The effect of FDI on domestic entrepreneurship: the case of greenfield investment and cross-border M&A activities

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Abstract

Purpose – The paper examines the impact of foreign direct investment (FDI), either greenfield investment or cross-border mergers and acquisitions (M&As), on domestic entrepreneurship.

Design/methodology/approach – This paper uses a panel dataset of 104 countries over ten years from 2006 to 2015 and multiple econometric techniques to control for potential endogeneity bias.

Findings – FDI, both in the form of greenfield investment and cross-border M&As, exerts positive spillover that encourages domestic entrepreneurial activities. While the benefit of greenfield investment in entrepreneurship is more pronounced in countries with higher levels of market capacity and institutional support, that of cross-border M&As is not influenced by these factors. On the other hand, human capital is important in promoting the positive effects of both types of FDI, and unless the level of human capital in the host economies reaches a certain threshold, greenfield investment can adversely affect domestic entrepreneurship.

Practical implications – Policies toward FDI need to focus on promoting the driving forces behind FDI spillover to counteract the potential negative crowding-out effect of FDI.

Originality/value – The paper contributes to the existing literature investigating the impact of FDI on domestic entrepreneurship by distinguishing between the two FDI modes of entry and taking into account the moderating effects of sociopolitical characteristics of the host economies.

Keywords Foreign direct investment, Greenfield investment, Cross-border merger and acquisition, Entrepreneurship, Spillover

Paper type Research paper

1. Introduction

Since entrepreneurship has increasingly been acknowledged as a crucial driving force behind economic growth (Galindo and Méndez-Picazo, 2013), many countries are trying to encourage entrepreneurial activities as the focal point of their development strategy. Of all the factors that may affect the level of a country's entrepreneurship, foreign direct investment (FDI) has attracted considerable attention among scholars and policymakers with its potential positive spillover and negative crowding-out effect on domestic firms (Estrin *et al.*, 2014). In that sense, governments who provide generous incentives to attract FDI inflows to their countries (see, e.g. Liu *et al.*, 2014) face a policy predicament: whether multinational enterprises (MNEs) could diffuse their advanced technological and managerial expertise to promote

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entrepreneurial activities or whether these firms would outcompete domestic entrants, force them out of the market and eventually cause undesirable economic consequences. Thus, this paper delves into the relationship between FDI and entrepreneurship to examine the problem from a more well-rounded perspective and suggests important policy implications.

The theory has diverged on how FDI exerts influence on domestic entrepreneurship. One strand of the literature suggests that the presence of MNEs can benefit domestic entrants through the transfer of their relatively advanced technology (Javorcik, 2004), the diffusion of superior managerial practices (Aldrich and Ruef, 2006) as well as the creation of new demand across related industries (Kim and Li, 2014). However, the other strand argues that when foreign firms with their specific advantages in resources and capability raise the barrier for entry (Konings, 2001) and attract high-skilled, entrepreneurially talented workers from their domestic counterparts (Grossman, 1984; Jovanovic, 1994), FDI may exert a crowding-out effect and dismiss entrepreneurial attempts.

Empirical research on the relationship between FDI and entrepreneurship yields mixed results, with some studies supporting the spillover effect (Ayyagari and Kosová, 2010; Berrill et al., 2020; Kim and Li, 2014; Nxazonke and van Wyk, 2020) while others found a negative relationship (De Backer and Sleuwaege, 2003; Estrin et al., 2014)[1]. These studies view FDI as a homogeneous stock of capital, and the empirical designs are based on the assumption that FDI is exogenous. As specified in this paper, the relationship is far more complicated and requires a more thorough approach by breaking down FDI into different components while considering the various sociopolitical factors that may influence the relationship.

The contribution of this paper is, therefore, threefold. While the literature on this topic has always considered FDI on an aggregate level, we are, to the best of our knowledge, the first to investigate details by classifying FDI according to its entry modes: greenfield investments and cross-border mergers and acquisitions (M&As). The motivation for this separation stems from the fact that MNEs can enter host economies through either greenfield investments or M&As (Wang and Sunny Wong, 2009). While greenfield investments require setting up new production plans in the host economy, M&As involve the transfer of ownership from domestic firms to foreign investors (Doytch and Ashraf, 2022). Arguably, the two modes of entry are examined separately as they are distinct and, therefore, may affect entrepreneurship in remarkably different ways.

Second, we analyze the various channels through which FDI (greenfield investments or M&As) may influence entrepreneurship. Accordingly, we focus on the level of host country market capacity, human capital and institutional support since these sociopolitical factors have long been used as comparative indicators across countries regarding their ability to create a new business (e.g. Berrill et al., 2020; Kim and Li, 2014; Slesman et al., 2021). This allows us to explain how the influence of FDI on entrepreneurship is contingent upon the sociopolitical characteristics of the host economies and whether greenfield investments and cross-border M&As affect entrepreneurial activities through different mechanisms.

Third, we attempt to control for endogeneity bias since FDI has been well documented as highly endogenous in economic literature but surprisingly neglected in most studies of FDI and entrepreneurship. There exist cogent justifications for our concern. Arguably, the relationship between FDI and entrepreneurship may be bidirectional. Although FDI can inject demand and spillover effects, the spur of entrepreneurship in a country may signal a growing market and demand that consequently attracts more FDI. Moreover, some host country characteristics that are not specified in the models may be correlated with FDI and bias the estimation results.

