

Bilateral M&A Activity from the Global South

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Abstract

This paper studies the factors associated with outbound bilateral mergers and acquisitions (M&A) activity by firms located in emerging economies. The authors document recent trends in emerging market M&A flows, which have risen dramatically over the past decade, and explore the factors that may have contributed to this rise. They find distinct patterns for M&A deals

according to whether the acquisition targets are in other emerging economies or advanced countries, and that these differences can be attributed to differing theoretical motivations behind foreign direct investment. The authors also consider the implications of their model for future M&A originating in the global South, in light of the global financial crisis of 2008.

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Bilateral M&A Activity from the Global South

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1 Introduction

The shift of global financial investment activity away from the advanced world toward emerging economies has been widely documented, and nowhere is this shift more evident than in recent patterns of cross-border mergers and acquisitions (M&A) deals. Between 1997 and 2003, companies based in emerging economies engaged in outbound cross-border M&A deals worth \$189 billion, or 4 percent of the total value of all global cross-border M&A investment. In the equivalent period from 2004 to 2010, that amount had increased to \$1.1 trillion, or 17 percent of the global total. This sharp rise in emerging economies' share of cross-border M&A has been accompanied by a deepening reach of emerging-market firms in international capital markets overall, not just via foreign direct investment (FDI) but also through equity cross-listings, participation in international loan syndicates, and debt issues on international bond markets.

Given the rising importance of emerging economies in international M&A, the question of what forces drive their investment activity becomes ever more important. In particular, do cross-border M&A choices by emerging market firms differ systematically across destination markets, and if so, what are the dimensions in which these choices differ?

This question is increasingly pertinent as government regulators grapple with the dramatic pickup in M&A investment by Southern firms in both Northern markets—exemplified by Chinese carmaker Geely's high-profile acquisition of Sweden's Volvo from Ford in 2010—as well as (and perhaps more importantly) their purchasing activities in the other developing economies of the South. Indeed, the trend of rising South-North and South-South M&A activity suggests yet another wrinkle to the Lucas (1990) paradox of “uphill” South-North capital flows: It is not sufficient for theoretical explanations to merely explain why emerging market firms may be investing in (ostensibly) less risky Northern markets, but also why they may choose to invest in other economies that are otherwise very similar to their own (insofar as their level of development is concerned), rather than investing at home.

This paper seeks to examine the factors associated with the flow of M&A investment originating in emerging market economies.¹ The empirical analysis relies on bilateral outbound cross-border M&A data for firms based in 61 emerging markets, collected for the period between 1997 and 2010. This coverage includes economies from all major developing regions, which makes this, to our knowledge, one of the most comprehensive analyses of bilateral M&A activity by the Global South.

The picture of Southern cross-border M&A that emerges from our paper is a fairly sophisticated one. Consistent with other forms of cross-border economic activity, M&A deals reflect standard gravity components, such as economic size and distance. But the strength of existing trading and investment relationships also matter, and for acquisitions in advanced economy targets, the informational advantages gleaned from such prior economic relationships appear to overcome frictions due to physical distance. Moreover, deals in advanced economies tend to

¹For the purposes of this paper, emerging economies are defined as 61 (mostly middle-income) economies traditionally classified as emerging markets by the financial community. The full list is provided in the annex.

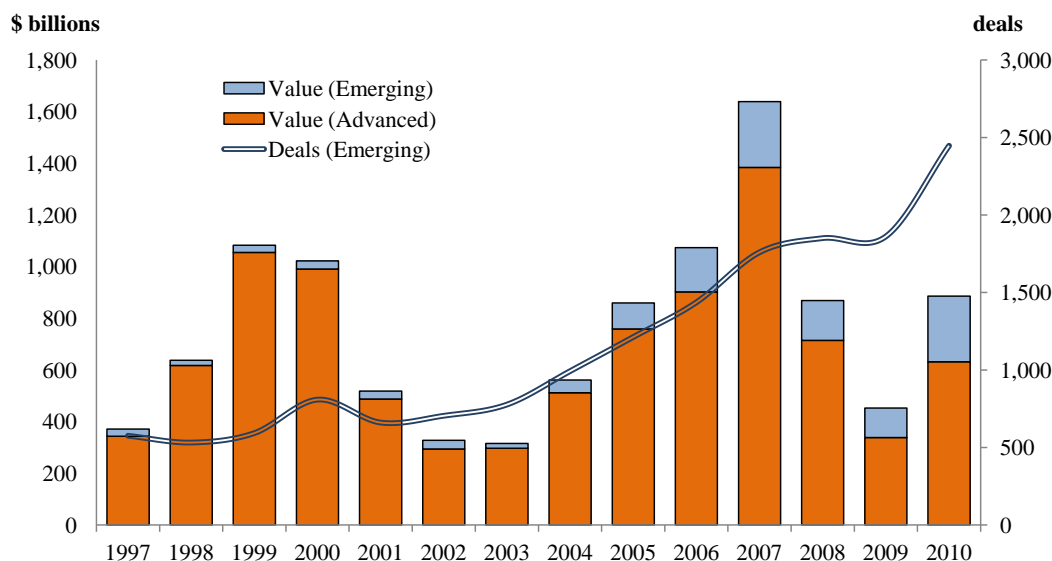
reflect the extent to which FDI can substitute for direct exporting activity, or offer possible diversification benefits. In contrast, acquisitions in other emerging countries tend to be associated more with considerations of factor price differentials. Finally, the ease of financial access—both in the home and host economies—appears to facilitate M&A transactions, a result consistent with the notion that limitations to trade flows may be overcome by substituting capital flows for goods exports.

We also fit our empirical model of M&A deals to a set of growth assumptions for emerging and advanced economies to obtain a projection of outbound cross-border M&A by emerging market firms for the period 2010–25. Under plausible scenarios of relative growth rates, we find that M&A activity is expected to recover from the crisis-induced decline, and grow at an average of 8.2 percent annually over the period. This respectable rate nevertheless represents a moderation in the rate of growth relative to the past, where—for the decade leading up to the crisis (1998–08)—average annual growth was significantly higher, at 14.3 percent.

Our findings corroborate, and extend, the existing literature in several ways. Existing empirical papers on FDI have tended to focus on testing one theoretical framework against another (Braconier, Norbäck & Urban 2005; Brainard 1997; Head & Ries 2008; Helpman, Melitz & Yeaple 2004). In contrast, we adopt an agnostic view on the different competing theories and seek instead to test a fairly eclectic set of potential hypotheses. Like several papers in the literature (Anand & Delios 2002; Blonigen & Piger 2011; Carr, Markusen & Maskus 2001; Makino, Lau & Yeh 2002), we indeed find that, depending on the circumstance, different theoretical motivations may drive FDI. Our innovation is to frame these distinct cases in terms of emerging versus advanced economy target acquisitions.

While a small number of papers have relied on cross-border M&A data (di Giovanni 2005; Méon & Delannay 2006; Rossi & Volpin 2004), these have tended to be relatively limited in terms of time period and/or country coverage, and none have explicitly focused on M&A *by* emerging economies. Finally, unlike several recent papers, we eschew an explicit focus on policy- or politically-related factors driving FDI—such as political risk (Busse & Hefeker 2007) or investment agreements (Büthe & Milner 2008; Neumayer & Spess 2005)—and instead embed these factors in our overall gravity framework.

