

Risky business: Institutions vs. social networks in FDI

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Abstract

Political economy scholarship on foreign direct investment (FDI) emphasizes variation in host country political risk but overlooks variation in investors' sensitivity to political risk. We show that relational contracting, relationship-based contract enforcement, is more efficient for high-risk, human capital-intensive activities for which the costs of writing legally enforceable contracts are prohibitive. We disaggregate FDI into two distinct varieties: mergers and acquisitions (M&A) and venture capital (VC). We propose that VC flows are less sensitive to host institutions but correlate strongly with skilled migrant networks that monitor compliance and impose reputational costs. Our empirical analysis of dyadic VC and M&A flows covers over 100 countries during 1980–2009. We address other mechanisms through which migrant networks facilitate FDI and verify our results hold at the country-industry level. These findings suggest that relational contracting facilitates global integration of dynamic, knowledge-intensive industries even when formal institutions are weak.

1. | INTRODUCTION

Political risk, the risk that government actions lower returns to foreign direct investment (FDI), is among the tightest links between politics and economics in the global economy. Extant research correlates host country political institutions with the amount of FDI that countries receive. Despite vigorous scholarly debate about which aspects of institutions correlate with political risk, existing political economy research implicitly assumes that all FDI investors are equally sensitive to such

risks.¹ If, however, investors systemically vary in their exposure to political risk, existing research conflates FDI investors' sensitivity to political risk with host policy-makers' propensity to generate political risk.

In this study, we examine how variation in FDI investors' access to relational contracting, non-legal relationship-based contract enforcement, mediates their sensitivity to political risk.² Contracts facilitate the optimal allocation of property between market actors (Joskow, 1987; Williamson, 1983), but carry the inherent risk of opportunism. Sanctions for contract violations must be credible and the enforcer must be able to monitor and assess compliance (North, 1990). Legal contract enforcement relies on the state's coercive power to sanction violations. Relational contracting occurs within social networks, typically defined by industry or co-ethnic/kin groups (Granovetter, 1983). Networks monitor members' compliance with universally recognized group norms and obligations, and collective knowledge of members' past behavior (Dixit, 2007, 2009). Repeated interaction among members casts the shadow of the future (Baker, Gibbons, & Murphy, 2002).

FDI investors with access to relational contracting are less exposed to political risk, all else equal, because they have less need for host governments to enforce private contracts. Consider two distinct varieties of FDI: cross-border mergers and acquisitions (hereafter M&A) and cross-border venture capital investment (hereafter VC).³ VC invests in high-risk startup firms whereas M&A transfers ownership of established firms. Figure 1 demonstrates similar patterns for both FDI types. The top panel plots the annual count of U.S.-origin investment projects of each type. The bottom

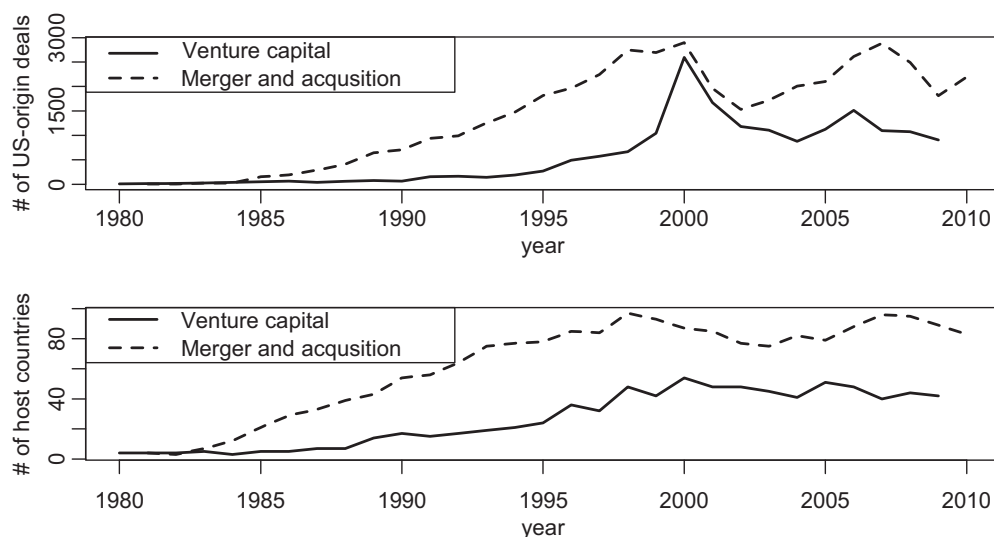


FIGURE 1 Growth of U.S. FDI outflows: Venture capital vs. mergers and acquisitions

Notes: The top panel plots the number of unique U.S.-origin deals and the bottom panel plots the number of countries that receive at least one U.S.-origin investment in a given year. Source: Thomson Reuters databases VentureXpert (venture capital) and SDC Platinum (mergers and acquisitions).

¹ See Jensen et al. (2012) for a review.

² Henisz (2000) makes a similar argument.

³ Both M&A and VC meet the statistical definition of FDI as greater than 10% equity foreign ownership and are captured by standard balance of payments-based FDI measures (IMF 2009).

panel indicates the number of countries that received at least one U.S. investment, and demonstrates that the internationalization of M&A and VC has moved in lockstep.⁴

Venture capital investors can use relational contracting to cope with contractual risk whereas M&A investors cannot. VC occurs within a relatively small, tightly linked community of investors and entrepreneurs with repeated interaction. VC is concentrated in high human capital industries such that the community shares the requisite technical expertise to assess compliance. In cross-border VC specifically, skilled migrant networks that link co-ethnics in the source and host countries facilitate relational contract enforcement with their contextual knowledge of the host country. These networks have an important and well-documented role in facilitating relational contracting in the global economy (Rauch, 2001). By contrast, M&A investors are more dispersed across investors and industries with relatively little scope for repeated interaction. Cross-border M&A investors thus rely more heavily on host country legal contract enforcement, which raises their relative exposure to political risk.

We test this claim using an original dataset of annual, dyadic cross-border M&A and VC investments originating from the United States to over 109 countries during 1980–2010. We compare the relative importance of host country political risk and cross-border skilled migrant networks for cross-border M&A and VC using a seemingly unrelated negative binomial framework (SUR), which allows for cross-equation hypothesis tests. This comparison isolates variation in M&A and VC access to relational contracting enforcement by holding constant all host country characteristics that influence both types of FDI. Empirical models include an exhaustive set of controls for dyad and host country characteristics that may independently drive political risk, the size and distribution of migrant networks, and FDI flows. Our baseline model focuses on U.S.-origin investments, thus hold constant sending country characteristics that may produce different patterns of cross-border VC and M&A flows.

Our finding that cross-border M&A is sensitive to host country political risk, but cross-border VC is not, holds across multiple standard measures of political risk. On average, countries with low political risk receive almost twice as many U.S.-origin M&A investments annually—22 compared with 12—than high political risk countries. U.S.-origin VC does not correlate with host political risk. Cross-border skilled migrant networks—measured as the share of host country immigrants to the United States who possess graduate degrees—stimulate triple the number of VC investments to their respective origin countries as compared to M&A.

We verify that our findings hold for VC and M&A originating from 75 countries in 2000 to show our findings are not unique to U.S.-origin FDI. We also estimate a dyad-industry-year version of our model, disaggregating cross-border VC and M&A, and skilled migrant networks into 88 industries. This version of our model, which includes industry fixed effects, demonstrates our baseline findings are not an artifact of the industries that tend to select into either type of FDI or skilled migrants' propensity to gravitate toward certain industries.

A final robustness test parses contract enforcement from other mechanisms through which skilled migrant networks could correlate with more VC. Distinct from relational contracting, migrant networks may leverage their market familiarity to identify more investment opportunities (Foley & Kerr, 2013; Leblang, 2010). VC is potentially more sensitive to this alternate mechanism. VC occurs early in a firm's lifecycle when investment opportunities are less transparent whereas M&A involves relatively more established firms with an observable record. We attempt to parse the two mechanisms by comparing M&A to a third variety of FDI, cross-border private equity investment (PE). PE is essentially a hybrid of VC and M&A in which VC-like networks of

⁴ See Appendix S1 for tabular summaries of M&A and VC inflows for each country in our sample.

investors purchase existing foreign companies. Through managerial skill and financial engineering, PE investors increase the company's value with the end goal of selling the company at a profit (Kaplan & Strömberg, 2009). PE is amenable to relational contracting because investors are a small community with repeated interaction but is less affected by migrants' market familiarity because it involves established firms.⁵ We re-estimate our baseline models with PE in place of VC. We find a large and statistically significant correlation between PE and migrant networks and considerably weaker correlation to political institutions. This evidence suggests migrant networks facilitate investment via relational contracting.

This study makes two broader contributions.⁶ First, we build on existing political economy research by expanding the micro-foundations of FDI models, and developing more precise measures of FDI.⁷ Most existing models consider only host countries' incentives to *supply* investors with legal contract enforcement.⁸ We demonstrate investors vary in their relative *demand* for legal enforcement depending on their access to non-legal alternatives.

