INWARD FDI AND ECONOMIC GROWTH: THE ROLE OF HOME AND HOST COUNTRY INSTITUTIONS

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Abstract

The empirical evidence from the past two decades on the growth consequences of FDI for host developing countries has been highly variable. This paper aims to complement the existing literature that focuses on the heterogeneity of host countries by simultaneously looking at the effects of the heterogeneity of both the home and host countries. We argue that the link between FDI and growth is influenced by the absolute levels of absorptive capacity and quality of institutions in the host country, as well as by the institutional and cultural distance between the home and host countries. Specifically, we expect that smaller institutional and cultural distances lower transaction costs and hence facilitate spillovers and knowledge transfer. Therefore, we expect to find a negative interaction effect between distance and FDI for economic growth. We test this idea on a comprehensive panel dataset including all major outward investors from 1989-2006. We find that indeed, formal institutional distance negatively influences the growth effects of FDI, but that informal institutional distance enhance the consequences of FDI for economic growth. A possible explanation is that a large distance can also point at a range of learning opportunities and institutional upgrading that may be derived from inward FDI.

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1. INTRODUCTION

Since the reversal of their import substitution policies of the 1970s, most developing countries have been pursuing liberal market policies that are characterized by economic openness and a desire to attract foreign direct investment (Dunning, 2006; UNCTAD, 2003). In addition to being driven by the ascendance of a liberal economic ideology, the reversal was supported by the growing realization that FDI is fundamentally different from portfolio investment, since it involves a combination of financial capital and transfer of technology. This implies that FDI stands to contribute not only to domestic capital formation, but also has the potential to induce higher rates of growth in the long run.

Indeed, FDI is particularly valued in cases where domestic firms lack the financial, organizational and technological resources to make the necessary investments. By supplying financial capital and technological resources, FDI contributes to domestic investment, improves (average) productivity, and provides generally higher wages than the domestic economy (Dunning & Lundan, 2008). In addition to these direct effects, there are also likely to be some indirect or spillover effects through increased demand for intermediate inputs, labour mobility and demonstration effects, which may enable the host country to appropriate broader benefits from the investment.

In spite of the push for more inbound FDI, the empirical evidence from the past two decades indicates that the experience of developing host countries with FDI has been highly variable. The first problem for many countries has been their limited ability to attract FDI. Although the number of countries where investment takes place has broadened over the past decade, FDI remains strongly concentrated in the developed economies and in a small group of emerging economies (UNCTAD, 2008). The second problem is that, even for those countries that have managed to attract FDI, the record is quite uneven in terms of the structural and technological upgrading that has been brought about, and in terms of subsequent economic growth.

To account for this variety in outcomes, the literature thus far has concentrated mainly on explanations that centre on the characteristics of the host countries. Such studies have examined the extent to which factors like economic openness, level of education and absorptive capacity of the recipient country are likely to influence its ability to appropriate

benefits from FDI. More recently, an influential set of studies out of the World Bank has examined the role of good governance in creating institutional conditions that are more conducive for cross-border investment. This research has shown, that host countries that are more technologically advanced, that are more open to trade, and that have better developed institutions, have generally benefitted more from inward FDI (Dunning & Lundan, 2008).

Other studies have focused on spillovers – i.e. the intended or unintended transfer of knowledge and skills from MNE affiliates to local firms – which have been found to be quite heterogeneous across host countries, and across different types of FDI. While the specific mechanisms whereby spillovers take place have not been of much interest to economists, these links have been investigated in the international business and development literature. These studies suggest that local firms that become linked to the MNE through equity-based or contractual relationships not only stand to receive direct transfers of technology from the MNE, but are also well placed to become conduits for spillovers into the local economy.

The aim of this paper is to complement the earlier growth literature that was focused on the heterogeneity of host countries, with a simultaneous look at the effects of the heterogeneity of both the home and host countries. We contend that knowledge transfers, both intentional and unintentional, between MNEs and the local firms are likely to be instrumental in enabling the growth inducing effects of FDI. Specifically, we will argue that the link between FDI and growth is likely to be influenced by the absolute levels of absorptive capacity and the quality of formal institutions in the host country, as well as the institutional and cultural distance between the home and host countries. We test this idea on a comprehensive panel data set including all of the major outward investors from 1989 to 2006.

The paper is organized as follows. The first section will review the economic literature on the relationship between FDI and growth, paying particular attention to the effects of host country heterogeneity in terms of institutions, culture and absorptive capacity. This is followed by a review of the macro and micro level studies on the existence of productivity spillovers from FDI. We then examine the specific mechanisms whereby spillover effects are likely to occur, and argue that the extent of spillovers is likely to be influenced by the costs of transferring knowledge-intensive assets. This leads us to propose that both absolute levels of absorptive capacity and good governance, as well as the institutional and cultural distance between the home and host countries, are likely to have an impact on the relationship between FDI and growth. We then present our data sources, variable definitions and estimation strategy, followed by the empirical results. The

concluding section summarizes our discussion, and assesses the policy relevance of our findings.

2. INSTITUTIONS AND GROWTH

Following North (1990) we distinguish between formal institutions (laws, regulations and other governance institutions) and informal institutions, which encompass shared norms and values, that might also be referred to as culture. An important aspect of North's (1990; 2005) argument is that formal and informal institutions are not two separate phenomena, but that formal institutions are manifestations of the underlying informal institutions. While the design of formal institutions is likely to share similarities with institutions in other countries due to imitation and deliberate benchmarking, they may nonetheless function differently depending on the underlying informal institutions. Consequently, differences in formal characteristics like a legal system or form of government organization are on their own unlikely to determine a country's potential for economic growth.

According to North (2005), economic growth is a process that requires the development of progressively more sophisticated forms of institutions to encounter the uncertainties arising from more complex exchange relationships. This process of institutional upgrading is in no way automatic, but once set in motion, the endogenous process of upgrading can be aided and enhanced by exogenous factors, including FDI.

a) Formal institutions

The extant literature on FDI and institutions has investigated two main questions; whether institutional quality (or distance) affects the ability of a country to attract FDI, and whether it affects the impact of FDI on economic growth. On the question of investment attraction, Globerman and Shapiro (2002) examined the effects of governance infrastructure on both FDI inflows and outflows for a cross-section of countries. They used the *Governance Matters* indices (see Appendix), which themselves are aggregated from several different sources, to measure differences in governance. To measure human capital they used the *Human Development Index* (HDI) of the United Nations, which includes GDP per capita, educational achievement, literacy standards and life expectancy at birth. They found a positive relationship between good governance, human development and inflows of FDI.[1]

[1] However, all three groups of measures used by Globerman and Shapiro are determinants of economic and social development as well as representing an outcome of the process, which is an endogeneity problem

Other studies have found that democratic institutions have a positive effect on flows of FDI, although at least in one study by Li and Resnick (2003) this effect was almost entirely accounted for by the indirect effect democracy had on strengthening property rights protection.[2] A study by Jensen (2006) suggested that a move from an authoritarian to a democratic regime could increase FDI flows by as much as 50% (Jensen, 2006:85).[3]

Switching attention to the home country, Cuervo-Cazurra (2006) investigated how domestic levels of corruption affected the choice of location by MNEs. He hypothesised that firms from countries that had signed the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions (1997) would be less willing to invest in more corrupt countries, and that high domestic levels of corruption might make corruption in the host countries less of a deterrent. He discovered that corruption not only reduced the level of FDI a country might receive, but also changed its composition, with a greater proportion being accounted for by investors from the relatively more corrupt countries. There is also some evidence that over time, FDI might reduce corruption in the host countries (Kwok & Tadesse, 2006).