The paper is organized as follows. In the following section, we describe some broad stylized patterns of M&A activity originating from emerging economies (Section 2). This is followed by an overview, in Section 3, of the different theoretical streams that have informed economists’ understanding of bilateral M&A (and FDI, more generally). Section 4 follows with a description of the dataset, econometric specification, and estimation methodology. Benchmark results and robustness checks follow (Section 5), before a final section concludes with some brief thoughts on policy and future research directions.



Source: Authors' calculations, based on Thomson-Reuters SDC Platinum

Figure 1: Total cross-border M&A deals by firms from advanced economies and emerging-market economies, 1997–2010. The upward trend held by emerging market firms is evident in both absolute deal number and relative deal values.

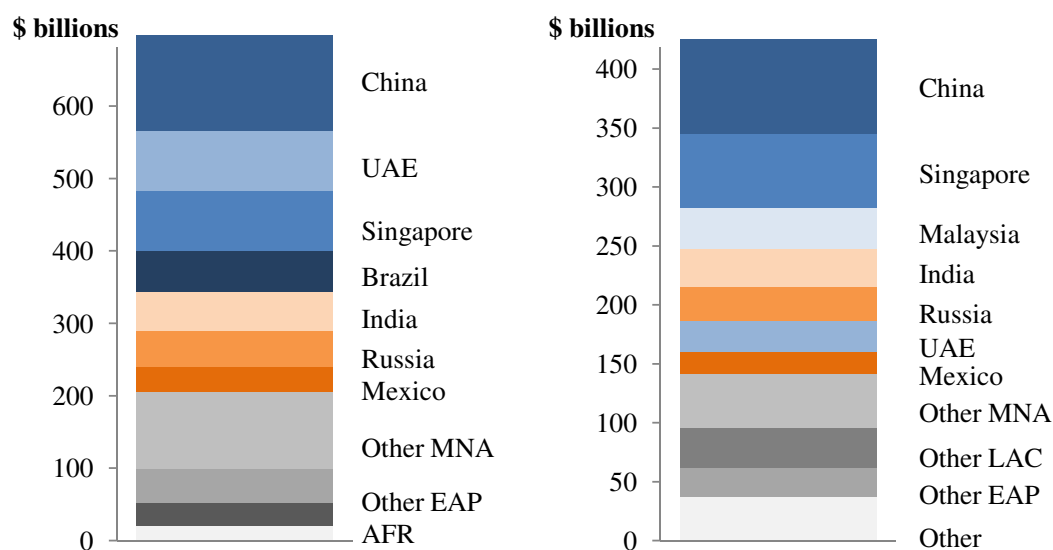
2 Recent Trends in Emerging Economy M&A

Emerging market multinationals have become far more assertive in their M&A activities on the global stage over the past decade. Save a dip during the global crisis in 2008 and 2009, the overall trend in cross-border M&A has been upward, especially in the post-dot-com period since 2001. This is evident both in terms of the total number of deals (increasing from 661 deals in 2001 to 2,447 in 2010), as well as—perhaps more dramatically—in the value of M&A deals concluded by emerging economy firms (the rise from \$30 to \$254 billion over this period represented an increase in shares from 6 to 29 percent) (see Figure 1).

Although not the focus of this paper, it is illuminative to consider, by way of comparison, whether patterns in emerging market M&A are also replicated in the other component of FDI, greenfield activity.² The share of emerging market greenfield investment did indeed rise between 2001 and 2009 (the latest year data are available), from 12 to 15 percent of total global greenfield activity. This rise, while clearly more modest, was nevertheless a significant absolute increase: the value of cross-border greenfield investment rose from an estimated \$98 billion to \$250 billion over the same period.³

²Greenfield investment, as opposed to M&A, typically represents internal, organic corporate growth, while M&A activity, in addition to satisfying growth objectives, may capture other more complex corporate goals, such as strategic market penetration or the acquisition of new technology.

³Greenfield data were sourced from UNCTAD and fDi Markets but were, unfortunately, only available for 2003 through 2009. The value for 2001 given here is an exponential projection from the available time series, and is not meant to be an authoritative figure, but rather to give a sense of the magnitude involved.



Source: Authors' calculations, based on Thomson-Reuters SDC Platinum

Figure 2: Top source countries of emerging-market cross-border M&A in emerging economies (left) and advanced economies (right), by value, 1997–2010 total. AFR, EAP, LAC, and MNA correspond to the World Bank's regional classifications for Africa, East Asia and the Pacific, Latin America and the Caribbean, and Middle East and North Africa.

As may be expected, large and fast-growing emerging economies are responsible for the bulk of cross-border M&A activity. China is the single largest emerging market source country for M&A deals, and accounts for \$80 and \$132 billion of the total \$426 and \$698 billion invested in emerging and advanced economies, respectively, over the 1997–2010 time period. Other emerging economies with significant presence among source countries include Singapore, the United Arab Emirates,⁴ India, and Russia (see Figure 2). Much of these flows are destined for developed markets—primarily the United States, United Kingdom, Canada, and Australia—but China, Singapore, and Brazil are major destination markets as well.

In terms of sectoral composition, the major emerging market M&A transactions appear in high-value, nontradable service sectors: financial services (the top sector for cross-border M&A activity among emerging-market firms, amounting to \$227 million of the total of \$1.12 billion for 1997–2010), telecommunications (a distant second, amounting to \$103 million), resource extraction, and utilities. There is little difference in the sectoral composition of M&A deals in emerging versus advanced economies, which suggests that, to the extent that there are distinct patterns between Southern and Northern investments, they lie more in the nature of the respective economies, rather than in the type of businesses involved.⁵

⁴The relatively high standing of Singapore and the UAE, in spite of their relatively small size, is attributable to the large number of sovereign wealth fund acquisitions in these economies. Singapore's Temasek Holdings and GIC Real Estate, for instance, accounted for 32 and 31 deals, respectively, in the sample period.

⁵The sectoral distribution differs somewhat when considering the number, rather than value, of deals, with

A casual examination of the actual transactions data suggests that the overall pattern of cross-border M&A investment by emerging-market firms is consistent with the typical international growth strategy of individual corporations. When companies venture abroad, they often first establish a small foothold in new markets through branch or representative offices, small distribution networks, or maintenance centers. Such small greenfield investments can be the first step toward execution of a firm’s globalization strategy, allowing companies with limited international exposure to gain experience and local knowledge before making a major commitment to a particular market through an outright acquisition or large-scale investment via mergers.⁶ In carrying out M&A transactions, companies often appear to seek more immediate access to local markets.

Firms may potentially capitalize on technological and informational advantages that may be gained by their foreign acquisitions, or when they can apply their unique expertise to the same industries abroad. In particular, emerging-market firms with expertise overcoming the difficult institutional environment in their home countries may be eager to apply this informational advantage to similar environments in other emerging markets. Some M&A may also be motivated by the desire to exploit factor cost differentials in target markets (relative to their own). Finally, international M&A activity may demonstrate some persistence, when initial investments lead to additional cross-border investments through the necessity of the restructuring or upgrading of acquired assets, or as part of acquiring other firms’ vertical- or horizontal-integration growth strategies.