Second, our findings highlight how cross-border social networks facilitate contemporary global economic integration via relational contracting. Scholars have long noted a correlation between migrant networks and cross-border economic activity (Javorcik, Özden, Spatareanu, & Neagu, 2011; Rauch & Trindade, 2002) but have not compared the relative importance of networks and legal contracting enforcement. Social network-based enforcement is critical in contexts as diverse as ethnic conflict (Fearon & Laitin, 1996) and international cooperation (Finnemore & Sikkink, 1998), but political economy research largely overlooks its role in the global economy. Whereas much research emphasizes the increasing legalization of global economic activity (Büthe & Milner, 2008; Goldstein, Kahler, Keohane, & Slaughter, 2000), we show that relational contracting better facilitates innovation and high human capital-based activities even when institutions are weak. These activities are central to the most dynamic and transformative sectors of today's global economy.

2. | BACKGROUND

2.1 | Venture capital investment: A primer

Venture capital invests in startups, new firms that arise to commercialize innovation. In the United States, the world's largest source of VC, specialized venture capital firms make these investments.⁹

⁵ By contrast, in M&A the acquirer and target merge into a single company, aligning the parties' incentives (Grossman and Hart, 1986).

⁶ We have identified four studies of international VC patterns, none of which evaluate the relative importance of political risk and relational contracting (Aizenman & Kendall, 2012; Guler & Guillen, 2010; Madhavan & Iriyama, 2009; Vaaler, 2011).

⁷ See Pandya (2016) for a review.

⁸ Some exceptions include Frieden (1994), Henisz (2000), Kobrin (1987), and Pauly and Reich (1997).

⁹ The American venture capital industry began in earnest after a 1978 change in federal pension rules that allowed pension funds to invest in riskier asset classes like venture funds (Gompers and Lerner, 2001). Outside the United States, there are more diverse sources of VC. Bank-run venture funds are the single largest source of venture financing but corporations and public sector are also common sources. These are known as captive funds because as subsets of larger organizations they receive allocations to invest rather than raising funds specifically for venture investments. Relative to their U.S. counterparts, these investors are more risk averse. They tend to make smaller investments in more established firms. Non-U.S. venture investments are usually of a longer duration because fund managers are not committed to delivering returns to limited partners on a preset timetable. See Megginson (2004) and Wright, Pruthi, and Lockett (2005) for cross-country comparisons of VC industries.

These firms are limited partnerships comprised of individuals with extensive entrepreneurship experience in specific sectors and/or commercially relevant technical expertise. The managing partner(s) of venture capital firms raise venture capital funds. A VC fund is a pool of money comprised of investments from the corresponding firm's managing partners and from passive outside investors known as limited partners.¹⁰ VC firms invest these funds into a portfolio of startup investments.

Venture capital flows primarily into human capital-intensive technology and service industries. Table 1 lists the top twenty VC recipient industries worldwide during 1953–2009. Computer software is the single largest recipient industry, receiving nearly double the amount of the next biggest recipient. Other top recipients are advanced manufacturing industries and high value-added business services. As a group, these industries generate value primarily through the input of specialized human capital. The rightmost column indicates average R&D spending as a percentage of sales for U.S. firms in 2000. Startup entrepreneurs often have specialized technical expertise and developed the innovation that is the basis for the proposed company. VC firms generate returns for their managing and limited partners by applying their business acumen to raise the market value of the startup companies in which they invest.

TABLE 1 Top 20 Industry International Venture Capital Recipients, 1980–2010

Industry	Deal counts	R&D/sales in 2000
Information Retrieval Services	12,539	11.8
Semiconductors and Related Devices	7,449	7.4
Pharmaceutical Preparations	5,413	9.8
Biological Products, Except Diagnostic Substances	4,836	3.6
Computer Integrated Systems Design	4,556	11.8
Surgical and Medical Instruments and Apparatus	4,440	13.1
Commercial Physical and Biological Research	3,208	32.3
Computer Programming Services	3,078	11.8
Electromedical and Electrotherapeutic Apparatus	2,587	8
Electronic Computers	2,369	7.9
Telephone Communications, Except Radiotelephone	2,327	Suppressed
Computer Peripheral Equipment, Not Elsewhere Classified	2,315	6.5
Business Services, Not Elsewhere Classified	2,297	14.9
Telephone and Telegraph Apparatus	2,271	9.6
Computer Related Services, Not Elsewhere Classified	1,892	11.8
Radio and Television Broadcasting and Communications Equipment	1,798	9.6
Communications Services, Not Elsewhere Classified	1,635	Suppressed
Radiotelephone Communications	1,373	Suppressed
Electronic Components, Not Elsewhere Classified	1,362	4.3

Notes: The table includes venture capital deals for all recorded source and recipient countries. Industry designations are 1987 Standard Industrial Classification four digit categories. VC data source: VentureXpert database. R&D data source: U.S. Census/National Science Foundation Research and Development Survey. The survey suppresses some industries data for privacy reasons.

¹⁰ In the United States, pensions funds supply approximately half of all venture financing. Other common limited partners are the endowments of private foundations and universities, and private wealth managers.

Startups require this form of specialized financing because traditional financial intermediaries like banks lack the risk tolerance and patience to lend to these firms. VC is inherently speculative, requiring investors to make bets about the product to be developed, the skill of entrepreneurs developing the product, and the eventual profitability of the startup company. Further, startups lack collateral, are illiquid, and operate at loss for an extended period before becoming profitable. These characteristics make VC one of the riskiest asset classes in existence. Of the over 11,500 startups that received American venture investment in the 1990s, approximately half failed, registering losses for investors.¹¹

Venture capital investors select startup companies in which to invest based on the managing partners' assessment of companies' profit potential. The pool of potential VC investments is comprised of would-be entrepreneurs who approach venture firms and other VC firms who seek investment partners for a particular deal. Investors conduct extensive due diligence, contacting dozens of references who can attest to the quality of the business idea and the entrepreneur seeking to execute it. When approached by another VC firm with an opportunity, the investor also relies upon the other firm's reputation for success in assessing the prospects of the proposed deal.

Upon making an investment, investors assume an active role in supervising the company's operations. Venture firm staff make frequent visits to the company's offices to consult with entrepreneurs and request information on performance. The investor advises the entrepreneur on all aspects of the business including strategy, operations, and human resources. VC investors routinely join the startup's board of directors and formalize their control over the company. Investors disperse funds in tranches at intervals ranging from a few weeks to a year. This funding structure creates an opportunity for investors to regularly reassess their investment.

Profitable VC investments end when investors sell their equity stake at a profit to another company, back to the entrepreneurs, or, when the investor guides the startup to an initial public stock offering. VC investors' compensation is tightly linked to startup's profitability and investors are mindful that future funding depends on performance.¹²

Mergers and acquisitions differ from VC on key dimensions. M&A investors are typically multinational firms with a production-based motive of entering a new market or acquiring new technology by acquiring an existing firm (Bruner, 2004). Acquisition targets have well-defined assets and a performance history, which M&A investors examine in an attempt to verify the target firm's profitability. Table 2 lists the top industries for cross-border M&A worldwide, and illustrates the broader range of industries that receive these investments. Reliance on specialized human capital is relatively low. For top VC industries, median R&D/sales is 9.7, but only 1.2 for the top M&A industries.¹³

2.2 | Relational contracting and venture capital investment

In VC, the firm's value is realized in a future state of the world and is contingent on the startup entrepreneur's effort. Contractual risks emerge mainly from VC investors' and entrepreneurs'

¹¹ National Venture Capital Association (2011, p. 6). Of the remaining startups, 14% had initial public offerings and 33% were acquired by other firms.

¹² Venture funds have a preset life, usually 10 years, after which the fund is liquidated and investors receive their initial investment plus a proportional share of the profits generated by the VC firm's management of the fund. Limited partners pay the VC firm a management fee equal to a small percentage, 2%–3%, of the fund's total value. Often the fund's rules allow the managing partner to earn "carried interest," a set share of the fund's profits contingent on achievement of preset performance targets. Carried interest is usually a larger source of profits to the managing partner than fees, in the order of 20%–25% of the fund's value.

¹³ Although the top M&A industry, prepackaged software, is one of the highest R&D industries, it is an industry with a well-defined product whose quality can be verified.

TABLE 2 Top 20 industry international M&A recipients, 1980–2010

Industry	Deal counts	R&D/sales in 2000
Prepackaged Software	27,652	20.4
Investors, Not Elsewhere Classified	20,142	1.2
Crude Petroleum And Natural Gas	19,565	1
Information Retrieval Services	16,355	11.8
Depository Institutions	13,803	1.2
Hotels and Motels	12,092	n/a
Land Subdividers and Developers, Except Cemeteries	11,937	1.9
Operators of Non-residential Buildings	10,978	1.2
Gold Ores	10,674	1
Electric Services	9,955	0.1
Telephone Communications, Except Radiotelephone	9,127	Suppressed
Life Insurance	8,984	1.2
Pharmaceutical Preparations	8,390	9.8
Business Services, Not Elsewhere Classified	8,270	6.1
Security Brokers, Dealers, and Flotation Companies	7,498	1.2
Investment Advice	7,248	1.2
National Commercial Banks	7,217	1.2
Engineering Services	6,989	7.1
Eating Places	6,411	n/a
Radiotelephone Communications	5,626	Suppressed

Notes: The table includes merger and acquisition deals for all recorded source and recipient countries. Industry designations are 1987 Standard Industrial Classification four digit categories. M&A data source: SDC Platinum database. R&D data source: U.S. Census/National Science Foundation Research and Development Survey. The survey suppresses some industries data for privacy reasons. n/a = industry was not part of the survey.

divergent incentives and investors' inability to perfectly monitor entrepreneurs' effort. Investors seek to maximize returns but entrepreneurs may favor non-profit maximizing projects with high personal value (Gompers & Lerner, 2001).

