

CROSS-BORDER INVESTMENT AND FIRM LIQUIDITY

Executive Summary. We investigate the influence of interjurisdictional, geographic-based information barriers on the financial transparency and liquidity of real estate organizations across the Asia-Pacific region. Given both the unique regulatory distribution requirements across this industry and the capital-intensive nature of most real estate investment activities, firms within this market sector face unique, substantive financing concerns. As a consequence, financial transparency and liquidity are of increased importance to firms within this industry. Consistent with this paradigm, we find strong evidence that Asia-Pacific real estate firms facing enhanced levels of political risk and uncertainty are characterized by higher information barriers, and exhibit reduced financial market liquidity as measured by wider bid-ask spreads.

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Information moves markets. All else equal, the more the market knows about a firm, the more accurate the firm's valuation will be. While corporate disclosures, operating characteristics, and investment activities play a central role in establishing the informational opacity of a firm, the past decade has seen considerable attention given to geographic distance. As outlined in more detail below, a consensus has begun to emerge across the finance and investments literature recognizing that geographic considerations materially impact the generation and transmission of information. These studies describe the apparent information advantage accruing to investors who are geographically proximate to a firm. Typically descriptive in nature, they tend to focus on identifying observable linkages between key operational characteristics of interest, while offering relatively little insight into the direct mechanism through which information barriers arise.

Given the continuing advancement of information technology, which potentially reduces the impact of physical distance, more subtle information barriers may prove substantively more important for financial markets. For example, consider a firm making a sizable investment in real property assets located on the other side of the country from the firm's existing operations and headquarters. As the physical

location of the investment is not proximate to the firm's existing operations or information nexus of the firm (i.e., headquarters), undertaking the project will increase the geographic scope and dispersion of the firm. While potentially value enhancing, the increase in geographic dispersion also increases valuation complexity due to both the increased difficulty associated with physically monitoring the investment and the corresponding increase in potential agency costs. Extending this framework, imagine that the firm is making this same investment across an international (or other significant geopolitical) border. Investing across such boundary lines will likely further increase the difficulties associated with valuing the company, as investors must contend not only with the physical distance, but also issues associated with different social norms and customs, political ideologies, economic systems, and/or regulatory frameworks and paradigms.

This investigation focuses on the valuation difficulties associated with a firm's cross-border operations. Specifically, the purpose of this investigation is to examine whether, and to what extent, information barriers associated with exposure to geopolitical risk and uncertainty influence the liquidity of publicly traded real estate firms across the Asia-Pacific region. The size, growth, and operating characteristics of both this market sector and the variation with respect to market conditions, maturity, and transparency offered by this geographic region offer unique advantages in identifying the key economic relations we examine. We find strong support for the notion that enhanced exposure to geopolitical risk increases information uncertainty, and is associated with reduced financial market liquidity (i.e., wider bid-ask spreads) for publicly traded real estate firms. These results add important insight and context to the growing literature on the geographic dimensions of firm investment decision making, providing evidence that both distance and location are important factors in shaping a firm's financial market transparency.

The remainder of this paper is organized as follows. In the next section, we review the relevant literature on home bias, information asymmetry and immobility, and the importance of geography to firm

characteristics and market outcomes. We outline our empirically testable hypotheses in the following section, along with the data and methodological approaches employed to evaluate them. We then present the results and conclude with a summary of our key findings.

LITERATURE REVIEW

Why Geography Matters

Do "local" investors have access to better information that allows them to make more efficient investment decisions? If so, what is the source of this competitive advantage? These two questions have received considerable attention across the broad finance and investments literature throughout the past 15 years, and given the localized nature of real property markets are of potentially unique and important interest to real estate market analysts and investors.

Beginning with Coval and Moskowitz (1999a, 1999b), a number of investigations present evidence suggesting local market participants may well possess, or have systematic advantages in acquiring or processing, value relevant information regarding local enterprises. For example, Coval and Moskowitz demonstrate that investors exhibit a "home bias," over-investing in geographically proximate firms, and generating significantly positive, risk-adjusted returns on these local investments. These findings stand in direct contrast to the basic theoretical tenants of home bias and international portfolio diversification, and suggest investors must have some unique advantage in valuing local firms to account for such superior performance.¹ While Coval and Moskowitz focus on portfolio managers, Hau (2001) examines the performance of professional traders and finds evidence consistent with Coval and Moskowitz. Notably, local traders outperform their non-local counterparts. Moreover, evidence of a local advantage is not limited to professionals, as Ivković and Weisbrenner (2005) find retail investors over-invest in local firms, and also earn higher returns on the local component of their portfolios.²

Given these findings, the obvious next question is how are investors able to earn superior performance

on these local investments? The answer to this question is somewhat less clear. One possibility frequently proffered in the literature is that local market participants possess an inherent, systematic advantage in accessing value relevant soft information.³ Evidence consistent with this explanation is presented by Malloy (2005) and Bae, Stulz, and Tan (2008). These authors find that local analysts typically provide more accurate forecasts and firm investment recommendations. Similarly, Berry and Gamble (2013) find that the trading patterns of local retail investors are useful in predicting a security's return following an earnings announcement.

Additional evidence suggesting local market participants possess an informational advantage may be gleaned from the market microstructure literature. For example, Schultz (2003) finds that regional market makers tend to focus, specialize, or concentrate their book making activities on local firms, while Anand et al. (2011) argue local market makers enhance and improve the efficiency of the price discovery process. Finally, Kedia and Zhou (2011) find firms with high participation by local market makers experience enhanced market liquidity.⁴ Taken together, these findings provide strong evidence that geography matters to financial market outcomes.

Why Asia-Pacific Real Estate Firms?

While the aforementioned studies tend to examine broad cross-sections of firms across multiple industries, throughout our empirical analysis we intentionally limit our sample to real estate firms. Focusing on a single industry removes inter-industry complications, and allows us to concentrate directly on firms for which transparency issues may be uniquely important. Given the high, regulatory mandated payout requirements for firms electing real estate investment trust (REIT) status, it is often difficult for these organizations to retain sufficient internally generated funds to finance new projects. Even for real estate firms not electing REIT status, many find it necessary to offer substantive dividends to remain competitive in the marketplace, while irrespective of payout policies the sheer scale and economic magnitude of many real estate development

initiatives mandates the pursuit of additional capital from the external marketplace. Given that financial market opacity has been shown to directly impact the cost of capital, firms within the real estate industry are uniquely positioned to reap the benefits, or suffer the consequences, of activities that influence the transparency of their operations.

Furthermore, we focus on real estate firms headquartered across the Asia-Pacific region, as these large and growing markets offer a unique natural laboratory in which to examine our focal hypotheses. In terms of magnitude, Leow (2015) reports that the Asian share of world GDP has grown from an estimated 26.2% in 2000 to over 35.0% by 2015, and now exceeds the output of both the United States and Europe. More specific to the real estate sector, while Australian listed property trusts (and subsequently A-REITs) have been around for nearly 50 years, Asian REITs began to emerge around the turn of the 21st century. The growth rate of this sector, which Cashman, Harrison, and Seiler (2016) report has been more than twice that of U.S. property markets over the past decade, has led to a total current market capitalization in excess of \$300 billion. Panel A of Exhibit 1 provides a brief summary and overview of REIT and listed property company markets across the Asia-Pacific countries that serve as the backdrop for our analysis.⁵

Additionally, unlike their U.S. based counterparts, who have historically focused their investment activities almost exclusively on properties located within the U.S., publicly traded Asia-Pacific real estate firms exhibit a strong historic pattern of, and continuing proclivity toward, international investment activities. This latter investment paradigm is particularly useful within the context of our investigation, as it provides for significant inter-firm variation along the geopolitical risk exposure dimensions analyze. To illustrate this variation, Panel B of Exhibit 1 provides the location of firm headquarters and investment property locations, while Exhibits 2 and 3 show the location of both sample firm headquarters (Exhibit 2) and properties (Exhibit 3). The sample firms and properties are spread across the entire Asia-Pacific region, and represent a broad cross-section of the commercial real estate entities