3 Potential Factors Related to M&A Activity

Economic models of bilateral trade flows have most successfully been modeled on the basis of an empirical gravity equation, which has more recently been contextualized in the form of a broad variety of theoretical models (Anderson & van Wincoop 2004). We therefore rely, as a point of departure, on a gravity equation, where cross-border M&A flows are positively related to the pair’s respective output and negatively related to the bilateral distance between them. Bilateral country distances capture not only explicit trade costs associated with shipping and transportation, but could also embed implicit transactions costs related to the deteriorating quality of an investor’s (or acquirer’s) knowledge of, and ability to obtain information about, a potential acquisition target as physical distances between the two countries increase (in line with the argument made by Loungani, Mody & Razin (2002)). Naturally, existing bilateral trade flows are also likely to be associated with bilateral M&A flows.

sectors such as professional and technical services, and electronics manufacturing featuring more prominently in emerging market M&A deals. However, the pattern of overlap in South-North and South-South remains the same.

⁶Such staged investment strategies emphasize the real-option aspects. Consequently, the initial greenfield investment serves as a stepping-stone to understanding a local economy. As uncertainties about demand and supply become resolved over time, follow-up investments then create a permanent presence in the foreign market by extending the scope and reach of the initial unit. Gilroy & Lukas (2006) provide the theoretical justification for this phenomenon, while Brighthouse & Dikova (2010) establish empirical evidence.

In addition to this baseline, however, we supplement the model with a range of theories that have been put forward to explain cross-border investment activity.

The first class of theories posit that companies seek growth opportunities abroad as they outgrow their home markets; a problem especially acute in developing countries. The decision of multinationals to either horizontally expand to access foreign markets or vertically integrate production across borders, in turn, depends on both market size and the ability to exploit factor price differentials between the two production locations (Helpman & Krugman 1985; Markusen 2002; Markusen & Venables 1998). This result, which relies on relative factor proportions, suggests that, in addition to absolute GDP, per capita incomes—as a proxy for factor costs—could be important for M&A choices.

Of course, the implications of the *factor proportions* hypothesis is not limited to contemporaneous differences in factor prices, but also possible future differentials. Consequently, relative growth in both home and destination countries could affect deal flows. This hypothesis can thus be further tested by including variables that measure GDP and sectoral growth rates. Following this rationale, faster growth in the home (host) country will exert greater pressure on domestic (foreign) factor prices and hence increase (reduce) incentives to engage in cross-border M&A.⁷

A second class of theories revolves around structural economic characteristics of the home and host countries, especially those related to the extent of trade openness (Brainard 1997; Helpman *et al.* 2004; Horstmann & Markusen 1992), but also with regard to differential access to finance (either domestic or international), or differences in the speed of diffusion of technological advances. This tradeoff—between proximity to the customer versus concentration of production—tends to privilege the former especially when transport costs and trade barriers are substantial or, conversely, when economies of scale favoring home production and subsequently exporting are relatively low.

Indeed, for economies heavily invested in high-fixed, low-marginal cost activities such as research and development (R&D), the *proximity-concentration* hypothesis would argue against FDI (or, at the least, geographically-diffused FDI, since pockets of research excellence may exist in more than one location). Given that emerging economies have now become important contributors to the advancement of science and technology in their own right, one can further test this group of hypotheses by including variables directly related to the home country's capabilities in science and technology, such as the number of patents granted, or through other indirect measures of innovative capacity, such as the percentage of the population attaining a tertiary education or the number of engineering graduates in the population. Financial access can also be captured via measures of international financial openness (by, for example, private capital flows as a share of GDP) or the level of domestic financial development (by, for instance, the ratio of stock-market capitalization to GDP).

Innovation in the *host* country may also serve as a justification for M&A. This class of theories, which focuses on the potential for FDI to facilitate technological and other types of

⁷However, host growth could also increase its market size in the future, in which case growth could increase the desire for M&A, leaving the sign of the coefficient ambiguous.

spillovers (Ethier 1986; Fosfuri, Motta & Rønde 2001; Havránek & Išová 2012; Rodríguez-Clare 1996), suggests that the desire for technological and knowledge transfer could motivate emerging market firms to acquire firms in an advanced economy. At the same time, emerging-market firms may have specialized managerial and operational expertise which the firms could spillover to markets very similar in nature to their home markets. This *technology transfer* hypothesis argues that it is not only the home country’s innovative capacity that may influence M&A choices, but also that of the host country.

Finally, political and policy factors may play a role in international M&A as well. Possibly the most likely channel where public policy could affect M&A deal flows is the residual accumulation of reserves as a consequence of existing trade patterns. In addition, policy factors that may affect M&A could take other forms, such as the presence of bilateral investment treaties (BITs) (Büthe & Milner 2008; Neumayer & Spess 2005), or risks associated with economic policy or political conditions (Busse & Hefeker 2007). Accordingly, we cluster these variables into the class of *political economy* explanations, which we consider in our empirical work.

4 Data Description and Econometric Methodology

4.1 Data sources and description

The cross-border M&A investment database used for this paper was compiled from a variety of sources. The primary data for M&A deals were drawn from a larger dataset compiled by Thompson-Reuters SDC Platinum, which covers all publicly disclosed cross-border transactions for which the ultimate acquiring company was based in an emerging-market country, and the immediate target company was located in a country other than that of the ultimate acquirer. Transactions that were included involved either two or more companies pooling their assets to form a new entity (a *merger*), or a foreign company gaining a portion of a domestic company (an *acquisition*). All completed and partially completed deals were included, as well as intended and pending deals announced after September 1, 2009. The definition of a cross-border M&A transaction used in this paper includes any deal where any equity stake is obtained by the acquirer firm.⁸ When no deals were recorded for any country and year, the dependent variable was coded as zero.⁹ The compilation resulted in a working database that covers some 10,000 companies from 61 emerging-market economies, over the period between 1997 and 2010.

These were merged with the main independent variables of interest and additional controls, which were drawn from a variety of additional sources. These include macroeconomic conditions from the World Bank’s World Development Indicators (WDI) and the IMF’s International Financial Statistics (IFS); financial factors from Dealogic DCM Analytics, MSCI,

⁸This grouping includes investments where share purchases resulted in acquisitions of less than 10 per cent of a firm’s voting shares, a narrower but commonly-used definition of FDI.

