

**Defying Gravity:**  
**The Role of Intermediaries for Cross-Border Mergers and Acquisitions**

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ABSTRACT

This study examines the determinants of cross-border mergers and acquisitions (M&A) using the gravity approach. The presence of intermediaries increases with an increase in the number of cross-border M&A. The intermediary undertakes M&A advisory services that cover a wide range of tasks, from the selection of potential acquisition targets to closing. The results from the gravity model show that a relatively high presence of M&A advisers is generally conducive to M&A, particularly for cross-border deals, and their impacts are significantly pronounced in origin countries. Further, for an acquirer country, we find substitutability between the use of M&A advisers and the extent of financial development for financial institutions and markets, whereas complementarities exist for a target country.

**Keywords:** FDI, cross-border M&A, financial development, gravity model

*JEL Classification:* F23 and G34.

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## 1. Introduction

Cross-border mergers and acquisitions (M&A) are key components of foreign direct investment (FDI). Their share is higher than that of Greenfield investments in developed countries (UNCTAD, 2019). Empirical studies on the determinants of cross-border M&As have shown that M&A flows across countries follow a gravity equation (Ahern et al., 2015; di Giovanni, 2005; Head and Ries, 2008; Hijzen et al., 2008; Huizinga and Voget, 2009; Mariscal, 2021; Wong, 2008).<sup>1</sup> Thus, we use gravity models to empirically examine the role of M&A advisers in cross-border M&As, which has not been the focus of existing research.

In the gravity model for M&A, the M&A flow between two countries is proportional to the economic size of the two countries and inversely proportional to geographical distance. Geographical distance reflects various costs associated with M&A deals. In addition to the geographical distance, other *economic distances* are known to affect cross-border M&A patterns. For example, cross-country differences in financial market development (e.g., the level of investor protection, accounting standards, and regulation) affect the pattern of cross-border M&A, as reported in finance literature (e.g., Rossi and Volpin, 2004). These economic distances matter for M&A because they increase the transaction costs for firms involved in M&A. However, many of these economic distances can be circumvented, if not all, by proper communication between transacting parties. For example, the costs associated with searching for an appropriate target firm, bargaining, and information production (e.g., due diligence) are largely unrelated to physical distance and can be significantly reduced by a third party who specializes in these tasks. In this study, we hypothesize that M&A advisers, such as investment banks and consulting firms, play such roles precisely, and we empirically study how their presence affects the pattern of cross-border M&A. In the U.S. M&A market, Golubov et al. (2012) report that in 2007, investment banks advised over 85% of deals by transaction values.

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<sup>1</sup> Similarly, FDI has also been explained by gravity models. See Brainard (1997), Markusen and Maskus (2002), Portes and Rey 2005, Bénassy-Quéré et al. (2005), Bergstrand and Egger (2007), Kleinert and Toubal (2010), Blonigen and Piger (2014), Román et al. (2016), and Hoshi, Kiyota, 2019.

Given the high level of fees firms pay to M&A advisers, it is a natural empirical question to determine if and how their services promote M&A.

Using a large-scale database that contains domestic and cross-border M&As for many countries, we estimate a gravity model using the pseudo-Poisson maximum likelihood (PPML) method. To investigate the role of intermediaries, we add the number of M&A advisers involved in actual M&A deals retrieved from the M&A database at the transaction level, controlling for the standard covariates of the gravity model. We find that the number of M&A advisers has a positive impact on M&A inflows and outflows. Additionally, the impact of geographical and economic distances is significantly weak with M&A advisers. Specifically, the negative effect of geographical distance is weakened, while the positive effect of language commonality disappears. These results are consistent with the view that M&A advisers act as information intermediaries to facilitate M&As. They help firms overcome information or language barriers when dealing with remote trading partners.

Further, we investigate the effect of M&A advisers on the intensive margin (i.e., the average value per deal) and the extensive margin (i.e., the number of deals). The positive effect of M&A advisers is particularly noticeable for the intensive margins. When we estimate the gravity model with M&A advisers focusing on the extensive margin, M&A flows still obey the gravity equation (albeit with the reduced effects of other explanatory variables). Conversely, when focusing on the intensive margin, the standard gravity variables either become insignificant or flip their signs, while the impact of M&A advisers remains positive and significant. Thus, the number of M&A advisers is the single most important explanatory variable for the intensive margin.

Finally, we examine the heterogeneity of the roles of M&A advisers in three dimensions. First, we examine if and how the impacts of advisers differ between domestic and cross-border deals. Second, we study the dependence of their impacts on the level of financial development. Finally, we study the difference in their impacts on inward and outward M&A

flows. The effects of M&A advisers are more pronounced for cross-border deals than for domestic deals. Furthermore, we find that the effects of M&A advisers are asymmetric: M&A advisers working for bidder firms substitute for the level of financial development in source countries (i.e., for outward M&A), while those working for target firms complement the level of financial development in destination countries (i.e., for inward M&A).

As a robustness check for the potential endogeneity of M&A advisers, we add country-year fixed effects. This is expected to eliminate unobservable factors that may influence the relationship between advisers and M&A. We follow Heid et al. (2021) by estimating gravity models with cross-border transactions and intra-national transactions. The interaction term of the cross-border dummy and the number of M&A advisers are introduced to estimate the impact of M&A advisers on cross-border deals relative to intra-national deals, even when the country-year fixed effects are added to the model. The main results, including the asymmetric effects, continue to hold.