Exhibit 1 | Asia-Pacific Real Estate Markets, Firms, and Investment Property Locations

| Country/Security | Introduced | # of REITs | Est. Market Size (millions of €) | Largest Firm (Property Focus) |
|----------------------------------------------------------------|------------------------|------------|----------------------------------|------------------------------------------|
| Panel A: The Size and Development of Asia-Pacific REIT Markets | | | | |
| Australia (A-REIT) | 1971 | 61 | 106,458 | Scentre Group (Regional Malls) |
| China (N/A) | In Process | N/A | N/A | – |
| Hong Kong (HK-REIT) | 2003 | 13 | 28,828 | Link REIT (Shopping Centers) |
| India (REMF) | 2008/2014 ^a | 0 | N/A | – |
| Japan (J-REIT) | 2000 | 56 | 102,695 | Nippon Building Fund (Office Properties) |
| Singapore (S-REIT) | 1999 | 44 | 51,236 | CapitaLand Mall Trust (Regional Malls) |

| Panel B: Sample Firm and Property Locations | | | | |
|---------------------------------------------|----------|-------------|------------|-------------|
| Country | Firm HQs | % of Sample | Properties | % of Sample |
| Australia | 30 | 16.30 | 2,233 | 19.92 |
| China | 7 | 3.80 | 1,565 | 13.96 |
| Hong Kong | 52 | 28.26 | 1,178 | 10.51 |
| India | 8 | 4.35 | 164 | 1.46 |
| Japan | 36 | 19.57 | 3,386 | 30.21 |
| Singapore | 51 | 27.72 | 831 | 7.41 |
| Other | 0 | 0.00 | 1,852 | 16.52 |
| Total | 184 | 100.00 | 11,209 | 100.00 |

Notes: This table provides a breakdown of the evolution and development of Asia-Pacific REIT markets in Panel A. All numbers are pulled directly from global sector reports provided by the European Public Real Estate Association (EPRA). An outline of the headquarter locations of the real estate firms in our sample, as well as the geographic location of all properties owned by sample firms is provided in Panel B.

^aIndia allowed the introduction of real estate mutual funds (REMF) in 2008, and subsequently adopted a REIT framework in 2014.

Exhibit 2 | Real Estate Firm Headquarters: Geographic Distribution

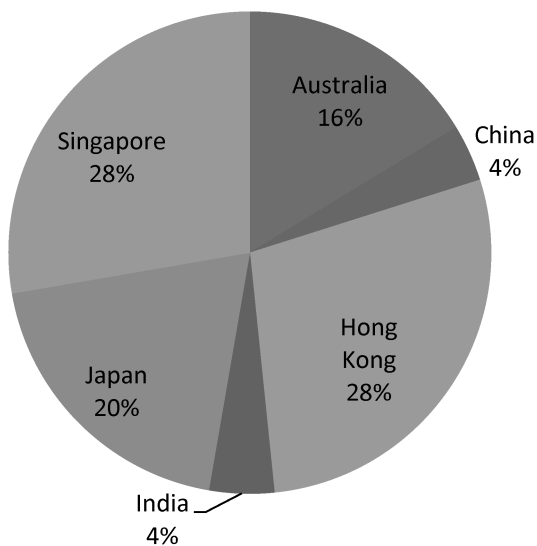
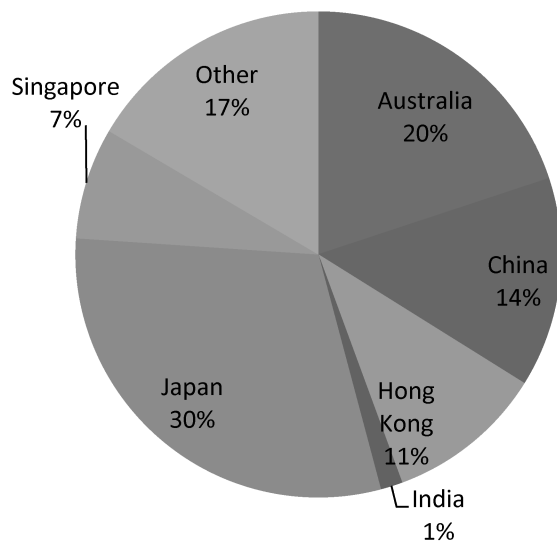


Exhibit 3 | Real Estate Firm Investments: Property Location Distribution



operating in this marketplace. A more detailed breakout of the individual property locations is provided in Appendix A.

Financial Market Transparency

There are important linkages between a firm's information environment and its financial market liquidity.⁶ In general, informational opacity directly influences a market maker's cost of doing business, and as such, bid-ask spreads are likely to reflect, at least in part, the transparency of the information environment and the level of informational asymmetry characterizing a firm. Building upon these notions, a number of researchers have examined important economic questions through the lens of market microstructure based metrics.⁷ A comprehensive review of these core findings is provided by Blau, Nguyen, and Whitby (2015). They find that real estate market microstructure studies consistently document direct linkages between increasing informational asymmetry and wider bid-ask spreads.

Political Risk and Liquidity

Having outlined key relations between firm geography, information transparency, and financial market liquidity, we posit that the uncertainty surrounding a firm's valuation will be materially influenced by its geopolitical risk exposure. In turn, increased valuation uncertainty should manifest itself in the form of reduced financial market liquidity. As such, we expect firms with greater geopolitical risk exposure to exhibit wider bid-ask spreads, as investors will have more uncertainty regarding the valuation of these firms.

As geopolitical risk can take many forms, to operationalize this central construct and examine its relation to a firm's financial market liquidity we employ five distinct measures. First, geopolitical risk at its broadest has to do with the likelihood that the current government will continue, or peacefully transition to the next, successive governmental regime. Investments in countries where the current political system is more likely to experience an unexpected, unconstitutional, or violent upheaval increases the difficulty of the valuation process, as

property rights, which serve as fundamental determinants of value, may be called into question. Such increased firm valuation uncertainty may well manifest itself in the form of increased bid-ask spreads, as specialists and other market makers may rationally widen spreads to compensate for increased inventory holding costs associated with the non-diversifiable risk associated with providing immediacy to the marketplace.⁸

Second, separate from the stability of the government is the general operating environment businesses confront when operating within a foreign country. This risk dimension encompasses attributes such as the general business friendliness of a jurisdiction toward private economic activity; the bureaucratic and regulatory burden confronted by firms; the existence, prevalence, and significance of taxes, tariffs, trade restrictions, or other economic incentives granting preferential treatment to local or national, as opposed to global or international, organizations; and the consistency and continuity of relevant economic policies, procedures, and regulations. Real estate firms investing in countries characterized by more opaque or operationally difficult business environments face increased uncertainty surrounding their ability to complete projects, determine the potential gains from those projects, and/or maintain control of their investments. As increased uncertainty should be associated with reduced financial market liquidity, we expect firms operating in countries with worse operating environments will exhibit wider bid-ask spreads.

Our third geopolitical risk dimension relates to the ability of a firm to repatriate profits and cash flows generated abroad. As the difficulty associated with extracting profits from abroad increases, the uncertainty surrounding the cash flows ultimately available to firm shareholders increases, as does the firm's valuation difficulty. Therefore, as the difficulty surrounding repatriation increases, so too should a firm's bid-ask spread.

Fourth, we examine the level of corporate disclosure required within each political jurisdiction. Better quality disclosures serve to enhance the informational transparency of the firm's operations, and

thus, should help to mitigate the uncertainty associated with cross-border investment. Consequently, we expect that as the quality of required disclosure increases, so too will the liquidity of the firm.

Lastly, we include the Jones Lang LaSalle Global Real Estate Transparency Index. This index is an aggregation of 139 variables covering transaction processes, regulation, the legal system, and corporate governance to provide a measure of market transparency. We expect that as the opacity of the real estate market increases, so too will the firm's bid-ask spread.

DATA AND METHOD

In assembling our dataset, we begin by identifying all Asia-Pacific REITs, listed property trusts, and real estate operating/property/development companies followed by SNL Financial that trade on the Australian Stock Exchange, Bombay Stock Exchange, Hong Kong Stock Exchange, Singapore Exchange, or Tokyo Stock Exchange during the January 2004 to December 2013 period.⁹ This yielded 234 real estate firms. SNL Financial provides accounting information regarding each firm, including total assets and the book value of equity. We match our sample to Bloomberg using ticker, institution name, and stock exchange. We are unable to match nine of our SNL firms to Bloomberg, reducing our sample to 225 firms. From Bloomberg, we extract daily closing stock prices, closing bid and ask quotes, total current number of shares outstanding, total number of shares traded, dividends per share, market-to-book equity ratios, leverage ratios, market capitalization, and number of analysts making recommendations regarding a firm's future performance. We aggregate this daily data to create our monthly observations. For example, monthly closing price is the average of daily closing prices for each firm month.