⁹The database also provides historical information on acquirer and target countries (both immediate and ultimate), status, sector, and consideration offered. These were used in the section describing stylized facts in the data, but were excluded from the econometric analysis.

and J.P. Morgan; commodity prices from Goldman Sachs and the World Bank’s Development Prospects Group; bilateral investment treaties from UNCTAD; country risk and institutional indicators from the PRS Group’s International Country Risk Guide (ICRG); and technology and innovation indicators from the World Intellectual Property Organization. Depending on the specification, the dataset is an unbalanced panel that includes between 29,995 and 55,497 observations.¹⁰

4.2 Econometric specification and estimation

The econometric model we use is an augmented gravity model that specifies that the number of cross-border M&A deals originating in country i (“home”) and destined for country j (“host”) at time t , M_{ijt} , is a function of each country’s output in that period, Y_{it} and Y_{jt} , the (time-invariant) bilateral distance between them, D_{ij} , and additional factors:

$$M_{ijt} = \beta_{1,k}Y_{it} + \beta_{2,k}Y_{jt} + \beta_{3,k}D_{ij} + \mathbf{\Gamma}'_k\mathbf{X}_{it} + \mathbf{\Lambda}'_k\mathbf{Z}_{jt} + \mathbf{\Phi}'_k\mathbf{B}_{ijt} + \mathbf{\Psi}'_k\mathbf{G}_t + \epsilon_{ijt}, \quad (1)$$

where \mathbf{X} and \mathbf{Z} are vectors of home- and host-country characteristics, respectively, \mathbf{B} is a vector of other variables capturing the bilateral economic relationship between the home and host countries, and \mathbf{G} is a vector of additional controls representing global macroeconomic and financial conditions. To maintain parsimony, we nest the two possible host targets within (1), so that the various coefficients— β , γ , λ , ϕ , and ψ —are allowed to vary by host-country class (advanced, AD , or emerging, EM), so that $k = \{AD, EM\}$.

Variables considered within \mathbf{X} and \mathbf{Z} are informed by the different theoretical approaches outlined in Section 3. These include, *inter alia*, GDP growth (corresponding to the factor proportions hypothesis), trade openness (corresponding to the proximity-concentration hypothesis), patents granted (corresponding to technology transfer arguments), and international reserve holdings (corresponding to political economy explanations). Additional variables included to account for the bilateral relationship between country pairs include factors such as the existing size of bilateral trade and the existence of a BIT between the two economies.

In our benchmark regressions, (1) was estimated using ordinary least squares (OLS) with two-dimensional clustering for standard errors (by country-pair and time), designed to correct for both heteroskedasticity across countries and serial correlation within countries. Because distance is time-invariant (and we are interested in the signs and magnitudes of the coefficient β_3), we do not introduce country-pair fixed effects. Moreover, given the inclusion of global variables, we exclude time fixed effects from the benchmark in order to minimize the incidence of multicollinearity, although we explore this possibility in our robustness checks.

¹⁰The technical appendix provides detailed descriptions of each variable and its source in Table A.2, along with summary statistics for major variables of interest in Table A.3.

5 Empirical Results and Robustness Checks

5.1 Benchmark results

Our benchmark results are reported in Table 1, for three main specifications: (*B1*) A bare-bones specification that comprises the standard components of a gravity model (GDP and distance); (*B2*) A parsimonious specification that includes only one representative variable from each family of hypotheses elaborated on in Section 3,¹¹ along with the main control variables such as bilateral trade flows and global macroeconomic conditions; and (*B3*) A fully specified model that includes all the variables of interest associated with the various theoretical hypotheses.¹²

Although we consider the final specification, (*B3*), to be the most complete representation of (1), the sample size is much smaller (about half of the first specification), and the goodness-of-fit improves only marginally from specification (*B2*). Nevertheless, some additional insight can be gleaned from the more stripped-down specifications. In particular, variables that are significant in a less elaborate specification typically survive the more comprehensive one (and always retain their signs). This suggests that such variables carry considerable explanatory power.

In general, the basic gravity model variables—economic size and distance—enter with highly significant coefficients (with the exception of distance in the final specification). The coefficients on both home and host GDP are positive and significant, which is consistent with theoretical priors: large economies tend to engage in a greater amount of cross-border economic activity, M&A included. In terms of magnitude, the effect is several times larger for acquisitions in developed versus emerging markets; this suggests that only firms from relatively large emerging economies have the means to pursue expansion in advanced economies through M&A. Interestingly, these relative magnitudes are reversed when considering host GDP, which means that these firms are also far more likely to pursue opportunities in larger emerging economies, compared to advanced ones.

While distance from other emerging economies—a proxy for transactions costs, which can include informational costs¹³—decreases M&A when considering emerging market targets, it actually *increases* when considering advanced economy firms. While seemingly paradoxical, this can be understood by recognizing that transactions costs vis-à-vis developed countries are likely to be fairly low, and so other factors are more likely to predominate in any M&A decision. Indeed, the positive coefficient is only statistically significant in one specification, suggesting

¹¹These are (theoretical family in parentheses): per capita GDP (factor proportions), trade openness (proximity-concentration), host patents granted (technology transfer), and both reserves and economic risk, since these capture distinctly different types of political-economy effects.

¹²In the third specification, the standard error for emerging host GDP is not reported. This arises due to collinearity. However, given the importance of GDP in the model, we have chosen to retain the variable in the specification, keeping in mind that the coefficients of variables that are highly correlated with GDP should be interpreted with caution (coefficients for non-collinear variables are unaffected).

¹³The quality of an investor's information about a potential acquisition target decreases as the distance between the two counties increases, whereas the costs of communication, coordination, and monitoring all increase with distance. At the same time, firms tend to be more knowledgeable about the financial, legal, and political environments of economies in close geographical proximity to their own. Proximity would thus reduce the cost of acquiring and operating subsidiaries.

Table 1: Benchmark regressions for factors associated with number of cross-border outbound M&A investments from emerging economies, 1997–2009

	B1		B2		B3	
	to EM	to AD	to EM	to AD	to EM	to AD
<i>Home country characteristics</i>						
GDP	4.781 (1.10)***	17.060 (4.00)***	2.728 (1.01)***	8.391 (0.92)***	3.714 (1.38)***	8.158 (2.20)***
GDP per capita			-0.672 (0.64)	-0.616 (0.64)	-0.321 (1.00)	-1.770 (0.83)**
GDP growth					-0.350 (0.48)	1.136 (0.76)
Trade openness			5.096 (1.81)***	3.751 (1.32)***	5.232 (2.11)**	2.458 (1.69)
Financial openness					0.227 (0.33)	-0.737 (0.45)
Stock market capitalization					1.816 (0.50)***	5.298 (1.83)***
Patents granted					-5.496 (2.80)**	-1.993 (2.56)
Reserves			-1.276 (0.44)***	1.179 (0.31)***	-2.218 (0.72)***	1.356 (0.78)*
Economic risk			0.684 (0.29)**	0.481 (0.34)	0.986 (0.44)**	-0.296 (0.66)
Political risk					-0.733 (0.47)	-0.055 (0.34)
<i>Host country characteristics</i>						
GDP	6.899 (3.28)**	1.652 (0.45)***	3.706 (1.99)*	0.752 (0.36)**	1.139 (0.53)	0.844 (0.41)**
GDP per capita			-1.227 (0.49)**	0.921 (0.30)***	-0.646 (0.53)	0.701 (0.30)**
GDP growth					0.312 (0.56)	0.355 (1.37)
Trade openness			1.994 (0.72)***	-1.865 (0.81)**	1.797 (0.78)**	-3.257 (1.36)**
Financial openness					0.339 (0.15)**	0.122 (0.08)
Stock market capitalization					-0.080 (0.53)	2.926 (0.75)***
Patents granted			-6.219 (2.69)**	-2.622 (0.83)***	-8.283 (3.54)**	-5.886 (1.28)***
Reserves			-0.694 (0.28)**	-0.552 (0.31)*	0.616 (1.15)	-0.099 (0.32)
Economic risk			0.420 (0.35)	-1.224 (0.76)	0.163 (0.49)	-2.656 (1.21)**
Political risk					-0.332 (0.25)	2.512 (0.60)***
Country-pair characteristics						
Distance	-3.810 (0.76)***	0.229 (0.56)	-1.236 (0.55)**	2.025 (0.73)***	-0.838 (0.68)	0.325 (0.80)
Bilateral trade flows			2.583 (0.90)***	0.551 (0.17)***	3.013 (0.94)***	0.501 (0.16)***
BITs					1.226 (0.70)*	-0.639 (0.77)
Global controls						
10-yr Treasury rate			-1.575 (1.34)	4.472 (1.23)***	-1.646 (0.67)**	2.156 (0.87)**
Energy price index			-0.958 (0.06)***	-0.288 (0.18)	-1.311 (0.53)**	-0.536 (0.53)
Agricultural price index			0.164 (0.01)***	-0.302 (0.27)	0.921 (0.59)	1.098 (0.60)*
Adjusted R^2	0.078	0.078	0.275	0.275	0.289	0.289
F	128.162***	128.162***	32.686***	32.686***	20.998***	20.998***
N	55,497	55,497	37,909	37,909	29,995	29,995

