Foreign Direct Investment and Human Development

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Scholars in the area of international business have long been interested in the impact of foreign direct investment (FDI) on host countries (e.g., Caves, 1974). An important body of research on this topic examines whether the presence of FDI in a host country leads to knowledge and productivity spillovers to local firms. Interestingly, while some studies in this "FDI spillover" stream of research have found positive effects of inward FDI on the productivity of domestic firms (e.g., Blomström, 1986; Javorcik, 2004; Kokko et al., 1996), others have documented negative effects (Aitken & Harrison, 1999; Chen et al., 2011; Haddad & Harrison, 1993; Lee & Wie, 2015). This body of research has grown substantially over the past decades, both through more nuanced analyses of moderating conditions (e.g., Du et al., 2014; Eapen, 2012; Jude, 2016; Papaioannou & Dimelis, 2019) and meta-analyses that summarize the overall spillover effect of inward FDI on host-country firms (Bruno & Cipollina, 2018; Gorg & Strobl, 2001; Luo et al., 2019; Meyer, 2004; Meyer & Sinani, 2009).

Despite the extensive literature on FDI effects, however, studies in this stream of work collectively describe only a narrow sliver of the effect inward FDI exerts on host countries. Their focus is almost solely on the economic consequences—specifically, productivity benefits (or costs)—for domestic firms. Broader effects of FDI on human development have received comparatively less attention (Kolk, 2016). Human development comprises the education, health, and income opportunities available to people in a country (United Nations Development Program [UNDP], 2015b). It is fundamental to human well-being and constitutes the bedrock of freedom and opportunity for any human population (Streeten, 1999; UNDP, 2015b). Further, over 689 million poor people today live in inadequate and extremely poor human development conditions (World Bank, 2020). Despite the undeniable importance of human development for host-country populations, it is

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reasonable to say that the international business literature has largely bypassed the issue of how FDI impacts human development in host countries.

Fortunately, some work in the development economics literature has attended to this issue. These studies have generally found a positive association between FDI and human development (Arcelus et al., 2005; Lehnert et al., 2013; Reiter & Steensma, 2010; Sharma & Gani, 2004; Stiglitz, 2006). There are, however, also findings suggestive of negative consequences, for example, on wages in the host country (Chen et al., 2011; Lee & Wie, 2015; Pan-Long, 1995). In general, however, studies in this stream have tended to be one-sided—they highlight either benefits or costs of FDI, giving short shrift to the "net (positive and negative) effect" of FDI on human development.

Taken together, in order to better understand the effect of FDI on host countries, two areas of further progress deserve good attention. First, FDI spillover research ought to go beyond its focus on how FDI affects domestic firms' productivity; the broader effect of FDI on human development in host countries is too important to ignore. Second, a more balanced approach to the effect of FDI on human development—one that simultaneously considers both positive and negative effects—is necessary. Such a conceptualization will help nudge current theoretical frameworks on the human development impact of FDI to a closer reflection of reality.

Our goal in this chapter is to contribute in both these ways. We explore the effect of inward FDI on human development while integrating its positive and negative effects. *First*, we suggest that while FDI can indeed enhance human development in a host country, it can also exert a negative effect by worsening income inequality (Basu & Guariglia, 2007; Chen et al., 2011; Chintrakarn et al., 2012; Choi, 2006; Herzer et al., 2014; Johansson & Liu, 2020; Lee & Wie, 2015; Pan-Long, 1995) and economic insecurity (Bachmann et al., 2014; Dill & Jirjahn, 2016; Scheve & Slaughter, 2004). These, in turn, lead to unequal access to capabilities that underpin human development (Coelli, 2011; Melamed & Samman, 2013). *Second*, given the opposing positive and negative effects of FDI on human development, we propose that the net effect of FDI is likely curvilinear. Inward FDI, as just suggested, can be a positive force for human development; but any such benefit will likely also taper off at higher levels of FDI. Further, alongside these diminishing marginal benefits, FDI increases income inequality and economic insecurity in the host country. This negative effect, eventually, will outweigh the positive benefits of FDI. The resulting pattern of the relationship between FDI and human development, we hence suggest, will be inverted U-shaped. This formulation encompasses the full range of effects that FDI exerts on human development. *Third*, we examine how ambient institutional settings in the host country play a role in conditioning the effect of FDI on human development. This section of our chapter proposes institutional environment as an important contingency factor in the relationship between FDI and human development.

To test our hypotheses, we collected data from multiple sources on FDI, human development, and other macroeconomic variables and merged them together. Our resulting dataset, as we describe in more detail later, is at the country-year level and

consists of 139 countries over the period 2000–2014.[1] Employing fixed-effects panel data methods, we find that inward FDI does have an inverted U-shaped relationship with human development in a host country. This result is robust to more precise methods of testing inverted U-shaped relationships (cf. Haans et al., 2016) and to alternative measurement and model specifications. Furthermore, consistent with our core narrative, we also find evidence that the inverted U-shaped effect of FDI on human development is more pronounced in countries with weak institutions. Taken together, these multiple lines of evidence lend credibility to our core argument for how FDI impacts human development.

This chapter makes three core contributions to knowledge. *First*, as mentioned before, the FDI spillover literature in international business has primarily focused on the productivity impact of inward FDI on domestic firms. Our study broadens this focus to encompass the consequences of FDI for social well-being (indicated by human development) in the host country. *Second*, our research adds to development economics scholars' analysis of human development. We simultaneously consider the benefits and costs of FDI for human development and provide a framework that integrates both positive and negative effects into a *curvilinear* relationship between the two. We also examine the conditioning effect of ambient institutional settings in the host country. Our *third* contribution is an empirical one. Teasing out the effect of FDI on human development is fraught with identification challenges. While we cannot claim to have eliminated all such challenges, we take the approach of seeking out multiple sources of confirmation for our core thesis. We use current best practice methods for testing curvilinear relationships, test additional hypotheses (on the impact of host-country institutions) that should also be true given our core storyline, and test the sensitivity of our results to measurement and model specifications. Empirically, therefore, we rest our findings not on a single analysis but on multiple lines of confirmation. This multipronged search for evidence helps progress empirical identification of the innately complex effect of FDI on human development.[2]

[1] The mechanisms we propose and test are on the relationship between FDI and HDI. As such, what matters more for our core argument is not so much the recency of the dataset than whether we have sufficient cross-country variation in both variables to allow us to correctly estimate the relationship. Furthermore, given the mechanisms underlying the relationship between FDI and HDI are time period-insensitive, they should extrapolate very well to more recent time periods as well.

[2] As we do acknowledge again at the end of this chapter, empirically identifying the causal effect of FDI on human development from secondary data is extremely challenging. While we pursue multiple tests of our core argument in our dataset (and find confirmation), we acknowledge that our empirical approach is not foolproof. Notwithstanding this caveat, our conceptual arguments and multiple lines of empirical confirmation point in the same direction. Collectively, this confers reasonable plausibility to our findings.

1 Past Literature

1.1 FDI Spillovers and Host-Country Productivity

The literature on FDI spillovers has mainly focused on knowledge spillovers from foreign to domestic firms in a host country and on subsequent productivity improvements for the latter (De Mello, 1999; Eapen, 2013; Gorg & Strobl, 2001; Javorcik, 2004; Meyer & Sinani, 2009). The key premise in this literature is that foreign firms in a host country are sources of useful knowledge and conduits for the transfer of this knowledge to domestic firms (Buckley et al., 2002; Jindra et al., 2009; Jude, 2016; Liu, 2008). The presence of collocated foreign firms gives local firms the opportunity to learn by interacting with and observing the advanced technologies of foreign firms. This, in turn, could allow domestic firms to upgrade their technology, upskill their employees, and acquire new knowledge (Buckley et al., 2002; Kemeny, 2010; Perri & Peruffo, 2016). A recent review of knowledge spillover has developed an analytical framework that integrates both micro- and macro-level antecedents of spillovers. This review analyzed three different constructs—magnitude, speed, and scope—and highlights the importance of internal and external networks as well as role of social and political context in activating the flow of knowledge (Perri & Peruffo, 2016).