We draw on a panel dataset from 104 countries between 2006 and 2015 to test our hypotheses. A two-stage least square (2SLS) approach is employed with appropriate instrumental variables (IVs) to address potential endogeneity problems. We find that FDI inflows at an aggregate level and FDI in greenfield investment and cross-border M&As exert

positive spillover that encourages domestic entrepreneurial activities. We also find that the absorptive capacity and institutional quality of host economies can moderate the relationship between FDI and entrepreneurship; however, these effects are not homogeneous across different FDI modes of entry. Specifically, market capacity plays a vital role in channeling the positive spillover of greenfield investment on entrepreneurship but exerts no significant effect on cross-border M&As. On the other hand, human capital exerts a moderating effect on both types of FDI. Regarding the role of institutional support, we found that the spillover effects of greenfield investment on entrepreneurship is more significant in economies with higher institutional quality, while cross-border M&As are less responsive to institutional influences.

The rest of this paper proceeds as follows: Section 2 presents a literature review, Section 3 provides hypothesis development, Section 4 describes empirical strategy, Section 5 reports the main empirical results, Section 6 presents robustness tests and Section 7 concludes the paper.

2. Literature review
FDI has been widely studied in the literature for its potential to spur economic growth and development. This research paper will review the impact of FDI on domestic entrepreneurship. The review begins with a brief overview of the theoretical basis for the relationship between FDI and entrepreneurship, followed by an examination of empirical evidence.

Theoretically, FDI can have both positive and negative impacts on local entrepreneurship. On the one hand, FDI may provide access to new technology and management skills to help local entrepreneurs develop their businesses more effectively (Aldrich and Ruef, 2006; Kim and Li, 2014). It can also create employment opportunities and increase competition, which can stimulate innovation and productivity (Cheung and Ping, 2004; Liang, 2017). FDI also provides capital for start-up and expansion costs, which can help reduce barriers to entry for new and existing businesses (Starčević et al., 2022). On the other hand, FDI can crowd out local firms by providing foreign firms with competitive advantages such as lower costs or better access to resources (Doytch, 2016). As a result, local entrepreneurs may be unable to compete and are forced to exit the market.

Studies have found mixed results regarding the impact of FDI on domestic entrepreneurship. In some cases, FDI has been found to lead to increased levels of entrepreneurship (Ayyagari and Kosová, 2010; Berrill et al., 2020; Kim and Li, 2014; Nxazonke and van Wyk, 2020), while in other cases, it has been associated with decreased levels (De Backer and Sleuwaege, 2003; Estrin et al., 2014). The effect appears to depend on the context, including the level of economic development and the regulatory environment. For example, studies have found that the effects are stronger in countries with higher education levels in the labor force (Berrill et al., 2020). There is some evidence that FDI can crowd out domestic entrepreneurship, particularly in countries where there are weak institutions (Slesman et al., 2021).

3. Hypothesis development
3.1 Greenfield investment and domestic entrepreneurship
FDI in the form of greenfield investment can foster positive spillover effects that spur domestic entrepreneurship. Since firms that undertake greenfield investments often have more resource commitment, these investments are associated with higher technological advances and new product creation than M&As (Brouthers, 2002). The new products offered by foreign firms can educate local customers, engender new demand and pave the way for

new business opportunities (Kim and Li, 2014). In that sense, the spillover effects of greenfield investment can occur horizontally, with domestic entrants potentially exploiting these opportunities by demonstrating the products and technology of their foreign counterparts and adjusting the products to serve a market niche or fit with local preferences (Aldrich and Ruef, 2006). The horizontal spillover may also manifest through the labor movement, with local workers obtaining the tacit knowledge of superior technologies and managerial practices from FDI firms through work experience, learning and interaction. These skilled workers will later constitute the human resources of domestic entrants (Javorcik, 2004), or they can start their businesses in the same or related industries (Ayyagari and Kosová, 2010). Regarding vertical spillover, when newly established entities acquire inputs from local suppliers, they increase demand and subsequently trigger entrepreneurial activities in the upstream industries (Ayyagari and Kosová, 2010). Similarly, new foreign firms can promote downstream entrepreneurship by providing local customers with high-quality equipment and inputs (Lin *et al.*, 2009).

H1a. Greenfield investment exerts positive effects on domestic entrepreneurship.

On the other hand, greenfield investment may impede entrepreneurship activities by creating a crowding-out effect on the local market. With superior firm-specific assets, abundant financial resources and lower costs of production, thanks to economies of scale and favorable incentives from local governments, the new foreign entity may outperform domestic firms in attracting demand, causing the latter to shrink production while diminishing the chance for new businesses to thrive (Djankov and Hoekman, 2000; Konings, 2001). In addition, according to Grossman (1984), crowding-out effects can also occur in the labor market. First, as increased product market competition reduces prices, the expected income of entrepreneurs becomes lower than the average wage, leading to a lower propensity to open a new business (Grossman, 1984). Second, the higher remuneration offered by MNEs makes them more appealing to workers and potential entrepreneurs, reducing the labor supply and human capital available for domestic entrants (Jovanovic, 1994).

H1b. Greenfield investment exerts negative effects on domestic entrepreneurship.