On the question of the growth impact of FDI, Balasubramanyam et al. (1996) found that higher rates of growth were concentrated in countries engaging in export promotion and trade openness (rather than import substitution), and that in these countries, it was FDI and not domestic investment that contributed most to growth.[4] Several studies have also confirmed, that particularly for the less developed countries, the institutions involved in the upgrading of human capital are likely to be critical. Barro (1991).[5]

In recent years, growth models involving FDI have increasingly moved from cross-sectional and time series analyses to using panel data. de Mello (1999) found that FDI increased output growth in all countries, but in developed countries it increased total factor productivity (TFP) growth while in developing countries it increased capital accumulation but not TPF growth. In another widely cited study, Borensztein et al. (1998) found that in

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common to many studies on development. There are also likely to be problems of multicollinearity, since countries with good governance tend to fare better on each and every dimension.

[2] On the importance of property rights protection see de Soto (2000), Smarzynska Javorcik (2004a) and Nunnenkamp and Spatz (2004).

[3] Rodrik (2000) has argued that democracy is a meta-institution, since adjustment to external shocks requires the ability to manage social conflict, and democratic institutions are likely to make this task easier.

[4] These results were broadly confirmed by de Mello (1997) who reviewed the evidence on FDI and growth from 11 studies and found the effect to be positive with a stronger effect for countries that were more open and relatively more developed.

[5] Glaeser et. al. (2004) found that the accumulation of human capital underpins the development of institutions and subsequent growth, and that poor countries that have achieved growth as a result of autocratic policies tend to improve their political institutions subsequent to growth.

developing countries, FDI had contributed to economic growth more than domestic investment, but that the effect was conditional on the level of human capital in the host country. Their results also suggested that most of the effect of FDI on growth arose from the efficiency gains rather than from simply an increased level of investment.[6]

In addition to the important influence of human capital, several studies have also investigated the impact of a technology gap between the home and host countries. The argument here is that while a wider technology gap might offer more opportunities for catch-up growth, insufficient absorptive capacity (Cohen & Levinthal, 1990) might prevent the achievement of the benefits from FDI. The transition countries are unique among developing economies in the sense that while the technology gap with the OECD countries was large, significant investments in human resources had been made. Campos and Kinoshita (2002) found that FDI was complementary to domestic investment and had a strong positive impact on growth in the transition economies. However, in contrast to evidence from other developing countries (Li & Liu, 2005), the interaction effect of FDI with human capital was insignificant or even negative, which reflected the relatively high levels of human capital in the transition countries. A recent study by Lee and Kim (2009) also found that while human capital (secondary education) and institutional quality were important determinants of economic growth for lower-income countries, technological capacity and higher education were more important in the middle- and high-income countries.

b) Informal institutions

While there is little doubt that an economy needs sufficient investment in human capital, well-defined property rights and a system of law with credible enforcement to function, informal institutions are fundamental because they condition the extent of experimentation and institutional evolution that is likely to take place (Cantwell, Dunning, & Lundan, 2008). The concept of social capital has often been employed to assess the influence of informal institutions. Social capital can be defined as 'the web of cooperative relationships between citizens that facilitates resolution of collective action problems' (Brehm & Rahn, 1997). Problem solving is facilitated by civic norms, which may be enforced either internally (e.g. via guilt) or externally (e.g. via shame or ostracism).[7]

[6] However, using data on 72 countries over the period 1960-95, Carkovic and Levine (2002) found that FDI did not have an independent effect on growth.

[7] However, excessive levels of social capital can also breed inertia and intolerance, and stifle creativity and innovation (Florida, Cushing, & Gates, 2002; Florida & Gates, 2002).

While social capital is a broad concept, much of the empirical research has concentrated on a few measurable antecedents, such as trust and civic norms. Brehm and Rahn (1997) hypothesised that general trust was influenced both by the levels of interpersonal trust and levels of civic engagement. Interpersonal trust is grounded in a person's psychological characteristics, such as a predisposition towards happiness or satisfaction, as well as life experiences that build or erode trust, such as incidences of poverty or discrimination. Additionally, the quality and quantity of education is likely to improve an individual's level of trust, and to make him or her more tolerant of individual differences. Using data from the US General Social Surveys, Brehm and Rahn studied the two-way effects between confidence in government, civic engagement and interpersonal trust. While civic engagement on its own exerted a small negative influence on general trust, the indirect effect of civic engagement on encouraging interpersonal trust contributed to the strong positive relationship between interpersonal and general trust (confidence in government). They also found that confidence in government exerted a smaller, but still significantly positive, influence on interpersonal trust. As expected, education and income were found to be important determinants of both trust and civic participation.

Using measures of trust and civic norms from the World Values Surveys (see Appendix), Knack and Keefer (1997) found that higher levels of trust and civic norms tended to be associated with a higher GDP per capita growth rate, while associational activity of the kind described by Putnam (2000) was not correlated with economic performance. They also found that trust and norms of cooperation were stronger in countries with effective formal institutions – notably with respect to the protection of private property and the enforcement of contracts - and in countries that are less polarised on the basis of class, race and gender. While they could not establish a relationship between trust and civic norms or membership in civic groups, they did find that trust and civic norms were likely to be stronger in countries with higher incomes and more egalitarian distributions of income.

A positive relationship between social capital and economic growth was also more likely in countries in which institutions were able to constrain the power of the executive, and with higher levels of education. Indeed, Knack and Keefer (1997) argue that trusting societies have stronger incentives to innovate and to accumulate physical capital, and are likely to enjoy higher returns to the accumulation of human capital. They found that a ten percentage point rise in trust corresponds to an increase in growth of almost one percentage point, an effect which is almost equivalent to the effects of a similar increase in education.

3. LINKAGES AND SPILLOVERS

The benefits derived from FDI will depend in part on the motivation for the investment (market seeking, resource seeking, efficiency seeking or strategic asset seeking), as well as the form in which the MNE chooses to exploit its ownership specific assets. Entry by M&A into a competitive industry in another developed economy is likely to have a very different impact than that of a greenfield investment into a developing economy with few indigenous firms. Similarly, entry through a collaborative venture might have different consequences for local learning and indigenous R&D capacity than entry via a wholly-owned subsidiary. Technology licensing, franchising, long-term supplier relationships and strategic alliances all exert a different influence on the local firms in the host economy.