[†] Heteroskedasticity and autocorrelation-robust standard errors, clustered by time and country-pair, are reported in parentheses. A constant term were included in the regressions, but not reported. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

that other factors are in fact more critical. In addition, the positive and significant coefficient on bilateral trade flows corroborates this notion, since preexisting trading relationships implies lower transactions costs, which serves to facilitate greater M&A activity.

The signs and statistical significance of coefficients on the other theoretically-motivated variables suggest that many of the hypotheses put forth in Section 3 have some merit.

The level of host-country development, as measured by per capita GDP, negatively affects acquisitions in emerging destination countries, but is positive for advanced-country targets. This would suggest that firms acquire assets in other emerging economies that have not yet attained a certain level of development—as measured by per capita GDP—so as to exploit factor price differentials (recall, the emerging economy acquirer firms in the sample typically hail from middle-income countries). Acquisitions in advanced economies, in contrast, do not offer positive wage differentials, and so the positive coefficient on per capita GDP in that case would simply mean that more developed economies tend to attract more M&As, since there are likely to be more acquisition targets available. This could especially be the case for acquisitions in services—as discussed in Section 2, deals in service-related sectors account for a significant share of all M&A activity—since countries with higher levels of per capita GDP also typically possess larger service sectors.

As expected, the greater a home country’s participation in the global economy, as measured by its trade flows, the greater its M&A flows. To a lesser extent, this is also reflected by its foreign currency reserves. A country whose firms trade more frequently with advanced (emerging) economies tends to build up foreign reserves faster (slower), which makes the country’s companies more (less) likely to engage in acquisitions in their target markets (hence the positive coefficient on home reserve holdings for advanced economy M&A, and conversely for emerging economy M&A).

The coefficients on trade openness in the host country are far more interesting. For acquisitions in advanced countries, less restrictive economies—as proxied by a greater degree of trade openness—will tend to attract less M&A, since emerging markets can simply choose the exporting rather than FDI route to penetrate those markets. In this sense, the two are *substitutes*, an interpretation entirely consistent with the proximity-concentration hypothesis. In contrast, acquisitions in emerging markets appear to be *complements*. Since barriers to the flow of goods and services tend to be significantly higher in most developing countries, a given marginal reduction in trade restrictiveness will have less of an effect. Thus, instead of choosing the route of exporting goods, firms export capital instead, by establishing an operational presence in such countries. The positive and significant coefficient on the distance variable for flows to advanced economies can, in fact, be viewed as further corroboration of this proximity-concentration tradeoff.

The additional measures that capture financial access also indicate that, overall, a greater level of access to finance is associated with more M&A activity. For instance, the ability of firms in the home economy to raise capital (through its domestic stock market, for example)

can promote M&A, as can financial depth in the host country. By relaxing constraints to financing, barriers to horizontal firm expansion are lowered, and firms are encouraged to pursue the M&A route.

The negative and significant coefficients on the innovation variable in the host country lend little support to the technology transfer argument. Indeed, across all specifications, emerging economy firms appear to invest less in countries with more granted patents.¹⁴ This could be, in part, because emerging economies now already account for a significant share of global innovation (Aizenman & Noy 2007; World Bank 2011), and it is the emerging economies that engage in the technology transfer to less innovative host nations. Whatever the motivation, the evidence does suggest that, if firms choose to pursue cross-border M&A, it seems unlikely that they do so for reasons of acquiring technology.

Finally, there is some evidence that political and policy variables make a difference to M&A. BITs are positively related to acquisitions in emerging economy country-pairs, and the magnitude of this effect is substantial (although the coefficient is only marginally statistically significant). In particular, the positive and significant effect of political stability on acquisitions in advanced countries seems to suggest that firms actively seek to lower their political-risk exposure through their M&A activities in advanced economies (since higher values of the measure indicate *less* risk).¹⁵ Similarly, firms from more economically stable emerging economies are more likely to seek to diversify their exposure by acquisitions in other emerging markets.

5.2 Robustness checks

To examine the strength of the results reported in Table 1, we experiment with two sets of additional robustness checks. The first set of checks allows for additional factors that may be associated with cross-border M&A, or alternative measures of existing variables. In the interest of space, and given the relatively good performance of the parsimonious model (*B2*), we rely on this specification as the basis for the robustness tests to follow.¹⁶ The results of this first set of checks are reported in Table 2.

In the benchmark models, per capita GDP was used as a proxy for factor prices. While doing so considerably expands the data coverage, there may be concern that this measure may be capturing other relevant factors beyond factor prices *per se*. For example, GDP per capita—

¹⁴One argument against this is that patents may reflect the extent to which the legal structure of the country supports patent filings, rather than innovation. While this may be true, the legal environment is controlled, in part, by our inclusion of the political risk variable. Furthermore, we regard the patent data as the best proxy that we have available for measuring innovative capacity. As an additional robustness check, however, we substitute the total patents measure with data that includes only cross-border patents granted (which arguably better controls for differences in domestic patent law). While the results are somewhat weaker, the qualitative message remains unchanged; these additional results are available on request.

¹⁵M&A activity does not, however, appear to respond to political risk measures in South-South acquisitions. This suggests that the hypothesis that emerging market firms may exploit their comparative advantage in more challenging institutional environments is not supported by the evidence presented here, a result that has also been corroborated by others (Arita forthcoming).

¹⁶Results obtained with the fully specified model (*B3*) were qualitatively similar, and are available from the authors on request.

as a measure of the overall level of development of the host country—could reflect the overall quality of acquisition targets in a country, or perhaps the extent to which property rights of foreign entities are respected. While we have sought to account for these additional intervening effects via our controls, it is worthwhile including factor prices directly into the benchmark. This is done in column (*R1*), where we have introduced total wages paid to employees in the manufacturing sector as an additional measure of factor price differentials. The negative (and significant) coefficient further corroborates the factor proportions hypothesis, although the magnitude of the effect is quantitatively small (a reduction of one advanced economy M&A deal requires an increase in host wages of twenty percent).