FDI spillovers are not limited only to flows of technical knowledge. There have been studies on spillovers on managerial knowledge from foreign to domestic firms, inclusive of both tacit and explicit elements of management practices of foreign MNEs (Fu, 2012). FDI spillovers also emanate from foreign MNEs' research and development (R&D) and export-focused activities in the host country (Hejazi & Safarian, 1999; Jefferson et al., 2006; Wei & Liu, 2006). Spillover studies have also emphasized how FDI can amplify host-country competition which, in turn, can help improve domestic firm efficiency, innovation, and productivity (Marcin, 2008). A substantial number of studies have conceptually and empirically explored these themes and analyzed how FDI inflows into a host country lead to improvements in efficiency, innovation, and productivity for domestic firms (Caves, 1974; Eapen, 2012; Fu, 2012; Javorcik, 2004; Jefferson et al., 2006; Liu et al., 2000; Marcin, 2008). Furthermore, studies have also investigated contingency factors such as host countries' institutions and technical absorptive capacity to explain variations observed across firms and contexts in spillover effects (Du et al., 2014; Sánchez-Sellero et al., 2014; Wang et al., 2013).

Another group of studies has highlighted the importance of carefully treating the heterogeneity in FDI that could arise from its motivation, nature, tenure, and origin (Aitken & Harrison, 1999; De Mello, 1999; Zhang et al., 2014). For example, Driffield and Love (2007) have observed that FDI motivation predicted its various effects on host countries' domestic productivity. One way to classify FDI motivation is into technology "exploiting" and "sourcing." Technology-exploiting FDI includes the class of foreign firms that possess an "ownership" advantage—usually, superior technology or capital stock quality—and exploit this ownership advantage in the host country (Driffield & Love, 2007). Technology-sourcing FDI refers to the class

of foreign firms that bring in limited technology to the host country but, instead, is motivated by the need to acquire knowledge from the host country. Driffield and Love's (2007) results suggest that technology-exploiting FDI has positive spillovers on the host country's productivity, while technology-sourcing FDI leads to no productivity spillovers. Similarly, Ha and Giroud (2015) address whether competence-creating or competence-exploiting activities by foreign MNEs influence FDI spillovers on host country's firms and find that competence-creating activities of MNEs generate positive technology spillovers. Exploring further types of heterogeneity in FDI, Zhang et al. (2010) examine the diversity of FDI country origins on domestic firms' productivity and find that diversity can facilitate FDI spillovers by increasing the variety of technology and management practices that foreign firms introduce into the host country.

Several meta-analytic studies have served to synthesize findings in this literature. Gorg and Strobl (2001), through a large meta-analysis, conclude that there is a positive relationship between FDI and productivity spillovers (Gorg & Strobl, 2001). Meyer and Sinani (2009) apply competitive dynamics theory in their meta-analysis and observe a curvilinear relationship between FDI spillovers and the host country's development level in terms of income, institutional framework, and human capital. Although studies in this stream of work have become increasingly sophisticated, it remains true that scholars have primarily studied FDI's effect on domestic firms and left its broader social consequences comparatively unexplored.

1.2 FDI and Host-Country Socioeconomic Development

A related set of studies have also examined the effects of foreign firms on macroeconomic features of host countries. These features have included its economic development (Borensztein et al., 1998; Cipollina et al., 2012; Yamin & Sinkovics, 2009), human capital, human rights, and child labor (Buller & McEvoy, 1999; Kolk & Van Tulder, 2004; Neumayer & de Soysa, 2005; Wettstein et al., 2019). Some studies in this stream have also examined whether FDI enhances human development (Arcelus et al., 2005**;** Lehnert et al., 2013**;** Oetzel & Doh, 2009**;** Reiter & Steensma, 2010**;** Sharma & Gani, 2004). The general conclusion from this collection of studies is that FDI is positively correlated with human development.

This is true even in more nuanced analyses that consider interaction effects between FDI inflows and host-country FDI policy. Sharma and Gani (2004) have found a positive correlation between FDI and human development for middle- and low-income countries. Other studies have attempted to better understand this relationship by examining mediation and moderation effects. Lehnert et al. (2013) conclude that the positive relationship between FDI and human development is mediated by the quality of national governance. Similarly, Reiter and Steensma (2010) have found this relationship to be moderated by FDI policy and strongest when FDI policy restricts foreign investors from entering certain economic sectors. This study has also observed this relationship to be moderated by host-country corruption and strongest when corruption is low. Similarly, Stiglitz (2006) has

documented a positive relationship between FDI and human development, with the strength of that relationship depending on the government's capability to regulate the right balance between itself and the markets.

However, there is also evidence for negative consequences of FDI inflows into a country. Within the FDI spillover literature, for example, Aitken and Harrison (1999) find that foreign firms negatively affect domestic firms' productivity. They point to increased competition and crowding out as responsible mechanisms. Further, scholars in development economics have raised concerns over wage inequality (Aitken et al., 1996; Aitken & Harrison, 1999; Feenstra & Hanson, 1997; Figini & Gorg, 2011; Wu & Hsu, 2012) and economic insecurity effects (Bachmann et al., 2014; Dill & Jirjahn, 2016; Scheve & Slaughter, 2004) of FDI. They argue that higher levels of FDI can raise wages for skilled workers, but not for low-skilled workers (Figini & Gorg, 2011; Herzer et al., 2014), and worsen labor market volatility and insecurity (Scheve & Slaughter, 2004).

1.3 The Role of Human Development

While the economic effects of globalization and foreign capital have received ample attention from scholars, their effects on people have been, relatively speaking, overlooked (Streeten, 1999). That is not to say that there has been complete disregard for the issue. Some recent studies have indeed examined the relationship between different predictors of human development. For example, Sharma and Gani (2004) have studied the influence of FDI on socioeconomic progress (which includes human development) and concluded that a positive correlation exists between FDI and human development. In addition, this study also found that FDI has a higher positive effect on human development in middle-income countries (Sharma & Gani, 2004).

There have also been studies that examine the relationship between human development and economic growth. Naturally, economic growth provides resources that facilitate sustained human development improvement (Ranis et al., 2000). Accordingly, studies have found a strong positive relationship between economic growth and human development. In particular, Ranis et al. (2000) highlight the importance of government expenditure on health and education, which in turn boosts human development. Studies have also identified a reverse link between human development and economic growth, whereby increased human development increases national income (Ranis et al., 2000). So, all considered, there is a mutual reinforcing upward spiral exists between economic growth and human development—high levels of economic growth lead to high levels of human development (Ranis et al., 2000) and vice versa. Similarly, Anand and Sen (2000) have observed a positive relationship between economic sustainability and human development.

Nevertheless, FDI effects are not always positive. Studies have increasingly demonstrated that FDI has negative effects (Haddad & Harrison, 1993); for example, Aitken and Harrison (1999) have found that foreign firms negatively affect domestic firms' productivity and suggested that increasing competition in the domestic market

causes a crowding-out effect for domestic firms (Aitken & Harrison, 1999). Further, economic scholars have progressively raised concerns over growing inequality. While FDI may offer benefits to the economy in which they locate, it is unclear whether the majority of individuals will benefit to the same extent (Figini & Gorg, 2011). FDI has been found to have a strong positive relationship with wage inequality (Aitken et al., 1996; Aitken & Harrison, 1999; Feenstra & Hanson, 1997; Figini & Gorg, 2011). These studies have examined FDI and its association with higher wages for skilled workers, concluding that FDI affects the income and employments prospects of less skilled workers (Figini & Gorg, 2011; Herzer et al., 2014). This generates a rising demand for skilled workers, causing their wages to rise and thus causing income and wage inequality to deteriorate (Aitken et al., 1996). In addition, the extent to which FDI causes inequality may depend on FDI motivation and the host country's capabilities to absorb the effects. FDI focused on high technology may flow more toward economies with high educational levels, further contributing to the development of human capital in these economies (Basu & Guariglia, 2007; Blomström et al., 2003). Conversely, economies with low levels of initial human capital may attract asset-exploiting FDI, which plays a smaller role in the future development of these economies (Blomström et al., 2003).

The positive and negative potential effects of inward FDI, thus, have certainly featured in past work. But their treatment has largely been fragmented with positive and negative effects emphasized in different pockets of the literature. Moreover, the net effect (both positive and negative) of FDI on human development has not received much attention. Given these gaps, there is value in a conceptual framework that simultaneously models both the positive and negative consequences of FDI for human development. This is what our research aims to do.