3.2 Cross-border M&As and domestic entrepreneurship

As opposed to greenfield investment, cross-border M&As involve the taking over or merging of assets, capital and liabilities of existing domestic firms. In an M&A transaction, the ownership is changed from the domestic seller to the foreign owner, while there is no increase in working capital and resources within the target firms (UNCTAD, 2009). Although the spillover through M&As is often limited in technological transfer and new demand creation, M&As may also encourage domestic entrepreneurship horizontally through disseminating managerial knowledge. Brouthers (2002) suggest that since MNEs undertaking M&As need to absorb existing knowledge of the acquired firms while dealing with a mismatch in company culture and managerial style, they generally possess superior managerial skills. This can foster positive spillover when the managerial knowledge is transferred to domestic workers within the takeover firms through work experience, learning and interaction. Several empirical works conclude that M&As contribute to skill upgrading in the host economy (Conyon *et al.*, 2002; Wang and Sunny Wong, 2009). In addition, many M&A deals are followed by downsizing and labor layoff (UNCTAD, 2000), which subsequently trigger unemployment-induced entrepreneurship. It is because the unemployed often face a low chance of wage employment and low opportunity costs when starting a business, thereby having a higher propensity to self-select into entrepreneurship (Evans and Leighton, 1990; Faria *et al.*, 2010). Vertically, the managerial knowledge can be disseminated to the domestic firm in the downstream and upstream industries, as in the case of greenfield investments.

Thus, cross-border M&As do not crowd out domestic entrants in the product and labor market while still generating spillover from its superior managerial practice.

H2. Cross-border M&As exert a positive effect on domestic entrepreneurship.

4. Empirical strategy

4.1 Data

This study employs a panel dataset covering 104 countries over the 10 years from 2006 to 2015. Data were obtained from multiple independent sources. Information about the entrepreneurial activity was derived from the World Bank Group Entrepreneurial Snapshots (WBGES) database, which requests the number of newly registered limited liability firms from official sources of government bodies, national statistics offices and chambers of commerce (World Bank, 2011). The second data source comes from the statistical annex of the World Investment Report 2018, issued by the United Nations Conference on Trade and Development (UNCTAD), which provides detailed information and statistics on FDI activities across countries, including FDI projects in the form of greenfield investment and the purchase and sales of cross-border M&As (UNCTAD, 2018). Host countries' socio-economic conditions come from the World Bank's World Development Indicators (WDI) database (World Bank, 2017a). Finally, our measures of institutional quality were retrieved from the World Governance Indicators (WGI) database (World Bank, 2017b), which gathered information from enterprise, citizen and expert survey respondents in developed and developing countries to capture their perceptions about different aspects of governance.

4.2 Empirical baseline models

To examine the effects of aggregate FDI inflows and FDI in the form of either greenfield investments or cross-border M&As on host country entrepreneurial activities, the following baseline specifications are employed:

$$entrepreneurship_{it} = \alpha_0 + \alpha_1 FDI_{it} + \boldsymbol{\beta}' \boldsymbol{X_{it}} + \varepsilon_{it} \tag{1}$$

$$entrepreneurship_{it} = \theta_0 + \theta_1 greenfield_{it} + \boldsymbol{\gamma}' \boldsymbol{X_{it}} + \epsilon_{it} \tag{2}$$

$$entrepreneurship_{it} = \delta_0 + \delta_1 M\&A_{it} + \boldsymbol{\varphi}' \boldsymbol{X_{it}} + \mu_{it} \tag{3}$$

where i indicates the host country and t denotes the year t. α_0, θ_0 and δ_0 are the constants, while ε_{it}, ϵ_{it} and μ_{it} are the error terms. *Entrepreneurship* is the dependent variable measured by taking the natural logarithm of the annual number of newly registered companies with limited liability. As discussed in the previous subsection, the WBGES database provides the data. Regarding the independent variables of interest, *FDI* is measured by taking the natural logarithm of the total value of FDI inflows (in million US$), *M&A* is the natural log of cross-border M&A sales (in million US$) and *greenfield* is the natural log of the value of greenfield investment projects (in million US$). FDI data were retrieved from the statistical annex of the World Investment Report 2018 issued by the UNCTAD. Finally, $\boldsymbol{X_{it}}$ is the vector of control variables.

4.3 Dependent variable

Although there is no clear-cut definition of entrepreneurship, the general view emphasizes that entrepreneurship involves the creation of new business, with a certain degree of inherent risks and the ability of such new creations to generate profit (Klapper *et al.*, 2010). We follow the study of Kim and Li (2014) and define entrepreneurial activity as "the level of business formation during a given period." To measure this, we use the number of newly registered liability limited companies from the WBGES database, which acquires the information from

official sources with comprehensive coverage of countries. This is the most popular form of business formation in the world, and while business laws differ vastly across economies, the common practice requires this type of legal entity to be officially registered (World Bank, 2011). The measure captures the formation of businesses in formal private sectors worldwide and has been widely used in related research (e.g. Klapper *et al.*, 2010; Stenholm *et al.*, 2013). Given its availability and comparability across countries, the measure allows us to produce consistent empirical results under a cross-country analysis.