To further explore the robustness of the proximity-concentration finding, we consider two perturbations to the benchmark: in column (*R2*), we substitute stock market capitalization with the stock market turnover ratio; and in column (*R3*), we add domestic credit to the private sector (as a share of GDP) to further approximate the importance of domestic financial depth.¹⁷ As was the case in the benchmark, financial depth (whether in the home or host country), when significant, is positively associated with greater M&A (stock market turnover was statistically insignificant).

An alternative measure of host-country innovative capacity is expenditure on R&D, as a share of GDP. When we substitute the patents measure of the benchmark—shown in column (*R4*)—the sample size decreases significantly, but the negative coefficient fails to reverse (although in this case it is insignificant).¹⁸

Finally, we consider supplementing the political economy variables with two alternatives. First, we include financial instead of political risk, as reported in column (*R5*). Home economies that experience lower levels of financial risk tend to increase their acquisitions in advanced markets—perhaps, as before, to meet diversification objectives—and the converse holds true for host economies: less risky Northern markets may attract less Southern M&A, perhaps because they offer a less attractive risk-return reward. In the final column, (*R6*), we introduce corporate bond issuance and sovereign risk of the home economy as additional factors that may influence cross-border M&A. These appear to have little effect, although the coefficient for sovereign risk is marginally (and negatively) significant.

In all of these specifications, the coefficients for the other main variables of interest remain largely unchanged.

The second set of robustness checks that we consider are different estimation strategies for the benchmark. As before, we utilize the parsimonious model (*B2*) for our analyses. Table 3 reports three alternative estimation methods that we consider. In column (*E1*), we substitute

¹⁷Another alternative could be to substitute the *de facto* measure of financial openness with a *de jure* one, such as the Chinn & Ito (2008) index. Doing so changes the significance of the coefficient on financial openness for advanced economy acquisitions (it becomes negative and significant), results analogous to the finding for trade openness. The other coefficients are qualitatively unchanged, and we do not report this specification, although these are available on request.

¹⁸We also considered, but do not report, the share of researchers in the population as yet another measure of innovative capacity. Again, the qualitative results remain, and details are available on request.

two-dimensional standard errors clustering with two-way fixed effects (by country-pair and time), along with Huber-White robust standard errors. In column (*E2*), we introduce three-way fixed effects (by each respective country and time), and in the third column, (*E3*), we use a random effects (RE) model with robust standard errors and errors clustered by country-pair. The final column (*E4*) applies seemingly unrelated regressions (SUR) with correlated country-pairs and a common AR(1) error.¹⁹ The first two FE approaches allow for ever-greater levels of unobserved heterogeneity, while the latter two error components models accept somewhat less clustering in the error structure, in exchange for greater efficiency in estimation (while still correcting standard errors for the panel nature of the data); the latter approach has also been applied by others in the literature (such as, for example, Head & Ries (2008)).

It is evident that the main results that obtained from our benchmark specifications remain unaffected by these alternative estimation approaches. It is useful to recognize that this is in spite of the far greater heterogeneity that is afforded by the fixed effects estimators (*E1*) and (*E2*). Indeed, the qualitatively consistent results reported in Table 3 suggest that the simpler (and more efficient) OLS estimation employed in our benchmark was a reasonable choice.

5.3 Will M&A flows change substantially in the aftermath of the 2008 crisis?

As discussed in Section 2, cross-border M&A flows by emerging market firms fell substantially during the later crisis period, and in the year following. The natural question that arises is whether such flows are likely to change substantially as a result of the crisis, especially with anticipated slower growth in advanced economies.

Using the model developed in Section 4,²⁰ we project M&A deal trends for 2010 through 2025. Obviously, forecasts of most independent variables were not available. We retained 2009 values for all but GDP and net international investment position (IIP)-related variables (specifically, GDP, GDP per capita, GDP growth, and net IIP, used to infer reserve holdings), and simulated the model using these assumptions for emerging and advanced aggregates. The main assumptions are summarized in Table 4 for two scenarios: a baseline where emerging economies are assumed to grow, on average, twice as fast as advanced economies; and a high-growth scenario for emerging markets where the largest emerging countries (China, India, and Russia) grow faster than the rest of the large emerging economies (such as Brazil, Indonesia, and Korea).

The results of the two scenarios are summarized in Figure 3. Future cross-border deals are likely to grow at a sustained, albeit slower, pace. Projections along the baseline scenario suggest that the pace of cross-border deal growth is likely to slow from the 14.3 percent annual growth rate recorded between 1998 and 2008, to an average of 8.9 percent annual growth over 2010–

¹⁹Variants of this feasible generalized least squares approach, for example by allowing panel-specific errors or independent country-pairs, did not qualitatively change the results.

²⁰In contrast to the regression analyses, we utilize a slightly different specification (*B3*) here in order to minimize data demands while maximizing the historical fit of the model. Details of the model used for the projections are detailed in the annex.

Table 3: Robustness regressions for alternative estimation methods for number of cross-border outbound M&A investments from emerging economies, 1997–2009

	E1		E2		E3		E4	
	to EM	to AD	to EM	to AD	to EM	to AD	to EM	to AD
<i>Home country characteristics</i>								
GDP	-5.448 (4.48)	21.707 (8.49)**	-3.838 (2.31)*	2.067 (2.37)	1.661 (1.85)	11.670 (3.47)***	5.082 (0.57)***	6.794 (0.26)***
GDP per capita	4.723 (2.35)**	2.315 (1.95)	3.144 (1.03)***	2.990 (1.05)***	1.340 (0.94)	0.614 (0.87)	-0.472 (0.10)***	-0.056 (0.05)
Trade openness	2.858 (2.43)	0.722 (1.07)	2.353 (0.82)***	0.977 (0.85)	3.966 (1.80)**	2.763 (1.14)**	4.562 (0.60)***	3.282 (0.06)***
Reserves	0.144 (0.27)	-0.231 (1.19)	-0.787 (0.25)***	1.608 (0.28)***	-0.648 (0.30)**	0.652 (0.93)	-0.749 (0.12)***	1.663 (0.20)***
Economic risk	0.048 (0.17)	-0.330 (0.28)	-0.081 (0.33)	0.046 (0.42)	0.182 (0.20)	-0.146 (0.28)	0.481 (0.16)***	0.529 (0.11)***
<i>Host country characteristics</i>								
GDP	19.805 (10.97)*	2.425 (2.22)	13.623 (2.64)***	1.847 (0.68)***	9.287 (4.93)*	0.896 (0.50)*	3.143 (0.77)***	0.811 (0.77)***
GDP per capita	-0.370 (1.64)	1.036 (0.61)*	-1.439 (1.39)	1.041 (0.88)	-1.311 (0.77)*	0.691 (0.29)**	-1.518 (0.40)***	0.704 (0.31)**
Trade openness	2.453 (1.35)*	-3.639 (1.62)**	2.058 (0.94)**	-4.144 (2.27)*	2.945 (1.10)***	-1.672 (0.96)*	1.712 (0.45)***	-2.194 (0.93)**
Patents granted	-3.511 (1.60)**	0.842 (1.38)	-5.142 (1.42)***	0.253 (2.06)	-4.028 (1.90)**	-2.223 (0.85)***	-3.111 (0.89)***	-2.892 (0.23)***
Reserves	-1.934 (0.96)**	0.065 (0.20)	-2.005 (0.27)***	0.062 (0.24)	-1.059 (0.46)**	-0.012 (0.19)	-0.909 (0.14)***	-0.722 (0.11)***
Economic risk	-0.350 (0.36)	-0.038 (0.75)	-0.267 (0.33)	0.533 (0.91)	-0.220 (0.34)	0.011 (0.70)	0.476 (0.12)***	0.040 (0.46)
<i>Country-pair characteristics</i>								
Distance			-2.942 (0.24)***	-2.131 (0.44)***	-2.150 (0.51)***	1.747 (0.59)***	-2.649 (0.42)***	2.283 (0.42)***
Bilateral trade flows	1.310 (0.62)**	0.493 (0.09)***	2.510 (0.03)***	0.541 (0.01)***	1.540 (0.69)**	0.527 (0.09)***	1.642 (0.11)***	0.587 (0.04)***
Adjusted R^2	0.096	0.096	0.207	0.207			0.263	0.263
R^2 (within)	0.097	0.097			0.093	0.093		
R^2 (between)					0.310	0.310		
F	6.767***	6.767***	251.5***	251.5***				
Wald χ^2					279.1***	279.1***	10,182.5***	10,182.5***
Estimator	2-way FE	2-way FE	3-way FE	3-way FE	RE	RE	SUR-PCSE	SUR-PCSE
N	37,909	37,909	37,909	37,909	37,909	37,909	37,909	37,909