2 FDI and Human Development

2.1 Benefits of FDI for Human Development

Inward foreign direct investment can potentially support human development in a host country through three mechanisms: (i) greater employment and income, (ii) greater revenue received by the government, and (iii) foreign firms' technology diffusion. Such growth drivers collectively contribute to the host country's greater national economic competitiveness and human development (Borensztein et al., 1998**;** Ranis et al., 2000).

FDI increases demand for employees, often expanding labor force participation in the host country (Feenstra & Hanson, 1997). This increased demand, in turn, results in higher income for workers. Although income is potentially spent on a range of different things, it also trickles down to factors associated with human development (e.g., education and health (Ranis et al., 2000)). Indeed, higher income has been positively related to more years spent at school and a higher average education threshold (Brückner & Gradstein, 2013). Higher income also enables members of the host country's population to invest in their own and their family's education. This

also enables individuals to undertake higher level skilled employment or to launch their own companies (Spender, 2013). Higher income is also associated with health improvements (Bloom & Canning, 2000), as individuals tend to spend a larger share of their income on healthcare and improving their living standards. As a result, human development improves (Acemoglu et al., 2013).

A second potential effect of FDI is increased government tax revenues. This could allow governments to increase investment and public spending in the host country (Basu et al., 2003) and allocate resources to activities that contribute to human development. These could include investments in the host country's social infrastructure to improve education, health, subsistence, and support for the unemployed (Ranis et al., 2000).

The third channel through which inward FDI can improve human development in a host country is technology diffusion. MNEs, with a broader network of subsidiaries spanning the globe, often possess firm-specific advantages in a variety of business areas such as strategy, innovation, technology, or management practices. These valuable practices can spill over to domestic firms and, as a result, enhance their efficiency and technology (Blomström & Kokko, 1998; Eapen & Krishnan, 2019; Jindra et al., 2009; Kemeny, 2010; Liu, 2008). This technology diffusion, in turn, can be an important conduit of economic development and growth (Borensztein et al., 1998), translate into better healthcare and education access (Blomström et al., 2003; Borensztein et al., 1998; Walz, 1997), and, eventually, result in improvements in human development (Ranis et al., 2000).

The positive effects of FDI on human development, however, are unlikely to monotonically increase. Early gains in human development are comparatively easier to attain than later ones. That is, getting some quick runs on the board when current human development standards are low is relatively easier. Some improvements in basic education, health, and economic infrastructure will usually suffice. However, as human development standards of a population improve, achieving even further improvements becomes relatively harder. As an example, providing basic education and healthcare facilities when they do not already exist is comparatively easier than providing higher-end versions of such facilities (e.g., specialist healthcare and world-class education) that improve on what already exists. By this token, even if FDI exerts a positive effect on human development in a host country (as we describe above), the magnitude of this effect is likely greater at low levels of preexisting human development in a host country. Improvements are still possible at high levels of preexisting human development, but the same quantum of improvement will likely come only from much greater FDI inflows. The marginal improvement in human development from FDI, therefore, is likely nonlinear; it tapers off with additional inward FDI into a host country.

2.2 Costs of FDI for Human Development

While FDI brings benefits to the host country, evidence also suggests that these benefits are not always evenly distributed within the country; some individuals

benefit considerably more than others from such opportunities (Acosta et al., 2011; Figini & Gorg, 2011). In addition, FDI can create labor market volatility that results in economic insecurity in workers (Scheve & Slaughter, 2004). Although foreign firms may require workers of all types, excessive demand for those with advanced technical or managerial capabilities may mean that these workers are paid disproportionately more (Johansson & Liu, 2020). For example, highly skilled and educated professionals (who may be in short supply) are more likely to reap the most benefit. This, in turn, widens the skilled-unskilled income gap and deepens income inequality (Chen et al., 2011; Gopinath & Chen, 2003; Herzer et al., 2014; Lee & Wie, 2015; Wu & Hsu, 2012).

In parallel, FDI also raises economic insecurity among workers (Bachmann et al., 2014;Dill & Jirjahn, 2016 ; Scheve & Slaughter, 2004). Given the fact that foreign-owned firms can shift production to other locations and substitute their labor consumption in response to wage fluctuations, their presence is usually correlated with higher labor demand elasticities (Andrews et al., 2012; Fabbri et al., 2003) and increased labor market volatility. This volatility manifests itself in higher turnover rate among multinational firms (Fabbri et al., 2003) and a substitution of irregular jobs in place of regular ones (Kim & Lee, 2015). As a net result of high elasticities of labor demand, high turnover, and fewer regular jobs in multinational firms, workers in these firms experience a higher degree of economic insecurity (Dill & Jirjahn, 2016; Scheve & Slaughter, 2004).

Both income inequality and economic insecurity are consequential for human development. For example, high-income earners gain better access to healthcare, while those at the lower end of the income distribution are constrained in their access (Subramanian & Kawachi, 2004; Wilkinson & Pickett, 2006). Educational attainment is also negatively affected (Mayer, 2000; Organization for Economic Cooperation and Development, 2014; Stewart & Samman, 2014). The gap between low- and high-income earners results in a variation between their children's education levels, with low-income individuals facing limited capacity to invest in education (Haveman & Smeeding, 2006; Ostry et al., 2014). Additionally, income inequality escalates the cost of high-quality education—it elevates the cost of attending college far more for low-income students than for high-income students (Haveman & Smeeding, 2006). And most disconcerting, income inequality has a contagion effect in that it is transferred to subsequent generations (Melamed & Samman, 2013). It has particularly negative consequences for poorer children's educational outcomes and college graduation rates (Haveman & Smeeding, 2006).

Economic insecurity has similar negative effects on human development. Economically insecure workers experience a significant increase in stress levels, anxiety, and minor psychiatric disorders (Ferrie et al., 2002; Rugulies et al., 2008). As a result, economic insecurity has been found to be related to poor well-being and life satisfaction (Silla et al., 2009). There is also a negative relationship between economic insecurity and education. Parental job losses during children's high school have a significant detrimental effect on their subsequent enrollments in university and community college (Coelli, 2011). Job losses result in poorer mental health,

lower adolescent academic performance, and falling class attendance, especially among students from low-income families (Ananat et al., 2017).

It is reasonable also to expect that the human development costs of FDI increase at an accelerating rate. At higher levels of inward FDI, competition intensifies among (the now many) foreign firms in the host country for high-skilled workers. Income is driven even higher for those few people, further worsening income inequality between low- and high-skilled workers in the host country. Heightened competition for labor between foreign firms also accelerates the economic insecurity effect, with more jobs now being at risk of substitution or relocation by foreign firms. The negative human development consequences we outlined above are therefore amplified by a greater multiple when there are high levels of FDI in the country. In sum, the human development cost of inward FDI increases but an increasing rate, with the level of FDI in the host country.

2.3 The "Net" Effect of FDI on Human Development

It is clear from the above discussion that inward FDI can exert both positive and negative forces on human development in a host country. However, while the positive effects increase at a decreasing rate with inward FDI, the negative effects are likely to increase at an increasing rate. Taking together latent effects of this nature, it is likely that the net effect of FDI on human development will be curvilinear (Haans et al., 2016). At low levels of inward FDI, the marginal benefit from an increase in FDI for human development overshadows its marginal cost. The net effect of FDI on human development will thus be positive. But as inward FDI increase into the country, not only do the positive effects of FDI taper off, but its negative consequences also rapidly increase. Eventually, at higher levels of FDI, the marginal human development benefit from an increment in FDI will trail behind its marginal cost. And with every additional influx of FDI generating greater marginal costs than benefits, the relationship between FDI and human development will likely turn negative.

Taken together, the overall effect of FDI on human development will not be uniform but vary with existing levels of inward FDI already in the host country. At low levels of inward FDI, the net effect of FDI on human development will be positive, and at high levels of inward FDI, it will be negative. Figure 1 visually depicts the essence of this argument.

Hypothesis 1 (H1) There will be an inverted U-shaped relationship between inward FDI in a host country and its level of human development.

Hypothesis 1 embodies the core proposition in this chapter. However, as part of our empirical identification strategy, we develop additional hypotheses that also derive from this core argument. Our intuition is that empirical support for multiple hypotheses that are derivative of the same core thesis offers confidence in the above curvilinear link between FDI and human development.