Following the literature, we employ several restrictions to ensure the accuracy of our spread data. Specifically, following Danielsen, Harrison, Van Ness, and Warr (2009), we omit trades and quotes that (1) have a bid price or ask price less than or equal to zero, (2) report a price or volume of zero, (3)

report a negative bid-ask spread, (4) report a bid-ask spread in excess of \$4 per share, (5) report a spread larger than the share price, or (6) report transaction prices, bid-quotes, or ask-quotes exhibiting greater than a 10% deviation from their previously observed value. To minimize the effects of outliers on our dataset, we also winsorize both the market-to-book and leverage ratios at the 1% and 99% levels. Applying the criteria above yields 15,749 firm-month observations, from 184 real estate companies headquartered across the Asia-Pacific region.

Given the dramatic variation in share prices, we focus our analysis on the relative spread. Relative spread is defined as the average quoted spread during the month divided by the monthly average midpoint of the quoted spread:¹⁰

$$Midpoint_i = \frac{DailyAsk_i + DailyBid_i}{2}$$

$$Relative\ spread_{i,t} = \left(\frac{E_t(DailyAsk_i - DailyBid_i)}{E_t(Midpoint_i)} \right).$$

Our geopolitical risk measures come from three sources: the World Bank, Business Risk Service, and Jones Lang LaSalle (JLL). We collect each country's political stability index (PSI, World Bank), operations risk index (ORI, Business Risk Service), R-factor (Business Risk Service), disclosure level (World Bank), and perceived operational transparency (JLL Transparency Index). PSI represents the likelihood that a country's government will be overthrown in an unconstitutional or violent manner. While higher raw values indicate the country is more stable (i.e., the government is less likely to be violently overthrown), we rescale the raw scores multiplying them by negative one. Following this rescaling, higher values indicate a country is more likely to experience a violent political change.¹¹ ORI measures the ability of foreign businesses to operate within a given country. The index is designed to measure both the degree to which nationals are given preferential treatment and the general quality of the overall business environment. As higher raw scores indicate a better business environment, we multiply the raw score by negative one so that

higher values indicate a more difficult operating environment. R-factor measures the ease with which a business can repatriate profits and cash flows out of the country where they are earned and back into the firm's home country. We rescale the raw index value, multiplying by negative one, so that higher values indicate an increased difficulty in repatriating funds. Next, disclosure provides a ranking of a country's level of required disclosures related to ownership and financial information. As higher raw values indicate more/better disclosure requirements, we rescale the index (multiplying by negative one) so that higher values indicate weaker disclosure requirements. Finally, the JLL Transparency Index provides a measure of the opacity of each country's real estate operating environment for investors, developers, and corporate occupiers/tenants. Higher values indicate increased opacity, and hence, increased risk. To review, our analysis incorporates five distinct measures designed to capture alternative dimensions of a firm's geopolitical risk exposure. After rescaling, higher index values along each dimension indicate increased risk exposure.

As the vast majority of publicly traded real estate firms across the Asia-Pacific region hold investment property interests across multiple countries, to operationalize our political risk metrics we employ a weighted average approach. Specifically, for each sample firm, we first identify the geographic location (i.e., country) where every property in the firm's investment portfolio is physically located. Second, at each point in time (i.e., month), we then determine the percentage of the firm's investment property portfolio located within each country.¹² Third, to estimate each firm's property weighted average risk exposure, we multiply each firm's investment property portfolio weights by each country's specific index values, across each of the five risk metrics outlined above. This procedure results in a set of firm-specific, time-synchronous, geopolitical risk exposure measures for each sample firm.

In addition to these five key variables of interest, we also include an array of control variables the literature has found to be related to bid-ask spreads. Specifically, we employ the following general form regression specification:

$$\begin{aligned}
 Liquidity_{i,t} = & \alpha_0 + \beta_1 Political Risk_{i,t} + \beta_2 Volume_{i,t} \\
 & + \beta_3 Size_{i,t} + \beta_4 Price_{i,t} + \beta_5 Std Dev_{i,t} \\
 & + \beta_6 Analysts_{i,t} + \beta_7 MTB_{i,t} + \beta_8 Leverage_{i,t} \\
 & + \beta_9 Properties_{i,t} + \beta_{10} Development_{i,t} \\
 & + \beta_{11} Internal Advised Firms_{i,t} \\
 & + \beta_{12} Internal Managed Properties_{i,t} \\
 & + \beta_{13} REIT Status_{i,t} + \beta_{14} Short Sales_{i,t} \\
 & + \beta_{15} Selloff_{i,t} + \beta_{16} Entrance_{i,t} \\
 & + \beta_{17} Single Country_{i,t} + FE_{E,PT,i,t} \\
 & + \varepsilon_{i,t}.
 \end{aligned} \tag{1}$$

In the above specification, $Liquidity_{i,t}$ refers to relative bid-ask spread, while $Political Risk_{i,t}$ corresponds to one of our five weighted average, geopolitical risk exposure indices.¹³ We group the control variables into three broad categories. First, we control for five traditional microstructure attributes that have consistently been shown to influence firm spreads. $Volume_{i,t}$ is the natural log of the total number of shares traded during the month. All else the same, higher transactions volume should reduce spreads as market makers are able to allocate their fixed costs of operations over a greater number of transactions.¹⁴ $Size_{i,t}$ is the natural log of the firm's market value during the month. As Capozza and Lee (1995), Nelling, Mahoney, Hildebrand, and Goldstein (1995), and Hamelink and Hoesli (2004) all find REIT spreads are inversely related to market capitalization, we anticipate a negative relation between our size and liquidity metrics. On the other hand, size may also be correlated with increased firm complexity, and thus could be positively related to firm spreads. $Price_{i,t}$ is the natural log of the average closing price over the month, and like our previous two metrics is anticipated to exhibit an inverse association with firm spreads. $Std Dev_{i,t}$ is the standard deviation of the daily quoted midpoint over the month. While prior studies find increased volume is associated with reduced spreads, they also find that increased volatility is associated with higher spreads. Lastly, $Analyst_{i,t}$ is an indicator variable identifying whether or not each firm has formal analyst coverage. The variable is set equal to one if there is at

least one analyst recommendation regarding the firm within the quarter, otherwise it is set equal to zero.¹⁵ Wang, Erickson, Gau, and Chan (1995) find that REIT stocks followed by more security analysts tend to perform better than other REIT stocks. To the extent superior market performance is associated with enhanced price discovery, we expect to observe a positive relation between analyst coverage and firm liquidity, and thus a negative association between analyst coverage and firm spreads.

Our second major category of control variables encompasses firm characteristics that may materially influence a firm's operational opacity. These controls include each firm's growth prospects, which we proxy for using market-to-book ratios ($MTB_{i,t}$) as reported by Bloomberg. Hamelink and Hoesli (2004) find that the growth orientation of international real estate firms exerts a substantial effect on stock returns. While they report considerable volatility in the relation between growth and returns across both time and country, they emphasize the importance of including growth orientation controls in studies of international real estate markets. Extending these arguments, we anticipate that the viability of (and cash flow expectations regarding) future acquisition, expansion, and new development activities is more uncertain (i.e., informationally opaque) than corresponding expectations surrounding the firm's assets in place. As such, we include MTB ratios and expect them to be positively related to both a firm's informational opacity and observable bid-ask spread. Similarly, $Leverage_{i,t}$ is the ratio of total debt (e.g., the sum of short-term and long-term borrowing) divided by total common equity (e.g., share capital plus additional paid in capital plus retained earnings). All else equal, we anticipate that the higher the financial leverage of the firm, the greater its return volatility will be. Therefore, we expect firm leverage ratios to be positively associated with bid-ask spreads. $Properties_{i,t}$ is the number of individual properties in which the firm holds a direct financial interest. Increased property holdings may well increase firm diversification levels, and thus be associated with reduced risk, lower valuation uncertainty, and smaller bid-ask spreads. On the other hand, increased property holdings may well be associated with increased coordination, monitoring,

and agency problems, thereby leading to increased informational opacity and higher bid-ask spreads. $Development_{i,t}$ is an indicator variable set equal to one if the firm is actively engaged in the physical development of properties as opposed to simply acquiring existing structures and/or the rights to the cash flow streams they generate. Otherwise, the indicator is assigned the value of zero. As tangible assets such as those employed throughout the development process can serve to effectively reduce the uncertainty related to collateral value, sample real estate firms with active property development programs and/or pipelines could enjoy enhanced financial market liquidity and exhibit reduced bid-ask spreads. Conversely, development is also an inherently risky proposition, which may well be associated with enhanced future cash flow uncertainty. Hence, development activities could also be associated with wider bid-ask spreads.