**Related literature.** This study contributes to the literature on the determinants of cross-border M&As. Many factors that affect M&A patterns have been suggested, including cultural values (Ahern et al., 2015), taxation (Arulampalam et al., 2019; Huizinga and Voget, 2009; Todtenhaupt et al., 2020), political uncertainty (Bonaime et al., 2018; Cao et al., 2019), European integration (Coeurdacier et al., 2009), trade costs (Hijzen et al., 2008), financial market development (di Giovanni, 2005), accounting standards and investor protection (Erel et al., 2012; Rossi and Volpin, 2004), and labor market regulation (Dessaint et al., 2017). None of these studies examine the role of intermediaries in facilitating M&As. Ferreira et al. (2010) have studied the role of institutional investors in facilitating cross-border M&A and reported that foreign institutional ownership is positively related to the intensity of cross-border M&A. We complement their work by showing that M&A advisers and institutions that are paid for their services with M&A are positively related to cross-border M&A.

Further, this study contributes to the literature on M&A advisers. Most studies in the literature focus on domestic deals and examine how the characteristics of bidder advisers (e.g., reputation, experience, and expertise) affect the announcement returns of bidder firms (Bao and Edmans, 2011; Chemmanur et al., 2019; Golubov et al., 2012; Kale et al., 2003; Raghavendra Rau, 2000; Servaes and Zenner, 1996; Wang et al., 2022; Yawson and Zhang, 2021). Instead, we study the role of M&A advisers as determinants of M&As and examine their effects on the target side. Consistent with our results, Bodnaruk et al. (2009) have found that firms in which bidder advisers hold stakes are more likely to become targets. Francis et al. (2014) have found that the positive effect of learning from past cross-border M&As on the likelihood of deal completion is pronounced in culturally remote markets. Our results suggest that M&A advisers promote cross-border M&As by facilitating this learning process.<sup>2</sup>

The remainder of this paper is organized as follows. Section 2 elaborates on the gravity equation for bilateral M&A and the independent variables used in this equation. Section 3 describes the data used to estimate the gravity model. Section 4 presents the estimation results from PPML, and Section 5 presents the conclusions drawn from the study.

## **2. Gravity model for cross-border M&A**

Following Head and Ries (2008), we apply a gravity model to explain bilateral M&A. The volume of bilateral M&A is proportional to the market size of the origin and destination countries. Conversely, the farther the overseas subsidiary, the higher the costs of monitoring the managers to exert effort incurred by the headquarters of a multinational enterprise. Therefore, M&A volume is expected to be inversely proportional to the bilateral geographical distance between the headquarters and subsidiary. The gravity model for explaining the bilateral deal

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<sup>2</sup> Also consistent with our results, Francis et al. (2014) have found that bidder firms use advisers in deals in which they face a high level of risk.

volumes of M&As from the origin (acquirer) country  $i$  to destination (target) country  $j$  in year  $t$ ,  $V_{ijt}$ , is expressed as follows:

$$V_{ijt} = \exp\left(\mathbf{O}'_{it} \alpha + \mathbf{T}'_{jt} \beta + \mathbf{D}_{ij}\theta\right) \varepsilon_{ijt} \quad (1)$$

where  $\mathbf{O}'_{it}$  is the vector of time-variant origin-country-year-specific factors,  $\mathbf{T}'_{jt}$  is the vector of time-variant destination-country-year-specific factors,  $\mathbf{D}_{ij}$  is the vector of the origin-destination country-pair characteristics, and  $\varepsilon_{ijt}$  is the disturbance term.

Concerning the time-varying origin- and destination-country-year-specific factors, in addition to the market size proxied by gross domestic product (GDP) ( $GDP_{it}, GDP_{jt}$ ), the following traits that affect M&A decisions are included in the model. First, we add the financial development index in the origin and destination countries ( $FD_{it}, FD_{jt}$ ) provided by the international monetary fund (IMF), considering that M&A decisions may be affected by the difference in the extent of financial development for financial institutions and markets. The volume of M&As should be higher in financially developed destination countries, where well-established systems and markets contribute to forming fair-deal values, than in financially underdeveloped countries. Further, financially developed countries should accelerate outward M&A by facilitating financing. Furthermore, the costs of starting a business in the host country influence investment decisions. To measure this cost, we use the sum of the number of days required to start a business and the number of procedures to start a business ( $Entry_{it}, Entry_{jt}$ ) provided by World Development Indicators as a proxy for business costs.

A key novelty of our research is the inclusion of M&A advisers ( $Adv_{it}, Adv_{jt}$ ). M&A advisers play many important roles in M&A deals, starting from searching for and selecting M&A candidates, doing due diligence, and calculating the business value of the target firm.

Typically, professional business service providers, such as investment banks, law firms, and consulting firms, act as M&A advisers. These firms are known to charge high advisory fees; however, on the net, the cost of M&A deals is reduced in countries where such advisers are abundant (and behave relatively competitively), relative to countries where they are non-existent or behave less competitively.