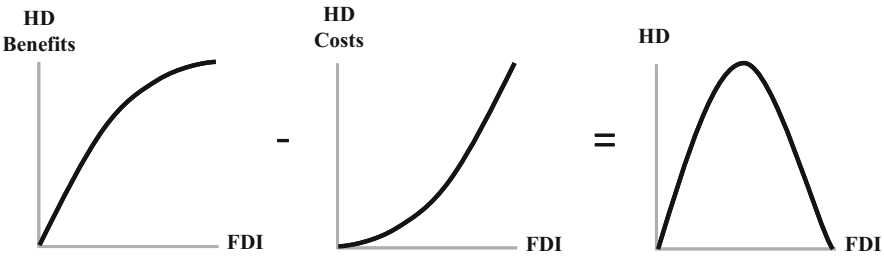

Fig. 1 Graphical representation of H1 on the effect of FDI on human development (HD). Source: figure created by authors

3 FDI, Host-Country Institutions, and Human Development

If FDI exerts a curvilinear effect on human development in a host country, what ambient institutional conditions might strengthen or weaken this effect? We suggest that the curvilinear relationship we propose between FDI and human development will flex with the quality of institutions in the host country. Any inverted U effect will be flatter when the latent benefits and costs accumulate slowly and steeper when the latent forces accumulate at a faster rate (Haans et al., 2016). The rate at which benefits and costs of FDI for human development increase, we argue below, varies with the quality of institutions in the host country. As such, the curvilinear effect we propose (in Hypothesis 1) will steepen for host countries with weak institutions but flatten for those with strong institutions.

Institutions effectively define accepted business practices (i.e., the "rules of the game") in commerce and industry (Mair et al., 2012). Institutions are crucial to shaping and supporting the markets in which domestic and foreign firms interact (Campbell & Lindberg, 1990; De Soto, 2000; Greif, 2006; Sen, 1999). At the organizational level, institutions create and manage the existing rules that determine MNEs' actions and strategies in the host country (DiMaggio & Powell, 1983). At an aggregate level, institutions play an important role in economic growth and the norms and accepted business practices that determine economic development (Webb et al., 2009). Therefore, it is important to understand and analyze how institutions channel FDI and, in turn, the expectations of MNEs and the business practices they implement (Banerjee & Duflo, 2011). Yet there is considerable variation across different economies regarding the extent to which institutions might be present and strong or absent and weak. Strong institutions connote an environment in which domestic players are already established and have secure regulations for businesses in the private sector and the transparent public sector. In this environment, new players become a part of an existing system and, as they are thus less likely to shape these markets, are more likely to comply with existing business rules and transparent regulations. Conversely, weak or absent institutions create an environment in which economies experience lack of knowledge and opportunities and relatively uncontrolled market systems (Crow, 2001; Mair et al., 2012; Rodrik, 2008), as a result of

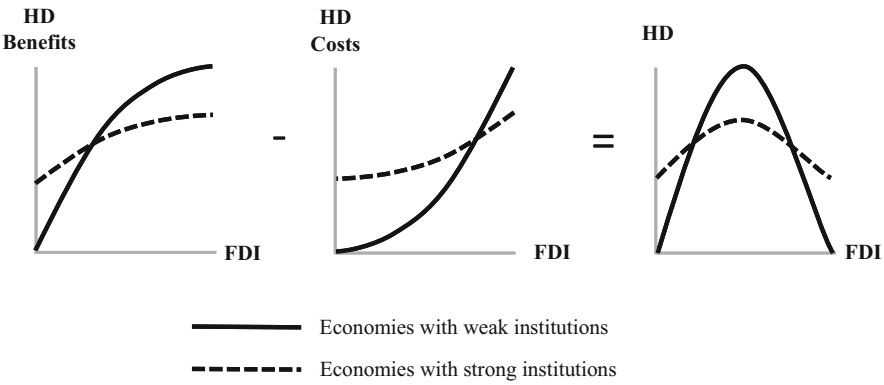

Fig. 2 Graphical representation of H2 and H3 on the moderated effects of FDI on human development (HD). Source*:* figure created by authors

their limited clarity or transparency of expected business practices and regulations. Thus, new entrants have far greater latitude to be active participants that serve as agents of change (Kwok & Tadesse, 2006).

When public and private sector institutions are well developed in a host country, there is relatively less room for the human development benefits of FDI to make a difference. Governments in these countries have already made progress on education and healthcare and typically display good governance. Given this progress that strong institutions have already brought about, the human development benefits of FDI will likely be at the margins. In low-quality host-country institutional settings, on the contrary, there is ample room for FDI to play a prominent role (e.g., D'Amelio et al., 2016). Given the vacuum in institutional mechanisms that uplift human development, the human development benefits of FDI assume prominence. (As an analogy, turning on a lamp makes a negligible difference in a room that has good ambient lighting but significantly brightens up a room with poor lighting. The lamp in the analogy denotes FDI and ambient lighting the host country's institutions). The human development benefit from a given increment in inward FDI, hence, will be weaker in host countries with strong private and public institutions and more pronounced in those with weak institutions. We represent this in Fig. 2 with a benefit curve that is steeper for countries with weak institutions and flatter for those with strong institutions.

The same is true when it comes to the cost side of FDI for human development. We contend that strong host-country institutions play a buffering role and shield the local population from negative consequences. More precisely, strong local institutions help soften the inequality and insecurity-driven effects of FDI on human development. The income gap between skilled and unskilled workers and economic insecurity can be remedied with government benefits allocated to those in need. In contrast, in countries with weak local institutions, there is likely only limited buffer that institutions can offer to the economically marginalized. (To continue with the earlier lamp analogy, turning on a lamp can also have a negative "blinding effect"

on peoples' eyes. This blinding effect will be stronger if ambient lighting is poor and buffered against when ambient lighting is good). The human development cost from a given increase in FDI in a host country (just as in the case of its benefits) will hence be more pronounced when ambient institutions are weak and softer when host-country institutions are strong. This is represented in Fig. 2 as a steeper cost curve for countries with weak institutions and a flatter curve for those with strong institutions.

In our empirical exercise, we consider both private and public forms of institutions. We use the term "business sophistication" to represent the quality of institutions, practices, and business environment in the private sector. This includes a country's overall business networks and the quality of individual firms' operations and strategies (World Economic Forum, 2015). And for public sector institutions, we use "transparency" as a proxy for public sector institutions and regulations. Transparency refers to the extent to which government employees are held accountable for administrative decisions and their use of funds and resources (World Bank, 2016). We treat economies with low levels of business sophistication and transparency to have weak local (private and public) institutions. In contrast, economies with high business sophistication and high transparency possess strong local institutions.

In summary, if our core argument in Hypothesis 1 is true, then we should also expect—based on our arguments in this section—the human development benefits and costs of FDI to be more pronounced (i.e., steeper) for countries with weak public and private institutions. This translates to a steeper inverted U effect for these countries. Figure 2 represents this prediction. Given our proxies for private and public institutions (business sophistication and transparency, respectively), we propose:

Hypothesis 2 (H2) The inverted U-shaped relationship between FDI and human development will be steeper for countries with low business sophistication and flatter in countries with high business sophistication.

Hypothesis 3 (H3) The inverted U-shaped relationship between FDI and human development will be steeper in countries with a low transparency and flatter in countries with a high transparency.

4 Data and Methodology

4.1 Data and Sample

Our empirical approach aims to explore the extent to which cross-country variations in human development can be attributed to differences in foreign direct investment across countries. Since the measure for our dependent variable—human development—is available only at the country-year level, we are forced to situate our empirical work at the "country-year" level of analysis. We constructed a database comprising variables from various sources. Measures of human development (the dependent variable) and its components (education index, health index, and income

per capita) came from the UNDP (2015a), measures of foreign investment (the independent variable) came from the United Nations Conference on Trade and Development [UNCTAD] (2016), and measures of institutional quality (business sophistication and transparency index) came from the World Economic Forum (2016) and the World Bank's World Development Indicators (World Bank, 2016). Finally, we also collected data on control variables from the International Monetary Fund (2016). We merged data from these different sources and arrived at an unbalanced country-year panel that includes 139 countries over 15 years (2000–2014).