[†] Heteroskedasticity and autocorrelation-robust standard errors (all specifications), clustered by country-pair (third specification), are reported in parentheses. Global controls and a constant term were included in the regressions, but not reported. * indicates significance at 10 percent level, ** indicates significance at 5 percent level, and *** indicates significance at 1 percent level.

Table 4: Growth and net IIP assumptions for emerging and advanced economies, by scenario, 2010–25[†]

	Baseline			High growth		
	<i>2010</i>	<i>2025</i>	<i>Average</i>	<i>2010</i>	<i>2025</i>	<i>Average</i>
GDP growth (%)						
Emerging	6.2	3.9	4.7	6.2	4.4	4.9
Advanced	2.2	1.5	2.3	2.2	1.5	2.3
GDP (USD trillion)						
Emerging	21.6	43.7		21.6	44.8	
Advanced	39.5	56.2		39.5	56.2	
GDP per capita growth (%)						
Emerging	5.6	3.6	4.2	5.6	4.0	4.4
Advanced	1.7	1.3	1.9	1.7	1.3	1.9
Net IIP (USD trillion)						
Emerging	2.7	15.2		2.7	15.2	
Advanced	-2.4	-9.8		-2.4	-9.8	

* GDP levels are measured in constant 2009 U.S. dollars.

20 (9.0 percent in the high-growth scenario), and to an average of 6.7 percent annual growth between 2020 and 2025 (7.0 percent in the high-growth scenario).

Consistent with the past decade, the expansion of financial globalization, as measured by the rate of growth of cross-border deals, is expected to exceed that of real economic growth: Growth in cross-border deals is likely to outpace expected emerging-market GDP annual growth rates of 4.9 percent over 2010–20, and 4.1 percent over 2020–25. This expected growth in cross-border deals echoes a global trend of financial growth generally exceeding growth in real economic variables.

Preliminary evidence from M&A activity for 2010 and 2011 is supportive of this reasonably rapid recovery from the crisis. Indeed, as evident in Figure 1, deal activity by emerging market firms in 2010 has already exceeded pre-crisis peaks, and M&A activity in 2011 appears well on track for the full recovery, in 2013, implied by our projections. This is also supported by country-level evidence. Outbound cross-border M&A deals concluded by Chinese firms, for example, reached 744 deals in 2010 and 909 deals in 2011, levels comparable to (and in excess of) the pre-crisis peak of 760 deals, attained in 2007.

6 Conclusion

In this paper, we have explored the factors associated with bilateral M&A activity by emerging market firms. Our main finding is that these firms’ decisions to pursue acquisition targets depend critically on whether they are investing in advanced or emerging market targets. Southern acquisitions tend to be located in countries with lower levels of per capita income, which likely reflects a desire to take advantage of lower wage costs in those countries. Acquisitions of

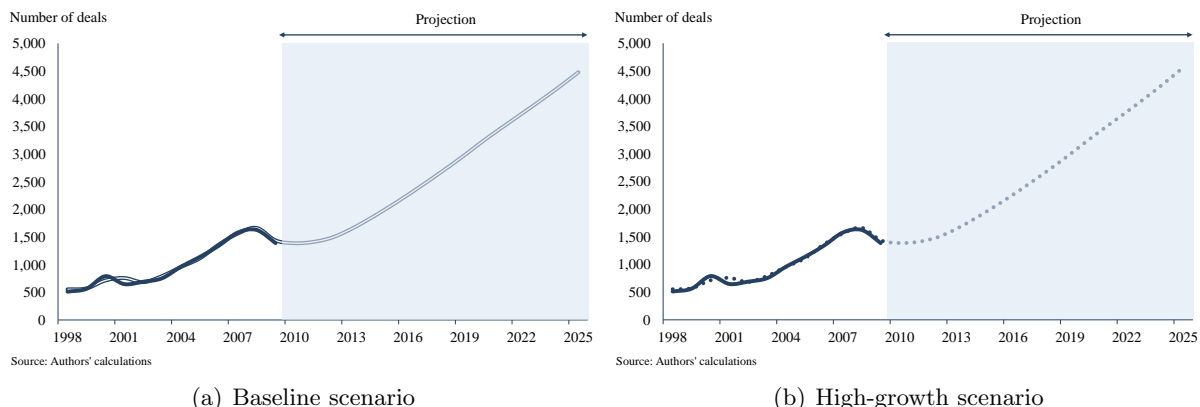


Figure 3: Model projection (hollow and dotted lines) and actual historical data (solid line) for outbound cross-border M&A deals by firms in emerging-market economies, 1998–2025, for baseline (left panel) and high-growth (right panel) scenarios. Shaded areas indicate the projection period. Forward projections based on growth and net IIP assumptions for emerging and advanced economies.

Northern targets, in contrast, occur in greater frequency when these host countries are more closed to trade, which suggests that such deals may be due to an implicit tradeoff that favors siting production directly in the country, rather than exporting to it.

Another important insight that emerges from the analysis is that firms appear to seek to diversify their equity holdings through acquisitions. More specifically, while emerging economy acquirers are likely to be located in economically less volatile economies, they tend to seek out targets in advanced economies that exhibit both lower levels of political risk (to insure the protection of their investments), but higher levels of economic and financial risk (possibly because such economies can offer better returns). The extent to which such diversification occurs is also materially affected by economic policies, such as those governing bilateral investment or financial access.

In light of this, emerging market firms are likely to press for future economic policies that will strengthen investment climates both at home and abroad. In doing so, emerging market firms can act as catalysts that spur increased integration of developing countries into the global economy, since enhanced integration offers additional support for open trading and investment regimes. But these firms will also serve as a growing source of global competition, especially when they invest in other emerging economies. Emerging market acquisitions are increasingly driven by resource- and efficiency-seeking motives—motives traditionally considered the preserve of firms based in advanced countries—and in making such cross-border investments, these firms will also challenge advanced-country firms’ preeminence in industrial production. Such competition will, in the longer run, drive global factor price equalization in general, and wage convergence in particular. Countries can support such positive competition by enhancing financial access within their countries, which is also positively associated with cross-border M&A.