We include a standard list of variables to control for changes in the country-pair relationship that may affect the cross-border M&A activity between two countries. Let  $D_{ij}$  denote a vector that consists of an origin–destination country pair with time-invariant characteristics. For the time-invariant country-pair characteristics, the geographical distance between the origin country  $i$  and destination country  $j$  ( $Dist_{ij}$ ) is used based on the assumption that the higher the distance, the higher the impediments to monitoring overseas subsidiaries. Further, contiguity is considered by introducing a dummy for sharing a common border ( $Contig_{ij}$ ). To control for the difference between intra-national and cross-border M&As, we add a dummy for cross-border deals ( $CBRD_{ij}$ ). In international trade literature, a common view is that the geographical impediments between the countries are mitigated by cultural ties. Similarly, sharing a common language ( $Lang_{ij}$ ), religion ( $Relig_{ij}$ ), and legal origin ( $Legal_{ij}$ ) should have a positive impact on M&As by reducing the transaction costs of contracts. Thus, the equation to be estimated is as follows:

$$\begin{aligned}
V_{ijt} = & \exp(\alpha_1 \ln GDP_{it} + \beta_1 \ln GDP_{jt} + \alpha_2 \ln FD_{it} + \beta_2 \ln FD_{jt} + \alpha_3 \ln Entry_{it} + \\
& \beta_3 \ln Entry_{jt} + \alpha_4 \ln Adv_{it} + \beta_4 \ln Adv_{jt} + \theta_1 \ln Dist_{ij} + \theta_2 CBRD_{ij} + \theta_3 Contig_{ij} + \\
& \theta_4 Lang_{ij} + \theta_5 Legal_{ij} + \theta_6 Relig_{ij} + \gamma_i + \delta_j + \tau_t) \varepsilon_{ijt} \quad (2)
\end{aligned}$$

where  $\gamma_i$  and  $\delta_j$  are time-invariant country-fixed effects, and  $\tau_t$  is a year-fixed effect. We estimate gravity model (2) for M&A flows by applying the PPML estimation method.<sup>3</sup>

### 3. Data sources

Our bilateral M&A volume data are a compilation of over 800,000 transactions available from 1997 to 2019 with a deal value retrieved from *Zephyr*, the database of M&A transactions provided by Bureau van Dijk (BvD). The bilateral data cover 169 countries/regions, including cross-border M&As and domestic M&As.

The disaggregated data allowed us to decompose bilateral M&A volume ( $MA$ ) into two components: the extensive margin measured by the number of deals ( $N$ ) and the intensive margin measured by the average volume per deal ( $MA/N$ ):

$$MA_{ijt} = N_{ijt} \times \frac{MA_{ijt}}{N_{ijt}},$$

where subscripts  $i$  and  $j$  denote origin  $i$  and destination  $j$ , respectively. The gravity models specified in Eq. (2) for the volume ( $MA$ ), intensive margin ( $MA/N$ ), and extensive margin ( $N$ ). This enabled us to study the impact of each explanatory variable on the margins.

Country-specific characteristics, such as GDP and entry costs, were obtained from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). Further, the country-pair characteristics, such as geographical distance, dummy variables for sharing a common border, and cultural ties, such as the common language, legal origin, and religion, were retrieved from the CEPII.

To consider the impact of country-level financial development, we employed the financial development index collected from the IMF. This broad measure of the index captured

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<sup>3</sup> Since Silva and Tenreyro (2006), PPML has become a standard method of estimating the gravity model for bilateral trade flows because of its advantages of properly accounting for heteroskedasticity and zero observations. These considerations are particularly important for the study of cross-border M&A, where zero observations and potential heteroskedasticity are even more prevalent than trade. See Mariscal (2021) for the recent application of the PPML estimation of the gravity model in the context of cross-border M&A.



both institutional and market-based financial development. As a proxy variable for the advisers, we used the number of advisers aggregated by country based on the M&A deals data by *Zephyr*, which records the presence or absence of advisers for each deal. Table 1 presents the descriptive statistics of the variables.

Table 1. Descriptive statistics

Variable	Mean	Std. dev.	Min	Max
MA	34.679	3098.813	0	1294752
MA/N	1.840	65.779	0	22625
N	0.660	44.334	0	19614
lnY_o, lnY_d	16.794	2.451	9.449	23.788
lnDist	8.798	0.814	-0.005	9.892
CBRD	0.984	0.127	0	1
Contig	0.012	0.110	0	1
Lang	0.173	0.379	0	1
Legal	0.340	0.474	0	1
Relig	0.178	0.253	0	0.998
lnEntry_o, lnEntry_d	3.355	0.817	0.405	6.566
lnFD_o, lnFD_d	-1.493	0.819	-11.513	0
lnAdv_o, lnAdv_d	-11.400	1.187	-11.513	7.751

#### 4. Estimation results from the gravity model

Table 2 shows the results of the PPML estimation for Eq. (2). All estimations included year-fixed effects, although the results were suppressed. Columns (1)–(6) report the results for the volume of M&A deals. Columns (7)–(12) show the results for the intensive margin (the average volume per M&A deal), and columns (13)–(18) show the results for the extensive margin (the number of M&A deals).<sup>4</sup>

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<sup>4</sup> As PPML is a non-linear model, the sum of the coefficients of both margins is not equal to the coefficients for the volume. All the models include the market sizes of both the origin and destination country, and the geographical distance between them, as well as the cross-border dummy.

Columns [1], [7], and [13] present the results of the baseline gravity model. Consistent with the results of empirical studies on the bilateral gravity model for FDI, the economic size of both countries has a positive impact on bilateral M&A. The geographical distance was significantly and negatively associated with the bilateral M&As. The cross-border dummy consistently showed negative coefficients for the volume and number of deals and positive coefficients for the intensive margin. This result indicates that the number of cross-border deals is smaller than that of domestic deals, whereas the average value per deal is relatively large for cross-border deals. This result confirms that cross-border deals are subject to higher transaction costs than domestic deals.