4.2 Measures

Dependent Variable We used a country's score on the UNDP Human Development Index (HDI) as our indicator of its level of human development. This index incorporates three important aspects of human well-being: a long and healthy life, knowledge, and a decent standard of living (UNDP, 2015b). A long and healthy life is captured by life expectancy at birth, the ability to acquire knowledge is measured by mean years of schooling and expected years of schooling, and the ability to achieve a decent standard of living is represented using by gross national income (GNI) per capita. HDI is an unweighted average of these three dimensions (UNDP, 2015b) and, thereby, reflects *both* economic and social dimensions of human development.

Independent Variables Our key independent variable, FDI, was measured using FDI stock in a host country at its book value (historical cost). This measure represents the dollar value of inward investments at the time it was made. We used a cumulative measure of FDI inflows (which allows us to explore the cumulative, long-term, effect of FDI). As part of our robustness tests, we also used variants of this measure: FDI inflows, inward FDI stock as a percentage of GDP (inward FDI stock/GDP), and FDI inflows distinguished by source countries of origin.

We used country scores on the "business sophistication" and "transparency" indices published by the World Economic Forum to represent the quality of private and public institutions in a host country (World Economic Forum, 2016). Business sophistication represents two linked elements: the quality of a country's overall business networks and the quality of individual firms' operations and strategies (World Economic Forum, 2015). The quality of business networks and supporting industries reflects the quantity and quality of local suppliers in a country and the extent of their interaction. The measure represents sophisticated and modern business processes across the country's business sectors (World Economic Forum, 2015). The index takes the form of a 6-point scale, with 1 representing low business sophistication and 6 denoting high sophistication.

The World Bank's Transparency index incorporates ratings on three dimensions of public sector governance. The first is executives' accountability to overseeing institutions and public sector employees' accountability and performance. The

second is civil society's access to information about public affairs. And the third is the extent to which the state is captured by narrow vested interests. The index takes the form of a 6-point scale, with 1 representing low transparency and 6 denoting high transparency. The transparency index is part of the Country Policy and Institutional Assessment database of the World Bank (2016).[3]

Control Variables Foreign aid is considered an important source of foreign funding for human development and economic growth (Bourguignon & Platteau, 2017; Gomanee et al., 2005; Kosack & Tobin, 2006). The UNDP (2015b) has pointed out that foreign donors significantly contribute to achieving greater human development. Hence, we included this as a control variable in our models. The data we used represent the net bilateral aid flows from Development Assistance Committee (DAC) donors. In other words, these amounts are the net disbursements of official development assistance or official aid from DAC members. Net disbursements are gross payments of grants and loans minus repayments of principal on earlier loans. This data came from the World Bank's World Development Indicators (World Bank, 2016).

Some countries have increasingly relaxed trade barriers and allowed more inward FDI as part of their growing interconnectivity with the global market. Trade openness could affect human development via two different paths. First, countries begin exporting more, boosting economic growth and income. Second, trading allows countries to gain knowledge, expertise, and technology (Cooray et al., 2014). We controlled for trade openness with a measure of each country's total imports plus total exports (Figini & Gorg, 2011). This data came from the World Development Indicators (World Bank, 2016) and was included in our models as a percentage of GDP (in order to take into account country size).

Government savings have also been considered a determinant of human development; countries with higher savings tend to have better human and economic performance (Caceres & Caceres, 2015). In particular, the importance of savings has been demonstrated in a comparison made by Dayal-Ghulati and Thimann (1997) between South East Asia and Latin America, revealing that regions with greater savings improved their development. In our study, we hence controlled for gross national savings (as a percentage of GDP). We sourced this data from the International Monetary Database (International Monetary Fund, 2016).

Gross national expenditure is the amount of money the government and the population expend in the host country. Governments' spending on social infrastructure (e.g., hospitals, schools) facilitates better systems for, and access to, basic human needs, thus improving human development. Second, increased expenditure from the population means that people have more opportunities to earn and spend on

[3]The data files from the World Economic Forum and The World Bank contain missing values on both "business sophistication" and "transparency" variables. In our examination, there is a systematic pattern in the missing observations whereby values on both business sophistication and transparency variables are missing predominantly for high-income countries. We discuss the possible implications of this in our "robustness checks" section later in the paper.

education to develop their capabilities (Kottaridi & Stengos, 2010). The data represent the sum of household final consumption expenditure, general government final consumption expenditure, and gross capital formation. This construct was measured in US dollars, and the data were extracted from the World Development Indicators (World Bank, 2016).

Finally, GDP has been shown to lead to better human development (Ranis et al., 2000). The variable we use represents GDP at purchasers' prices and is the sum of gross value added by all resident producers in the economy plus any product taxes less any subsidies not included in the products' value. It was calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. The data were sourced from the World Development Indicators and expressed in US dollars. Dollar figures for GDP were converted from domestic currencies using 2005 official exchange rates (World Bank, 2016).

4.3 Methodology

To test our hypotheses, we used ordinary least squares (OLS) estimation with fixed effects. We tested for the relative benefit of fixed versus random effects using the Hausman test and, based on this, chose to employ a fixed-effects model. The advantage of using fixed effects is that it accounts for time-invariant unobserved heterogeneity across countries. After all, countries may not only differ in terms of their systematic societal characteristics but also feature varying growth paths because of prolonged differences in technological progress (Binder & Georgiadis, 2010). Generally, in panel data analysis, the fixed-effects model assumes that each country differs in its intercept term (Ranjan & Agrawal, 2011). We also used a lagged structure across the model to allow for a better test of the causal relationship. Our main set of analyses is based on estimations of the following equation:

$$\mathrm{HDI}_{it} = \beta_0 + \beta_1 \mathrm{Inward\ FDI}_{it-1} + \beta_2 (\mathrm{Inward\ FDI}_{it-1})^2 + \mathrm{Controls}_{it-1} + \alpha_i + u_{it-1.}$$

In the above, subscripts *i* and *t* are country and year identifiers, α_i denotes country fixed effects, and $u_{it\text{-}1}$ is the country-year specific error term. Based on H1, we expect the coefficient of inward FDI (β_1) to be positive and significant and the coefficient of inward FDI squared (β_2) to be negative and significant. These would indicate an inverted U-shaped relationship between inward FDI and human development. To test H2, we estimate an equation of the form:

$$\begin{aligned}\mathrm{HDI}_{it} = {} & \beta_0 + \beta_1 \mathrm{Inward\ FDI}_{it-1} + \beta_2\ (\mathrm{Inward\ FDI}_{it-1})^2 + \beta_3 \mathrm{Bus.Sophistication}_{it-1} \\ & + \beta_4 \mathrm{Inward\ FDI}_{it-1} {}^{*} \mathrm{Bus.Sophistication}_{it-1} \\ & + \beta_5\ (\mathrm{Inward\ FDI}_{it-1})^{2*} \mathrm{Bus.Sophistication}_{it-1} + \mathrm{Controls}_{it-1} + \alpha_i + u_{it-1.}\end{aligned}$$

Given H2 predicts that the inverted U-shaped effect of FDI on human development will be flatter at high levels of business sophistication in the host country, we

expect β_5 in the above equation to be positive. This is because Haans et al. (2016: 1187) suggest that "...testing for flattening or steepening is equivalent to testing whether [the coefficient of the interaction term between the moderator and the quadratic term of the main variable] is significant. A flattening occurs for inverted U-shaped relationships when [this coefficient] is positive... Conversely, a steepening occurs for inverted U-shaped relationships when [this coefficient] is negative." Similarly, to test H3, we estimated the following equation and take a positive β_8 as confirmation for our prediction in H3.

$$\begin{aligned} HDI_{it} = {} & \beta_0 + \beta_1 \text{Inward FDI}_{it-1} + \beta_2 \left(\text{Inward FDI}_{it-1}\right)^2 + \beta_6 \text{Transparency}_{it-1} \\ & + \beta_7 \text{ Inward FDI}_{it-1}{}^{*}\text{Transparency}_{it-1} \\ & + \beta_8 \left(\text{Inward FDI}_{it-1}\right)^{2*} \text{Transparency}_{it-1} + \text{Controls}_{it-1} + \alpha_i + u_{it-1} \end{aligned}$$

After estimating the above equations, we also followed the three-step procedure recommended by Haans et al. (2016) to accurately test inverted U-shaped relationships. Haans et al. (2016) present three criteria that need to be met for a precise test of a U-shaped relationship. First, the coefficient for inward FDI (β_1) needs to be positive and significant, while the coefficient of its squared term (β_2) is negative and significant. Second, the slope of our estimated inverted U-shaped curve needs to be sufficiently steep at both low and high values of FDI. We tested for this by taking two points at low and high ends of our FDI variable (FDI_L and FDI_H) and examining the slope of the estimated curve at both these points. We calculated the slope of the curve at the lowest point of FDI (i.e., at FDI_L) using the expression $Slope_{FDIL} = \beta_1 + 2\beta_2 FDI_L$ and, that at the highest value of FDI (i.e., at FDI_H) using $Slope_{FDIH} = \beta_1 + 2\beta_2 FDI_H$. Finally we calculated the turning point using the following equation $-\beta_1/2\beta_2$. As we report below, all three criteria for a more precise verification of an inverted U-shaped effect were satisfied in our analyses.