Monitoring is central in VC investors' strategies to coping with contractual risk and relational contracting is a key monitoring mechanism. VC embodies the basic requirements for successful relational contracting including a relatively small group, joined by common knowledge and repeated interaction.

Venture capital investors form a tight community. Syndication, the practice of inviting other firms to co-invest in a startup, is the norm and forges close links between investors. Syndication distributes risk, brings additional relevant expertise, and comes with expectation of reciprocity for participation in future investments (Hochberg, Ljungqvist, & Lu, 2007). Gompers, Mukharlyamov, and Xuan (2016) show syndication is more common among co-ethnic VCs. VC investors also form enduring relationships with third parties like patent lawyers and other professionals who contribute to startups' success (Sorensen and Stuart, 2001). VC investors tend to specialize in particular industry to which they bring technical experience and related business experience that

constitutes context-specific knowledge needed to assess compliance (Gompers, Kovner, & Lerner, 2009). For their part, entrepreneurs have strong incentives to abide by contracts because they anticipate the need for funding future startups. Entrepreneurs perceived as more skilled actually become more successful serial entrepreneurs because of greater access to VC financing (Gompers, Kovner, Lerner, & Scharfstein, 2010).

Some evidence suggests that VC investors explicitly monitor more in response to higher risks. Kaplan and Strömberg (2004) find that when external risks—including political risk—are high, VC investors consistently retain majority control over board seats and entrepreneurs have less scope to earn more control based on performance benchmarks (282).

Even if VC investors do not actively pursue relational contracting to hedge against political risk, they may still find it relatively more efficient than legal contracting. Legal contracting costs are high for VC because uncertainty about future states of the world raises the costs of writing legally enforceable contracts (Grossman & Hart, 1983). When contracts pertain to highly uncertain outcomes, such as research and development and innovation, the cost of writing a complete contract *ex ante* is prohibitive (Lerner & Malmendier, 2010). Monitoring is more intense when higher proportion of startup assets are intangible and R&D spending is greater (Gompers, 1995).

Relational contracting can also be more efficient when compliance verification requires specialized or technical knowledge that courts lack. Social networks are more adept than courts in assessing compliance because they can take into account contextual factors that contracting parties did not anticipate and/or courts cannot readily verify (Greif, 1993, 2006). This contextual knowledge is critical but contracting parties often cannot *ex ante* write into the contract an evidentiary standard by which courts can verify compliance (Banerjee & Duflo, 2000).

In countries with poorly developed legal systems, VC investors substitute greater monitoring for complex, state-contingent contracts.¹⁴ Lerner and Schoar (2005) find for a sample of developing countries that in countries with weaker legal enforcement, investors eschew complex contracts in favor of greater control.

In many nations, our interviewees asserted, not only were the entrepreneurs unfamiliar with equity investments that used securities other than common stock, but key actors in the legal system—lawyers and judges—were suspicious and indeed hostile to such transactions. (pp. 227–228)

M&A, by contrast, has less scope for efficient use of relational contracting. M&A investors are multinational firms seeking to enter new market or obtain new technologies. There is no analogue of syndication for M&A investments. Typically acquiring firms obtain full control over the target firm. In our sample of cross-border M&As during 1980–2009, over 60% of deals were for full control of the target firm. As seen in Table 2, M&A also occurs across a wider range of industries than does VC. Additionally, there is little scope for repeated interaction once the acquisition is complete.

¹⁴ Typically VC firms use convertible securities instead of straight equity in order to align the entrepreneur's incentives. Financing is initially in the form of debt but the investor has the option to convert the debt into equity at a predetermined price. This structure incentivizes high effort from the entrepreneur to convert their debt obligation into equity. Contracts also separately specify the investors' control rights including the right to appoint members of the board and authorize major business decisions. This typically means that VC investors' control rights are greater than those implied by the equity ownership share.

We expect M&A to be more sensitive to political risk because M&A investors rely more heavily on legal contract enforcement. The main form of contractual risk is the withholding of private information about the target firm. Contracting parties can more readily anticipate the range of future outcomes and to write more complete, state-contingent contracts (MacLeod, 2007; Scott, 2006). M&A investors also depend heavily on host country laws on financial accounting standards, securities regulations, and many other aspects of corporate governance law that compel truthful disclosure of private information, and establish evidentiary standards for evaluating compliance and sanctions for non-compliance (Shleifer & Vishny, 1997).

2.3 | Relational contracting via skilled migrant networks

Cross-border skilled migrant networks play a large, well-documented role in VC flows to their countries of origin. For example, over 90% of foreign VC investors in India are non-resident Indians nationals (Wright et al. 2005). Israel's first VC investments were by Jewish-American investors who raised capital from the American Jewish community (Dossani and Kenney, 2002, p. 31). Several specific organizational practices embed network-based monitoring within these migrant networks including syndication, joint investments by other foreign VCs who have previously worked with each other and/or the entrepreneur (Guler & Guillen, 2010); joint investments with domestic VCs who can more readily monitor and create larger reputational costs (Wright et al. 2005), and the appointment of network members to startups' boards of directors (Ahlstrom & Bruton, 2006; Sapienza et al., 2000).

The presence of returned skilled migrants provides particularly strong links to overseas networks. A majority of Indian technology startups are headed up by Indians who spent, on average, a decade working in the Silicon Valley (Saxenian, 2005). Evidence from Taiwan and India shows these returnees rely more heavily on their overseas networks because of barriers to entering local networks (Saxenian & Li, 2003; Nanda & Khanna, 2010). To the extent that returnees form an important part of these networks, relational contracting is more likely to drive the correlation between networks and investment. Returnees as host country contracting partners are as familiar with the local market as U.S.-based migrant investors.

Although skilled migrant networks likely help match investors and entrepreneurs, ex post differences in the operation of investments are consistent with relational contracting. Analyzing domestic U.S. VC deals, Bengtsson and Hsu (2015) find that shared ethnicity increases the probability of a match, investors' appointment to the startup board, investment earlier in the startup's lifecycle, and contractual terms more favorable to the entrepreneur. Bottazzi, Da Rin, and Hellmann (2016) show greater VC investment between countries whose citizens express greater trust toward each other, controlling for a wide variety of investor and country characteristics. Hegde and Tumlinson (2014) find a positive correlation between shared ethnicity and the probability the startup is successfully acquired or has an initial public offering. They attribute the finding to better coordination between co-ethnic VC investors and entrepreneurs after the investment is made.

3. | EMPIRICAL ANALYSIS

Our hypotheses speak to differential effects of covariates across M&A and VC. Our first hypothesis holds that political risk correlates more strongly with the number of M&A investments than with the number of VC investments. Our second hypothesis proposes the size of skilled migrant networks correlate more strongly with the number of VC investments than the number of M&A investments.

To test these hypotheses, we deploy a variant of Zellner's (1962) seemingly unrelated regression model. To fix ideas, consider two dependent variables that are closely related conceptually:

$$\begin{aligned} VC_{ijt,1} &= X'_{ijt}\beta_1 + U_{ijt,1} \\ MA_{ijt,2} &= X'_{ijt}\beta_2 + U_{ijt,2} \end{aligned}$$

where VC and M&A refer to the number of venture capital and the number of mergers and acquisitions investment, respectively, the matrix X is a set of covariates hypothesized to influence the allocation of both VC and M&A, and U is an error term. The subscripts i and j index the recipient and source of FDI while the subscript t indexes the year. If $\text{corr}(u_{ijt,1}, u_{ijt,2}) = 0$, then estimating the two equations separately and drawing conclusions from independent hypothesis tests is not problematic. However, as Zellner (1962) shows, if the error terms are correlated, then efficiency is increased by estimating the two equations jointly; this provides for more reliable hypothesis tests.¹⁵ Within the context of our hypotheses, a seemingly unrelated regression framework allows us to test for the differential impact of formal and informal contract enforcement mechanisms as measured by political institutions and skilled migrant networks, respectively.

Our two outcomes of interest are (1) the number of cross-border M&A investments, or "deals" in a dyad-year; and (2) the number of cross-border VC deals in a dyad-year. Given these are count variables, we estimate seemingly unrelated negative binomial models for both types of investment. We report 95% confidence intervals based on robust standard errors clustered by recipient country.

3.1 | Measurement

Our dependent variable—foreign direct investment (y_{ijt})—uses two different measures: annual VC and M&A inflows which are measured as the number of cross-border VC or M&A deals into country i in year t . In most of our empirical models, the sending country j is the United States. Our data span the full universe of U.S.-origin cross-border VC and M&A during 1980–2009, in which 109 countries received at least one M&A or VC deal. These data are from Thompson Reuters, the standard data source for scholarly research on VC and M&A.¹⁶

Each deal represents a distinct foreign investment project in which a U.S.-based investor has a controlling equity stake. Deal counts are a standard metric for the volume of M&A and VC (Aizenman & Kendall, 2012; Guler & Guillen, 2010; Madhavan & Iriyama, 2009). Deal counts not only allow us to parse FDI by VC and M&A, but they also represent the number of distinct cross-border contractual relationships, the exact theoretical concept at the heart of political economy FDI models. Our focus is on investments originating in the United States because it was the world's largest source of both types of FDI during the sample period. Our robustness tests exploit the richness of our investment and migrant data to model investments originating from a larger

¹⁵ The intuition behind Zellner's (1962) contribution is similar to the logic underlying estimating a time-series model containing serial correlation: if U_t is correlated with U_{t-1} , then knowledge of U_{t-1} can help reduce the size of the error, U_t . A more formal discussion of Zellner's model is contained in Cameron and Trivedi (2005). The extension to non-normally distributed dependent variables—the model we deploy—is developed by Weesie (1999) and is implemented via the `suest` command using STATA statistical software.