Columns [2], [8], and [14] show the results of the model including other covariates. The effect of standard gravity variables, such as economy size and geographical distance, on cross-border M&As was considerably robust, even when considering other covariates. As presented in Column [2], the dummy variables for common language and religion are positively associated with M&A volume, while common legal origin does not affect the M&A volume. This is as expected from trade literature: broadly defined “cultural proximity” reduces transaction costs associated with M&A. Furthermore, as shown in Columns [8] and [14], language commonality strongly contributes to the extensive margin, while the commonality of legal origin or religion has a positive correlation with the intensive margin.

However, as shown in Column [3], when we included the number of M&A advisers as the explanatory variable, these “cultural proximity” variables were not statistically significant for M&A volume. This result indicates that the negative impact of cultural distance was mitigated with M&A advisers, suggesting a potential channel through which M&A advisers can reduce M&A transaction costs.

Table 2. Base results from the PPML

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
	Volume	Volume	Volume	Volume	Volume	Volume	Int. margin	Int. margin	Int. margin	Int. margin	Int. margin	Int. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin
lnY_o	0.800*** [0.0155]	0.583*** [0.0237]	0.275*** [0.0233]	0.288*** [0.0233]	0.278*** [0.0233]	0.294*** [0.0236]	0.580*** [0.0126]	0.312*** [0.0241]	0.0584** [0.0255]	0.0760*** [0.0253]	0.0772*** [0.0251]	0.0582** [0.0255]	0.663*** [0.0138]	0.437*** [0.0227]	0.231*** [0.0188]	0.240*** [0.0186]	0.233*** [0.0187]	0.258*** [0.0191]
lnY_d	0.855*** [0.0176]	0.723*** [0.0253]	0.446*** [0.0203]	0.440*** [0.0196]	0.452*** [0.0198]	0.469*** [0.0211]	0.512*** [0.0134]	0.325*** [0.0303]	0.0679** [0.0302]	0.0605** [0.0299]	0.0565* [0.0315]	0.0701** [0.0300]	0.625*** [0.0136]	0.472*** [0.0217]	0.276*** [0.0194]	0.286*** [0.0193]	0.293*** [0.0191]	0.317*** [0.0200]
lnDist	-0.470*** [0.0336]	-0.219*** [0.0359]	0.0620* [0.0335]	0.0666** [0.0334]	0.0662** [0.0332]	0.0794** [0.0341]	-0.507*** [0.0405]	-0.353*** [0.0544]	-0.0723 [0.0602]	-0.0447 [0.0614]	-0.0518 [0.0594]	-0.0424 [0.0609]	-0.425*** [0.0252]	-0.123*** [0.0310]	-0.01 [0.0238]	0.0076 [0.0243]	0.00509 [0.0244]	0.0538** [0.0259]
CBRD	-2.617*** [0.107]	-3.388*** [0.140]	-2.071*** [0.122]	-2.093*** [0.121]	-2.109*** [0.122]	-2.450*** [0.184]	0.532*** [0.130]	0.725*** [0.218]	1.749*** [0.223]	2.147*** [0.215]	2.094*** [0.220]	1.140*** [0.253]	-3.773*** [0.0990]	-5.111*** [0.142]	-3.321*** [0.102]	-3.386*** [0.102]	-3.421*** [0.104]	-3.959*** [0.118]
Contig	0.279** [0.119]	0.287*** [0.0994]	0.296*** [0.0991]	0.297*** [0.0993]	0.297*** [0.101]	0.333*** [0.101]		-0.402** [0.164]	-0.513*** [0.167]	-0.496*** [0.158]	-0.428*** [0.161]	-0.472*** [0.169]		0.915*** [0.115]	0.468*** [0.0854]	0.488*** [0.0850]	0.507*** [0.0860]	0.564*** [0.0808]
Lang	0.968*** [0.0762]	0.149* [0.0764]	0.137* [0.0769]	0.142* [0.0772]	0.142* [0.0772]	0.0882 [0.0784]		0.268** [0.109]	-0.254** [0.117]	-0.305*** [0.110]	-0.305*** [0.112]	-0.297** [0.119]		1.352*** [0.0619]	0.707*** [0.0542]	0.670*** [0.0548]	0.675*** [0.0550]	0.530*** [0.0532]
Legal	0.0662 [0.0618]	0.0774 [0.0712]	0.0836 [0.0725]	0.0898 [0.0726]	0.109 [0.0732]			0.276*** [0.0922]	0.255** [0.0996]	0.222** [0.0957]	0.230** [0.0961]	0.273*** [0.0999]		-0.0665 [0.0437]	-0.174*** [0.0397]	-0.136*** [0.0398]	-0.138*** [0.0399]	-0.141*** [0.0402]
Relig	0.371*** [0.103]	0.118 [0.0864]	0.112 [0.0855]	0.119 [0.0859]	0.0544 [0.0905]			0.545*** [0.123]	0.286** [0.140]	0.284** [0.130]	0.332** [0.129]	0.245* [0.140]		-0.462*** [0.105]	-0.497*** [0.0878]	-0.501*** [0.0866]	-0.503*** [0.0867]	-0.652*** [0.0916]
lnEntry_o	-0.196*** [0.0394]	-0.108*** [0.0375]	-0.143*** [0.0409]	-0.111*** [0.0408]	-0.120*** [0.0378]			-0.00252 [0.0635]	0.175*** [0.0672]	0.0753 [0.0644]	0.0993 [0.0662]	0.176*** [0.0675]		-0.222*** [0.0249]	-0.163*** [0.0213]	-0.197*** [0.0228]	-0.161*** [0.0227]	-0.173*** [0.0228]
lnEntry_d	-0.0416 [0.0362]	-0.00973 [0.0319]	0.0124 [0.0358]	-0.0254 [0.0332]	-0.023 [0.0329]			-0.0819 [0.0602]	0.00136 [0.0571]	-0.0312 [0.0565]	-0.0575 [0.0564]	-0.0019 [0.0567]		0.152*** [0.0243]	0.160*** [0.0197]	0.131*** [0.0219]	0.105*** [0.0205]	0.137*** [0.0201]
lnFD_o	1.316*** [0.0977]	0.577*** [0.0914]	0.348*** [0.126]	0.627*** [0.143]	0.635*** [0.0977]			1.483*** [0.110]	1.007*** [0.101]	0.897*** [0.158]	-1.154*** [0.195]	1.042*** [0.101]		0.902*** [0.0731]	0.324*** [0.0626]	0.629*** [0.110]	0.602*** [0.101]	0.602*** [0.0711]
lnFD_d	0.581*** [0.0797]	-0.00282 [0.0776]	0.292** [0.127]	-0.0434 [0.0952]	0.00224 [0.0817]			0.825*** [0.114]	0.552*** [0.119]	-0.321* [0.176]	-0.252** [0.111]	0.559*** [0.118]		0.546*** [0.0560]	0.0596 [0.0460]	0.0588 [0.104]	-0.182*** [0.0694]	0.0627 [0.0503]
lnAdv_o		0.244*** [0.0128]	0.213*** [0.0151]	0.227*** [0.0165]	0.185*** [0.0294]			0.240*** [0.0172]	0.110*** [0.0171]	0.126*** [0.0183]	0.0223 [0.0179]			0.222*** [0.00846]	0.182*** [0.00769]	0.167*** [0.00897]	0.117*** [0.0189]	
lnAdv_d		0.0762*** [0.00666]	0.0897*** [0.00833]	0.0762*** [0.00679]	0.0637*** [0.0156]			0.0123 [0.0113]	-0.00404 [0.0124]	-0.0338*** [0.0115]	-0.0781*** [0.0152]			0.0575*** [0.00640]	0.0498*** [0.00597]	0.0645*** [0.00584]	0.0257** [0.0126]	
lnFD_o×lnAdv_o			-0.0582*** [0.0125]							-0.254*** [0.0137]						-0.0476*** [0.0101]		
lnFD_d×lnAdv_d			0.0283*** [0.0109]							-0.0964*** [0.0131]						-0.0226** [0.0107]		
lnFD_o×lnAdv_d				-0.00481 [0.0117]							-0.228*** [0.0152]						-0.00237 [0.0109]	
lnFD_d×lnAdv_o					-0.0195* [0.0105]						-0.135*** [0.0110]						-0.0593*** [0.00747]	
CBRD_o×lnAdv_o					0.0601** [0.0296]							0.220*** [0.0228]						0.107*** [0.0186]
CBRD_d×lnAdv_d					0.0128 [0.0174]							0.0948*** [0.0189]						0.0537*** [0.0135]
Constant	-21.99*** [0.429]	-14.93*** [0.556]	-6.109*** [0.486]	-6.185*** [0.482]	-6.219*** [0.483]	-6.684*** [0.496]	-15.31*** [0.443]	-6.185*** [0.826]	1.032 [0.854]	-0.153 [0.819]	-0.0713 [0.849]	1.419* [0.828]	-18.01*** [0.367]	-10.72*** [0.566]	-4.416*** [0.451]	-4.655*** [0.445]	-4.633*** [0.446]	-5.430*** [0.485]
Observations	833,497	416,760	416,760	416,760	416,760	416,760	833,497	416,760	416,760	416,760	416,760	416,760	833,497	416,760	416,760	416,760	416,760	416,760