4.4 Control variables

Following previous literature (see, e.g. Bowen and De Clerqc, 2008; Kim and Li, 2014), we incorporate into our equations the vector of a control variable (X_{it}) that may exert some influence on domestic entrepreneurial activity. Specifically, X_{it} = [*openness, labor, exchange, population growth, government size, financial depth*], whereby *openness* is calculated as the share in the gross domestic product (GDP) of the sum of exports and imports of goods and services; *labor* captures the availability of the labor force in the host country by taking the natural logarithm of the labor force comprising people aged 15 and above; *exchange* is the change in the real exchange rate; *population growth* is the annual growth rate of the host country's total population; *government size* is proxied by the ratio of government consumption to GDP and *financial depth* denotes the availability of financial resources provided to the private sector by financial corporations, measured by the percentage of domestic credit to the private sector in GDP. Descriptive statistics of the main variables are presented in Table 1, while Table 2 reports the correlation matrix.

Variables	Mean	SD	Min	Max
Entrepreneurship	8.822	1.938	2.639	13.324
FDI	7.203	2.112	−0.895	12.848
Greenfield	7.233	1.909	−0.895	12.032
M&A	5.653	3.065	−4.510	12.607
Openness	0.936	0.571	0.002	4.554
Labor	1.570	0.126	1.272	2.115
Exchange	0.109	3.057	−0.193	116.678
Population growth	1.476	1.655	−3.339	17.625
Government size	16.011	5.993	2.047	57.955
Financial depth	54.416	45.901	2.080	312.030

Table 1.
Descriptive statistics

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	*Entrepreneurship*	1.000									
(2)	*FDI*	0.702	1.000								
(3)	*Greenfield*	0.652	0.964	1.000							
(4)	*M&A*	0.620	0.758	0.629	1.000						
(5)	*Openness*	−0.064	0.047	0.072	−0.025	1.000					
(6)	*Labor*	0.193	0.219	0.220	0.126	0.242	1.000				
(7)	*Exchange*	0.090	−0.008	0.017	−0.101	−0.097	−0.015	1.000			
(8)	*Population growth*	−0.219	0.004	0.015	−0.023	0.004	0.102	−0.034	1.000		
(9)	*Government size*	0.063	0.088	0.067	0.054	0.031	0.022	0.047	−0.228	1.000	
(10)	*Financial depth*	0.385	0.411	0.341	0.400	0.274	0.368	−0.023	−0.099	0.302	1.000

Table 2.
Correlation matrix

4.5 Interaction terms

We augmented our baseline model to test for the moderating effects of the host country's absorbing capacity on the relationship between FDI and entrepreneurship; we created interaction terms between FDI variables (including FDI, greenfield and M&A) and each of the three measures of host country absorptive capacity, including market capacity and human capital. Market capacity is measured by GDP per capita. Human capital is the level of tertiary enrollment defined as "the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of tertiary education." Data on real GDP and tertiary enrollment comes from the WDI data series.

Next, to examine the moderating effects of host country institutional quality, we employed the interaction terms between each of the three FDI variables (*FDI, greenfield* and *M&A*) and each of the six indicators reflecting the perceptions of different aspects of good governance, provided by the WGI database, namely Voice and accountability (*voice*), Government effectiveness (*effect*), Regulatory quality (*regulation*), Rule of law (*rule*), Political stability and absence of violence or terrorism (*stability*) and Control of corruption (*corruption*) [2]. Each indicator ranges from −2.5 to 2.5, with the higher score indicating better governance practice or, in other words, higher institutional quality.

4.6 Controlling for endogeneity

One of the complications in estimating FDI–entrepreneurship relationships is that FDI may not be strictly exogenous. In the current analysis, FDI may give rise to omitted variable bias because FDI is often correlated with many other factors (see, for example, cultural factors (Contractor *et al.*, 2014) and institutional quality (Mina, 2007)) that would be impractical to capture in our models fully. Another reason for our endogeneity concern stems from simultaneous causality, by which the causality runs in both directions: from FDI to domestic entrepreneurship and from domestic entrepreneurship to FDI. This is because the spur of entrepreneurship in a country may signal a growing market and demand that consequently attracts more FDI.

To address this potential endogeneity problem, we employ the 2SLS regression analysis widely used in the economics literature. We follow the study of Davies and Voy (2009) and use the host countries' geographic characteristics to instrument the inward FDI level. Specifically, our IVs include the natural log of the country's latitude and the natural log of the total area in square kilometers. The Durbin–Wu–Hausman test for endogeneity, over-identification and under-identification test simultaneously confirm the validity of our IVs in most of the model specifications. The use of alternative methods to control for endogeneity bias is discussed in the sensitivity analysis presented in Section 5.

5. Empirical findings

5.1 The effect of FDI on entrepreneurship

Table 3 presents the estimation results of the effect of FDI and its two modes of entry on domestic entrepreneurial activity. Columns 1–3 present the results of fixed-effect models, where Column 1 examines the effect of the aggregated level of FDI inflows, while Columns 2 and 3 investigate that of greenfield investments and cross-border M&As. In Column 1, the coefficient on FDI is positive and statistically significant, indicating that higher levels of inward FDI are related to higher levels of business formation. This finding is in line with the strand of research that supports the spillover effect of FDI on promoting entrepreneurial activity in the host economy (Ayyagari and Kosová, 2010; Kim and Li, 2014; Berrill *et al.*, 2020).