¹⁶ VC data are from Thomson's VentureXpert database. Following Aizenman and Kendall (2012), we limit our analysis to VC deals that Thomson defines as "seed/startup," "early stage," and "expansion" funding. M&A data are from Thomson's SDC Platinum database. SDC Platinum includes both private and public companies. Thomson compiles data about individual investments from sources such as investor and company public statements, media reports, and its own interviews. Neither VC nor M&A faces legal reporting requirements in a manner that generates comprehensive official data on investment activity.

sample of countries, and model M&A and VC at the dyad-industry-year level. Ideally, we would also model the monetary value of investments but this information is not consistently available.¹⁷ Although our analysis cannot capture systematic differences in VC and M&A valuation size, given that the size of VC deals is on average smaller than M&A deals, analysis of deal counts is a conservative test of our political risk hypothesis.¹⁸

We measure the depth of cross-border skilled migrant networks using two measures common in research on ethnic ties and economic integration (Rauch, 2001). $\text{Log}(\text{Total Migrants})_{ijt}$ is the logged stock (total number) of U.S. permanent resident and U.S. citizen migrants from country i in year t . By limiting the sample to long-term U.S. residents, we bypass any potential endogeneity of temporary migrants to the U.S. generated by overseas investments. Given U.S. immigration laws, U.S. investors can, at best, facilitate only short-term migration by sponsoring foreigners for skilled-worker visas; migrants in these visa classes are excluded from our measures of migrant networks.

Cross-border skilled migrant networks provide efficient relational contract enforcement because skilled migrant are knowledgeable about both the substantive aspects of investment and the host country. We measure this by *Share of Migrants with Grad Ed*_{ijt}, the percent of all U.S. permanent residents and U.S. citizen migrants from country i in year t that have a graduate degree.¹⁹ This variable isolates the effect of skilled migrants as the migrant stock variable controls for all other aspects of migration that may influence investment-location decisions.

We employ two common measures of host country political institutions used in existing research to proxy for political risk. The first measure, Henisz's (2000) political constraint index ($POLCON_{it}$), captures the distribution of checks and balances across a host country's policymaking institutions; this measure speaks to policy-makers' capacity to undermine foreign investors' legal rights postinvestment. Host countries with more checks and balances should be less risky for foreign investment. The measure includes the presence of an independent judiciary, a direct measure of host countries' contracting environment, especially the scope for political interference in contract enforcement. Higher values indicate greater constraints on policymaking in host country i and year t .

The strength of democracy in the host country is also a standard metric for policy-makers' incentives to enforce contracts involving foreign investors (Jensen, 2006; Li and Resnick, 2003). According to this literature, democracies should be less risky all else equal. We account for this dimension of political risk with the Polity index of democracy ($Polity_{it}$) (Marshall & Jaggers, 2012). Higher values of the index correspond to more robust democracy in host country i and year t .

As an initial probe of the plausibility of our hypotheses, we plot in Figure 2 counts of M&A and VC deals against political risk and skilled migrant networks in 2000. This figure suggests that M&A has a stronger linear association to political risk than does VC. The figure also indicates that high political risk countries nonetheless receive VC when a higher proportion of their migrants residing in the United States possess graduate degrees (as indicated by the diameter of the circle). Compare China, a high political risk country and Italy, a country with relatively low political risk. In 2000, about 20% of Chinese immigrants in the United States held a graduate degree as

¹⁷ For most years in our sample, we lack monetary values for at least 75% of VC deals, and post-2000 more than 90% of deals lack valuation information. One-quarter of M&A deals in our sample lack this information.

¹⁸ We are grateful to a referee for making this observation.

¹⁹ Immigration data are from the American Community Survey, the Current Population Survey, and the U.S. Census as reported in IPUMS (<https://www.ipums.org/>). Missing data were filled in via linear interpolation.

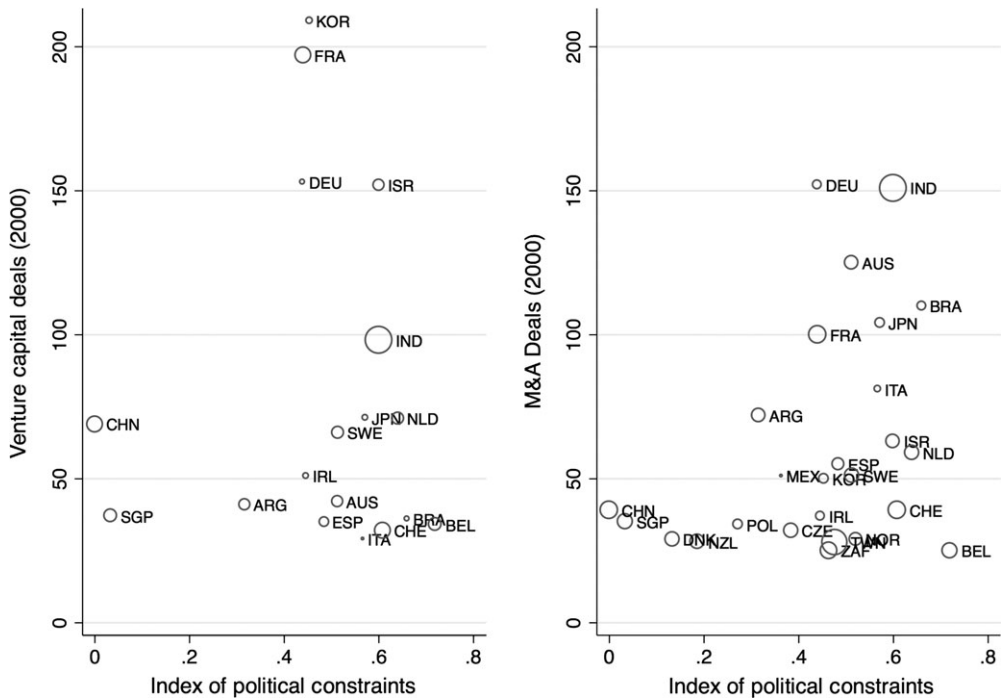


FIGURE 2 Sensitivity to political risk and skilled migrant networks: Cross-border VC and M&A compared

Notes: X-axes are the index of political constraints due to Henisz (2000), a standard measure of political risk. Y-axes are counts of the number of venture capital (VC) and mergers and acquisitions (M&A) investments (“deals”) into country i from the U.S. in 2000. For ease of presentation, we omit two outliers that received over 300 investments (UK and Canada) and countries that received less than 25 deals in 2000. The circles are proportional to the size of migrant network (graduate degree migrants/total migrants) from country i residing in the U.S. in 2000. See appendix for data sources.

compared to 6.5% of Italian migrants in the United States. In the same year, China received 70 VC investments from the United States whereas Italy received 29. Italy, however, received 81 U.S.-origin M&As compared to China’s 40.

A similar comparison of France and Germany demonstrates that skilled migrant networks remain more salient for VC than M&A even when political risk is held constant. In 2000, 20% of French migrants in the United States had a graduate degree; only 10% of German migrants did. In the same year, France received 197 U.S.-origin VC investments whereas Germany had 152 investments. Germany, however, outperformed France in U.S.-origin M&As, receiving 152 M&As compared to France’s 100. The figure provides preliminary support for our argument by demonstrating variation in investment patterns that extant FDI theories are unable to explain.

We control for a variety of other factors that can influence patterns of cross-border M&A and VC.²⁰ One set of variables based on “gravity” models accounts for the size of basic transaction costs in investments from the United States to host country i : the natural log of geographic distance between capital cities ($\text{Log}(\text{Distance}_{ij})$), a common border ($\text{Common Border}_{ij}$), shared colonial origin ($\text{Common Colonial History}_{ij}$), and shared official language ($\text{Common Language}_{ij}$). We

²⁰ See online appendix for data sources for all control variables. For discussion of broader models of cross-border VC and M&A, see Wright et al. (2005) and Rossi and Volpin (2004), respectively.

also control for genetic similarity (*Genetic Distance_{ij}*) to capture additional unobservable dyad characteristics that systematically effect transactions costs (Leblang, 2010; Spolaore & Wacziarg, 2008). Time-varying bilateral correlates of transaction costs include dual taxation treaties (*Dual Taxation Treaty_{ijt}*) and the presence of a common currency (*Common Currency_{ijt}*). We also control for capital account openness in country i because foreign investors who anticipate remitting profits may be sensitive to host country financial policies (*Capital Account Openness_{it}*) using the Chinn-Ito measure of capital controls (Chinn & Ito, 2008).²¹

Economic characteristics in country i and year t may also influence the expected returns to cross-border VC and M&A, so we include controls for market size measured as the log of real gross domestic product (*Log(GDP)_{it}*) and stock market development (*Log(Stocks Traded)_{it}*).²² The creation of new intellectual property (*Log(Patents Issued)_{it-1}*) reflects both the host country's technical capacity for innovation and how its intellectual property rights regime influences the incentives to undertake innovation. These innovations often motivate VC and M&A investment. We lag this variable to account for any stimulating effect of VC or M&A on the level of patent activity.