Our final three firm characteristics are all designed to control for potential agency costs and incentives faced by sample firms. Consistent with both Holmstrom (1999a, 1999b), who contends internal employees are easier to incentivize, motivate, and extract effort from than third party contractors, and Cashman, Harrison, and Seiler (2014), who extend this paradigm to the advisor choice decision in Asia-Pacific property markets, we include binary (0/1) control variables for whether a firm is *Internal Advised Firm* $_{i,t}$ (yes = 1) and *Internal Managed Properties* $_{i,t}$ (yes = 1). As external advisement and management structures are associated with an increased potential for agency problems, ex ante we anticipate that the internalization of these roles will be negatively associated with bid-ask spreads. Similarly, property companies electing REIT status face an additional layer of regulatory mandates and restrictions which may reduce their operational transparency to interested market participants, thereby driving up observable bid-ask spreads. On the other hand, to the extent such regulations constrain managerial behavior/risk-taking and enhance the consistency and stability of firm operations, REITs may be more informationally transparent than similarly situated non-REIT property companies. In this latter case, *REIT Status* would be expected to be inversely related to a firm's relative bid-ask spread. To account

for both of these possible scenarios, we include a zero/one indicator variable ($REIT_{i,t}$), which assumes the value of one if the firm has elected REIT status, and zero otherwise.¹⁶

Our final category of control variables is designed to capture the potential influence of unique market dynamics on the financial market liquidity of real estate firms. We include four such metrics. First, $Short\ Sales_{i,t}$ is an indicator variable set equal to one if the stock exchange on which the firm's securities trade allows investors to engage in short selling, and zero if the exchange does not allow short selling. The ability to short sell can potentially enhance the efficiency of the price discovery process, which should reduce the amount of information regarding the firm that remains unincorporated into security prices at any point in time. Therefore, if short selling is allowed, the risk to the market maker of potentially trading against an informed counterparty should be reduced. Thus, we expect the ability to short sell will be associated with reduced bid-ask spreads and enhanced firm financial market liquidity. Second, $Selloff_{i,t}$ is an indicator variable that is set equal to one if a firm divests all of its investment properties in a country during a particular sample year. Such transactions effectively serve to increase the geographic focus of the firm, and may thus ease the valuation process by reducing both monitoring and potential agency costs. On the other hand, increased geographic focus reduces a potentially important source of diversification for the firm, and may therefore be associated with an increase in the volatility of future firm cash flows. Thus, country-wide divestitures may alter observable spreads in either a positive or negative fashion. Conversely, $Entrance_{i,t}$ is an indicator variable that is set equal to one if the sample firm acquires an investment property within a new country (i.e., one in which they did not previously hold investment property interests) during the year. Such acquisitions should serve to increase firm level geographic diversification, and thereby impact a firm's financial market liquidity and associated spread metrics in a manner directly opposite those outlined above for country level divestitures. Finally, $Single\ Country_{i,t}$ is an indicator variable that is set equal to one if all of the firm's investment properties are located within a single country, and zero otherwise.¹⁷ The enhanced geo-

graphic focus of such firms could well be associated with an increased ease of monitoring and valuation, and thus enhanced liquidity and lower spreads. Alternatively, such focused holdings reduce geographic diversification, and may therefore be associated with increased cash flow volatility and reduced financial market liquidity as measured by bid-ask spreads. Additional information regarding the construction of these variables, including complete variable definitions, is provided in Appendix B.

RESULTS

Descriptive statistics are presented in Exhibit 4. We find the typical, publicly traded real estate firm across the Asia-Pacific region faces a raw bid-ask spread of approximately 23 cents per share, or slightly less than 1% of both the current share price and the mid-point of the closing bid and ask prices.

With respect to firm characteristics, the average sample firm exhibits an equity market capitalization of slightly over \$3 billion. However, as with previous studies of this market sector, we note that this firm size distribution is highly skewed, with a substantively lower median value of only approximately \$1 billion. This latter value is much more in-line with the typical publically traded real estate firm in the U.S. The sample is evenly split between firms focusing on property development activities (49.3%) and those concentrating exclusively on operational activities, while analyst coverage is reported for more than 88% of sample firms. The average market-to-book equity ratio is approximately 1.19. Given the relatively high mandatory payout requirements faced by many publicly traded real estate firms across this region, this latter finding is consistent with a priori expectations. Similarly, and also consistent with the literature, we find typical (book) leverage ratios for sample firms to be well in excess of 50%.¹⁸ While the typical firm in our sample holds investment interests in just under 50 properties, we observe considerable variation along this dimension. Some firms follow a focused strategy. For example, 18 firms (constituting 15% of our firm-month sample observations) hold less than ten properties in their portfolio. At the other end of the

Exhibit 4 | Descriptive Statistics

| | Mean | Median | Std. Dev. | Min. | Max. |
|-----------------------------|--------|--------|-----------|--------|--------|
| Dependent Variables | | | | | |
| Ln(Relative Spread) | -4.961 | -4.992 | 0.860 | -8.772 | -0.371 |
| Raw Spread | 0.231 | 0.011 | 0.671 | 0.000 | 3.963 |
| Geopolitical Risk Variables | | | | | |
| Political Stability | -1.579 | -0.869 | 5.463 | -60.19 | 1.328 |
| Operations Risk | -0.614 | -0.630 | 0.072 | -0.757 | -0.315 |
| R-Factor | -0.702 | -0.730 | 0.169 | -0.970 | -0.364 |
| Disclosure | -0.835 | -0.879 | 0.128 | -1.000 | -0.023 |
| JLL Transparency | 2.144 | 2.063 | 0.719 | 1.150 | 3.900 |
| Control Variables | | | | | |
| Volume | 13.489 | 14.108 | 2.675 | 3.651 | 19.764 |
| Size | 7.065 | 7.015 | 1.553 | 1.011 | 10.871 |
| Price | 0.904 | 0.460 | 2.294 | -5.973 | 8.228 |
| Std. Dev. | -2.615 | -2.977 | 2.286 | -10.17 | 6.161 |
| Analysts | 0.885 | 1.000 | 0.319 | 0.000 | 1.000 |
| Firm Characteristics | | | | | |
| MTB | 1.188 | 0.940 | 1.095 | 0.084 | 8.687 |
| Leverage | 0.731 | 0.560 | 0.714 | 0.000 | 5.077 |
| Properties | 48.84 | 29.00 | 54.16 | 1.000 | 458.0 |
| Development | 0.493 | 0.000 | 0.500 | 0.000 | 1.000 |
| Internal Advised Firms | 0.705 | 1.000 | 0.456 | 0.000 | 1.000 |
| Internal Managed Properties | 0.682 | 1.000 | 0.466 | 0.000 | 1.000 |
| REIT Status | 0.404 | 0.000 | 0.491 | 0.000 | 1.000 |
| Market Dynamics | | | | | |
| Short Sales | 0.675 | 1.000 | 0.469 | 0.000 | 1.000 |
| Selloff | 0.059 | 0.000 | 0.235 | 0.000 | 1.000 |
| Entrance | 0.087 | 0.000 | 0.282 | 0.000 | 1.000 |
| Single Country | 0.008 | 0.000 | 0.087 | 0.000 | 1.000 |

Notes: This table provides descriptive statistics for the variables employed throughout our analysis. *Ln(Relative Spread)* is the log of the monthly average of the bid-ask spread divided by the midpoint of the bid-ask spread. *Political Stability* measures the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. *Operations Risk* measures the country's general business environment, including how friendly the country is to private economic activity, the burdensomeness of regulations, and the degree of preferential treatment given to locals. *R-Factor* measures the ease with which a firm can repatriate profits out of the country. *Disclosure* measures the quality and amount of disclosure mandated by a country's regulatory regime. *JLL Transparency* measures the country's operating environment for investors, developers, and corporate occupiers/tenants. Higher political risk values along each dimension indicate a worse business environment. The number of observations is 15,749. Appendix B provides detailed descriptions of all the variables.

spectrum, Federation Centres exhibits a remarkably diverse portfolio, holding 458 unique properties during 2008.