	Fixed-effects regression			IV-2SLS regression		
	FDI (1)	Greenfield (2)	M&A (3)	FDI (4)	Greenfield (5)	M&A (6)
FDI	0.039** (0.018)			0.839*** (0.036)		
Greenfield		0.028 (0.018)			0.830*** (0.051)	
M&A			0.014* (0.008)			0.670*** (0.059)
Openness	0.344*** (0.120)	0.449*** (0.122)	0.138 (0.125)	−0.419*** (0.090)	−0.483*** (0.097)	0.019 (0.105)
Labor	2.239*** (0.686)	2.551*** (0.676)	3.204*** (0.735)	0.423 (0.406)	0.906** (0.390)	1.074** (0.543)
Exchange	−0.003 (0.003)	−0.003 (0.003)	−0.076 (0.158)	0.001 (0.001)	−0.001 (0.001)	2.746*** (0.591)
Population growth	0.001 (0.013)	0.001 (0.013)	−0.009 (0.014)	−0.165*** (0.020)	−0.189*** (0.020)	−0.176*** (0.040)
Government size	−0.015* (0.008)	−0.017** (0.008)	−0.026*** (0.009)	−0.007 (0.009)	−0.006 (0.010)	−0.010 (0.013)
Financial depth	0.002** (0.001)	0.003** (0.001)	0.001 (0.001)	0.003* (0.001)	0.004** (0.002)	−0.007*** (0.002)
Constant	4.720*** (1.054)	4.268*** (1.039)	4.344*** (1.126)	2.538*** (0.605)	1.962*** (0.620)	4.713*** (0.895)
Country-fixed effects	YES	YES	YES	–	–	–
Year-fixed effects	YES	YES	YES	–	–	–
Durbin–Wu–Hausman test	–	–	–	0.000	0.000	0.000
Overidentification test	–	–	–	0.224	0.100	0.231
Underidentification test	–	–	–	0.000	0.000	0.000
Observations	835	775	558	835	775	558
R-squared	0.228	0.262	0.316	0.538	0.500	−0.029

Note(s): Robust standard errors are in parentheses; *, ** and *** denote significance levels at 10, 5 and 1%, respectively

Table 3.
The effect of FDI and its mode of entry on domestic entrepreneurship

We focus on analyzing the effect of greenfield investments and M&As to see whether the positive spillover effect of FDI still holds for each component and whether there is any difference between the two modes of entry. In Column 2, the coefficient on greenfield investment is positive but not statistically significant, suggesting that greenfield investment may have no significant impact on domestic entrepreneurship. The positive spillover of greenfield investment is probably offset by its negative crowding-out effect. In contrast, in Column 3, the coefficient of M&As is positive and significant. This result corroborates Hypothesis 2 that M&As could assist entrepreneurial efforts by transferring business knowledge and managerial experience to potential entrepreneurs through direct interaction and training within the takeover firms.

Columns 4, 5 and 6 of Table 3 present the estimation results of the effect of FDI, greenfield investment and cross-border M&As on entrepreneurship after controlling for potential endogeneity bias using the IV-2SLS approach. The results remain largely unchanged compared to the fixed-effect models, except that the coefficient on *greenfield* becomes positive and significant, supporting Hypothesis 1a that greenfield investments positively affect domestic entrepreneurship. The Dubin–Wu–Hausman tests in Columns 4–6 confirm that endogeneity is a problem in our model and that fixed-effect models may produce bias coefficients. The results of overidentification and underidentification tests also indicate that our use of IVs is valid. Thus, we are convinced that the results of IV-2SLS models are more reliable and should be used in our main findings.

5.2 The role of host country absorptive capacity

As discussed in the previous subsection, the baseline regression results suggest that FDI can promote domestic entrepreneurship regardless of its entry modes. However, we can still not discern the mechanisms through which FDI via different entry modes channels their positive spillover.

Market capacity, characterized by the ability to absorb additional production, is important for the greenfield investment project to obtain economies of scale and ample growth opportunities (Brouthers and Brouthers, 2000). This encourages investors to make significant investments and bring in new products and advanced technologies, creating positive spillover effects on host country entrepreneurship. In addition, a market with high capacity signifies higher demand that may alleviate the competition pressure followed by FDI entry, therefore, reduces the crowding-out effects of greenfield investments on domestic entrants. In contrast, M&A entry does not create new entities and, therefore, may not intensify competition in the domestic market to the extent of greenfield investments, making the role of market capacity less significant in channeling the positive effect of M&As on entrepreneurship.

In addition, human capital has been well documented to foster entrepreneurship by discovering entrepreneurial opportunities (Marvel, 2013), accumulating new knowledge and creating advantages for new firms (Corbett et al., 2007; Bradley et al., 2012). Thus, higher levels of human capital can facilitate the learning process and assimilation of the advanced technologies and managerial expertise of MNEs, thereby enhancing the absorptive capacity of the host country to take advantage of the FDI spillover effect on entrepreneurship. Additionally, well-educated entrepreneurs are more capable of detecting demand injected by MNEs and seizing new business opportunities. Since greenfield investments and M&As are both associated with specific firm-specific knowledge that can be spread and absorbed into the host economy, we argue that the moderating role of human capital is significant for both FDI entry modes.

Thus, we consider the moderating effect of the host country's absorptive capability in market capacity and human capital and present the estimation results in Table 4.

Columns 1–3 study how FDI, greenfield investments and cross-border M&As interact with the market capacity to affect entrepreneurship. In Column 1, the coefficient on FDI is statistically insignificant, suggesting that market capacity exerts no significant effect on the overall relationship between FDI and business creation. However, we can obtain meaningful insights when examining each FDI entry mode separately. Accordingly, the coefficient of the interaction term between *greenfield* and *market capacity* in Column 2 is positive and statistically significant, indicating that the benefit of greenfield investments on entrepreneurship is more salient in markets with higher capacity. On the other hand, as suggested by the statistically insignificant coefficient on *M&As*market capacity* in Column 3, market capacity does not significantly influence the relationship between M&As and entrepreneurship.