Finally, cross-border FDI may vary over time as a result of factors within the origin country market; stock market performance and interest rate changes, for example, may condition both the opportunities and willingness for domestic investors to look overseas for opportunities. We account for these supply-side factors by including a measure of total domestic deals (VC or M&A) in the country of origin. Given our focus U.S. FDI outflows, these measures only vary over time, so we do not include year dummies in our analyses.

3.2 | Baseline results

Table 3 summarizes estimates of our baseline model of cross-border VC and M&A flows. The baseline model results support both hypotheses. We find a large, positive, and statistically significant correlation between host country political risk and the number of U.S.-origin M&A investments received. We find however no statistically significant correlation between host political risk and the number of U.S.-origin VC investments received. These results hold across both proxies for political risk: political constraint (*POLCON*) and institutional democracy (*POLITY*).

Additionally, we find skilled migrant networks, our measure of relational contracting, has a larger substantive effect on cross-border VC than with M&A as evidenced by the positive and significant coefficients on both the log of migrants and the share of migrants with graduate education. We note that this comparison of coefficients across equations is valid within the context of our seeming unrelated regression model as we are explicitly allowing for the correlation of errors between the VC and M&A equations. The coefficient for *Share of Migrants with Grad Ed_{ijt}* in Table 3, column 1 (*VC_{ijt}*) model is over three times the size as the same coefficient in the Table 3, column 2 (*M&A_{ijt}*) model. This difference is even larger in the Table 3, column 3 and 4 models.²³

Figure 3 illustrates how migrant networks stimulate cross-border VC investment and, to a lesser extent, cross-border M&A investment. The left panels plot the predicted number of U.S.-origin VC and

²¹ During the sample period in which most investment occurred countries dismantled most foreign ownership restrictions (Pandya, 2014).

²² Stock market development is potentially important to both VC and M&A because it influences the expected returns to investment (Black & Gilson, 1998). Another possible measure would be the annual number of initial public offerings (IPOs), but these data are not available for most countries in our dataset. In the United States, for which we have reasonably complete IPO data, our measure of stock market activity and IPO counts have a correlation of .85.

²³ Our results are unchanged if we lag migration variables to account for a possible lag between migrant arrival and functioning of the social network. See online appendix for results.

TABLE 3 Baseline models of annual dyadic flows of international venture capital (VC) and mergers and acquisitions (M&A)

	VC_{ijt}	$M\&A_{ijt}$	VC_{ijt}	$M\&A_{ijt}$
<i>Share of Migrants with Grad Ed_{ijt}</i>	7.29** [4.26, 10.33]	2.10** [0.25, 3.95]	6.81** [3.65, 9.97]	1.60* [−0.20, 3.40]
<i>Log(Total Migrants)_{ijt}</i>	0.29** [0.09, 0.48]	0.18** [0.07, 0.29]	0.29** [0.08, 0.49]	0.13** [0.02, 0.23]
<i>POLCON_{it}</i>	0.95 [−0.27, 2.16]	0.99** [0.53, 1.45]		
<i>Polity_{it}</i>			0.01 [−0.05, 0.07]	0.05** [0.03, 0.07]
<i>Log(U.S. Domestic Deals)_t</i>	1.08** [0.79, 1.37]	0.99** [0.79, 1.18]	1.12** [0.82, 1.41]	1.02** [0.82, 1.22]
<i>Log(GDP)_{it}</i>	0.47** [0.11, 0.82]	0.24** [0.04, 0.43]	0.54** [0.15, 0.93]	0.18* [−0.01, 0.37]
<i>Log(Distance)_{ij}</i>	−0.68** [−1.16, −0.20]	−0.27** [−0.51, −0.03]	−0.73** [−1.24, −0.22]	−0.20 [−0.44, 0.05]
<i>Common Language_{ij}</i>	0.79** [0.22, 1.35]	0.29 [−0.07, 0.65]	0.87** [0.23, 1.50]	0.28 [−0.10, 0.65]
<i>Common Border_{ij}</i>	−0.46 [−1.62, 0.71]	0.15 [−0.38, 0.69]	−0.55 [−1.75, 0.66]	0.43 [−0.13, 0.98]
<i>Common Colonial History_{ij}</i>	−0.11 [−0.61, 0.38]	0.53** [0.18, 0.88]	−0.12 [−0.62, 0.38]	0.50** [0.12, 0.88]
<i>Common Legal Origin_{ij}</i>	−0.15 [−0.63, 0.33]	−0.05 [−0.41, 0.31]	−0.21 [−0.74, 0.33]	−0.14 [−0.52, 0.24]
<i>Common Currency_{ijt}</i>	−1.90** [−3.02, −0.78]	0.18 [−0.51, 0.87]	−1.52** [−2.23, −0.81]	−0.29 [−0.67, 0.09]
<i>Log(Patents Issued)_{it}</i>	0.47** [0.30, 0.64]	0.50** [0.40, 0.61]	0.44** [0.28, 0.61]	0.49** [0.38, 0.60]
<i>Log(Stocks Traded)_{it}</i>	0.46** [0.28, 0.64]	0.12** [0.01, 0.22]	0.50** [0.32, 0.68]	0.16** [0.05, 0.26]
<i>Capital Account Openness_{it}</i>	0.11 [−0.05, 0.27]	0.11** [0.03, 0.19]	0.06 [−0.12, 0.24]	0.08* [−0.01, 0.18]
<i>Dual Taxation Treaty_{ijt}</i>	0.39 [−0.38, 1.17]	0.59** [0.24, 0.94]	0.36 [−0.48, 1.20]	0.58** [0.25, 0.90]
<i>Genetic Distance_{ij}</i>	−0.19 [−0.66, 0.27]	−0.13 [−0.38, 0.13]	−0.18 [−0.68, 0.31]	−0.17 [−0.44, 0.09]
Constant	−16.90** [−23.6, −10.16]	−14.11** [−18.14, −10.09]	−16.89** [−23.85, −9.92]	−13.65** [−17.34, −9.95]
Observations	2,163		2,048	

Note: Seemingly unrelated negative binominal regression models with 95% confidence intervals based on robust standard errors in brackets. * $p < .10$, ** $p < .05$.

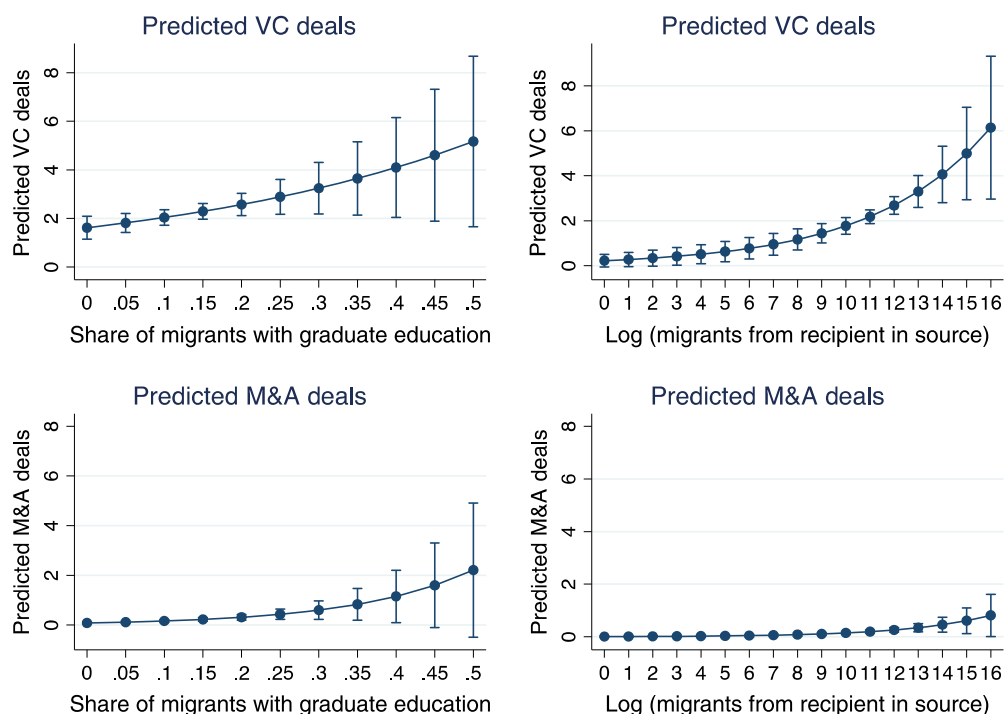


FIGURE 3 Skilled migrants facilitate international VC and M&A investment

Notes: This figure plots predicted investment deal counts and 95% confidence intervals based on two dimensions of cross-border migrant networks. All other variables are fixed at their mean value. The top two panels are predicted VC counts based on Table 3, column 1. The top left panel plots predicted VC investments into a country at different levels of skill composition of its U.S.-resident population. The top right panel plots predicted VC counts across the total number of U.S.-resident migrants (measured in logs). The bottom panels plot predicted M&A investments based on Table 3, column 2 estimates.

M&A investments across a range of values for *Share of Migrants with Grad Ed*_{ijt}.²⁴ On average, host economies with larger skilled migrant networks residing in the United States receive more than twice as many U.S.-origin VC deals as compared to U.S.-origin M&A investments. The right panels of Figure 3 plot the predicted number of VC and M&A investment across a range of values for *Log(Total Migrant-s)*_{ijt}. The total size of migrant networks stimulates investments independent of skill composition, but this additional effect is modest and, consistent with our argument, stronger for VC than M&A.