Notes: \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors clustered within country pairs are shown in parentheses.

Further, Table 2 shows the results of the specification, including the financial development index. The degree of financial development has a positive effect on the M&A volume, intensive margins, and extensive margins. For the magnitude of elasticity, as shown in Column [2], the financial development in the origin country matters more than that in the destination country. This is consistent with the literature that determined that source country financial market variables are important determinants of cross-border M&A (di Giovanni, 2005; Erel et al., 2012).

When we include the number of M&A advisers, the financial development of the destination country loses statistical significance for the volume and extensive margin, as shown

in Columns [3] and [15], respectively.<sup>5</sup> Additionally, the elasticity of financial development in the origin country was reduced in the model that included the number of M&A advisers. Overall, the number of M&A advisers showed a consistently positive impact, regardless of origin or destination, except for the intensive margin for the number of destination country advisers (Column [9]). Moreover, its impact is larger in the origin country than in the destination country, which is a pattern similar to the indicator of financial development. These results suggest that the number of M&A advisers captures an important part of financial development, which is particularly relevant for cross-border M&As; further, the presence of M&A advisers considerably reduces the cost of M&A for acquirers than for targets. One possible explanation might be that acquiring firms, typically continuing companies after deals, generally have a longer-term relationship with advisers than acquired firms. We offer further discussion on this asymmetry in the concluding section.