The slow post-crisis recovery in the developed world, coupled with the relatively rapid recovery in the developing one, has underscored the future economic potential of emerging markets. Projections of post-crisis M&A volume by emerging market firms suggest that future M&A activity, while moderating somewhat, is likely to remain fairly robust. Emerging market firms are thus likely to be at the forefront of this process of global economic convergence, and are fast becoming a potent force for globalization in their own right. Future research in this area will do well to study how the economic behavior of such globalized emerging market multinationals may differ from those of advanced country corporations, beyond their choices in cross-border M&A.

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Technical Appendix

Projection Model Details

Our M&A growth projections are based on a modified version of the model (1), and is designed to minimize data requirements for forward variables while maximizing the fit of the model to historical data. We use specification (*B3*) in Table 1 as a starting point, and introduce a lagged dependent variable to the regressors. The model is then estimated with the full set of explanatory variables, and insignificant variables are then sequentially dropped. The process is repeated until the most parsimonious specification is reached. Due to data limitations, a smaller panel is used, which includes 53 countries for which full data are available. The country-specific variables are further simplified by classifying host countries two groups, either advanced or emerging.

The projections are based on the two sets of assumptions regarding GDP, GDP per capita, and net IIP detailed in Table 4. These assumptions correspond to a growth scenario where all countries grow at a rate consistent with their potential output, allowing for short-run deviations in the short term (from 2011–12, where we use the World Bank’s forecasts published in the *Global Economic Prospects* report). Per capita calculations are obtained by supplementing the growth-implied GDP levels with UN population projections. Reserve holdings are assumed to grow as a constant fraction of the net IIP position. A number of variables, such as corporate bonds issues, are assumed to grow at historical rates (for the 1997–2008 period). Other variables, such as economic risk, political risk, and participation in global trade are assumed to remain constant throughout the projection period. The fitted model is generally robust to small deviations in most of the independent variables, but is sensitive to assumptions about reserve holdings growth.

Additional Tables

Table A.1: Countries included in the database[†]

Emerging economies		
Algeria	Ghana	Peru
Argentina	Guatemala	Philippines
Azerbaijan	Hungary	Poland
Bahamas, The	India	Qatar
Bahrain	Indonesia	Romania
Barbados	Jamaica	Russian Federation
Belarus	Jordan	Saudi Arabia
Brazil	Kazakhstan	Singapore
Bulgaria	Kenya	South Africa
Chile	Kuwait	Korea, Rep. of
China	Latvia	Sri Lanka
Colombia	Lebanon	Thailand
Costa Rica	Lithuania	Trinidad and Tobago
Croatia	Malaysia	Turkey
Czech Republic	Mexico	Ukraine
Dominican Republic	Mongolia	UAE
Ecuador	Morocco	Uruguay
Egypt, Arab Rep.	Nigeria	Venezuela, RB
El Salvador	Oman	Vietnam
Estonia	Pakistan	
Georgia	Panama	

[†] The definition of emerging economies used in the paper were chosen on the basis of markets traditionally classified as emerging by investment banks, and to illustrate the economies that were distinct from the historically advanced economies of North America, Western Europe, Japan, and Oceania. China data aggregate the mainland and the special administrative regions of Hong Kong and Macau.

Table A.2: Data description and sources

Variable	Description	Source
10-year Treasury rate	10-year constant maturity Treasury bond rate	J.P. Morgan
Agricultural price index	Agricultural commodity prices, weighted index	World Bank DECPG
BITs	Existence of bilateral investment treaty between two countries	UNCTAD
Capital openness	Total private capital inflows and outflows (% GDP)	World Bank WDI
Corporate bond issuance	Total number of corporate bonds issued	Dealogic DCM Analytics
Cross-border M&A deal	Acquisition of an equity stake of i 1 percent in target firm located in country other than country of domicile of acquirer	Thompson-Reuters SDC Platinum
Distance	Bilateral geodesic distance between national capitals	CEPII
Domestic credit/GDP	Domestic credit to private sector (% GDP)	World Bank WDI
Economic risk	ICRG economic risk rating, annual average (higher values indicate lower risk)	Political Risk Services
Energy price index	Energy commodity prices, weighted index	Goldman Sachs
Financial risk	ICRG financial risk rating, annual average (higher values indicate lower risk)	Political Risk Services
GDP	Gross domestic product, in 2000 constant U.S. dollars	World Bank WDI
GDP growth	Growth of real gross domestic product	World Bank WDI
GDP per capita	Per capita gross domestic product, in 2000 constant U.S. dollars	World Bank WDI
Patents granted	Total patents granted per million people in population	World Bank WDI
Political risk	ICRG political risk rating, annual average (higher values indicate lower risk)	WPO
Population	Total population	Political Risk Services
R&D/GDP	R&D expenditure (% GDP)	World Bank WDI
Reserves	Total international reserves, end of year	World Bank WDI
Sovereign bond rating	Long-term ratings on sovereign bonds	World Bank WDI
Stock market capitalization	Total market capitalization of listed companies	IMF IFS
Stock market turnover	Stocks traded, turnover ratio (%)	J.P. Morgan
Wages	Home total manufacturing wages/salaries to employees (USD)	MSCI
		World Bank WDI

Table A.3: Summary statistics for major variables of interest[†]

	To advanced					To emerging				
	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max
M&A deals	19,825	0.286	1.785	0	65	43,030	0.158	1.616	0	98
GDP, home	18,200	0.018	0.035	0.000	0.347	39,481	0.018	0.035	0.000	0.347
GDP, host	19,032	0.156	0.242	0.003	1.323	41,470	0.019	0.036	0.000	0.347
GDP per capita, home	18,200	0.056	0.058	0.004	0.336	39,481	0.056	0.058	0.004	0.336
GDP per capita, host	19,032	0.381	0.123	0.160	0.916	41,470	0.054	0.056	0.002	0.336
Trade openness, home	18,200	0.089	0.055	0.016	0.438	39,481	0.089	0.055	0.016	0.438
Trade openness, host	19,032	0.082	0.053	0.019	0.324	41,470	0.091	0.058	0.016	0.438
Patents granted, host	16,653	0.046	0.038	0.000	0.199	39,897	0.005	0.018	0.000	0.221
Reserves, home	19,175	0.038	0.145	0.000	2.418	41,623	0.038	0.145	0.000	2.418
Reserves, host	19,703	0.052	0.134	0.000	1.024	41,223	0.041	0.153	0.000	2.418
Economic risk, home	18,975	0.359	0.051	0.200	0.493	41,180	0.359	0.051	0.200	0.493
Economic risk, host	19,825	0.410	0.031	0.303	0.484	40,122	0.351	0.057	0.098	0.493
Distance	19,825	0.072	0.042	0.001	0.189	43,030	0.078	0.048	0.001	0.198
Bilateral trade flows	16,735	0.180	0.995	0.000	35.500	35,495	0.051	0.292	0.000	15.664
BITs	19,825	0.041	0.049	0.000	0.100	43,030	0.028	0.045	0.000	0.100

[†] Variables were rescaled for regression purposes and reported values may not reflect actual magnitudes.