Figure 3 also illustrates that at higher levels of *Share of Migrants with Grad Ed*_{ijt}, small increases in the variable have a disproportionately large effect on the annual number of U.S. VC investments to country *i*. For a country such as Mexico with a large immigrant population in the United States, doubling the share of Mexican migrants that are skilled would stimulate two additional U.S.-origin VC investments annually but would not generate any additional M&A investments. For India, with 30% of its migrants to the United States holding postgraduate degrees, increasing the share of skilled migrants from 30% to just 33% would generate two additional U.S.-origin VC investments to India yearly.

Our interpretation of these findings rests on our ability to statistically control for other potentially confounding influences. The models already include proxies for transactions costs including

²⁴ For all predicted values, we set other variables in the models at their means.

dyadic measures of physical and genetic distance, common language, and common colonial history. These variables account for time invariant, dyadic characteristics that may correlate with size of migrant networks linking two countries or otherwise correspond to lower transactions costs that facilitate investment. As additional controls for unobserved correlates of FDI-relevant information, we add to the baseline specification controls for the number of domestic deals (e.g., originating within host country i) in year t (Table 4) and the lagged number of bilateral deals at $t - 1$ (Appendix Table 1). Both the number of domestic deals and lagged deals should capture unobserved country i characteristics that influence the informational and contractual climate for investment in country i at time t . Again, the results remain unchanged.²⁵

The appendix reports results of a number of different robustness tests based on deals originating from the United States' market. In Appendix Table 2, we use the raw number of skilled migrants rather than the share of skilled migrants. In that specification, we again find that institutions have a statistically significant effect on M&A investment but not on VC. We also find a larger effect of skilled migrant networks on VC than on M&A but that difference is no longer statistically significant; a result that owes to very high collinearity between the raw number of skilled migrants and unskilled migrants used in the model.²⁶

Appendix Table 3 uses alternative measures of political institutions—a measure of corruption and of democratic accountability from ICRG (International Country Risk Guide), along with a measure of executive constraints from the POLITY project. These changes do not alter the results of our hypothesis tests. In Appendix Table 4, we add recipient fixed effects. The inclusion of country fixed effects necessitates that we drop all time invariant variables that were motivated by gravity models of international investment: distance, common border, shared colonial history, common legal origin, and genetic distance. Again, we find that skilled migrant networks have larger substantive effect on VC investment than on M&A investment.²⁷ The appendix includes a variety of additional robustness checks including additional controls for the VC model.

3.3 | Robustness tests

We verify the robustness of results by adapting our baseline model for two different, relevant samples. First, we analyze dyadic VC and M&A deal flows from 75 sending countries into 78 recipient countries in 2000.²⁸ We are limited to this cross-section because 2000 is the only year for which detailed skilled immigration data are available for a large sample of countries. This cross-section is exceptionally salient because 2000 had the most U.S.-origin cross-border VC and M&A

²⁵ In Appendix Table 1 (online), we also report additional results including controls for all non-U.S. investments in country i in year t .

²⁶ Another option would be to include the raw number of skilled migrants by itself in the model and exclude the number of unskilled migrants. As there is a high correlation between the measures of skilled and unskilled migrants, that strategy would result in us conflating skilled with unskilled migrants. That is why we opt for the initial strategy in the text tables of including the ratio of skilled migrants to total migrants along with the stock of total migrants.

²⁷ Traditionally, we would use a Hausman test to test for the optimal specification of fixed effects vs. the variables motivate by the gravity equation. However, a Hausman test within the context of a seemingly unrelated regressions model is indeterminate. Our preference is for the specification that uses the gravity motivate variables as their inclusion is based on theory rather than ignorance; that is, we have clear theoretical guidance with regard to the interpretation of the gravity variables while the fixed effects model is motivated by ignorance.

²⁸ Migration data for 2000 are from the OECD Database on Immigrants, which uses national census data to construct estimates of immigrants based on their country of birth.

TABLE 4 Controlling for domestic venture capital (VC) and mergers and acquisitions (M&A) in host country

	VC_{ijt}	$M\&A_{ijt}$	VC_{ijt}	$M\&A_{ijt}$
<i>Share of Migrants with Grad Ed</i> _{ijt}	3.55** [0.97, 6.13]	0.41 [−0.99, 1.81]	3.12** [0.38, 5.87]	0.12 [−1.37, 1.61]
<i>Log(Total Migrants)</i> _{ijt}	0.12 [−0.03, 0.28]	0.13** [0.04, 0.22]	0.12 [−0.04, 0.29]	0.10** [0.01, 0.20]
<i>POLCON</i> _{it}	0.80 [−0.20, 1.79]	0.53** [0.11, 0.95]		
<i>Polity</i> _{it}			0.02 [−0.03, 0.06]	0.02** [0.00, 0.04]
<i>Log(U.S. Domestic Deals)</i> _t	0.77** [0.40, 1.13]	0.80** [0.65, 0.95]	0.78** [0.41, 1.15]	0.83** [0.67, 0.99]
<i>Log(Domestic Deals)</i> _{it}	0.50** [0.37, 0.63]	0.47** [0.38, 0.55]	0.51** [0.37, 0.64]	0.44** [0.36, 0.53]
<i>Log(GDP)</i> _{it}	0.29* [−0.01, 0.59]	0.05 [−0.11, 0.22]	0.33** [0.02, 0.65]	0.04 [−0.13, 0.21]
<i>Log(Distance)</i> _{ij}	−0.08 [−0.60, 0.44]	−0.21 [−0.46, 0.04]	−0.10 [−0.66, 0.46]	−0.18 [−0.43, 0.08]
<i>Common Language</i> _{ij}	0.44 [−0.09, 0.97]	0.39* [−0.03, 0.81]	0.50* [−0.06, 1.07]	0.42* [−0.02, 0.86]
<i>Common Border</i> _{ij}	0.61 [−0.36, 1.58]	0.33 [−0.24, 0.90]	0.55 [−0.49, 1.60]	0.45 [−0.11, 1.01]
<i>Common Colonial History</i> _{ij}	−0.08 [−0.43, 0.26]	0.16 [−0.13, 0.45]	−0.12 [−0.46, 0.23]	0.16 [−0.15, 0.48]
<i>Common Legal Origin</i> _{ij}	−0.05 [−0.48, 0.39]	−0.22 [−0.64, 0.20]	−0.11 [−0.56, 0.34]	−0.30 [−0.74, 0.14]
<i>Common Currency</i> _{ijt}	−1.98** [−3.19, −0.78]	0.13 [−0.39, 0.66]	−1.59** [−2.34, −0.84]	−0.24 [−0.61, 0.13]
<i>Log(Patents Issued)</i> _{it}	0.35** [0.22, 0.48]	0.25** [0.14, 0.36]	0.33** [0.20, 0.46]	0.25** [0.14, 0.36]
<i>Log(Stocks Traded)</i> _{it}	0.19** [0.03, 0.35]	−0.04 [−0.13, 0.06]	0.22** [0.06, 0.39]	−0.01 [−0.10, 0.09]
<i>Capital Account Openness</i> _{it}	0.06 [−0.08, 0.21]	0.04 [−0.03, 0.12]	0.02 [−0.14, 0.19]	0.03 [−0.05, 0.12]
<i>Dual Taxation Treaty</i> _{ijt}	0.70* [−0.06, 1.46]	0.48** [0.20, 0.75]	0.64 [−0.16, 1.45]	0.49** [0.22, 0.77]
<i>Genetic Distance</i> _{ij}	−0.14 [−0.52, 0.24]	−0.23** [−0.45, −0.01]	−0.12 [−0.52, 0.28]	−0.27** [−0.50, −0.05]
Constant	−14.74** [−21.40, −8.07]	−9.50** [−13.37, −5.64]	−14.60** [−21.25, −7.95]	−9.47** [−13.23, −5.71]
Observations	2,163		2,048	

Note: Seemingly unrelated negative binominal regression models with 95% confidence intervals based on robust standard errors in brackets. * $p < .10$, ** $p < .05$.

investment in history (see Figure 1). We use this sample to confirm that our proposed theoretical mechanisms are universal characteristics of these two types of FDI and not unique to the U.S.-based investors. We add to the baseline model controls for sending country j stock market development ($\text{Log}(\text{Stocks Traded})_{jt}$) and GDP ($\text{Log}(\text{GDP})_{jt}$), standard correlates for the size of cross-border VC and M&A outflows (Wright et al., 2005).

Table 5 provides model estimates based on this broader cross-section sample. The results are consistent with those based on the U.S. panel reported in Table 3. Countries with lower political risk receive more M&A, but VC is still uncorrelated with host political risk. Host countries with higher proportions of graduate-educated migrants in the sending country receive more of both types of FDI, but the effect for VC is twice that of M&A. Among the controls, log GDP, bilateral distance, host patent activity, and stock market development correlate with both more VC and M&A. In Appendix Table 4, we again control for a battery of potential determinants of cross-border VC. These controls include cultural differences, corruption and rule of law in the recipient country, and the existence of BITs and PTAs. We also experiment with lagging our migration variables by 5 years. In none of these additional specifications do our result differ.

