the respective p-values

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 16: Dependent variable: $GFCF^*$

	(1) GMM**	(2) GMM**	(3) FE	(4) FE	(5) POLS	(6) POLS
$GFCF_{t-1}$	0.59***	0.58***	0.41***	0.39***	0.79***	0.78***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FDI	0.34*	0.24**	0.15+	0.06	0.08	0.04
	(0.03)	(0.01)	(0.06)	(0.33)	(0.27)	(0.54)
PUBLIC	0.06	0.18	0.63***	0.67***	0.14**	0.14**
	(0.70)	(0.31)	(0.00)	(0.00)	(0.00)	(0.00)
GROWTH	0.12	0.25**	0.25***	0.28***	0.10	0.11
	(0.41)	(0.00)	(0.00)	(0.00)	(0.31)	(0.22)
WGI	0.48	2.46***	1.29	2.06	0.43	1.22*
	(0.43)	(0.00)	(0.58)	(0.34)	(0.23)	(0.03)
FDI_WGI		-0.54***		-0.33**		-0.21+
		(0.00)		(0.00)		(0.07)
CONSTANT	7.25**	6.33*	7.65***	8.14***	3.55***	3.84***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
N	318	318	318	318	318	318
R^2			0.536	0.568	0.790	0.797
Hansen J	0.23	0.50				
D-in Hansen (levels)	0.06	0.17				
D-in Hansen ($GFCF_{t-1}$)	0.01	0.47				
D-in Hansen (FDI)	0.80	0.44				
D-in Hansen (GROWTH)	0.64	0.79				
D-in Hansen (PUBLIC)	0.04	0.20				
D-in Hansen (FDI_WGI)	0.66					
D-in Hansen (iv)	0.24	0.40				
# of instruments	26	31				
# of countries	68	68	68	68	68	68
AR(1)	0.00	0.00				
AR(2)	0.21	0.37				

p-values in parentheses; all models contain year dummies;

AR(1), AR(2), Hansen J, and difference-in-Hansen test statistics report the respective p-values

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 17: Empirical macro studies on the effect of FDI on domestic private investment

Source	Dependent variable	Foreign investment variable	Source of investment data	Explanatory variables	Countries	Years	Method	Result
Al-Sadig (2013)	Private domestic investment = total gross domestic investment (from national accounts) - consolidated public investment	FDI	UNCTAD, WDI, Everhart and Sumlinski (2001)	Private domestic investment; FDI; GDP growth; public investment; inflation; trade openness; M2; external debt; democracy; school enrollment.	91 developing countries	1970-2000	GMM	CI
M&U	Total investment (GFCF) - net inflow of FDI - public investment	Net inflow of FDI	WDI and GFS	Lagged private investment; FDI; Worldwide Governance Indicators (VA, PS, RA, RL, CC); public investment; GDP growth	46 developing countries	1996-2009	System GMM	CO

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Ramirez (2011)	Total gross domestic investment - consolidated public investment spending	Gross FDI inflow repatriation of profits and dividends	Data on FDI from IFC 'trends in private investment in developing countries' by Everhart and Sumlinski (2001) and the Economic Commission for Latin America and the Caribbean (ECLAC) Data on domestic investment from Glen and Sumlinski (1994) and IFC (1999, 2001)	Lagged real private capital formation; lagged FDI; lagged public fixed capital formation; natural logarithm of real GDP; domestic credit to the private sector; lagged ex-post real interest rate; lagged gross national savings; lagged real effective exchange rate; standard deviation of real effective exchange rate; dummy for 1982-83, dummy for 1990-94	8 countries in Latin America: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguary	1981-2002	Fully modified OLS (MOLS)	CI