To further investigate the relationship between the financial development index and the role of M&A advisers, we estimate the model by including the interaction term of the financial development index and the number of M&A advisers. Columns [4], [10], and [16] show that the coefficient of the interaction term was negative, indicating a substitutable relationship between the financial development index and the number of M&A advisers. Moreover, as shown in Columns [5], [11], and [17], a similar relationship was observed for the interaction terms of the origin  $\times$  destination and destination  $\times$  origin, particularly for the intensive margin. For example, while the advisers of the target country positively affected M&A flow, their marginal impact decreased with the level of financial development in the origin country.

Since our data cover both intra-national and cross-border deals, we studied the difference in the impacts of M&A advisers between the two types of deals. Columns [6], [12],

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<sup>5</sup> For the intensive margin, the financial development of the destination country remained significant; however, its magnitude was reduced (column [9]).

and [18] demonstrate the results of the interaction terms related to the cross-border dummy variable to test the difference in the impact of M&A advisers between intra-national and cross-border. The results show that the impact of M&A advisers was more pronounced in cross-border deals than domestic deals. This suggests that the cost of collecting information was relatively high for cross-border deals; resultantly, the positive impact of adviser support was relatively high.

Table 3. Results from the PPML with country-fixed effects

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
	Volume	Volume	Volume	Volume	Volume	Volume	Int. margin	Int. margin	Int. margin	Int. margin	Int. margin	Int. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin
lnY_o	0.973***	0.819***	0.488***	0.480***	0.490***	0.520***	0.654***	0.441**	0.116	0.0714	0.0567	0.123	0.693***	0.439***	0.243***	0.257***	0.249***	0.343***
	[0.0915]	[0.127]	[0.130]	[0.130]	[0.130]	[0.132]	[0.127]	[0.203]	[0.194]	[0.192]	[0.193]	[0.196]	[0.0716]	[0.0956]	[0.0937]	[0.0946]	[0.0941]	[0.0961]
lnY_d	0.971***	0.772***	0.701***	0.702***	0.700***	0.729***	0.498***	0.137	0.0776	0.0914	0.0843	0.108	0.554***	0.318***	0.269***	0.265***	0.272***	0.327***
	[0.0838]	[0.120]	[0.123]	[0.124]	[0.123]	[0.125]	[0.132]	[0.213]	[0.212]	[0.208]	[0.208]	[0.213]	[0.0631]	[0.0874]	[0.0834]	[0.0846]	[0.0840]	[0.0866]
lnDist	-0.556***	-0.471***	-0.145***	-0.145***	-0.144***	-0.116***	-0.402***	-0.429***	-0.113	-0.123	-0.134*	-0.0735	-0.752***	-0.668***	-0.440***	-0.444***	-0.443***	-0.344***
	[0.0292]	[0.0417]	[0.0407]	[0.0408]	[0.0408]	[0.0440]	[0.0399]	[0.0652]	[0.0777]	[0.0790]	[0.0782]	[0.0785]	[0.0215]	[0.0290]	[0.0256]	[0.0257]	[0.0257]	[0.0263]
CBRD	-2.319***	-2.606***	-1.576***	-1.567***	-1.583***	-1.972***	0.660***	0.961***	2.110***	2.321***	2.238***	1.553***	-2.940***	-3.254***	-2.367***	-2.399***	-2.385***	-3.171***
	[0.0818]	[0.118]	[0.123]	[0.124]	[0.121]	[0.215]	[0.164]	[0.274]	[0.258]	[0.258]	[0.265]	[0.292]	[0.0588]	[0.0928]	[0.0936]	[0.0957]	[0.0943]	[0.0973]
Contig		-0.108	-0.0149	-0.016	-0.0138	0.0727		-0.311*	-0.491***	-0.466***	-0.430***	-0.459***		-0.224**	-0.252***	-0.223***	-0.240***	-0.0127
		[0.107]	[0.103]	[0.104]	[0.103]	[0.111]		[0.163]	[0.162]	[0.161]	[0.161]	[0.164]		[0.0877]	[0.0807]	[0.0818]	[0.0814]	[0.0778]
Lang	0.832***	0.174**	0.169**	0.174**	0.118			0.137	-0.203*	-0.256**	-0.197*		1.470***	0.992***	0.965***	0.984***	0.772***	
	[0.0829]	[0.0772]	[0.0781]	[0.0780]	[0.0773]			[0.127]	[0.117]	[0.115]	[0.118]	[0.117]		[0.0705]	[0.0583]	[0.0594]	[0.0589]	[0.0555]
Legal		-0.0421	0.0226	0.0227	0.0237	0.049		0.147*	0.0149	0.0569	0.0545	0.0235		-0.230**	-0.295***	-0.280***	-0.288***	-0.243***
		[0.0676]	[0.0707]	[0.0719]	[0.0718]	[0.0713]		[0.0861]	[0.0889]	[0.0882]	[0.0867]	[0.0888]		[0.0467]	[0.0416]	[0.0414]	[0.0415]	[0.0421]
Relig	1.744***	0.717***	0.712***	0.715***	0.626***			0.544***	0.00359	-0.025	-0.000684	-0.0547		2.507***	1.929***	1.937***	1.927***	1.597***
	[0.215]	[0.204]	[0.204]	[0.204]	[0.205]			[0.169]	[0.162]	[0.167]	[0.171]	[0.161]		[0.134]	[0.119]	[0.120]	[0.120]	[0.122]
lnEntry_o		-0.0216	0.0344	0.0329	0.0339	0.0291		-0.0324	-0.0614	-0.0778	-0.0817	-0.066		-0.0983*	-0.0548	-0.0592	-0.0555	-0.0716
		[0.0812]	[0.0774]	[0.0774]	[0.0773]	[0.0776]		[0.118]	[0.113]	[0.111]	[0.112]	[0.113]		[0.0553]	[0.0487]	[0.0494]	[0.0490]	[0.0505]
lnEntry_d		0.0821	0.052	0.0524	0.0516	0.0493		-0.127	-0.144	-0.134	-0.127	-0.148		0.029	0.00289	0.00334	0.00506	0.00371
		[0.0776]	[0.0736]	[0.0734]	[0.0738]	[0.0738]		[0.109]	[0.107]	[0.108]	[0.107]	[0.107]		[0.0511]	[0.0454]	[0.0460]	[0.0457]	[0.0470]
lnFD_o	1.020**	0.221	0.122	0.28	0.323			-0.116	-0.927	-1.864***	-1.948***	-0.887		1.470***	0.939***	0.925***	0.870***	1.233***
	[0.485]	[0.467]	[0.478]	[0.479]	[0.483]			[0.609]	[0.584]	[0.622]	[0.623]	[0.583]		[0.283]	[0.276]	[0.286]	[0.286]	[0.302]
lnFD_d		0.207	-0.0175	0.173	-0.0526	0.0563		-0.0655	-0.0688	-0.669	-0.705	-0.00274		0.497**	0.348	0.460*	0.417*	0.454*
		[0.395]	[0.400]	[0.422]	[0.407]	[0.409]		[0.501]	[0.467]	[0.510]	[0.471]	[0.468]		[0.226]	[0.217]	[0.238]	[0.222]	[0.243]
lnAdv_o			0.225***	0.205***	0.218***	0.169***			0.244***	0.137***	0.144***	-0.0237		0.141***	0.106***	0.138***	0.0382***	
			[0.0125]	[0.0167]	[0.0189]	[0.0313]			[0.0166]	[0.0199]	[0.0209]	[0.0207]		[0.00557]	[0.00632]	[0.00787]	[0.0105]	
lnAdv_d			0.0811***	0.0987***	0.0873***	0.0726***			0.0465***	0.0216*	0.00279	-0.0397**		0.0557***	0.0542***	0.0431***	0.0175*	
			[0.00634]	[0.00976]	[0.00796]	[0.0144]			[0.00982]	[0.0123]	[0.0112]	[0.0163]		[0.00543]	[0.00842]	[0.00528]	[0.00975]	
lnFD_o×lnAdv_o				-0.0406**						-0.197***							-0.0573***	
				[0.0172]						[0.0188]							[0.0118]	
lnFD_d×lnAdv_d				0.0368**						-0.0629***							-0.00535	
				[0.0153]						[0.0180]							[0.0124]	
lnFD_o×lnAdv_d					0.0153						-0.142***							-0.0269***
					[0.0156]						[0.0201]							[0.0103]
lnFD_d×lnAdv_o						-0.0132												-0.00163
						[0.0149]					[0.0126]							[0.00863]
CBRD_o×lnAdv_o							0.0571*											0.106***
							[0.0331]											[0.0111]
CBRD_d×lnAdv_d							0.00681											0.0440***
							[0.0164]											[0.0103]
Constant	-27.51***	-20.69***	-15.67***	-15.48***	-15.69***	-16.75***	-16.70***	-5.191	0.348	0.325	0.878	-0.0664	-14.75***	-4.324*	-1.434	-1.48	-1.562	-4.556**
	[2.721]	[3.367]	[2.972]	[2.971]	[2.970]	[3.011]	[3.690]	[5.919]	[5.546]	[5.593]	[5.650]	[5.545]	[1.849]	[2.235]	[2.018]	[2.062]	[2.037]	[2.075]
Observations	667,950	358,788	358,788	358,788	358,788	358,788	667,950	358,788	358,788	358,788	358,788	358,788	667,950	358,788	358,788	358,788	358,788	358,788