Our second robustness test disaggregates the baseline panel sample of U.S.-origin VC, M&A and skilled migrant data into 88 industries.²⁹ These dyad-industry-level analyses are exceptionally stringent tests of our claims because they account for the non-random distribution of skilled migrants across industries, and hold constant unobserved industry characteristics that influence the propensity to receive either type of FDI.

The unit of analysis is now investment (VC_{ijkt}) and ($M\&A_{ijkt}$) from the United States into host country i , in industry k , and year t . This set of models includes year and industry fixed effects. In these models, $\text{Log}(\text{Total Migrants})_{ijkt}$ and $\text{Share of Migrants with Grad Ed}_{ijkt}$ are based on migrants' industry of employment in the United States. To control for unobservable and time-varying dyad-industry attributes that may influence investment, we add to the baseline VC model a control for the number of U.S.-origin M&A investments in that country-industry-year. Likewise, we include in the M&A model the number of U.S.-origin VC investments in that country-industry-year.

Table 6 columns 1 and 2 provide parameter estimates and associated confidence intervals for these country-industry-year-level models. These estimates confirm the baseline findings: skilled migrant networks play a role in both VC and M&A, but the effect—as measured by the share of migrants with graduate education—is statistically and substantively larger for VC than for M&A investment.³⁰

This fine-grained analysis also allows us to pinpoint the industries in which migrant networks stimulate the most investment. In results not reported here, we interact *Migrants with Grad Ed* _{$ijkt$} with each industry dummy to estimate industry-specific slopes, and show that skilled migrant networks are particularly important to cross-border VC in the pharmaceutical

²⁹ Our VC and M&A data are at the level of four-digit SIC (1987) categories. Our U.S. migrant data are classified by U.S. Census 1990 Occupational Codes, which is approximately equal to the three-digit SIC classification. We merge these data using the official U.S. Census Bureau concordance (U.S. Census Bureau, 2003).

³⁰ The use of both country and industry level data suggests the use of a multilevel/hierarchical model. Our investigation of the statistical literature suggests that multilevel negative binomial models with a large number of dummy variables often give inconsistent results. Further, it is unclear how to implement a multilevel model within the framework of a seemingly unrelated regression model. We do, however, estimate, in Appendix Table 5, individual multilevel models of VC and M&A investment (using the logged number of deals) assuming a normal distribution for the error term and find results consistent with those reported.

TABLE 5 OECD-origin international venture capital (VC) and mergers and acquisitions (M&A): 2000 cross-section

	VC_{ij}	$M\&A_{ij}$	VC_{ij}	$M\&A_{ij}$
<i>Share of Migrants with Grad Ed_{ij}</i>	2.53** [1.15, 3.91]	1.02** [0.48, 1.56]	2.52** [1.15, 3.88]	1.04** [0.50, 1.58]
<i>Log(Total Migrants)_{ij}</i>	0.65** [0.54, 0.75]	0.34** [0.29, 0.39]	0.65** [0.54, 0.76]	0.34** [0.29, 0.39]
<i>POLCON_i</i>	0.20 [−0.99, 1.40]	0.81** [0.19, 1.43]		
<i>Polity_i</i>			0.00 [−0.06, 0.06]	0.04** [0.00, 0.07]
<i>Log(Domestic Deals)_i</i>	0.57** [0.40, 0.73]	0.81** [0.67, 0.95]	0.58** [0.41, 0.75]	0.77** [0.62, 0.92]
<i>Log(GDP)_j</i>	0.86** [0.29, 1.43]	0.67** [0.33, 1.01]	0.87** [0.31, 1.42]	0.68** [0.34, 1.02]
<i>Log(GDP)_i</i>	−0.29 [−0.93, 0.35]	0.01 [−0.23, 0.24]	−0.29 [−0.96, 0.39]	−0.01 [−0.27, 0.25]
<i>Log(Distance)_{ij}</i>	−0.56** [−0.79, −0.34]	−0.50** [−0.60, −0.40]	−0.56** [−0.79, −0.34]	−0.49** [−0.59, −0.39]
<i>Common Language_{ij}</i>	0.52 [−0.81, 1.86]	0.33 [−0.07, 0.73]	0.52 [−0.79, 1.82]	0.35* [−0.07, 0.76]
<i>Common Border_{ij}</i>	0.11 [−0.93, 1.14]	−0.02 [−0.36, 0.32]	0.10 [−0.93, 1.14]	−0.04 [−0.38, 0.31]
<i>Common Colonial History_{ij}</i>	−0.53* [−1.16, 0.10]	0.26 [−0.07, 0.59]	−0.53 [−1.17, 0.10]	0.25 [−0.09, 0.58]
<i>Common Legal Origin_{ij}</i>	0.55 [−0.23, 1.33]	0.50** [0.24, 0.76]	0.54 [−0.22, 1.30]	0.52** [0.25, 0.78]
<i>Common Currency_{ij}</i>	−0.78** [−1.48, −0.08]	−0.28* [−0.59, 0.03]	−0.77** [−1.48, −0.07]	−0.27* [−0.58, 0.04]
<i>Log(Patents Issued)_i</i>	−0.16** [−0.32, −0.01]	−0.04 [−0.13, 0.04]	−0.17** [−0.32, −0.01]	−0.05 [−0.14, 0.04]
<i>Log(Stocks Traded)_j</i>	0.48** [0.33, 0.64]	0.56** [0.45, 0.67]	0.48** [0.32, 0.64]	0.57** [0.46, 0.68]
<i>Log(Stocks Traded)_i</i>	0.15 [−0.13, 0.42]	−0.12** [−0.22, −0.01]	0.14 [−0.13, 0.42]	−0.10* [−0.21, 0.01]
<i>Capital Account Openness_i</i>	0.01 [−0.17, 0.20]	−0.03 [−0.12, 0.06]	0.01 [−0.17, 0.20]	−0.03 [−0.13, 0.06]
<i>Dual Taxation Treaty_{ij}</i>	0.38 [−0.12, 0.89]	0.51** [0.25, 0.76]	0.39 [−0.12, 0.90]	0.50** [0.24, 0.76]

(Continues)

TABLE 5 (Continued)

	VC_{ij}	$M\&A_{ij}$	VC_{ij}	$M\&A_{ij}$
<i>Genetic Distance_{ij}</i>	−0.53* [−1.12, 0.07]	0.10 [−0.15, 0.35]	−0.51* [−1.06, 0.04]	0.09 [−0.17, 0.35]
Constant	−12.05** [−22.98, −1.12]	−11.76** [−16.09, −7.43]	−11.97** [−22.79, −1.15]	−11.58** [−15.98, −7.19]
Observations	3,551		3,428	

Note: Seemingly unrelated negative binomial regression models with 95% confidence intervals based on robust standard errors in brackets. * $p < .10$, ** $p < .05$.

and software industries. Consistent with our theoretical claims, these are industries in which most assets are intangible, R&D spending is high, and monitoring contract compliance requires in-depth knowledge of the industry and host country.³¹ Substantively, a one-unit increase in the share of U.S. skilled migrants originally from country i , employed in the U.S. pharmaceutical industry in year t corresponds to an increase of five deals in pharmaceutical VC investments into that country. For the software industry, the increase is a whopping nine deals.

Our final robustness test distinguishes between mechanisms through skilled migrant networks could increase VC but not M&A. The correlation between migrant networks and VC could reflect migrants' familiarity with the host market and a corresponding advantage in identifying investment opportunities. We have no doubt that this alternate mechanism also operates. To the extent that market familiarity aids in identifying both VC and M&A, our use of the SUR framework accounts for this. The framework holds constant migrants' investment generation functions by comparing different varieties of FDI within the same host country. Market familiarity could be more important for VC, however, because startups do not have the observable track record of established firms. If so, the alternate mechanism could account for relatively stronger correlation between VC and migrant networks.

We devise an additional empirical test to better differentiate between these two explanations. Cross-border private equity investment (PE) blends elements of VC and M&A. In most respects, PE investors are the same as VC investors.³² Both types of investors have the same basic motivation maximizing returns to large pools of capital by investing in a portfolio of companies and exercising a high degree of managerial control.³³

The crucial difference between VC and PE is that PE, like M&A, invests in existing companies. PE leverages managerial skill and financial engineering to raise firms' market values. For example, in leveraged buyouts, PE investors invest in firms using capital borrowed at favorable terms (Kaplan & Strömberg, 2009). PE requires the same kind of monitoring that VC does and investors can avail themselves of similarly tight networks (Meuleman et al. 2009) but are like M&A investors in being less sensitive to investment generation functions of networks. By replacing VC with PE in our baseline model, we can hold constant the alternate

³¹ We note that dropping the pharmaceutical and software industries from our analyses attenuates the coefficient on skilled migrants but does not alter the substantive results or hypothesis tests we report in Table 6.

³² See Kaplan & Strömberg (2009) and Lerner (2011) for overviews.

³³ Indeed, VC is often described as subset of PE.