Furthermore, in robustness tests, we accounted for possible path dependency in human development. We employed dynamic panel data estimation using general methods of moments (GMM). Dynamic panel data GMM models extend the OLS fixed-effects model by including lagged values of the dependent variable.

5 Results

5.1 Main Results

Table 1 reports summary statistics and correlations for the variables we use in our analyses. The correlations between some variables are high, indicating that multicollinearity might be a problem. Examining variance inflation factors confirmed that the variables GDP and government expenditure are collinear. While we still include these variables in our main analyses, we also ran additional analyses that excluded the collinear variable government expenditure. The results provided support for an inverted U-shaped relationship between inward FDI and human

Table 1 Descriptive statistics and correlations

				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Mean	Standard deviation	Human development	Inward FDI stock	Business soph.	Transparency	Foreign aid	Trade openness	Gov. savings	Gov. expenditure	GDP
(1)	*Human development*	0.54	0.10	1.00	–	–	–	–	–	–	–	–
(2)	*Inward FDI stock*	1.33	3.40	0.14	1.00	–	–	–	–	–	–	–
(3)	*Business sophistication*	3.49	0.39	0.11	0.57	1.00	–	–	–	–	–	–
(4)	*Transparency*	2.90	0.51	0.10	0.21	0.09	1.00	–	–	–	–	–
(5)	*Foreign aid*	0.08	0.09	−0.14	0.35	0.29	0.07	1.00	–	–	–	–
(6)	*Trade openness*	77.94	34.93	0.39	−0.07	−0.18	0.03	−0.18	1.00	–	–	–
(7)	*Government savings*	20.04	11.31	0.32	0.30	0.17	0.35	0.13	0.18	1.00	–	–
(8)	*Government expenditure*	6.75	23.33	0.08	0.94	0.56	0.22	0.26	−0.18	0.25	1.00	–
(9)	*Gross Domestic Product (GDP)*	6.44	22.12	0.08	0.94	0.57	0.21	0.27	−0.18	0.26	0.99	1.00

Notes: Examining variance inflation factors suggested potential multicollinearity due to the inclusion of the variables government expenditure and GDP. As a precaution, thus, we ran all our analyses with and without government expenditure and our empirical results remained the same
Source: Table compiled by authors

development; so our core findings are robust to the inclusion (or exclusion) of this potentially problematic variable.

Table 2 reports our main results on the effect of inward FDI stock on human development. Model 1 includes only control variables, while model 2 includes FDI and its squared term to test our hypothesis of an inverted U-shaped effect. Models 3 and 4 include variables to test interaction effects, i.e., how the main inverted U-shaped FDI effect varies with the quality of host country institutions. As reported in model 2, we find a main effect of FDI that is positive and significant and a squared effect that is negative and significant. This offers preliminary confirmation for Hypothesis 1.

As mentioned above, we also conducted the three-step procedure suggested by Haans et al. (2016) to test the inverted U-shaped relationship between FDI and human development. First, as we have seen in model 2 in Table 2, the main effects of inward FDI stock and inward FDI stock squared coefficients are statistically significant and of the expected sign. Second, as we report in Table 3 (model 1), slope of our estimated inverted U-shaped curve is positive and significant at low levels of FDI ($\beta = 0.005$, $p < 0.001$). Also, the slope is negative and significant at high levels of FDI ($\beta = -0.004$, $p < 0.001$). This satisfies the second criterion in Haans et al.'s test. Third, the turning point of the inverted U-shaped curve is located well within the range of our FDI variable. Taken together, these results provide further evidence in support of an inverted U-shaped relationship between FDI and human development.

Our results also indicate that countries with low business sophistication exhibit a steeper inverted U-shaped curve between FDI and human development, while those with high business sophistication exhibit a flatter curve (Hypothesis 2). The coefficient of the interaction term between inward FDI stock squared and business sophistication in model 3 of Table 2 is positive and significant. As per Haans et al.'s (2016) directive, this suggests a flattening of the inverted U-shaped curve when business sophistication in the host country is high. These results suggest support for Hypothesis 2.

We also find in model 4 of Table 2 that the coefficient of the interaction term between inward FDI stock squared and transparency is positive and significant. Using Haans et al.'s interpretation, this suggests that countries with low transparency exhibit a steeper inverted U-shaped relationship between FDI and human development. Conversely, countries with high transparency displayed a flatter relationship. This finding renders support for Hypothesis 3.

5.2 Additional Analyses

We conducted several additional tests to assess the robustness of our results to different measurement and model specifications. As the contribution of our work is centered on the inverted U-shaped effect of FDI on HDI, we focused our robustness tests on validating this aspect of our analysis.

The Human Development Index comprises of a country's scores on three different dimensions—education, health, and income. We first examined whether our

Table 2 Fixed-effects analysis: main and moderated effects of FDI on human development

Variables	Model 1	Model 2	Model 3	Model 4
Main effects				
Inward FDI stock		0.005***	0.019***	0.109***
		(0.000)	(0.003)	(0.018)
Inward FDI stock squared		−0.000***	−0.000**	−0.011***
		(0.000)	(0.000)	(0.003)
Institution effects				
Business sophistication			0.024***	
			(0.004)	
Inward FDI stock x bus sophistication			−0.004***	
			(0.001)	
Inward FDI stock sq x bus sophistication			0.000**	
			(0.000)	
Transparency				0.012**
				(0.004)
Inward FDI stock x transparency				−0.028***
				(0.006)
Inward FDI stock sq x transparency				0.003***
				(0.001)
Controls				
Foreign aid	0.126***	0.066***	0.019*	0.022
	(0.027)	(0.015)	(0.009)	(0.013)
Trade openness	0.001***	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Government savings	0.001***	0.001***	−0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Government expenditure	0.005***	0.000	0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.002)
GDP	−0.003***	−0.000	0.000	0.004
	(0.001)	(0.001)	(0.001)	(0.002)
Constant	0.513***	0.574***	0.532***	0.453***
	(0.007)	(0.005)	(0.015)	(0.014)
Observations	1040	916	512	351
Country no.	131	130	82	60
Fixed effects	Incl.	Incl.	Incl.	Incl.

Notes*:* (a) *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Standard errors in parentheses. (b) All independent and control variables were included with a 1-year lag. (c) The sample is an unbalanced panel data that includes up to 139 countries over a period of 14 years which explains the different number of observations in each model. (d) We ran variance inflation factors and confirmed potential collinearity between GDP and government expenditure. Therefore, we ran additional analyses that excluded the variable government expenditure. Our core findings are robust to the inclusion (or exclusion) of this potentially problematic variable

Source*:* Table compiled by authors

Table 3 Testing for the existence of an inverted U-shaped relationship (Haans et al., 2016)

	Model 1	Model 2	Model 3
Slope:			
Inward FDI stock			
Slope at lowest point	0.005***	0.019***	0.109***
	(11.58)	(5.99)	(5.944)
Slope at the highest point	−0.004***	−0.021*	−0.378***
	(−7.131)	(−2.145)	(−3.298)
Data range			
Inward FDI stock			
Extremum point	48.354	39.253	5.076
95% confidence interval	[43.261–54.195]	[29.752–73.977]	[3.591–8.599]
Lowest point	0.000	0.000	0.000
Highest point	83.288	83.288	22.655
Appropriate inverted U test:	7.13***	2.15*	3.3***

Notes*:* (a) *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. (b) Model (1) in this table is based on estimated coefficients for inward FDI stock and its squared term from model 2 in Table 2. Models (2) and (3) in this table are based on estimated coefficients for the two variables from models 3 and 4, respectively, in Table 2. (c) t-values are in parentheses
Source*:* Table compiled by authors

hypothesized inverted U-shaped effect holds even if we look at the effect of FDI on each of these individual components. The results are in Table 4. The coefficients for FDI and its squared term in models 1, 2, and 3 confirm an inverted-U effect (as in our main set of results) even when we look at components of the HDI index and not the aggregated index itself.