The indirect benefits of FDI, including technological spillovers through labour market exchanges, demonstration effects or reverse engineering, represent unintended technology transfer from the MNE to unaffiliated local firms, and are thus conceptually distinct from other, more organised, forms of technology transfer, such as licensing or training provided by the MNE.[8] In addition, those local firms that are able to form backward or forward linkages with MNEs stand to gain from the pecuniary externalities that are due to the increased demand for the product or service they provide. We can thus identify two distinct kinds of effect on local firms: linkage effects concerning local firms that are in an equity-based or contractual relationship with the MNE, and knowledge spillovers to unaffiliated local firms. We shall discuss these in turn.

a) Linkages

The buyer and producer-driven production networks that have emerged over the past two decades differ in the extent and kind of local linkages they are likely to foster (Gereffi, 1999; Giroud & Mirza, 2006; UNCTAD, 2001:134). Producer driven networks, such as those in automobiles and semiconductors, are more amenable to generating indigenous investment and local linkages to support affiliate production. For example, in the auto industry, while Volvo has reduced the number of suppliers it uses to manufacture its range of trucks and buses, its suppliers in China, Brazil and India and Mexico have received extensive technological assistance to meet quality and performance targets (Ivarsson & Alvstam, 2005). However, specialisation within the MNE network implies that such suppliers are sometimes

[8] Although in the empirical literature the challenges of distinguishing between the deliberate and non-deliberate components of the intermediate inputs that are transferred often means that both types are counted as one in assessing the impact of MNE entry on local firms (Dunning & Lundan, 2008; Giroud & Scott-Kennel, 2006).

in global competition with other members of the network. For example, Barnes and Kaplinsky (2000) have shown that the removal of local purchasing requirements and a significant lowering of tariffs caused the South African automobile assemblers to increasingly substitute imports for local sourcing.

In buyer-driven commodity chains, such as those in apparel or toys, local suppliers might develop into OEM producers, as has happened in Taiwan and Hong Kong. However, the position of such suppliers is largely dependent on the changing tastes of buyers abroad, rather than their own competitive position in the MNE network. In countries with limited ability to upgrade the competencies of local suppliers, such as Sri Lanka, linkage formation, and the emergence of indigenous OEM suppliers, is much less likely to occur (Kelegama & Foley, 1999). However, in some types of export-oriented manufacturing, there is considerable evidence of technology transfer and supplier assistance. There is recent evidence that foreign manufacturing affiliates have engaged in extensive upgrading of human resources in the food and beverage and machine and engineering sectors in Kenya (Gachino, 2006), Malaysia (Rasiah, 2002) and Costa Rica (Monge, 2004).

There is as yet less evidence of the degree to which local firms have benefited from the offshoring of MNE service activities. Nonetheless, there is little reason to suppose *a priori*, that it would be any less in the interest of the MNE to provide training and assistance to the local partner in order to improve the quality of the services they provide. The current wave of the offshoring of business services has certainly been facilitated by the widespread use of standardised software platforms supplied by companies like Oracle and SAP for human resource management, customer relationships and logistics (Dossani & Kenney, 2006). In the future, as higher value added service activities in the medical, legal and financial sector, for example, are likely to become increasingly mobile, the need to ensure quality and consistency is likely to be even more critical, and to require more, rather than less, coordination between the MNE and the local partner (Khanna & Palepu, 2004; Patibandla & Petersen, 2002; Zhou & Xin, 2003).

b) Spillovers

In addition to the local firms that act as suppliers or customers to MNEs, are thus directly linked to them, unaffiliated local firms can benefit from general knowledge spillovers to the local economy. Since such spillovers cannot be measured directly, data on changes in labour productivity, growth and export market share have often been employed as indirect indicators of spillovers.

The empirical literature on productivity spillovers resulting from MNE entry in both developed and developing countries has increased considerably since the 1990s, and several excellent reviews have been published in the last decade (Barba Navaretti & Venables, 2004; Blomström & Kokko, 1998; Lipsey, 2002; Spencer, 2008). The earlier cross-sectional studies on productivity spillovers highlighted the importance of accounting for industry-specific effects due to the tendency of FDI to cluster in the more productive sectors. The recent studies have in turn emphasised the need to use longitudinal data. A meta-study conducted by Görg and Strobl (2001) showed that while the earlier industry or firm-level cross-sectional studies generally yielded positive spillovers, the newer firm- or plant-level panel data studies have tended to yield negative or insignificant results.

In developing countries, studies on productivity spillovers have focused on the role of technology gaps and the absorptive capacity of local firms, as well as any differences between majority and minority owned affiliates. Specifically, it has been hypothesised that majority ownership of foreign affiliates might imply full internalisation of technology markets by MNEs or their affiliates, and consequently few spillovers to local firms, while minority ownership might allow for more productive linkages to be formed with local firms. At the same time, however, the kind of technology transferred to the majority-owned affiliate might be closer to the technological core of the MNE than that transferred to a minority affiliate, which might reduce the likelihood of any spillover of technology.

In one of the seminal studies examining the impact of technology gaps, Kokko et al. (1996) found that in the Uruguayan manufacturing sector, foreign plants' share of the total output of the industry had no overall impact on local productivity. However, when the technology gap was low, the effect of foreign presence was positive, but when it was large, there did not seem to be any spillovers. Differences in labour quality and the use of proprietary technology were important additional determinants of productivity differences for the firms with a small technology gap, but not for those with a large technology gap. Furthermore, the size of the gap did not seem to be related to any particular industry, as plants from nearly all industries appeared in both high and low gap groups, which suggests that it is firm-level factors, like absorptive capacity, which are most likely to influence the extent and content of spillovers.[9]

[9] Takii (2005) found positive productivity spillovers in Indonesia, but these were smaller in industries where a high proportion of MNEs had majority levels of ownership. They were also smaller or even negative in industries where a large technology gap existed between local and foreign firms.

One of the first studies using firm-level panel data was done by Haddad and Harrison (1993) on the manufacturing sector in Morocco in 1985-1989. They found that, on average, foreign firms had a higher total factor productivity than domestic firms, but that their rate of productivity growth was lower. While a foreign presence in the industry lowered the dispersion of productivity levels across domestic firms, there was no significant relationship between such a presence and productivity growth in domestic firms. Furthermore, it appeared that inward direct investment was associated with a one-time increase in domestic firm efficiency. In Venezuela, Aitken and Harrison (1999) found that a foreign equity participation in a joint venture had a positive effect on the productivity of the local venture partner, but this effect was not robust for small firms.