TABLE 6 Industry-level models of international venture capital (VC) and mergers and acquisitions (M&A)

	All 88 industries		Pharmaceutical industry	
	VC_{ijkt}	$M\&A_{ijkt}$	VC_{ijkt}	$M\&A_{ijkt}$
<i>Share of Migrants with Grad Ed</i> _{ijkt}	1.05** [0.83, 1.28]	0.55** [0.44, 0.67]	1.11** [0.54, 1.68]	0.52** [0.11, 0.93]
<i>Log(Total Migrants)</i> _{ijkt}	0.14** [0.10, 0.19]	0.22** [0.20, 0.24]	0.05 [−0.09, 0.19]	0.31** [0.20, 0.41]
<i>Log(Domestic Deals)</i> _{ikt}	0.42** [0.34, 0.50]	0.51** [0.44, 0.58]	0.90** [0.67, 1.13]	0.41** [0.29, 0.54]
<i>Log(GDP)</i> _{it}	0.27** [0.17, 0.38]	0.30** [0.26, 0.34]	1.25** [0.73, 1.77]	0.37** [0.16, 0.57]
<i>Log(Distance)</i> _{ij}	−1.24** [−1.36, −1.11]	−0.47** [−0.51, −0.43]	−0.88** [−1.26, −0.49]	−0.29** [−0.54, −0.05]
<i>Common Language</i> _{ij}	0.84** [0.59, 1.09]	0.14** [0.06, 0.23]	0.97** [0.08, 1.86]	0.20 [−0.19, 0.59]
<i>Common Border</i> _{ij}	−0.90** [−1.24, −0.55]	−0.16** [−0.28, −0.05]	−0.83 [−1.84, 0.18]	−0.81** [−1.47, −0.16]
<i>Common Colonial History</i> _{ij}	0.15** [0.04, 0.27]	0.67** [0.61, 0.72]	0.20 [−0.17, 0.57]	0.20 [−0.06, 0.46]
<i>Common Legal Origin</i> _{ij}	−0.01 [−0.25, 0.24]	0.25** [0.17, 0.33]	−0.72* [−1.56, 0.12]	0.08 [−0.30, 0.46]
<i>Common Currency</i> _{ijt}	−3.00** [−5.00, −0.99]	−0.43** [−0.72, −0.14]	−14.80** [−15.95, −13.65]	−14.96** [−15.40, −14.52]
<i>Log(Patents Issued)</i> _{it}	0.42** [0.38, 0.45]	0.40** [0.39, 0.42]	0.15** [0.03, 0.26]	0.35** [0.27, 0.42]
<i>Log(Stocks Traded)</i> _{it}	0.54** [0.49, 0.59]	0.16** [0.14, 0.18]	0.29** [0.10, 0.47]	0.12** [0.01, 0.23]
<i>Capital Account Openness</i> _{it}	0.00 [−0.04, 0.05]	0.06** [0.04, 0.08]	−0.03 [−0.18, 0.12]	0.01 [−0.09, 0.11]
<i>Dual Taxation Treaty</i> _{ijt}	0.99** [0.64, 1.33]	1.06** [0.94, 1.19]	2.70** [0.67, 4.73]	1.03** [0.44, 1.61]
Constant	−5.27** [−7.03, −3.51]	−9.57** [−10.27, −8.87]	−13.57** [−20.03, −7.12]	−8.42** [−11.77, −5.07]
Observations	162,031		1,929	

Notes: Seemingly unrelated regression models with 95% confidence intervals based on robust standard errors in brackets. Columns 1 and 2 include a set of industry dummy variables; all models include a set of time dummies. * $p < .10$, ** $p < .05$.

mechanism to directly compare relative sensitivity to migrant networks' relational contracting function. We measure the number of private equity deals in a manner analogous to the VC and M&A measures.³⁴

³⁴ Private equity data are from VentureXpert, the same source for our VC data. We define PE as all non-early stage deals as classified in the database.

TABLE 7 Relational contracting or investment generation: International private equity (PE) and mergers and acquisitions (M&A)

	<i>PE_{ijt}</i>	<i>M&A_{ijt}</i>	<i>PE_{ijt}</i>	<i>M&A_{ijt}</i>
Share of Migrants with Graduate Education	6.50** [3.81, 9.19]	1.44 [−2.39, 5.28]	6.08** [3.29, 8.87]	1.33 [−2.25, 4.91]
Log(Migrants from Recipient in Source)	0.26** [0.10, 0.42]	0.43** [0.21, 0.66]	0.23** [0.06, 0.40]	0.38** [0.18, 0.58]
Index of Political Constraints	1.01** [0.03, 2.00]	1.77** [0.63, 2.91]		
Democracy Score, Recipient			0.02 [−0.03, 0.08]	0.07** [0.02, 0.12]
log(U.S. Domestic Deals)	1.15** [0.87, 1.44]	1.56** [1.03, 2.09]	1.15** [0.87, 1.43]	1.66** [1.14, 2.18]
Log(Real GDP) Recipient	0.34* [−0.02, 0.70]	1.10** [0.69, 1.51]	0.38** [0.01, 0.75]	1.20** [0.76, 1.64]
log(Bilateral Distance)	−0.64** [−0.96, −0.31]	0.54 [−0.40, 1.48]	−0.70** [−1.03, −0.37]	0.44 [−0.41, 1.28]
Common Official Language	0.57** [0.19, 0.94]	0.99 [−0.77, 2.74]	0.59** [0.16, 1.03]	1.28** [0.03, 2.53]
Shared Common Border	−0.23 [−1.14, 0.68]	1.69 [−1.19, 4.58]	−0.29 [−1.20, 0.62]	1.41 [−1.08, 3.91]
Common Colonial History	0.23 [−0.15, 0.61]	0.85 [−0.30, 2.00]	0.23 [−0.16, 0.62]	0.68 [−0.42, 1.79]
Common Legal Origin	−0.14 [−0.54, 0.26]	−1.43 [−3.15, 0.28]	−0.20 [−0.63, 0.23]	−1.66** [−2.94, −0.37]
Common Currency	−0.62** [−1.16, −0.07]	2.61** [0.89, 4.33]	−0.77** [−1.37, −0.16]	2.56** [0.44, 4.68]
Log(Total Patents) Recipient	0.43** [0.26, 0.59]	0.36** [0.14, 0.57]	0.41** [0.25, 0.56]	0.31** [0.12, 0.51]
Log(Stock Market Development) Recipient	0.47** [0.33, 0.62]	0.23** [0.03, 0.42]	0.50** [0.35, 0.65]	0.24** [0.05, 0.43]
Capital Account Openness	0.21** [0.05, 0.38]	−0.02 [−0.18, 0.14]	0.16* [−0.02, 0.35]	−0.12 [−0.28, 0.05]
Dual Taxation Treaty	0.19 [−0.54, 0.93]	0.25 [−0.55, 1.06]	0.18 [−0.61, 0.96]	0.33 [−0.34, 1.00]
Genetic Distance	−0.17 [−0.50, 0.17]	0.75** [0.20, 1.30]	−0.16 [−0.50, 0.18]	0.73** [0.21, 1.24]
Constant	−15.01** [−20.49, −9.52]	−32.91** [−44.82, −20.99]	−14.01** [−19.37, −8.64]	−32.56** [−43.37, −21.75]
Observations	2,028		1,920	

Note: Seemingly unrelated negative binominal regression models with 95% confidence intervals based on robust standard errors in brackets. * $p < .10$, ** $p < .05$.

Table 7 contains the results of this analysis. As with the comparison between VC and M&A, we again find that skilled migrant network, all else equal, have a statistically significant and substantively larger effect on PE relative to M&A. Indeed, skilled migrants are uncorrelated with M&A in these models. These patterns hold regardless of how we measure political risk. The one key difference we find between the results in Tables 3 and 7 is that we find that political constraint has a statistically significant effect on both PE and M&A deals, though the PE coefficient is smaller. We find no correlation with the POLITY score of democracy.

4. | CONCLUSION

FDI investors vary in their sensitivity to political risk. International VC investors, embedded in cross-border skilled migrant networks, are less sensitive to political risk because they rely more heavily on relational contracting. International M&A investors lack the tight network necessary for relational contracting, so they rely more on legal contract enforcement. Greater need for legal contract enforcement increases M&A investors' exposure to political risk. To be sure, institutions are core elements of global market exchange; our findings help explain when and why they are relatively more important.

Our findings suggest that other varieties of FDI can also benefit from network-based enforcement. For example, joint venture greenfield FDI, establishment of a new firm in partnership with local firms, may be able to draw upon relational contracting. Monitoring compliance is also the central to mitigating contractual hazard in joint ventures. The global knowledge economy—goods and services whose production requires specialized human capital, intellectual property, and reliance on technology—provides much of the dynamism in the contemporary world economy. This sector's heavy reliance on intangible assets and continual innovation presents the same contractual hazards and costs as VC. Relational contracting should be particularly important to foster global integration of these sectors.

More generally, greater attention to distinctive types of contractual risk can produce richer and more nuanced predictions about important political economy questions. For example, some economic activities suffer from adverse selection, the risk that contracting parties withhold private information during contract negotiation. Other activities present moral hazard risk, which arises *ex post* when contracting parties have divergent incentives and can only imperfectly monitor the other's compliance. These distinctive forms of contractual risk produce varying sensitivity to political risk, laws, and other salient political economy factors.

Finally, our findings provide some optimism for developing countries seeking to harness the benefits of global economic integration. The production activities of FDI investors are among the few direct conduits for intangible production capital—technologies and skills—necessary for development (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004; Romer, 1993). Many of the developing countries most in need of FDI to spur development lack robust legal contract enforcement. Our findings indicate that relational contracting can better facilitate the flows of specific and essential elements of foreign investment. Additionally, our findings indicate that brain drain has an upside inasmuch as skilled emigrants facilitate greater investment.

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