Notes: Origin country-, destination country-, and year-fixed effects are included. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors clustered within country pairs are shown in parentheses.

Table 3 displays the results of the model, including time-invariant country-fixed effects. Considering unobservable country-specific factors, the impact of several national attributes, such as entry costs and financial development indices, was lost; however, the impact of the number of M&A advisers was robust. Moreover, the notable asymmetry, the magnitude of the impact on the acquirer is greater than that on the target, remained unchanged.

### **5. Robustness check for the impact of M&A advisers**

One issue with our empirical approach is the endogeneity of the M&A advisers. To address the endogeneity issue, we added country–year-fixed effects that control for all observable country characteristics and unobservable time-variant country-specific factors. The introduction of the country–year-fixed effects eliminated the unobservable factors that may influence the relationship between the M&A advisers and M&A flows. However, in this case, the impact of advisers could not be identified because of the perfect collinearity with the country–year-fixed effects. Heid et al. (2021) proposed an identification approach by estimating gravity models with cross-border transactions and intra-national transactions. The introduction of the interaction term of the cross-border dummy and the abundance of advisers enabled us to identify the impact of M&A advisers even when the country–year-fixed effects were added to the model. Since our data were panel data, we added country-pair-fixed effects to alleviate the endogeneity issues by controlling for unobserved bilateral-specific factors. Columns (1)–(4) of Table 4 report the results for the volume of M&A deals. Columns (5)–(8) display the results for the intensive margin (the average volume per M&A deal), and Columns (9)–(12) show the results for the extensive margin (the number of M&A deals). The models shown in Columns [1] and [2] include time-invariant country-pair characteristics, such as distance and language commonality, while Columns [3] and [4] show the results of the specification with country-pair-fixed effects instead of explicit bilateral covariates. The country-pair-fixed effects mitigated the potential for omitted variables by absorbing both observable and unobservable

bilateral factors. The regressor of interest, interaction term of the cross-border dummy, and number of M&A advisers consistently showed a positive and statistically significant sign for both the origin country (In-Out deals) and the destination country (Out-In deals). This result holds for both intensive and extensive margins and indicates that the number of M&A advisers has a positive impact on cross-border deals relative to intra-national deals. Intermediaries play a more important role in cross-border deals than in domestic deals, suggesting greater information barriers for cross-border deals.