Columns 4–6 present the estimation results on the interactions of FDI, greenfield investments and cross-border M&As, respectively, with the level of human capital to influence entrepreneurial activity. The coefficients on all three interaction variables are positive and statistically significant, indicating that the positive effect of FDI on domestic entrepreneurship, both via greenfield investments and M&As, is enhanced in economies with higher levels of human capital. It is also notable that, after the moderator, *human capital* is incorporated into our models, the coefficients on *FDI, greenfield* and *M&A* become significantly negative (except the insignificant coefficient on M&As), suggesting that FDI, mainly via greenfield investments, can encourage entrepreneurship only when the level of human capital reaches a certain threshold.

5.3 The role of institutional support

The effect of FDI on entrepreneurship may vary under the influence of the host country's institutional quality (Slesman et al., 2021). Institutions define the game's rules for the market

	FDI (1)	Market capacity Greenfield (2)	M&A (3)	FDI (4)	Human capital Greenfield (5)	M&A (6)
FDI	0.805*** (0.045)			−3.187** (1.329)		
Greenfield		0.680*** (0.066)			−2.854** (1.304)	
M&A			0.619*** (0.062)			−0.579 (0.581)
FDI*market capacity	0.001 (0.003)					
Greenfield*market capacity		0.010* (0.006)				
M&A*market capacity			0.002 (0.003)			
FDI*human capital				0.041*** (0.014)		
Greenfield*human capital					0.037*** (0.013)	
M&A*human capital						0.012** (0.006)
Market capacity	−0.030 (0.028)	−0.106** (0.051)	−0.042* (0.025)			
Human capital				−0.245*** (0.080)	−0.224*** (0.080)	−0.035 (0.024)
Openness	−0.418*** (0.086)	−0.555*** (0.108)	−0.008 (0.094)	0.163 (0.264)	0.052 (0.268)	0.234* (0.131)
Labor	1.549*** (0.450)	2.258*** (0.462)	2.946*** (0.673)	−0.280 (0.707)	−0.240 (0.649)	1.444** (0.582)
Exchange	−0.001 (0.001)	−0.005*** (0.002)	2.160*** (0.544)	1.745*** (0.655)	1.373** (0.648)	2.653*** (0.736)
Population growth	−0.105*** (0.021)	−0.136*** (0.024)	−0.082* (0.048)	−0.180*** (0.028)	−0.191*** (0.028)	−0.182*** (0.042)
Government size	0.007 (0.010)	0.018 (0.014)	0.011 (0.014)	−0.047** (0.023)	−0.039* (0.021)	−0.016 (0.013)
Financial depth	0.008*** (0.002)	0.008*** (0.002)	0.000 (0.002)	0.003 (0.002)	0.002 (0.002)	−0.009*** (0.002)
Constant	0.735 (0.709)	0.622 (0.790)	1.655 (1.104)	27.856*** (8.585)	25.816*** (8.410)	8.121*** (2.536)
Durbin–Wu–Hausman test	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification test	0.294	0.304	0.707	0.677	0.561	0.177
Underidentification test	0.001	0.006	0.000	0.002	0.000	0.113
Observations	835	775	558	570	546	392
R-squared	0.577	0.512	0.222	0.265	0.279	0.112

Note(s): Robust standard errors are in parentheses; *, ** and *** denote significance levels at 10, 5 and 1%, respectively

Table 4.
The effect of FDI and its modes of entry on domestic entrepreneurship – the role of host country absorptive capacity

economy (Meyer *et al.*, 2009). MNEs entering the local market may face transaction costs when working with domestic business partners and coping with the local governments (Brouthers, 2002; Meyer, 2001). The absence of supporting institutions may render these costs excessively high for foreign entrants. For instance, weak institutions increase the risk that their business partners can be opportunistic and appropriate their expected profits. Their operational costs may be exaggerated as they deal with inefficient, inexperienced and perhaps corrupt government agents. As a result, they may be reluctant to commit resources

with sophisticated technology and human capital as the potential gains may be offset by the high transaction costs involved. Otherwise, FDI firms may significantly circumscribe the scope of their activities to familiar business partners they can trust. In either case, the FDI's spillover effect diminishes, which hinders entrepreneurship activities.

We argue that greenfield investments are more vulnerable to institutional influences as the new establishments may be unfamiliar with institutional environments in the host country and the methods of doing business with the local governments (Hennart and Park, 1993; Brouthers and Brouthers, 2000). Cross-border M&As, on the other hand, maybe less affected by institutional factors. It is because, as opposed to greenfield investment, M&As can allow foreign firms to inherit and further develop market senses, knowledge and business networks necessary for coping with local business environments from the domestic target firms (Meyer *et al.*, 2009).

Table 5 reports the regression results on the effect of FDI inflows, greenfield investments and cross-border M&As on domestic entrepreneurship while considering the moderating effect of institutional quality in the host economy. All of the six governance dimensions from the WDI database, comprising $\gamma = $ *[voice, effect, regulation, rule, stability, corruption]* and their interaction terms with FDI variables, are, respectively, included in our model specifications.