Second, we tested the sensitivity of our results to alternative measures of FDI. Our main results are based on a stock measure of FDI. In this set of robustness tests, we replaced this measure with FDI inflows and FDI stock as a percentage of GDP (FDI stock/GDP). Further, since we treated FDI from all sources are equal in our main analyses, we also explored whether the source of origin of FDI would make a difference in our hypothesized effects. In particular, we distinguished between FDI from developed and developing economies. The results are presented in Table 5. We find that the inverted U-shaped effect is confirmed irrespective of the way we measure inward FDI. As models 1 and 2 show, the main effects of FDI inflows and FDI stock/GDP are positive and statistically significant ($\beta = 0.026$, $p < 0.001$; $\beta = 0.002$, $p < 0.001$), while the effects of FDI inflows squared and FDI stock/GDP squared are negative and statistically significant ($\beta = -0.003$, $p < 0.001$; $\beta = -0.000$, $p < 0.001$). Equally, as models 3 and 4 show, the inverted-U effect persists for both FDI from developed and developing countries, albeit with a stronger effect in the case of the former. The results of these robustness tests are largely immune to whether or not we also include business sophistication or transparency in our models.

Third, since there could be path dependencies by which HDI in a given year is partly dependent on its values in the previous year, we sought to account for this in

Table 4 Robustness test—nonlinear effects of FDI on dimensions of human development

	Model 1	Model 2	Model 3
	Education index	Health index	GNI per capita
Main effects			
Inward FDI stock	0.010***	0.004***	368.147***
	(0.001)	(0.001)	(26.684)
Inward FDI stock sq	−0.000***	−0.000***	−3.348***
	(0.000)	(0.000)	(0.289)
Controls			
Foreign aid	0.294***	0.059**	579.7
	(0.055)	(0.019)	(874.932)
Trade openness	0.001***	0.000**	−15.436***
	(0.000)	(0.000)	(3.107)
Government savings	0.001**	0.000*	43.175***
	(0.000)	(0.000)	(7.188)
Government expenditure	−0.002	0.000	−51.695
	(0.002)	(0.001)	(39.336)
GDP	0.002	0.000	57.757
	(0.002)	(0.001)	(34.299)
Constant	0.456***	0.681***	7797.103***
	(0.011)	(0.006)	(277.764)
Observations	623	913	939
Country no.	115	137	137
Fixed effects	Incl.	Incl.	Incl.

Notes: (a) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (b) All independent and control variables were included with a 1-year lag
Source: Table compiled by authors

our analyses. Including a lagged value of HDI in our models, however, necessitates the use of dynamic panel data models. We used GMM system with lagged independent variables—with up to 3-year lags—as instruments (Arellano & Bond, 1991). We also included year dummies as a regressor. The results are presented in Table 6. We find that the inverted U-shaped effect is confirmed as model 1 shows the main effect of inward FDI stock is positively and statistically significant ($\beta = 0.001$, $p < 0.05$), while the effect of inward FDI stock squared is negative and statistically significant ($\beta = -0.000$, $p < 0.05$).

When applying GMM models, there are two post-estimation tests that determine the validity of a model. These tests are (i) the Hansen test to determine whether the instruments are correctly specified and (ii) the Arellano-Bond to test for no second-order correlation [AR(2)]. As reported in Table 6, the values we obtain for both these post-estimation tests imply no concerns about the validity of our instruments or serial correlation.

Finally, we closely examined the drop in sample size in models 3 and 4 in Table 2 where we include interaction terms with business sophistication and transparency.

Table 5 Robustness test—nonlinear effects of FDI (measured as inflows, inward FDI stock/GDP, inward FDI stock from developed and developing economies, respectively) on human development

	Model 1	Model 2	Model 3	Model 4
Main effects				
FDI inflows	0.026***			
	(0.004)			
FDI inflows squared	−0.003***			
	(0.000)			
Inward FDI stock/GDP		0.002***		
		(0.000)		
Inward FDI stock /GDP squared		−0.000***		
		(0.000)		
Inward FDI stock from developed economies			0.006***	
			(0.001)	
Inward FDI stock sq from developed economies			−0.000***	
			(0.000)	
Inward FDI stock by developing economies				0.002*
				(0.001)
Inward FDI stock sq by developing economies				−0.000***
				(0.000)
Controls				
Foreign aid	0.069***	0.063***	0.031**	0.104***
	(0.016)	(0.015)	(0.011)	(0.022)
Trade openness	0.000*	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Government savings	0.000**	0.001***	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Government expenditure	−0.000	0.002***	0.001*	0.002***
	(0.001)	(0.001)	(0.001)	(0.000)
GDP	0.001	−0.001**	−0.001	−0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Constant	0.577***	0.544***	0.614***	0.606***
	(0.005)	(0.006)	(0.006)	(0.006)
Observations	904	915	570	584
Country no.	128	129	119	120
Fixed effects	Incl.	Incl.	Incl.	Incl.

Notes: (a) *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. (b) All independent and control variables were included with a 1-year lag

Source: Table compiled by authors

Table 6 Robustness test—generalized method of moments (GMM) of non-linear main effects of FDI on human development

	Model 1
Dependent variable	
Human development $_{t-1}$	0.867***
	(0.048)
Independent variables	
Inward FDI stock	0.001*
	(0.001)
Inward FDI stock sq	−0.000*
	(0.000)
Controls	
Foreign aid	0.016
	(0.019)
Trade openness	0.000
	(0.000)
Government savings	−0.000
	(0.000)
Government expenditure	0.000
	(0.000)
GDP	−0.000
	(0.000)
Constant	0.088**
	(0.011)
Observations	613
Country no.	93
Number of instruments	35
Arellano-Bond test for second-order serial correlation AR(2)	
Z	–0.03
Pr > *z*	0.973
Hansen test of overidentifying restrictions	
Chi2	31.83
Prob > *chi2*	0.131

Notes*:* (a) *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Standard errors in parentheses. (b) Model (1) in this table refers to the dynamic panel model on the inverted U-shaped relationship between Inward FDI stock and human development. (c) The instruments that have been included in this dynamic model are all the independent variables and controls lagged 1 to 3. (d) We used GMM system. We control for year effects as dynamic data models requires their inclusion
Source*:* Table compiled by authors

The reason sample size drops in those models, as we alluded to earlier, is due to missing values on our "business sophistication" and "transparency" variables. As the first step in our investigation into this, we confirmed that values that were missing our sample were also missing in the source data. In other words, the missing observations were not due to any data transformations we employed in our analyses but, rather, missing at source in the files we obtained from the World Economic

Forum (2016) and World Bank (2016). As our next step, we examined whether there is any systematic pattern in our missing data. Unfortunately, there is. Values on both business sophistication and transparency variables are missing predominantly for high-income countries. Armed with this information, and as the third step in our investigation, we considered the potential effect of this on our results. There is surely a restricted range of values for business sophistication and transparency that we use in our analyses. High-income countries are also likely to have high values on business sophistication and transparency. As such, our analyses in models 3 and 4 are based on a limited range of values for both moderator variables. Does this bias our findings? We suggest that the limited range of values available for our analyses only renders our moderator tests conservative. If our moderator hypotheses are correct, they will easily show through in a dataset with the full range of values for our moderator variables. Not having the full range of values sets the bar high for us to find any support for our moderator hypotheses. The pattern in our missing data works against us finding support for our moderator hypotheses. We interpret this to mean that (while it would have been ideal to have a dataset with no missing values) the drop in sample size in models 3 and 4 is likely a benign problem. The drop arose due to values on our moderator variables being missing in the official source files (and not just in our sample) and biases our analyses against us finding support for our moderator hypotheses. Our tests for hypotheses 2 and 3 are, therefore, more conservative than usual.