Finally, we observe considerable variation across our geopolitical risk attributes. This variation is beneficial from an estimation perspective. In particular, we are not directly concerned with the absolute level of these geopolitical risk variables, but rather with how variation in relative exposure impacts firm liquidity. As such, considerable variation across these variables of interest facilitates our ability to identify key focal relations. The correlation coefficients between each of our geopolitical risk measures are presented in Exhibit 5. The generally low correlations suggest

each of our five geopolitical risk proxies do indeed capture different aspects of geopolitical risk exposure for sample firms.¹⁹

Univariate Results

Exhibit 6 presents the results of a univariate analysis examining the relation between a firm's geopolitical risk exposure and its financial market liquidity. Specifically, we split our sample into terciles according to their geopolitical risk exposure along each of our five measures. We then compare the mean relative spread of firms in the high-risk tercile to the mean relative spread of firms in the low-risk tercile across each of our risk metrics. The results in Exhibit 6 are

Exhibit 5 | Geopolitical Risk Correlations

| | Political Stability | Operations Risk | R-Factor | Disclosure |
|------------------|---------------------|--------------------|---------------------|---------------------|
| Operations Risk | 0.126 (<0.0001) | | | |
| R-Factor | -0.136 (<0.0001) | 0.245 (<0.0001) | | |
| Disclosure | -0.692 (<0.0001) | 0.202 (<0.0001) | 0.323 (<0.0001) | |
| JLL Transparency | 0.294 (<0.0001) | 0.734 (<0.0001) | -0.242 (<0.0001) | -0.259 (<0.0001) |

Notes: This table reports the Pearson correlations between our five geopolitical risk measures. *Political Stability* measures the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. *Operations Risk* measures the country's general business environment, including how friendly the country is to private economic activity, the burdensomeness of regulations, and the degree of preferential treatment given to locals. *R-Factor* measures the ease with which a firm can repatriate profits out of the country. *Disclosure* measures the quality and amount of disclosure mandated by a country's regulatory regime. *JLL Transparency* measures the country's operating environment for investors, developers, and corporate occupiers/tenants. Higher political risk values along each dimension indicate a worse business environment.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Exhibit 6 | Univariate Analysis

| | High Risk | | Low Risk | | Test for Difference |
|---------------------|-----------|--------|----------|--------|---------------------|
| | Obs. | Mean | Obs. | Mean | |
| Political Stability | 5253 | 0.0101 | 5261 | 0.0095 | 0.0006** |
| Operations Risk | 5248 | 0.0099 | 5281 | 0.0093 | 0.0006* |
| R-Factor | 5252 | 0.0151 | 5250 | 0.0087 | 0.0064*** |
| Disclosure | 5248 | 0.0127 | 6915 | 0.0010 | 0.0027*** |
| JLL Transparency | 5249 | 0.0092 | 5208 | 0.0134 | -0.0043*** |

Notes: This table presents the results of a univariate analysis. *Political Stability* measures the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. *Operations Risk* measures the country's general business environment, including how friendly the country is to private economic activity, the burdensomeness of regulations, and the degree of preferential treatment given to locals. *R-Factor* measures the ease with which a firm can repatriate profits out of the country. *Disclosure* measures the quality and amount of disclosure mandated by a country's regulatory regime. *JLL Transparency* measures the country's operating environment for investors, developers, and corporate occupiers/tenants. Higher political risk values along each dimension indicate a worse business environment.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

generally consistent with our a priori expectations. Specifically, with the exception of the JLL Transparency Index, firms characterized by greater risk exposure exhibit significantly larger relative bid-ask spreads, indicating reduced financial market liquidity.

Multivariate Results

Exhibit 7 presents the cornerstone results of our multivariate analysis. In sum, these results provide strong and consistent evidence that as a firm's geopolitical risk exposure increases its financial market liquidity decreases (i.e., relative bid-ask spreads widen). We observe that as firm risk exposure increases, so does the firm's relative bid-ask spread. Firms whose investment properties are concentrated in locations where the likelihood of violent political change is higher exhibit wider relative bid-ask spreads, indicating they are less liquid. The positive relation between political stability and relative spreads suggests that when firm assets are located in more politically stable countries, one dimension of the uncertainty surrounding those assets' long-run valuation is mitigated. This reduced uncertainty, all else equal, leads to a more liquid trading environment for the firm's equity market securities.

Similarly, firms investing in countries where the operating environment is more conducive to foreign investment are also more liquid. Logically, firms with real property investments located in countries possessing a more efficient operating environment are likely to be easier to value. Furthermore, conventional wisdom suggests there will be more uncertainty surrounding the valuation of firms that invest in countries where the operating environment

Exhibit 7 | Geopolitical Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms

| | | | | | |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Intercept | -1.537*** (-6.83) | -0.683 (-0.00) | -0.922*** (-6.63) | -0.681*** (-3.32) | -2.102 (-0.00) |
| Geopolitical Risk | | | | | |
| Political Stability | 0.007*** (2.73) | | | | |
| Operations Risk | | 1.982*** (10.07) | | | |
| R-Factor | | | 0.478*** (3.19) | | |
| Disclosure | | | | 0.458*** (3.78) | |
| JLL Transparency | | | | | 0.073*** (3.28) |
| Traditional Microstructure Attributes | | | | | |
| Volume | -0.146*** (-20.19) | -0.152*** (-21.06) | -0.147*** (-20.24) | -0.147*** (-20.27) | -0.146*** (-20.19) |
| Size | 0.024 (1.43) | 0.024 (1.47) | 0.022 (1.32) | 0.019 (1.14) | 0.022 (1.34) |
| Price | -0.510*** (-28.12) | -0.497*** (-27.41) | -0.509*** (-28.10) | -0.504*** (-27.86) | -0.507*** (-28.11) |
| Std. Dev. | 0.102*** (13.07) | 0.099*** (12.84) | 0.101*** (13.00) | 0.101*** (13.01) | 0.102*** (13.08) |
| Analyst | -0.032 (-1.44) | -0.031 (-1.41) | -0.033 (-1.50) | -0.033 (-1.49) | -0.031 (-1.38) |
| Firm Characteristics | | | | | |
| MTB | 0.064*** (8.53) | 0.063*** (8.25) | 0.066*** (8.62) | 0.064*** (8.51) | 0.061*** (7.87) |
| Leverage | 0.030*** (3.19) | 0.016* (1.71) | 0.028*** (2.95) | 0.029*** (3.09) | 0.033*** (3.51) |
| Properties | 0.000*** (2.68) | 0.000* (1.73) | 0.001*** (3.31) | 0.001*** (3.60) | 0.000*** (2.80) |
| Development | -0.594*** (-7.73) | -0.459 (-0.00) | -0.676*** (-6.53) | 0.162 (1.51) | -0.370 (-0.00) |
| Internal Advised Firms | 0.023 (0.18) | 0.302 (0.00) | 0.079 (0.58) | 0.414*** (3.70) | 0.283 (0.00) |
| Internal Managed Properties | 0.468** (2.16) | -0.090 (-0.00) | 0.061 (0.43) | -0.675*** (-4.41) | -0.007 (-0.00) |
| REIT Status | 0.168 (1.29) | -0.027 (-0.00) | -0.031 (-0.43) | -0.053 (-0.62) | 0.060 (0.00) |
| Market Dynamics | | | | | |
| Short Sales | -0.647*** (-3.47) | -0.353 (-0.00) | -0.917*** (-6.74) | -1.169*** (-8.30) | -0.543 (-0.00) |
| Selloff | 0.040*** (2.83) | 0.038*** (2.63) | 0.040*** (2.79) | 0.039*** (2.75) | 0.040*** (2.78) |
| Entrance | -0.061*** (-5.39) | -0.062*** (-5.45) | -0.063*** (-5.56) | -0.063*** (-5.53) | -0.061*** (-5.40) |
| Single Country | 0.419*** (4.68) | 0.106 (0.00) | -0.011 (-0.07) | 0.652*** (6.77) | 0.270 (0.00) |
| Exchange FE | Yes | Yes | Yes | Yes | Yes |
| Property Type FE | Yes | Yes | Yes | Yes | Yes |
| Time (Month) FE | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Adj. R ² | 0.800 | 0.801 | 0.802 | 0.800 | 0.803 |