In Lithuania, Smarzynska Javorcik (2004b) found robust evidence that backward linkages within the industry of the MNE affiliate exhibited positive spillovers as a result of increased demand. This was true of both domestic and foreign-owned suppliers, and the effect was not simply a reflection of increased concentration, either in the supplying industry, or in the industry being supplied. When the sample was split between minority and majority owned affiliates, the basic results remained unchanged, but wholly owned affiliates failed to show a spillover effect, as compared to partially owned affiliates.[10]

4. INSTITUTIONAL DISTANCE AND KNOWLEDGE TRANSFER

The economic literature we have discussed thus far suggests that the most likely local firms to benefit from MNE entry are those able to form linkage relationships. Such firms are more likely to posses the requisite absorptive capacity, while the MNE itself has an incentive to facilitate the process of technology transfer. Outside these linkage relationships, productive knowledge may spill over through demonstration effects, reverse engineering and labour market transactions, but the magnitude of these effects is likely to be curtailed by any efforts by the MNE to protect its knowledge, and by the inability of local firms to make use of the inadvertent spillovers.

The international business literature has examined the effects of two additional factors that are likely to influence the extent of both deliberate knowledge transfer and spillovers from the MNE to the local economy. These are the mode of entry, and the cultural and institutional distance between the home and host countries.

[10] Unfortunately in her sample it was not possible to distinguish a greenfield investment from an acquisition.

Whether the MNE prefers to stay at arm's length by exporting (and importing) or selling licenses to serve a foreign market, or whether it prefers to engage in equity modes is dependent on the transaction costs of using the marketplace over the relative costs of using hierarchical organization (Buckley & Casson, 1976; Hennart, 1993). In general, the presence of knowledge-intensive assets, and the need for transaction specific investments favour the use of wholly-owned equity modes over market-based modes. Contractual forms may used either in routine sourcing, or in the case of strategic alliances, in the development of new knowledge. Joint equity ventures will be preferred to contractual arrangements and wholly-owned affiliates when the firm wishes to gain access to complementary knowledge or assets in the host market.[11] Overall, increasing familiarity with a foreign market is expected to lead to increasing resource commitment (Guillén, 2003; Johanson & Vahlne, 1977; Lu, 2002).

One of the issues that has commanded a great deal of attention in this literature is the degree to which joint ventures act as a means for firms to overcome some of the difficulties associated with operating in culturally and institutionally distant markets. To assess the impact of cultural distance, many studies have employed the well-known dimensions of national culture developed by Hofstede (1980), namely collectivism-individualism, masculinity-femininity, uncertainty avoidance and power distance, and the index of psychic distance developed by Kogut and Singh (1988), which is based on these dimensions (see Appendix).

While the local knowledge held by the venture partner may alleviate some of the 'liability of foreignness' of the MNE, it introduces its own complications in knowledge transfer that arise from the need to reconcile the different national and corporate cultures, and possibly conflicting objectives, of the investing firms (Gupta & Govindarajan, 2000; Lane, Salk, & Lyles, 2001; Szulanski, 1996). Such problems are similar to those that arise in acquisitions, although the acquirer has, in theory at least, an opportunity to directly impose a new culture on both parties to the venture.

The empirical results have not been entirely consistent, since cultural distance has sometimes had the predicted negative effect on firm or venture performance, while sometimes it has had no effect, or even a positive effect (Tihanyi, Griffith, & Russell, 2005). Partly this reflects measurement issues concerning how well other factors contributing to success have been controlled for, but in part, it is also likely to reflect some recognized

[11] Of course, sometimes joint venture participation is mandated by the government, as in the case of China.

deficiencies in the measures of culture that have been employed (Dow & Karunaratna, 2006; Harzing, 2004; Shenkar, 2001; Xu & Shenkar, 2002).

There are fewer studies that have assessed the impact of formal institutions on the choice of entry mode, but Delios and Henisz (2000) examined the effects of public and private expropriation hazards in emerging markets.[12] They found that the higher the hazard, the lower the equity share, while experience from prior entry, as well as that of industry, host country or other markets influenced the firms' ability to mitigate these hazards. Another interesting empirical study, which draws explicitly on North's analysis of institutions, and how these affected transaction costs in the transition economies of Central and Eastern Europe, was that presented by Meyer (2001). He found that wholly-owned affiliates were preferred in countries that had advanced furthest in institution building, and in countries with lower geographical distance.

In addition to affecting the volume and composition of FDI, the pervasiveness and degree of arbitrariness of corruption have also been linked to the choice of entry mode of the MNE (Rodriguez, Uhlenbruck, & Eden, 2005; Smarzynska & Wei, 2001). Uhlenbruck et al. (2006) found that MNEs involved in telecommunications projects used short-term contracting and joint ventures to mitigate the impact of corruption. To the extent that MNEs may forego full internalisation because of corruption, this could have adverse effects on the transfer of knowledge and technology to the host country. Weitzel and Berns (2006) found that acquisition targets in countries that are more corrupt also commanded lower premiums, further reducing the benefits to the host country.

Earlier, we suggested that host countries with good institutional quality are more likely to be able to attract investment and to experience positive growth effects from inward FDI. Some studies have also indicated that the effects of FDI may differ depending on its country of origin, since embeddedness (and path dependencies) in the home country institutional structure influences the way in which MNEs organize their international production networks, including influencing their mode of entry.

Here, we combine these two notions to explain how the institutional and cultural *distance* between the home and host countries affects the outcome in terms of economic growth. We contend that for knowledge transfer *and* spillovers to occur – be it through vertical linkages, demonstration effects, or labour migration – close interaction between firms is necessary, and we expect that this interaction is easier, and therefore more frequent and

[12] Public hazards included inconsistency in policy or regulatory regimes, while private hazards included those such as the unintended leakage of technology to a venture partner.

more extensive, between firms and individuals sharing similar cultural and institutional backgrounds.

Specifically, we will argue that local firms in the host country will be able to benefit more from investments from culturally/institutionally close countries because:

1. MNEs from proximate countries will be more likely to set up local linkages with buyers and suppliers due to lower transaction costs (greater trust and lower information asymmetries);
2. Knowledge – especially organizational and managerial knowledge – from culturally/institutionally proximate MNEs is likely to be more appropriate for local circumstances and hence also more valuable (local firms have a higher incentive to acquire that knowledge); and
3. The relative absorptive capacity of local firms is higher for technology and knowledge that bears resemblance to existing practices, which is the case with MNEs from countries with a lower cultural/institutional distance.

While we in general expect a negative relationship between cultural/institutional distance and growth effects of FDI, the relationship may be curvilinear, analogous to the technology gap discussed earlier. When the gap between the home and host country is small, the growth potential may be quite small, since there is little new knowledge for local firms to absorb. However, if the gap is excessively wide, learning may no longer be possible due to insufficient absorptive capacity.

5. DATA AND METHODOLOGY

a) Sample selection and variable definitions

Ideally, one would like to be able to use firm level data to examine the effects of firm heterogeneity, and to complement this with comparative macro data to assess differences between home and host countries. However, in practice micro data is available for a limited number of countries, while comparative macro data is more widely available, also for some of the least developed countries. Consequently, we follow the latter route and employ macro level data to examine the influence of the institutions, cultures and value systems in both home and host countries on the benefits derived from FDI.