Table 4. Results of the model with country–year- and pair-fixed effects

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
	Volume	Volume	Volume	Volume	Int. margin	Int. margin	Int. margin	Int. margin	Ext. margin	Ext. margin	Ext. margin	Ext. margin
lnDist	0.0249	-0.0476			-0.0496	-0.185***			-0.148***	-0.205***		
	[0.0436]	[0.0438]			[0.0558]	[0.0490]			[0.0262]	[0.0257]		
CBRD	-3.503***	-3.012***			1.015***	1.331***			-3.905***	-3.583***		
	[0.152]	[0.145]			[0.220]	[0.225]			[0.0871]	[0.0886]		
Contig	0.412***	0.349***			-0.410***	-0.484***			0.325***	0.291***		
	[0.114]	[0.114]			[0.134]	[0.140]			[0.0753]	[0.0754]		
Lang	0.169**	0.261***			-0.061	0.12			0.818***	0.914***		
	[0.0811]	[0.0863]			[0.0971]	[0.102]			[0.0508]	[0.0523]		
Legal	0.0225	-0.0287			-0.0389	-0.0136			-0.184***	-0.240***		
	[0.0712]	[0.0746]			[0.0775]	[0.0758]			[0.0370]	[0.0384]		
Relig	0.461**	0.843***			0.154	0.512***			1.129***	1.408***		
	[0.197]	[0.193]			[0.147]	[0.144]			[0.108]	[0.109]		
CBRD_o×lnAdv_o	0.261***		0.209***		0.272***		0.233***		0.193***		0.0699***	
	[0.00802]		[0.00833]		[0.0112]		[0.00792]		[0.00406]		[0.00268]	
CBRD_d×lnAdv_d		0.186***		0.132***		0.177***		0.171***		0.154***		0.0398***
		[0.00560]		[0.00547]		[0.00969]		[0.00683]		[0.00423]		[0.00311]
Origin-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin-Destination pair FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Constant	11.00***	11.40***	10.36***	10.46***	4.331***	4.945***	5.695***	5.813***	7.888***	8.217***	6.360***	6.377***
	[0.290]	[0.300]	[0.0254]	[0.0259]	[0.283]	[0.257]	[0.0305]	[0.0509]	[0.169]	[0.169]	[0.0172]	[0.0175]
Observations	723,350	723,350	723,350	723,350	723,350	723,350	723,350	723,350	723,350	723,350	723,350	723,350

Notes: \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors clustered within country pairs are shown in parentheses.

## 6. Conclusion

With excessive tax incentives being restricted internationally as a measure to attract FDI, there is a policy debate on how to build a friendly environment for inward FDI. Growing cross-border M&A is becoming a major player in FDI, particularly in developed countries. The increase in

M&A may be due to the presence of intermediaries who are in charge of searching for appropriate targets, negotiations, and advisory work. Previous research on M&A advisers has mostly focused on the role of bidder advisers and their impact on bidder announcement returns. This study examines the role of advisers, for both the acquirer and target sides, as a determinant of bilateral M&A flows.

The estimation results from the PPML reveal that a high presence of advisers is positively associated with M&A. This result is consistent with the view that M&A advisers are the information channels that facilitate M&A. To shed light on how intermediaries promote M&As, we further investigate how the intermediary effect interacts with a financial market development index and a cross-border dummy variable. We find evidence that M&A advisers are more important for cross-border deals than domestic deals, indicating higher information barriers for cross-border deals. Additionally, for an acquirer country, the intermediation service partly substitutes for the positive effect of overall financial market development on M&A volume. In contrast, on the target side, they work in a complementary manner. These results suggest that the intermediary mechanism may differ between inward and outward M&As. To spur outward M&As, we should consider either improving financial development or expanding intermediaries; however, to attract inward M&As, having more of both might be useful.

Finally, one robust finding is that the impact of M&A advisers is much stronger on the acquirer side than on the target side, regardless of the intensive margin and extensive margin. We propose two hypotheses to explain this asymmetry. First, the result is consistent with the idea that it is perhaps easier for M&A advisers to build a long-term relationship with acquiring firms than with target firms because the completion of deals changes the status of target firms (e.g., from public to private, from independent to a subsidiary, or they may simply disappear). This might create a better incentive for M&A advisers to improve the quality of deals on the acquirer's side, increasing M&As. Second, M&A advisers may be used as defense mechanisms for potential target firms. Firms on the acquirer side would naturally seek better deals for them



(i.e., high-quality target firms for low prices). In contrast, firms on the other side of M&A markets may have more diverse incentives; some may want to sell themselves at relatively high prices, while others may want to prevent deals. This might lead to a weak effect of M&A advisers on the target side, on average. We believe that further investigation of this asymmetry would be useful for a better understanding of the M&A markets.

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