Exhibit 7 (continued) | Geopolitical Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms

Notes: This table presents the results of our multivariate analysis of the relation between geopolitical risk exposure and market liquidity. Each model regresses the natural log of each firm's relative bid-ask spread against alternative measures of political risk, while controlling for traditional market microstructure attributes, firm characteristics, and market dynamics. The number of observations is 15,749. Appendix B provides a detailed description of the variables. The *t*-values reported in parentheses are robust to heteroscedasticity.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

is more hostile to foreigners, and/or governmental policies, procedures, and regulations are less stable. These results strongly support our focal hypothesis, and suggest enhanced geopolitical risk exposure negatively impacts financial market liquidity.

We also find evidence that as the difficulties associated with repatriating a firm's profits increase (higher R-factor values), the firm's equity securities become less liquid and are characterized by wider relative spreads. Once again, these findings are entirely consistent with expectations, as increasing the uncertainty surrounding a firm's ability to repatriate profits should make the firm harder to value, and thereby decrease its financial market liquidity.

In addition, the results indicate that firms investing in areas where disclosure requirements are weaker exhibit wider bid-ask spreads. As high-quality disclosure may potentially mitigate some of the uncertainty associated with international investments, it is not surprising that areas where disclosure is weaker are associated with reduced financial market liquidity.

Finally, our results suggest real property firms holding investment properties in countries where the operating environment is more informationally opaque (higher JLL Transparency Index values) are less liquid and characterized by higher relative bid-ask spreads. Together, the results in Exhibit 7 provide compelling evidence that a firm's geopolitical risk exposure materially influences the firm's financial market liquidity.

We also note the results on our control variables are generally very consistent with those found in the literature. For example, examining our traditional

microstructure attributes reveals that higher transactions volume is associated with enhanced liquidity and reduced spreads, while increases in past price volatility are associated with higher spreads and reduced liquidity. Both of these results conform nicely to *ex ante* expectations. While on the surface our market capitalization variable exhibits a statistically insignificant though unexpectedly positive sign, it is highly collinear with our price variable. When examined in concert, the net effect reveals increases in firm size are associated with enhanced liquidity and reduced spreads for the typical sample firm. Finally, while the relation between a firm's relative spread and analyst coverage is statistically insignificant at conventionally accepted levels, the negative coefficient point estimate is entirely consistent with the notion that such scrutiny increases the efficiency of the price discovery process. Each of these relations hold across all five models reported in Exhibit 7, and suggest the liquidity of our sample firms is broadly consistent with many of the same underlying market forces and microstructure attributes that influence non-real estate firms.

Continuing on to our firm-specific attributes and proxies for the nature of the competitive operating environment, we find real estate companies with enhanced growth prospects (as measured by higher market-to-book ratios), more leverage, and larger investment property portfolios are characterized by wider bid-ask spreads and reduced financial market liquidity. As outlined above, the increased informational opacity surrounding these firms appears to substantively enhance their valuation difficulty. Similarly, firms focusing their investment activities exclusively on operational and managerial, as opposed to development, activities exhibit increased spreads. We attribute this latter finding to both the

reduced collateral value of debt claims and lease obligations relative to that provided by the tangible assets underlying the direct real estate development business, and the reduced managerial flexibility arising from the magnitude of the time and financial commitments inherent in real property development. Somewhat surprisingly, none of our three firm-specific agency cost proxies exhibit consistent, statistically significant relations with relative bid-ask spreads.

Finally, turning to our market dynamics variables, we find consistent evidence that geographic diversification is directly related to financial market liquidity. Firms investing exclusively within a single country, and those completing focus enhancing, full country divestitures both exhibit wider bid-ask spreads than their more geographically diversified counterparts. Similarly, Asia-Pacific real estate firms that are expanding their scope of operations into new countries, and thus increasing their geographic diversification, are characterized by narrower spreads, indicating increased financial market liquidity. Lastly, as short sales serve to enhance the efficiency of the price discovery process, it comes as no surprise that relative spreads are inversely related to the ability of investors to short the underlying firm's equity shares. Taken together, these results provide unique insight into the fundamental determinants of financial market liquidity for real estate companies throughout the Asia-Pacific region.

Robustness Checks

To further assess the robustness of the relation between geopolitical risk and financial market liquidity, we divide our sample along three separate dimensions and replicate our analysis within these more focused sub-samples. As a first robustness check, in Exhibit 8, we bifurcate the sample into those firms that have active property development programs and/or pipelines versus firms focusing exclusively on the operation and/or management of existing facilities. The illiquid and irreversible nature of many projects during the design, permitting, construction, and lease-up phases of the real property development cycle have two key implications with respect to our investigation. First, investment in

such development activities effectively serves to commit the firm's management to the project for an extended period of time. Such chronological commitment reduces managerial flexibility options, which while potentially costly from an economic perspective, should serve to reduce uncertainty about the nature of the firm's future operations and asset base. Consequently, this reduced uncertainty may well mitigate information asymmetries embedded within security values, thereby reducing bid-ask spreads and enhancing a firm's financial market liquidity.

On the other hand, real property development entails unique risks and opportunities for politically motivated actors to extract economic rents. Investments in physical capital may well be more difficult and/or costly to unwind should the political and/or regulatory environment within a given country change, while the nature of the typical permitting process provides ample opportunity for governmental authorities and other interested stakeholders to ask questions, seek concessions, and/or impose hold-up costs on firms engaged in development activities. As such, we could alternatively expect political risk influences to exert a greater impact on the financial market outcomes of firms with active development programs than on those engaged exclusively in the ownership, operation, and/or management of existing facilities.²⁰

Examining the results across Exhibits 7 and 8, we find evidence consistent with both of these hypotheses. First, the negative coefficient estimates previously observed on our development indicator variable in multiple specifications presented in Exhibit 7 are consistent with such activities committing the firm to a prescribed course of action, and thereby reducing information and valuation uncertainty. In Exhibit 8, while each of our five geopolitical risk metrics remain positive (and often statistically significant) across our subsamples of development (Panel A) and non-development (Panel B) property companies, the economic magnitude of these effects is materially larger (1.07–2.19 times, depending on the attribute examined) for those firms with active development pipelines. Additionally, untabulated results using interaction terms to evaluate the significance and magnitude of these differences across

Exhibit 8 | Geopolitical Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms: Development

| Panel A: Development Firms | | | | | |
|--------------------------------|-------------------|--------------------|--------------------|--------------------|-----------------|
| Political Stability | 0.009 (1.19) | | | | |
| Operations Risk | | 2.643*** (9.30) | | | |
| R-Factor | | | 0.904*** (3.28) | | |
| Disclosure | | | | 0.511* (1.89) | |
| JLL Transparency | | | | | 0.026 (0.76) |
| Adj. R ² | 0.769 | 0.772 | 0.769 | 0.769 | 0.769 |
| Panel B: Non-Development Firms | | | | | |
| Political Stability | 0.005** (2.11) | | | | |
| Operations Risk | | 1.205*** (4.98) | | | |
| R-Factor | | | 0.382** (2.36) | | |
| Disclosure | | | | 0.477*** (3.57) | |
| JLL Transparency | | | | | 0.021 (0.86) |
| Adj. R ² | 0.828 | 0.829 | 0.828 | 0.828 | 0.828 |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Exchange F.E. | Yes | Yes | Yes | Yes | Yes |
| Property Type F.E. | Yes | Yes | Yes | Yes | Yes |
| Time (Month) F.E. | Yes | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes |

Notes: Panels A and B report the results of re-estimating all Exhibit 7 regressions exclusively on subsamples of those firms actively engaged in development activities, and those focused exclusively on the management and operation of existing real property assets. While we include all controls used in Exhibit 7 in the regressions for this table, for brevity their coefficient estimates are not reported. The number of observations is 7,772 in Panel A; the number of observations is 7,977 in Panel B. Appendix B provides a detailed description of each variable examined. The *t*-values reported in parentheses are robust to heteroscedasticity.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

subsamples confirm geopolitical risk exerts a significantly stronger influence on the financial market liquidity of development companies than on those focused exclusively on management and operational functions.