As can be seen from the table, the coefficients on $FDI^*\gamma$ are positive and statistically significant in all model specifications (except the insignificant coefficient on FDI^*voice in Column 1), thereby indicating that higher institutional quality can enhance the overall positive effect of FDI on entrepreneurship. Nevertheless, the moderating effect of institutional quality is not homogenous across different modes of FDI entry, while the coefficients on $greenfield^*\gamma$ are positive and significant in all model specifications and those on $M\&A^*\gamma$ are mostly insignificant (the only significant instance, although marginally, is the coefficient on $M\&A^*regulation$ in Column 9). The result confirms that institutional support is essential in promoting the positive effect of greenfield investments on entrepreneurial activity but exerts no significant influence on the relationship between M&As and entrepreneurship.

6. Robustness tests

To ensure the robustness of our results, we reestimate our baseline models using alternative econometric techniques to control for endogeneity problems and present the results in Table 6. Columns 1–3 report the estimation results on the effects of aggregated FDI inflows, greenfield investments and cross-border M&As on domestic entrepreneurship, respectively, using a two-step system of generalized method of moments (GMM) estimation to cope with endogeneity bias. We also include one-year lag of the dependent variable *L.entrepreneurship,* to control for potential dynamic effect. We follow the proposed method of Arellano and Bond (1991) and use appropriate lags of the explanatory variables, together with external instruments for our independent variables of interest, *FDI*, *greenfield* and *M&A*. Specifically, a natural log of geographic variables, including land area and latitude, are employed as external IVs. As can be seen from Table 6, the coefficients on *FDI* and *greenfield* remain significantly positive, reinforcing our previous findings that FDI can create spillover effects to promote entrepreneurial activity in the host economies. However, the impact of M&A becomes insignificant.

We also apply the two-step GMM to examine the various moderating factors comprising host country absorptive capacity and institutional support, which may affect how FDI and its modes of entry channel their impact on entrepreneurship. The results are not reported in this paper for brevity but are available upon request. The results largely confirm our predictions, as specified in the previous section.

	Voice and accountability			Government effectiveness			Regulatory quality		
	FDI (1)	Greenfield (2)	M&A (3)	FDI (4)	Greenfield (5)	M&A (6)	FDI (7)	Greenfield (8)	M&A (9)
FDI	0.836***			0.816***			0.817***		
	(0.037)			(0.044)			(0.041)		
Greenfield		0.891***			0.911***			0.830***	
		(0.065)			(0.107)			(0.065)	
M&A			0.652***			0.585***			0.562***
			(0.055)			(0.061)			(0.062)
FDI*voice	0.069								
	(0.044)								
Greenfield*voice		0.196**							
		(0.086)							
M&A*voice			−0.016						
			(0.058)						
FDI*effect				0.399**					
				(0.173)					
Greenfield*effect					1.016**				
					(0.446)				
M&As*effect						0.301			
						(0.229)			
FDI*regulation							0.336**		
							(0.139)		
Greenfield*regulation								0.738***	
								(0.268)	
M&A*regulation									0.367*
									(0.202)
Voice	−0.555	−1.478**	−0.039						
	(0.346)	(0.675)	(0.365)						
Effect				−3.221**	−7.718**	−2.099			
				(1.336)	(3.447)	(1.460)			
Regulation							−2.632**	−5.547***	−2.320*
							(1.093)	(2.096)	(1.308)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Durbin–Wu–Hausman test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification test	0.015	0.019	0.197	0.178	0.986	0.283	0.377	0.414	0.550
Underidentification test	0.000	0.000	0.000	0.002	0.017	0.094	0.000	0.000	0.027
Observations	835	775	558	835	775	558	835	775	558
R-squared	0.542	0.450	0.147	0.395	−0.363	−0.127	0.444	0.098	−0.213

	Rule of law			Political stability			Control of corruption		
	FDI (10)	Greenfield (11)	M&A (12)	FDI (13)	Greenfield (14)	M&A (15)	FDI (16)	Greenfield (17)	M&A (18)
FDI	0.809***			0.788***			0.827***		
	(0.035)			(0.040)			(0.038)		
Greenfield		0.953***			0.933***			0.958***	
		(0.113)			(0.113)			(0.124)	
M&A			0.645***			0.665***			0.616***
			(0.052)			(0.066)			(0.052)
FDI*rule	0.185*								
	(0.095)								
Greenfield*rule		0.619**							
		(0.295)							
M&A*rule			0.105						
			(0.098)						
FDI*stability				0.249***					
				(0.087)					
Greenfield*stability					0.534**				
					(0.218)				
M&As*stability						0.085			
						(0.116)			
FDI*corruption							0.134*		
							(0.072)		

(*continued*)

	Rule of law			Political stability			Control of corruption		
	FDI (10)	Greenfield (11)	M&A (12)	FDI (13)	Greenfield (14)	M&A (15)	FDI (16)	Greenfield (17)	M&A (18)
*Greenfield*corruption*								0.715** (0.359)	
*M&A*corruption*									0.156 (0.125)
Rule	−1.639** (0.754)	−4.868** (2.350)	−0.832 (0.670)						
Stability				−2.050*** (0.627)	−4.086** (1.601)	−0.504 (0.627)			
Corruption							−1.283** (0.588)	−5.869** (2.928)	−1.295 (0.879)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Durbin–Wu–Hausman test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Overidentification test	0.087	0.535	0.243	0.019	0.031	0.408	0.066	0.192	0.086
Underidentification test	0.000	0.015	0.001	0.000	0.003	0.008	0.000	0.106	0.017
Observations	835	775	558	835	775	558	835	775	558
R-squared	0.527	0.134	0.084	0.553	0.281	0.077	0.529	−0.011	0.088

Table 5.