To test the hypotheses, data was collected on the annual changes in total inward FDI (FDI) in host economies. Similar data was collected for eleven of the major investor countries worldwide (the US, Japan, Germany, the UK, France, Canada, Italy, Sweden, Denmark,

Finland and the Netherlands) towards each country in the sample. These eleven investor countries account for 82% of global outward FDI stock. FDI was measured as changes in stocks, rather than flows. While this differs from other studies, it better captures (changes in) the role of FDI and foreign MNEs in a host economy, and also better mirrors the growth in capital stock in the production function (Balasubramanyam et al., 1996).

The data on FDI comes from UNCTAD (for total inward FDI as a percentage of GDP), and from the National Statistics Offices or Central Banks (as well as Eurostat) of the eleven outward investors. For Japan, which has very detailed geographically broken down data available for flows but not for stocks, estimates were made for stock breakdown by applying the percentages of individual country shares in the accumulated outflows to the outward stock totals. The comparison of these estimates with the real values for the geographically broken down stock data that were available for a small group of country-periods [(1997-2003, for 25 countries), resulted in a Pearson Correlation of 0.89 ($p<0.001$),] indicating that the estimates are good approximations of the real values.

Data on investment stock by country of origin was available since 1989 for all outward investors, while 2006 was the latest year for which all eleven countries reported the geographical breakdown of their outward stock. Since not all investor countries include the same host countries in their outward investment statistics, only those host countries were included in the sample for which data was available for at least five of the eleven investors for the entire period. On average, data on 8 out of 11 foreign investors was available for each country-year observation in our sample. Financial centres and small island states were excluded from our analysis. This resulted in a sample of 149 countries (of which 125 developing), and a total of 2019 observations for which FDI data is available. Table 1 gives an overview of the countries (and regions) included in the sample.

--Table 1 here--

Although combining FDI data in this manner has some important limitations since the methodologies of data collection are not the same across countries, this dataset still represents the best data available to date. With the exception of Japan, the dataset has exactly the same methodology, data quality (and as far as samples overlap, also the same data) as the OECD Direct Investment Yearbook, which is the only official source of bilateral FDI data. Yet, going back to the original sources of the data ensured a wider developing country coverage

and in some instances, fewer missing values (since national data is more frequently updated) than the OECD dataset.

When examining the relationship between FDI and economic growth, we controlled for all the other factors that are generally included in growth equations. Both the augmented Solow model and endogenous growth models include initial levels of GDP per capita, total investment, and human capital (education) as a minimal set of explanatory variables in cross-country growth regressions (compare e.g. Mankiw et al. (1992) and Romer (1993)). The key difference lies in the role of externalities or spillovers from knowledge goods that endogenous growth theory proposes. In fact, the study of FDI as a driver of economic growth in host countries via technology transfer, diffusion and spillover effects is based on endogenous growth reasoning (Nair-Reichert & Weinhold, 2001). Hence, following Borensztein et al. (1998) and Alfaro et al. (2003), the direct effect of FDI on economic growth is estimated using a model in which growth is dependent upon initial GDP per capita, total investment, and human capital, as well as FDI.

Here, economic growth (gGDP) is measured as the annual percentage growth of GDP, the extent of domestic investment (GFCF) is measured as Gross Capital Formation as a proportion of GDP (expected sign is positive), and the level of initial GDP per capita (logGDP0), which serves as a 'catch-up' variable and captures diminishing returns to capital (expected sign negative), as the log of GDP per capita in 1990 in PPP. Finally, a set of regional dummies was included.

A commonly employed measure of the stock of human capital has been the percentage of secondary school enrolment in 1990 from Barro and Lee (1993). However, to get a better measure of the absorptive capacity of the host economy, particularly in connection with technology intensive investment, we employed the ArCo index developed by Archibugi and Coco (2004). This index combines a schooling variable with seven other indicators of technological capability, including internet penetration, and it covers a notably larger group of developing countries than the Barro and Lee measure.

Our institutional distance measures consist of three different index measures; one measure of the quality of formal institutions, and two measures of informal institutions. The quality of formal institutions was measured using the Governance Matters VII dataset developed by Kaufmann et al. (2008) at the World Bank. The index combines six dimensions of governance: Voice and Accountability, Political Instability and Violence, Government Effectiveness, Regulatory Burden, Rule of Law and Control of Corruption.

The first of the two measures of informal institutions is the cultural distance index developed by Kogut and Singh (1988) that is based on the Hofstede (1980) cultural dimensions data. Since we argue that norms and values are important elements of the heterogeneity between countries, our second measure of informal institutions employs measures of trust and civic norms from the World Values Survey. (Appendix I explains the construction of these indexes in more detail.)

To relate growth to the 'distance' of FDI, we calculated a weighted average measure of institutional distance of FDI as the sum of the percentage share of FDI in total inward investment from country X, times the institutional distance of country X. We correct this for the total share our eleven home countries take in FDI (while they are the largest investors worldwide, they may account for 99% of inward FDI in some countries, but 80% in others), by multiplying total inward FDI by the inverse of the ratio of FDI from these eleven countries. Thus:

$$ID_i = \sum_{x=1}^{11} \left(\frac{FDI_{xi}}{FDI_i} \right) \left(\frac{FDI_i}{\sum_{x=1}^{11} FDI_{xi}} \right) ID_{xi}$$

where ID_i is the weighted average Institutional Distance of FDI into host country *i*;

FDI_{xi} represents the flow of FDI from home country *x* to host country *i*;

FDI_i represents total inward flows into country *i*;

ID_{xi} the Institutional Distance between country *x* and *i*.

b) Estimation

The analysis proceeds in several consecutive steps. As explained above, we starts with a basic growth model that includes the rate of investment, initial GDP per capita, FDI, regional dummies, and indicators for human capital and institutional (governance) quality. The first two models test for the influence of host country absorptive capacity and governance on the economic effects of FDI. The following two models test for the influence of the home country, first by introducing country dummies, and second, by modelling the composition of inward FDI in terms of its cultural or institutional distance between the home and host country.

$$gGDP_{it} = \beta_t + \beta_1 GCF_{it} + \beta_2 GPD0_i + \beta_3 FDI_{it} + \beta_4^{1-7} R_i^{1-7} + \beta_5 AbsCapacity_i + \beta_6 Governance_{it} + \varepsilon_{it}$$

This basic model is then extended in order to examine whether the institutional distance between the home and host country has an influence on the growth effects of FDI:

$$gGDP_{it} = \beta_t + \beta_1 GCF_{it} + \beta_2 GPD0_i + \beta_3 FDI_{it} + \beta_4^{1-7} R_i^{1-7} + \beta_5 ARCO_i + \beta_6 Governance_{it} + \beta_7 DIST_{it} + \beta_8 FDI_{it} \times DIST_{it} + \varepsilon_{it}$$

where DIST is either *Governance, Hofstede or WVS*.

These equations are estimated using all information available in the dataset by using techniques specifically designed to handle panel data. At the same time, it is exactly the combination of data across units and over time that may create additional difficulties in the estimation. In addition to issues related to the structure of error term (heteroskedasticity), especially the potential *endogeneity* of FDI and growth, caused by unobserved (omitted) variables that influence both, is a major potential concern in economic growth research.