6 Discussion

This research in this chapter was motivated by the need to better understand how FDI affects human development. This matters as human development reflects the well-being and breadth of choices and opportunities available to the population in a country. As noted earlier, prior research has primarily studied FDI's effect on economic growth, domestic productivity, and knowledge spillovers. While these studies have been crucial to understand the economic effects of FDI on host countries, our work extends scholarly analysis to its social effects as well. Moreover, to our knowledge, our work is novel in terms of integrating the potential positive and negative effects of FDI on human development into a curvilinear conceptualization.

Our discussion and empirical observations in this chapter present important findings. First, our theory and empirics suggest that FDI has an inverted U-shaped relationship with human development. At modest levels of FDI, it assists with human development. Yet, as the level of FDI increases in a host country, not only do the benefits for human development taper off, but negative effects also prominently manifest themselves. Thus, FDI might improve human development through positive impacts on the host country's economic growth and income; but, eventually, that improvement might not be reflected in individuals' lives and development since FDI also increases income inequality.

A second key finding to emerge from our discussion and empirical tests is that the positive and negative effects of FDI for human development depend on the quality of

private and public institutions in the host country. We exploited the variation across countries in their institutional quality to examine how private and public institutions affect the relationship between FDI and human development. Our results show that countries with weak institutions experience a steeper inverted U-shaped curve between FDI and human development. In other words, these economies are more likely to experience the benefits that enhance human development, as well as the higher human development costs that come with too much FDI. Conversely, countries with high-quality institutions have a flatter inverted U-shaped curve. They experience moderate benefits and costs from FDI for human development. Existing good governance and mature institutions in these countries not only renders the positive effects of FDI redundant but also buffers against its negative consequences.

6.1 Reverse Causality: Does FDI Follow HDI Instead?

A legitimate concern to consider is that our results, contrary to our assertions, merely reflect the phenomenon of FDI seeking out host locations on the basis of human development. In other words, rather than FDI influencing human development in a host country, our results could instead be the result of human development attracting or dissuading FDI investments in the host country. While this reverse causality appears to be a plausible alternative explanation, there are two reasons that strengthen our confidence in our argument.

First, if human development is indeed influencing the level of FDI in a host country, it is likely that inward FDI will be relatively high in contexts of both high and low human development. Countries with high human development, by virtue of their high disposable incomes of consumers, will attract "market-seeking" FDI. Countries with low human development too, by virtue of low wages and low-cost production bases, will attract "resource-seeking" inward FDI. The net effect of FDI chasing human development locations, hence, will likely be a U-shaped—and not inverted U-shaped—relationship between the two. Market-seeing FDI will be disproportionately attracted to high human development locations and resource-seeking FDI to low human development locations. Our theory instead proposes an inverted U-shaped relationship between inward FDI and human development. Our prediction, therefore, is incompatible with a logic based on the reverse influence of human development on inward FDI. If our arguments too had led to a U-shaped hypothesis, then the reverse causal logic would have been a viable alternative explanation.

Second, our argument in this paper that inward FDI influences human development yielded both a main effect hypothesis and two interaction effect hypotheses. Our empirical results are consistent with these. If reverse causality logic is to be a viable alternative explanation, it should explain not only our main effect finding but also our interaction effects. Our main effect result (of an inverted U), as we explain above, is not consistent with the argument that human development determines the levels of inward FDI in a country (which would be a U-shaped effect). But additionally, there are two other interaction effect predictions in our work that are also

consistent with our argument that FDI has an effect on human development. If the reverse argument that FDI flows to locations with certain levels of human development is true, logically, that effect should be amplified by the host country's business sophistication and transparency. Market-seeking and resource-seeking FDI should find it easier to enter desirable locations when local business conditions are sophisticated and government interactions are transparent. Yet, we find the opposite. We find empirically that business sophistication and transparency weaken our (inverted U-shaped) relationship between FDI and human development.

In sum, the threat of reverse causality being a viable alternative explanation for our results is weak. The predictions that emerge from a reverse causality story are not only contrary to the predictions from our narrative (that the direction of causality is from FDI to human development) but are also inconsistent with the results we find.

6.2 Policy Implications

Our findings in this chapter carry important implications for policymakers. Our key result is that FDI will be likely to boost human development in host countries yet also weaken their economies via associated costs such as inequality and economic insecurity. As such, the first core implication of our work for policymakers is that they need be cautious in their approach to FDI (Luo et al., 2019). At the very least, it is important to be alert to monitoring the resulting benefits and costs for human development that arise from welcoming FDI into the country. Hoping for a magic bullet—i.e., for FDI to continually deliver positive gains—is likely wishful thinking.

Second and relatedly, policymakers may need to pay particular attention to those sections of the population that are likely to be negatively affected by FDI. On the basis of our arguments around the economic inequality and insecurity effects of FDI, these sections are likely to be unskilled or casual workers. These groups disproportionately bear the burden of the economic costs of FDI. Accordingly, policymakers should endeavor to provide social safety nets, labor retraining, and reskilling in order to reduce FDI costs to human development.

Third, our study also emphasizes the critical importance of the ambient institutional context. In economies with weak institutions, MNEs are likely to contribute toward human development. At the same time, however, these economies are also most exposed to the income inequality consequences that come with higher levels of FDI. The key lesson from this for policymakers is that effort should be expended on local institution-building in parallel to increasing inflows of FDI. In other words, there is a need for strong local institutions to buffer a host country's populace from the potential human development costs of "too much" FDI.

Fourth, our findings also provide suggestions for policymakers on how to manage FDI inflows in a way that maximizes its benefits to human development. A call to unconditionally accelerate inward FDI into the host country may not always be the best approach; the related human development cost of FDI needs to be borne in mind. A moderate amount of FDI (i.e., around the inflection point of the inverted

U-shaped curve) is likely where maximum human development benefits can be realized. Additional inward FDI will most likely result in human development reductions, unless local institutions can be strengthened to buffer against these reductions. Part of these institutional development initiatives could include policymakers redistributing the social benefits of FDI to those vulnerable to inequality and job insecurity and creating more equal opportunities for those in need by leveraging government taxation of FDI. Taken together, our results also speak to ongoing debates around the gains and pains from globalization. When both the benefits and costs of FDI on a host economy are simultaneously considered, the prescription would be that globalization can be beneficial to an extent. To prolong these benefits in a host economy, ambient institutions need to be strong enough to shield vulnerable sections of the population from being economically displaced.

7 Limitations and Future Research

As with any empirical study, ours too has limitations. The limitations of this study arise primarily from the data used in our analysis. First, since the Human Development Index is available only at the country level, we restricted our analysis to the country-year level. Finer levels of analyses (e.g., the region, or city level) were not feasible. Second, we have not fully distinguished between the different types of inward FDI into a country. The differing nature of FDI may have an effect on human development. For instance, asset-seeking and asset-exploiting types of FDI may generate demand for different pools of skilled and unskilled labor. This, in turn, may interfere with the mechanisms we have proposed. Studies that are able to distinguish the effects of different types of FDI (e.g., based on entry modes, whether FDI is largely asset or technology-seeking or asset or technology-exploiting, etc.) might provide a more nuanced understanding of the human development effects of FDI.

In addition, while we argue above that the restricted range of values in our data on "business sophistication" and "transparency" variables only render our hypotheses tests to be more stringent than usual, it would be useful for future research to explore other possible proxies for institutional quality in the host country. Corroborative evidence to ours that uses alternative measures (that do not suffer from missing data like ours) will be useful.

Finally, we acknowledge that empirically identifying the effect of FDI on human development is a challenging task. Nonetheless, we have presented in this paper a collection of material to investigate the relationship—i.e., our conceptual reasoning for an inverted U-shaped effect (that is amplified by weak institutions), our empirical evidence that corroborates these predictions, and the resilience of our results to a variety of alternative measurement and model specifications. These collectively suggest that there are human development benefits and costs from inward FDI in a host country that likely have the "net effect" that is inverted U-shape.

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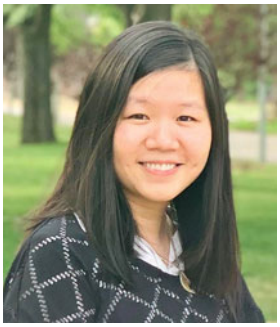

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