As a second robustness check, we split our sample into firms with high versus low anticipated growth prospects based upon their market-to-book value ratios. The results in Exhibit 9 show that geopolitical risk appears to influence spreads for both high- and low-growth organizations. More specifically, all five

risk metrics are positive and statistically significant in either the high or the low market-to-book subsample, suggesting our focal political risk hypothesis results are not simply a function of the firm’s growth prospects. Turning to the individual dimensions of geopolitical risk, we find our political stability and JLL Transparency Index metrics exert a significant influence on the spreads of low-growth firms, while high-growth firm spreads appear to be more sensitive to our operations risk index, ease of profit repatriation metric (R-factor), and disclosure index. With respect to political stability and operational

Exhibit 9 | Geopolitical Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms: Growth Options

| Panel A: Low Growth Option (MTB) Firms | | | | | |
|-----------------------------------------|--------------------|--------------------|--------------------|-------------------|--------------------|
| Political Stability | 0.004 (0.86) | | | | |
| Operations Risk | | 1.973*** (6.27) | | | |
| R-Factor | | | 1.391*** (5.32) | | |
| Disclosure | | | | 0.410** (2.12) | |
| JLL Transparency | | | | | 0.017 (0.53) |
| Adj. R ² | 0.864 | 0.865 | 0.865 | 0.864 | 0.864 |
| Panel B: High Growth Option (MTB) Firms | | | | | |
| Political Stability | 0.019*** (5.17) | | | | |
| Operations Risk | | -0.045 (-0.04) | | | |
| R-Factor | | | -0.616 (-0.85) | | |
| Disclosure | | | | -0.171 (-0.26) | |
| JLL Transparency | | | | | 0.216*** (6.41) |
| Adj. R ² | 0.756 | 0.755 | 0.755 | 0.755 | 0.756 |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Exchange F.E. | Yes | Yes | Yes | Yes | Yes |
| Property Type F.E. | Yes | Yes | Yes | Yes | Yes |
| Time (Month) F.E. | Yes | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes |

Notes: Our sample is split between firms with low growth options (Panel A), and firms with high growth options (Panel B). The sample division is based upon each firm's observed market-to-book value ratios relative to the sample average MTB. While we include all controls previously employed in the regressions for Exhibit 7, for brevity their coefficient estimates are not reported. The number of observations is 7,460 in Panel A; the number of observations is 8,289 in Panel B. Appendix B provides descriptions of the variables. The *t*-values reported in parentheses are robust to heteroscedasticity.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

transparency, low-growth firms have already exhibited a proclivity toward maintaining relatively constant, stable operations. As such, a dramatic (negative) change in the political regime vested with regulatory control and oversight of the firm's operations may adversely impact the operating environment of low-growth firms for an extended period of time. Conversely, high-growth firms may more readily and rapidly reallocate their investment property portfolio holdings in response to political and/or regulatory regime changes, and thus the penalty may not be as significant.

On the other hand, operations risk, cash flow repatriation, and disclosure attributes appear to be more important to the liquidity of low-growth firms than their high-growth counterparts. With respect to changes in operational risk, low-growth firms may well have a larger fraction of their value reliant upon the continued successful operations of their properties. To the extent increased operations risk increases the uncertainty, or jeopardizes the viability and/or profitability of these projects, the findings in Exhibit 9 are fully in line with expectations.

Exhibit 10 | Geopolitical Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms: Headquarters

| Panel A: Export-Oriented HQ Locations | | | | | |
|-------------------------------------------|--------------------|--------------------|----------------------|------------------|---------------------|
| Political Stability | 0.003 (1.17) | | | | |
| Operations Risk | | 0.882*** (4.12) | | | |
| R-Factor | | | 0.393** (2.55) | | |
| Disclosure | | | | 0.092 (0.71) | |
| JLL Transparency | | | | | -0.050 (-0.70) |
| Adj. R ² | 0.790 | 0.791 | 0.790 | 0.790 | 0.790 |
| Panel B: Non-Export-Oriented HQ Locations | | | | | |
| Political Stability | 0.022*** (3.64) | | | | |
| Operations Risk | | 3.436*** (7.36) | | | |
| R-Factor | | | -1.827*** (-5.89) | | |
| Disclosure | | | | 0.524* (1.96) | |
| JLL Transparency | | | | | 1.158*** (20.13) |
| Adj. R ² | 0.832 | 0.834 | 0.833 | 0.832 | 0.845 |
| Control Variables | Yes | Yes | Yes | Yes | Yes |
| Exchange F.E. | Yes | Yes | Yes | Yes | Yes |
| Property Type F.E. | Yes | Yes | Yes | Yes | Yes |
| Time (Month) F.E. | Yes | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes |

Notes: Our sample is split between those firms headquartered in export-oriented locations (Panel A), versus those in non-export-oriented locations (Panel B). For identification purposes, we classify Hong Kong, Singapore, South Korea, and Taiwan as our export-oriented locations. While we include all controls previously employed in the regressions for Exhibit 7, for brevity their coefficient estimates are not reported. The number of observations is 9,831 in Panel A; the number of observations is 5,918 in Panel B. Appendix B provides descriptions of the variables. The *t*-values reported in parentheses are robust to heteroscedastic. Appendix B provides a detailed description of each variable examined. The *t*-values reported in parentheses are robust to heteroscedasticity.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Similarly, with respect to our repatriation index, the findings are consistent with the notion that the ability to monetize firm cash flows and profits, and return them to shareholders across international boundaries is potentially more important for low-growth firms. As unlike high-growth firms, which could potentially use rents earned internationally to finance projects in the country they are earned in, low-growth firms will need to repatriate these rents in order to meet dividend requirements. Lastly, poor

disclosure quality will make the firm’s current operations more difficult for investors to understand.

As a final robustness check, to ensure our results are not driven by structural differences between firms located in export-oriented countries versus more domestically-focused nations, we split our sample based on the location (country) of the firm’s headquarters. Ex ante, while we would expect political risk to matter for all publicly traded real estate

firms, we hypothesize that those firms headquartered in nations more domestically centered, with less export-oriented economic systems, may well be more sensitive to geopolitical risk exposure along the dimensions we analyze. To investigate this possibility, we classify the economies of Hong Kong, Singapore, South Korea, and Taiwan (frequently referred to as the “Four Asian Tigers”) as export-oriented economies, and replicate our core analyses on both subsamples of firms headquartered exclusively inside, and outside, these four export-oriented nations. The results of this analysis are presented in Exhibit 10. As with our previous robustness tests, we again find evidence that our focal results regarding geopolitical risk exposure hold for a broad cross-section of Asia-Pacific real estate organizations. More specifically, six of our ten reported risk measures are statistically significant and exhibit sign patterns consistent with our expectation that increased geopolitical risk exposure reduces financial market liquidity. Oddly, the R-factor exhibits an unexpected (significant) negative relation between political risk exposure and financial market liquidity among firms headquartered in countries that are not identified as export-oriented. While not explicitly tested, the anomalous R-factor findings could be driven (in part) by capital market frictions and/or capital constraints faced by firms in non-export-oriented countries. To elaborate, given the capital intensive nature of many/most commercial real estate investment projects, external financing is typically required. It is quite possible that risk-averse lenders may disproportionately balk at providing capital to firms located in non-export-oriented nations that are looking to finance the development or acquisition of properties in countries from which it is difficult to extract profits/cash flows. Under such a scenario, only extremely transparent transactions (or those with offsetting benefits) would be funded, thereby leading to the observed negative relation. Similarly, with respect to the relative political risk sensitivity of firms across the export-oriented nature of the economic system in which they are headquartered and operate, we again find non-trivial evidence that firm spreads are indeed more sensitive to geopolitical risk when the firm is head-

quartered in a nation that is not export-oriented. More specifically, ignoring our aforementioned anomalous R-factor results, our four remaining risk metrics all exhibit significantly higher magnitudes for firms headquartered across nations other than the “Four Asian Tigers.”²¹ Taken together, the robustness check results in Exhibits 8–10 provide additional support for the notion that, across a wide spectrum of firm attributes, increased exposure to geopolitical risk materially reduces a firm’s financial market transparency and widens relative bid-ask spreads.