Endogeneity would make OLS estimations inconsistent. In particular certain host country characteristics such as trade openness or the quality of institutions, are known not only to cause growth, but also to attract FDI. Our equation includes three important host country characteristics (quality of institutions, trade openness, and level of human capital), which would mean that there may be less reason to suspect any additional unobserved variable that greatly influences FDI and growth and that causes a correlation between FDI and the error term. However, we still test for potential endogeneity using both the Durbin-Wu-Hausman (DWH) test and the Hausman specification test. Essentially, both compare coefficients obtained from OLS (potentially inconsistent) with those obtained via IV regressions (consistent but inefficient), and test whether they differ significantly.

With IV estimations, the selection of instruments for FDI is the main problem. We follow Xu (2000), Borensztein et al. (1998), Alfaro et al. (2004) and De Mello (1999) and select the lagged values of FDI as instruments. Some researchers include other instruments as well, in addition to lagged FDI values. However, our system of equations already includes most of those variables in the primary equation. Therefore, and similar to Xu (2000), we include only the lagged FDI values.

The DWH test indicated that there is little concern for endogeneity ($F_{1,1685}$=1.17, p=0.29). In addition, the Hausman specification test further indicates that it is unlikely that endogeneity is present (Chi^2(11)=9.39, p=0.59). Thirdly, other studies on the FDI-growth relationship (e.g. Borensztein et al. 1998; Alfaro et al. 2001; Fortanier, 2007), though not always formally testing for endogeneity, concluded that the results they obtained with or without IV estimators are qualitatively similar, implying that OLS is not inconsistent and that IV estimation is therefore unnecessary. Finally, estimating the models below using dynamic (Arellano-Bond) GMM estimators led to virtually similar results. Given these arguments, and considering that using IV implies a loss of efficiency in comparison with OLS, the models will be estimated and reported without instrumental variables.

Since the Panel-adjusted Durbin Watson test (for the model without interaction effects specified above) and modified Wald tests (Chi^2(1)=230, p<0.001) the presence of heteroskedasticity, the equations are estimated using GLS with heteroskedasticity-corrected standard errors and time fixed effects.

5. RESULTS

Descriptive statistics

Tables 2 and 3 give the descriptive statistics and the correlation coefficients of the variables included in our sample. Since an initial analysis of the data showed the presence of a few extreme values, we deleted a total 25 observations from the overall dataset. As seen from the descriptive statistics (table 2), all variables are now reasonably normally distributed and do not include outliers. The correlations in table 3 do point at a potential problem of multicollinearity. In particularly the variables ARCO, Governance and logGDP0 are highly correlated (likely because the general level of education of the population, quality of institutions and general level of development are strongly interrelated). In the subsequent regression estimations, we however do not find that the problem of multicollinearity among these variables is so large as to prevent a proper interpretation.

--Tables 2 and 3 here—

A second point to note is that the three measures of distance that we include in our analysis are not highly correlated, indicating that each of these concepts indeed does measure

a different aspect of distance. Finally though, the results do point at a potential problem in the strong negative correlation between the variable governance and FDI-weighted institutional distance (ID). This indicated that with respect to this variable, it may be difficult to determine if we measure the consequences of levels of institutions ('governance') or distances from host to home countries. This problem may however possibly be mitigated by the fact that we are not interested in the growth-consequences of distance as such, but only in the effect of distance on the growth-impact of FDI (i.e., the interaction effect): we find small correlations between FDI and the institutional distance variables or overall levels of governance.

Regression results

The results of our regression analyses are displayed in tables 4 and 5. All models include fixed effects for time and regions, although they are not reported to save space. Models 1 and 2 shows the results for our basic regression equation. All our control variables are strongly significant and with the expected signs; the overall effect of FDI for economic growth is however not significant. Interactions with host-country absorptive capacity and institutional quality (not reported) did however confirm earlier studies in that the effect of FDI is positively dependent upon these variables: only after a certain threshold does FDI contribute to economic growth.

This paper focused on how the distance between host and home country with respect to culture, institutions and values affect the consequences of FDI. On the one hand, we expect that too great a distance would impede spillovers and knowledge transfer, and hence find that there is a negative interaction effect between distance and FDI for economic growth. On the other hand, a large distance may also point at a broader range of learning opportunities and institutional upgrading and hence positively affect the growth consequences of FDI.

Models 3 to 8 in tables 4 and 5 report the empirical results for these interaction effects for three types of distance: cultural (models 3 and 4), institutional (models 5 and 7) and values (models 6 and 8). We report the results for both the entire sample, and for the sample consisting of developing countries only. We find that the growth effects of FDI are not linearly dependent upon the CD of the FDI, neither in the full sample nor in the reduced, developing country only dataset.

--Tables 4 and 5 here--

However, we do find significant results for the interaction effects between ID and VD with FDI. Models 5 and 7 show that while the growth effects of FDI are not linearly dependent upon the ID of the FDI in the overall sample, there is a weakly negative interaction effect in the developing country sample. We find that the smaller the ID, the more positive the effect of FDI, indicating that in developing countries, FDI from institutionally close countries (often, other developing countries) contributes more to economic growth than FDI from distant countries. This resonates with recent findings that firms from emerging markets are more successful in operating in other emerging markets, compared to firms from developed countries. We find a reverse effect for the role of Value Distance in the growth effect of FDI. Models 6 and 8 show that FDI from 'distant' countries are linearly dependent VD of the FDI: the greater the VD, the more positive the effect of FDI.

Robustness checks

To explore the robustness of our findings, we performed several checks on our model – in addition to the estimation for the full and developing country only samples. First, we analyzed if the effect of distance on the growth effects of FDI could be perhaps non-linear. Since we provided theoretical arguments for both a positive and a negative interaction effect, the combined effect of distance may in fact be (inversely) U-shaped. The results of these tests are reported as models 9 to 11 in table 6. We find only some evidence of a non-linear effect of distance on the consequences for FDI for cultural distance – however, when we estimated this same model for the sample of developing countries only, the relationship was insignificant, indicating that the results were mainly driven by the developed countries in our sample.

--Table 6 here--

The second robustness check we performed was by including yet another measure of distance: in this case, Colonial Distance (KD) – a variable calculated in the same way as the other three distance variables, but now to indicate the presence of colonial ties. High values indicate that the inward investment in a particular country originates strongly from former colonizers. Colonial ties are often associated with familiarity with the host country of the foreign investors and can have resulted in similar formal and informal institutional environments (cf. Lundan & Jones, 2001). This implies that knowledge spillovers may occur more easily. The results in table 6 are not significant however, indicating that compared to

the other distance measures, colonial ties are too broad a measure to adequately capture similarity between home and host institutional environments. Colonial ties do not necessarily lead to the transfer of formal and informal institutions. In addition, host country firms may feel negatively about working with investors from former colonisers.