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Adams (2009)	Gross fixed investment FDI inflow	FDI	WDI	lagged domestic investment; current and lagged FDI: government consumption; rate of inflation; political risk (ICRG); landlocked; trade share in GDP; current and lagged real GDP growth rate	44 Sub-Saharan African countries	1990-2003	OLS and fixed-effect estimations	CO in current period; CI in lagged period
Ndikumana and Verick (2008)	Gross capital formation - public investment	net FDI inflow	FDI from UNCTAD. Public and private investment from WDI	Lagged FDI; lagged public investment; GDP growth; openness; log of telephone subscribers; real exchange rate detrended; real exchange rate volatility	38 Sub-Saharan African countries	1970-2005	Fixed-effect estimations	CI

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Tang et al. (2008)	Change in gross capital formation. Excludes any type of foreign investment	FDI inflow	China monthly statistics, national bureau of statistics of China	Change in lagged domestic investment; change in lagged FDI; change in GDP (measured by the ratio of annual GDP over gross industrial output x quarterly gross industrial output); centered seasonal dummy	China	1988-2003 (quarterly)	VAR system with error correction model	CI
Titarenko (2005)	Domestic investment + FDI	FDI stock	Bank of Latvia and Central Statistical Bureau of Latvia	Third and fourth lag of investment; current FDI and lagged FDI; third and fourth lag of GDP growth	Latvia	1995-2004 (quarterly)	OLS	CO
Apergis et al. (2006)	GFCF	FDI inflow	IFS	FDI and change in FDI; public deficits; export and import of goods; exports and imports of goods and services; effective exchange rate	30 countries	1992-2002	VAR system with error correction model	Overall CO. By region: Asia and Africa CI; America and Europe CI

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Agosin and Machado (2005)	Investment	FDI	WDI, IMF, and CEPAL	First and second lag of investment; current, first and second lag of FDI; first and second lag of GDP growth	3 x 12 countries: Africa, Asia and Latin America (3 regressions)	1971-2000	One-step difference GMM	CO in Latin America; no effect in Asia and Africa
Misun and Tomsik (2002)	Domestic investment + FDI inflow	FDI inflow	Data from central banks and statistical yearbooks	First, second and third lag of domestic investment; current FDI and the second and third lag of FDI; first, second and third lag of GDP Growth	Czech Republic, Hungary, Poland	1990-2000		CO in Poland; CI in Hungary and Czech Republic
Lipsey (2000)	GFCF	FDI inflow, FDI outflow, and net FDI inflow	Data on FDI from IFS. Data on GFCF from OECD	5 year periods. Lagged GFCF; growth in real GDP per capita	22 developed countries	1970-1995		FDI outflow has a negative effect. FDI inflow and net FDI are insignificant

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Agosin and Mayer (2000)	Investment	FDI	IMF and WDI	First and second lag of investment; current FDI, and first and second lag of FDI; first and second lag of GDP	Africa, Asia, Latin America	1970-1996	Pooled estimations of seemingly unrelated regressions (SUR)	CI in Asia and Africa; CO in Latin America. Heterogeneity at country level
de Mello (1999)	Capital stock (durables - transport equipment)	Net FDI inflow	Capital stock data from Summers and Heston. Capital stock data for Brazil is from Hofman (1992). FDI data is from IMF	Lagged capital stock; current FDI; group dummy variables; income as a share of USA per capita income	32 countries (OECD and non-OECD)	1970-1990	Fixed-effect estimations	CI
Bosworth and Collins (1999)	Investment	FDI inflows	IMF and WB data	Current and lagged FDI; current and lagged portfolio investment; current and lagged loans; change in terms of trade; first and second lag of change in GDP; dummy for capital controls	58 developing countries	1979-1995	Instrumental variable regressions	CI

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Borensztein et al. (1998)	Total fixed investment	Gross FDI originated in OECD member countries into developing countries	Investment data from Barro and Lee (1994). FDI data from OECD	FDI; interaction schooling and FDI; log of initial GDP; schooling; government consumption; log(1+black market premium); regional dummies; dummy for political assassinations; wars; political rights; financial depth; inflation rate; institutions (ICRG)	69 developing countries	1970-1989	Seemingly unrelated regressions technique (SUR)	CI

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