Note(s): Robust standard errors are in parentheses, and *, ** and *** denote significance levels at 10, 5 and 1%, respectively

	FDI (1)	Greenfield (2)	M&As (3)
FDI	0.134*** (0.041)		
Greenfield		0.109* (0.059)	
M&A			0.030 (0.210)
L.entrepreneurship	0.843*** (0.039)	1.147*** (0.070)	0.959*** (0.330)
Controls	Y	Y	Y
Overidentification test (Hansen test)	0.384	0.423	0.197
AR(1)	0.00	0.001	0.002
AR(2)	0.624	0.543	0.544
Observations	729	674	486

Table 6.
The effect of FDI and its modes of entry on domestic entrepreneurship, two-step system GMM

Note(s): Robust standard errors are in parentheses, *, ** and *** denote significance levels at 10, 5 and 1%, respectively

7. Conclusion

This paper investigates the effect of FDI inflows on host country entrepreneurial activities, paying particular attention to the two modes of entry: greenfield investment and cross-border M&As. We aim to reconcile the contrasting views in the literature and provide more insights into the relationship by considering the differences between FDI modes of entry and the moderating effects of various sociopolitical factors of host countries in terms of absorptive capacity and institutional quality.

Using a panel dataset of 104 countries from 2006 to 2015, we find that FDI at an aggregate level fosters entrepreneurship in the host economies. Although the positive spillover stems from both greenfield investment and cross-border M&As, the difference lies in their transmission mechanisms. While market capacity only enhances the positive influence of greenfield investment, human capital moderates both types of FDI. Regarding institutional
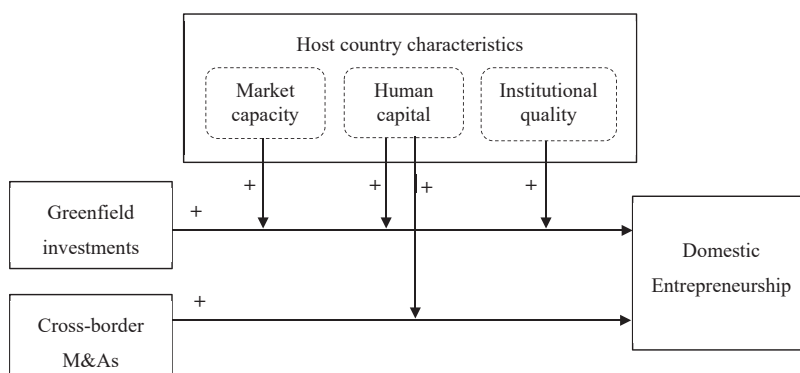
Figure 1.
Conceptual framework

support, we find greenfield investment's spillover effects on entrepreneurship are more significant in economies with higher institutional quality, while cross-border M&As are less responsive to institutional influences [3]. The results are robust to alternative econometric strategies to address the endogeneity problem.

To this end, our research suggests important policy implications. First, policies toward FDI should focus on generating the driving forces behind spillover mechanisms that can counteract its negative crowding-out effects on domestic entry. As suggested by our findings, it may be beneficial for governments to enhance human capital levels to create a pool of high-skilled, entrepreneurially talented labors who can absorb the advantages from foreign firms and subsequently open successful businesses. Developing human resources is critical, as the benefits of FDI, primarily via greenfield investments, may not be realized unless the levels of human capital in the host economies reach a certain threshold. Another promising strategy could be to ameliorate institutional environments that facilitate free market transactions and the development of the private sector. Second, by understanding the distinction between greenfield investments and cross-border M&As in terms of their corresponding advantages and drawbacks, as well as their contingency upon host country absorptive capacity and institutional conditions, governments can tailor their policies to attract the desirable type of FDI, depending on their specific socio-economic conditions and objectives. Finally, it is essential for governments to bear in mind that FDI, despite its beneficial spillover from technology, managerial expertise and demand creation, can simultaneously exert adverse effects on entrepreneurship. Thus, policymakers implementing strategies to encourage FDI should also consider providing policy incentives to foster the business formation and support domestic firms at their early stages of development.

This study is not free from limitations. Given the aggregated level of the data, M&A or greenfield activity may contribute to the host economy's entrepreneurial activity. It is impossible to separate foreign firms from domestic ones with the currently available data. Hence, the direct effect of FDI and its spillover effects on entrepreneurship are not measured separately. However, we have reason to believe that foreign new businesses only account for a small proportion of the total number of business registrations, meaning that most of the significant effects in this study may come from the FDI spillover effect. In addition, the aggregate data do not allow control of the sector or region where the FDI occurs. The expected impact on entrepreneurship may be higher for FDI entrants in a new region or sector than already established ones. The avenues for future research are to distinguish between foreign-invested and domestic entrepreneurship or to control for sectoral/regional characteristics to capture the FDI spillovers in the domestic market more precisely.

Notes

1. See Hong *et al.* (2021) for a survey of related literature.

2. Definitions of each indicator can be found in Kaufman *et al.* (2011)

3. A summary of these relationships is illustrated in Figure 1.

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