6. DISCUSSION AND CONCLUSIONS

In this paper we explored the FDI-growth relationship at the macro level, paying particular attention to the heterogeneous effects of FDI on growth that may stem from institutional distance between home and host countries. On the one hand, we expect that too great a distance would impede spillovers and knowledge transfer, and hence to find a negative interaction effect between distance and FDI for economic growth. On the other hand, a large distance may also point at a broader range of learning opportunities and institutional upgrading and hence positively affect the growth consequences of FDI.

By examining the characteristics of both home and host countries, and in particular the institutional distance between them, we broaden the scope of existing studies that focused primarily on the role of host country levels of absorptive capacity and good governance. By including a variety of measures of institutional distance, we captured both the effect of formal (governance) and informal (culture, values) institutions. Specifically, we argue that generalized trust and civic norms, and shared culture and formal institutions are likely to reduce the costs of transacting, and thus enable more beneficial interactions to take place.

We tested our hypotheses with a comprehensive dataset using national sources supplemented by Eurostat and OECD of investments of 11 home in 149 host countries for 18 years (1989-2006). We find that while cultural distance does not have an impact on the growth effects of FDI, the institutional and value distance do: the smaller the ID, the more positive the effect of FDI; while at the same time, the greater the VD, the more positive the effect of FDI. This indicates that in developing countries, FDI from institutionally close countries (often, other developing countries) contributes more to economic growth than FDI from distant countries. This resonates with recent findings that firms from emerging markets are more successful in operating in other emerging markets, compared to firms from developed countries. However, why a greater value distance would results in higher spillovers remains more difficult to explain. Perhaps, and similar to the literature on the role of technology gaps in the growth effects of FDI, some extent of differences between home

and host can be good: countries that are on an endogenous growth path can absorb new institutions when the gap is relatively high.

The record indicates that across a wide range of host countries in terms of absorptive capacity and institutional quality, the growth impact of FDI is different. This is hardly surprising, and emphasizes the fact that FDI alone is unlikely to induce economic growth. It may act as a catalyst, but reverse causality is also a real possibility. Countries that have achieved initial levels of economic growth are more likely to be able to attract FDI, and consequently achieve more sustained growth.

Part of our findings may however also be due to some of the limitations of this study: for example, the operationalization of informal institutions based on World Values Survey is done using existing literature but can always be improved. Similarly, while we were able to find significant effects for Institutional Distance despite strong collinearity with the overall level of governance, additional analysis is needed to explore to what extent our results really represent 'distance' and not a mere 'level' of institutions. In addition, while our data is quit comprehensive, the country effects that we find may be industry (or other) effects in disguise. It remains difficult if not impossible though to break bilateral FDI data down to industries for a substantial set of countries.

APPENDIX I: CONSTRUCTION OF THE CULTURE, VALUES AND GOVERNANCE INDEXES

CD: Kogut and Singh (1988) index

Cultural distance (CD x y) between country x and y is calculated as the average of the differences of Hofstede's (1980) country scores adjusted by the variance (vi) of the corresponding dimension:

$$CD\ x\ y = \Sigma\ ((I\ i\ x - Ii\ y)\ 2\ /\ V\ i))\ /\ S$$

where Ii x stands for the index for the ith cultural dimension and country x, Vi is the variance of the index of the ith dimension, the subscript y indicates country y, and S is the number of variables included in the index (four dimensions in the original Hofstede index).

VD: World Values Survey index

The World Values Surveys (WVS) have been conducted five times since 1981, and the latest survey conducted in 2005 consisted of representative national samples of at least 1000 respondents from over 80 countries (http://www.worldvaluessurvey.org/). Since the two earliest surveys covered a much smaller group of countries, we use measures from the 1999-2000 survey, supplemented by measures from the 1995-1997 survey if the former were not available.

We used eight questions from the WVS to calculate three distance measures similar in construction to the Kogut and Singh index above. These are:

1. The key question from the WVS on *interpersonal trust* is the following: Generally speaking, would you say that most people can be trusted, or that you just can't be too careful in dealing with people?
This measure does leave open the extent to which trust is meant to extend beyond the people you know. People in low trust environments are more likely to deal frequently with people they already know, and thus trust for them would primarily reflect trust in the inside group. People in high trust environments are more likely to deal with a variety of people at arm's length, and trust is more likely to refer to situations not conditioned by prior experience.
2. In addition to interpersonal trust, the WVS also includes items that measure *generalized trust* in government and other institutions. Out of the 16 measures available, we selected three for trust in government and one concerning trust in corporations:
a) Confidence in government
b) Confidence in parliament
c) Confidence in civil service
d) Confidence in corporations
The three measures of confidence in government were combined into one item with a Cronbach alpha of .901.
3. The questions on *civic norms* in the WVS ask whether it can always be justified, never be justified or is something in between for the following four issues: claiming government benefits you are not entitled to, avoiding a fare on public transport, cheating on taxes and accepting bribes. Since corruption is already included in the measures of formal institutions, we selected the following three items:
a) Claiming benefits
b) Avoiding transport fare
c) Cheating on taxes
The three measures of civic norms were combined into one item with a Cronbach alpha of .825.

ID: Governance matters index

We used the six dimensions of the Governance Matters VII dataset (Kaufmann et al., 2008) to create an index similar in construction to the Kogut and Singh index above. We use the available data from 1996 to 2006, and use the proceeding year's value for the missing years in the dataset (1997, 1999 and 2001). For the period 1989-1995 we use the earliest available data (1996).

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Table 1 Overview of countries included in the sample

Region	Countries
Western Europe	Austria; Belgium; Denmark; Finland; France; Germany; Greece; Iceland; Ireland
	Italy; Malta; Netherland; Norway; Portugal; Spain; Sweden; Switzerland; United Kingdom
Other Developed	Australia; Canada; Israel; Japan; New Zealand; United States
Central Asia	Azerbaijan; Bhutan; India; Kazakhstan; Kyrgyzstan; Nepal; Pakistan; Uzbekistan
East and Southeast Asia	Bangladesh; Brunei Darussalam; China; Fiji; Hong Kong; Indonesia; Korea, South; Laos; Macao; Malaysia; Maldives; Mongolia; Papua New Guinea; Philippines; Samoa; Singapore; Sri Lanka; Taiwan; Thailand
Eastern Europe	Albania; Armenia; Belarus; Bosnia Herzegovina; Bulgaria; Croatia; Czech Rep.; Estonia; Georgia; Hungary; Latvia; Lithuania; Macedonia; Moldova; Poland; Romania; Russia; Serbia Montenegro; Slovakia; Slovenia; Ukraine
Latin America	Argentina; Belize; Bolivia; Brazil; Cambodia; Chile; Colombia; Costa Rica; Dominican rep.; Ecuador; El Salvador; Guatemala; Guinea; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Trinidad and Tobago; Uruguay; Venezuela
North Africa and Middle East	Algeria; Bahrain; Egypt; Iran; Jordan; Kuwait; Lebanon; Morocco; Oman; Qatar; Saudi Arabia; Syria; Tunisia; Turkey; UAE; Yemen
Sub-Saharan Africa	Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; CAR; Chad; Congo (rep); Côte d'Ivoire; Djibouti; Eritrea; Ethiopia; Gabon; Ghana; Kenya; Lesotho; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Senegal; Seychelles; Sierra Leone; South Africa; Sudan; Swaziland; Tanzania; Zambia; Zimbabwe

Table 2. Descriptive statistics

	N	Mean	Std. Dev.	Min	Max
Ggrowth	2174	3.87	4.19	-18.00	27.00
logGDP0	2142	3.73	0.52	2.60	4.70
d_FDIGDP	2019	0.03	0.07	-0.52	0.59
GFCF	2147	21.62	6.85	3.00	62.00
ARCO	2112	0.31	0.17	0.02	0.73
FDI_w_CD	1238	2.52	1.27	0.32	6.85
FDI_w_ID	2193	2.85	2.32	-2.05	10.54
FDI_w_VD	1220	1.29	1.06	0.16	6.20
Governance	2201	0.08	0.89	-1.78	1.95

Table 3. Correlation coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Ggrowth	1.00							
(2) logGDP0	-0.13 ***	1.00						
(3) d_FDIGDP	-0.02	0.10 ***	1.00					
(4) GFCF	0.23 ***	0.04 **	0.14 ***	1.00				
(5) ARCO	-0.13 ***	0.84 ***	0.08 ***	0.03	1.00			
(6) FDI_w_CD	0.15 ***	-0.38 ***	-0.06 *	0.08 ***	-0.44 ***	1.00		
(7) FDI_w_ID	-0.01	-0.66 ***	-0.08 ***	-0.19 ***	-0.64 ***	0.42 ***	1.00	
(8) FDI_w_VD	0.07 **	-0.54 ***	-0.05	-0.02	-0.43 ***	0.30 ***	0.44 ***	1.00
(9) Governance	-0.04 *	0.75 ***	0.09 ***	0.13 ***	0.77 ***	-0.47 ***	-0.92 ***	-0.44 ***

*** p< 0.01; ** p< 0.05; * p< 0.01

Table 4. Regression results (1)

	(1) Full sample		(2) Full sample		(3) Full sample		(4) Developing	
Constant	6.32	***	5.94	***	6.58	***	9.88	***
	6.72		6.06		4.94		6.04	
GFCF	0.10	***	0.10	***	0.14	***	0.16	***
	9.16		9.03		8.23		7.53	
logGDP0	-1.14	***	-1.08	***	-1.57	***	-1.90	***
	-4.69		-4.32		-4.70		-4.17	
ARCO	-2.21	***	-1.51	**	-1.84	**	-0.20	
	-3.13		-2.10		-2.02		-0.11	
Governance	1.07	***	0.89	***	1.33	***	1.47	***
	7.51		6.33		6.39		5.09	
FDI			-1.32		-1.82		-1.87	
			-1.62		-1.09		-0.49	
CD					0.23	***	0.36	***
					2.85		3.35	
CD*FDI					0.23		0.02	
					0.31		0.02	
N	2028.00		1876		1122		738	
Wald chi2	823.36	***	744.56	***	650.06	***	342.25	***
LL	-5000.51		-4540.4		-2612.451		-1867.73	

*** p < 0.01; ** p< 0.05; * p< 0.10

Heteroskedasticity-corrected z-values below the coefficients. Fixed effects for time and region not reported.

Table 5. Regression results (2)

	(5) Full sample		(6) Full sample		(7) Developing		(8) Developing	
Constant	5.48	***	8.15	***	7.96	***	9.02	***
	5.11		4.33		7.51		4.27	
GFCF	0.10	***	0.16	***	0.11	***	0.20	***
	9.15		9.09		8.37		8.65	
logGDP0	-1.04	***	-1.96	***	-1.15	***	-2.16	***
	-4.07		-4.56		-3.92		-4.22	
ARCO	-1.71	**	-1.07		-1.05		1.17	
	-2.30		-1.21		-0.99		0.57	
Governance	1.06	***	0.94	***	1.46	***	0.81	***
	4.24		4.88		3.89		3.13	
FDI	-0.49		-2.84	**	1.24		-8.00	**
	-0.47		-1.98		0.61		-2.23	
ID	0.08				0.21	**		
	0.95				1.93			
ID*FDI	-0.60				-1.10	*		
	-1.26				-1.64			
VD			0.00				-0.03	
			0.00				-0.20	
VD*FDI			2.46	**			4.30	**
			2.14				2.29	
n	1868		1077		1470		679	
Wald chi2	734.43	***	616.06	***	340.92	***	310.58	***
LL	-4517.97		-2501.86		-3749.74		-1732.34	

*** p < 0.01; ** p< 0.05; * p< 0.10

Heteroskedasticity-corrected z-values below the coefficients. Fixed effects for time and region not reported.

Table 6 Robustness checks

	(9) Full sample		(10) Full sample		(11) Full sample		(12) Full sample		(13) Developing	
Constant	6.33	***	5.56	***	9.81	***	5.93	***	8.59	***
	4.59		4.64		4.84		6.01		8.32	
GFCF	0.14	***	0.10	***	0.16	***	0.10	***	0.10	***
	8.24		9.07		9.34		9.05		8.08	
logGDP0	-1.55	***	-1.05	**8	-2.42	***	-1.09	***	-1.16	***
	-4.57		-3.93		-5.12		-4.31		-3.98	
ARCO	-1.89	**	-1.67	**	-1.55	*	-1.50	**	-0.79	
	-2.06		-2.23		-1.71		-2.07		-0.74	
Governance	1.34	***	1.04	***	1.06	***	0.89	***	0.89	***
	6.44		3.76		5.38		6.31		5.41	
FDI	3.69		-0.57		-2.68		-0.98		-0.79	
	1.12		-0.49		-1.22		-1.10		-0.58	
CD	0.43	**								
	2.16									
CD2	-0.03									
	-1.12									
CD*FDI	-5.33	*								
	-1.82									
CD2*FDI	0.91	**								
	1.97									
ID			0.04							
			0.22							
ID2			0.00							
			0.17							
ID*FDI			-0.44							
			-0.35							
ID2*FDI			-0.04							
			-0.17							
VD					0.49	**				
					2.31					
VD2					-0.10	***				
					-2.58					
VD*FDI					2.30					
					0.68					
VD2*FDI					-0.06					
					-0.06					
KD							0.34		0.17	
							1.10		0.50	
KD*FDI							-2.53		-4.21	
							-0.93		-1.29	
N	1122		1868		1077		1868		1470	
Wald chi2	650.17	***	735.94	***	645.75	***	744.61	***	340.75	***
LL	-2610.424		-4518.36		-2498.74		-4516.72		-3751.35	

*** p < 0.01; ** p< 0.05; * p< 0.10

Heteroskedasticity-corrected z-values below the coefficients. Fixed effects for time and region not reported.