CONCLUSION

In this study, we explore how a firm’s exposure to geopolitical risk influences the firm’s informational transparency. Building on prior studies that demonstrate that geographic distance as well as general firm operations and characteristics all play a role in an investor’s ability to learn about and value the firm, we explore how the geopolitical risk associated with cross-border investing influences these abilities. We accomplish this by examining the relation between a firm’s geopolitical risk exposure and its relative bid-ask spread—a measure of its financial market liquidity. In doing so, we find evidence that firms characterized by increased geopolitical risk exposure exhibit wider bid-ask spreads, thus suggesting that the valuation difficulties surrounding these firms negatively impacts their liquidity. Our results are robust across an array of alternative risk metrics, as well as across subsamples of the data. Taken together, these results provide strong evidence in support of the notion that geopolitical risk factors directly impact the financial market liquidity of real estate firms across the Asia-Pacific region. More specifically, investing in countries with economic systems, regulations, and/or other policies that facilitate and enhance the generation, collection, and dissemination of information regarding firm activities tends to enhance financial transparency, thus increasing firm liquidity by reducing bid-ask spreads.

APPENDIX A

DISTRIBUTION OF PROPERTIES

| Country/Territory | # of Properties | % of Total Properties |
|-------------------|-----------------|-----------------------|
| Australia | 2,233 | 19.9215 |
| Belgium | 5 | 0.0446 |
| Brazil | 6 | 0.0535 |
| Burma | 4 | 0.0357 |
| Cambodia | 2 | 0.0178 |
| Canada | 11 | 0.0981 |
| China | 1,565 | 13.9620 |
| Czech Republic | 3 | 0.0268 |
| Fiji | 5 | 0.0446 |
| France | 61 | 0.5442 |
| Germany | 45 | 0.4015 |
| Hong Kong | 1,178 | 10.5094 |
| Hungary | 1 | 0.0089 |
| India | 164 | 1.4631 |
| Indonesia | 62 | 0.5531 |
| Ireland | 1 | 0.0089 |
| Italy | 1 | 0.0089 |
| Japan | 3,386 | 30.2079 |
| Macau | 11 | 0.0981 |
| Malaysia | 131 | 1.1687 |
| Maldives | 14 | 0.1249 |
| Mexico | 2 | 0.0178 |

| | | |
|----------------------|---------------|------------|
| Mongolia | 1 | 0.0089 |
| Morocco | 1 | 0.0089 |
| Netherlands | 4 | 0.0357 |
| New Zealand | 106 | 0.9457 |
| Philippines | 23 | 0.2052 |
| Poland | 7 | 0.0624 |
| Russia | 1 | 0.0089 |
| Seychelles | 3 | 0.0268 |
| Singapore | 831 | 7.4137 |
| Slovakia | 1 | 0.0089 |
| South Africa | 1 | 0.0089 |
| South Korea | 11 | 0.0981 |
| Spain | 3 | 0.0268 |
| Sri Lanka | 3 | 0.0268 |
| Sweden | 1 | 0.0089 |
| Switzerland | 1 | 0.0089 |
| Taiwan | 5 | 0.0446 |
| Tanzania | 1 | 0.0089 |
| Thailand | 46 | 0.4104 |
| Turkey | 1 | 0.0089 |
| United States | 983 | 8.7697 |
| United Arab Emirates | 4 | 0.0357 |
| United Kingdom | 242 | 2.1590 |
| Vanuatu | 1 | 0.0089 |
| Vietnam | 37 | 0.3301 |
| Total | 11,209 | 100 |

APPENDIX B

VARIABLE DESCRIPTIONS

| Variables | Descriptions |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Financial Market Liquidity Metrics Spread | Equals the average difference in the daily closing ask price and bid price for each firm <i>i</i> , each day in month <i>t</i> . |
| Relative Spread | Equals the log of the monthly average quoted spread divided by the midpoint of the quoted spread. |
| Geopolitical Risk Metrics Political Stability Index | This is the property weighted average of Political Stability and Absence of Violence/Terrorism Index, as reported by the World Bank. Higher values indicate higher perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and/or terrorism. |
| Operations Risk Index | This is the property-weighted average of the Operations Risk Index, as reported by Business Risk Service. Higher values indicate that there is more operational risk involved. |
| R-Factor | This is the property weighted average of the Business Risk Service remittances and repatriation of capital factor, as reported by Business Risk Service. Higher R-Factor values imply it is harder to repatriate profits back into the home country of the REIT or listed property trust/company. |
| Disclosure Index | This is the property weighted average of the Business Extent of Disclosure Index, as reported by the World Bank. Higher values indicate investors are less protected and informed, as firms face fewer regulatory mandates regarding disclosure of ownership and financial information. |
| JLL Transparency | This is the property weighted average of the Global Real Estate Transparency Index, as reported by JLL. The index is updated every two years and starts in 2004. For the years in which the index value is not explicitly updated, we replace the index value of each country with the average value from the immediately preceding and following years. Higher values indicate the country's operating environment is more opaque for investors, developers, and corporate occupiers/tenants. |

| Variables | Descriptions |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Traditional Market Microstructure Attributes | |
| Volume | Equals the log transformation of trading volume. |
| Size | Equals the log transformation of market capitalization reported by Bloomberg. |
| Price | Equals the log transformation of the monthly average of daily closing prices. |
| Std. Dev. | Equals the log transformation of the monthly standard deviation of the quote midpoint. |
| Analyst | This is a dummy variable for analyst recommendations reported by Bloomberg. It equals one if there is at least one analyst making recommendations for a firm (i) within a quarter, otherwise it equals zero. |
| Firm Characteristics | |
| MTB | Represents the market-to-book value of equity ratio. |
| Leverage | Equals the total debt (short-term plus long-term debt) divided by total common equity ratio for firm <i>i</i> , at month <i>t</i> , as reported by Bloomberg. |
| Properties | |
| Development | Equals the total number of properties owned by a firm each year and month. An indicator variable equal to one if the firm engages in investment property development, construction programs, or has an active property development pipeline; 0 otherwise. |
| Internal Advised Firm | |
| | An indicator variable for whether a company provides its own asset management services (investment acquisition/disposition decisions) or the advisor is a subsidiary. It equals one if a company provides its own asset management services, and zero otherwise. |
| Internal Managed Properties | |
| | An indicator variable for whether a REIT manages the day-to-day operations of its own properties or the management firm that manages the properties is a subsidiary. It equals one if a REIT manages the day-to-day operations of its own properties, and zero otherwise. |
| REIT Status | |
| | An indicator variable for whether a company has elected to be taxed as a REIT for corporate income tax purposes. It equals one if the company is a REIT, and zero otherwise. |
| Market Dynamics | |
| Short Sale | An indicator variable for whether a headquarter country exchange allows short sales. It equals one if the country allows short sales, and zero otherwise. |
| Selloff | An indicator variable for whether the firm sold off all its properties in a country and did not buy back in over the remainder of our sample period. It equals one when the firm sold its last property in a country and did not repurchase any in the rest of the sample years, and zero otherwise. |
| Entrance | An indicator variable for whether a firm is buying a property in a given country for the first time in our sample period. It equals one if it is the first time to buy a property in a given country, and zero otherwise. |
| Single Country | An indicator for whether a firm only has property investments within one country. It equals one if the firm only invested in properties within a single country during the given month, and zero otherwise. |

ENDNOTES

1. Early work examining home bias and the benefits of international portfolio diversification includes Grubel (1968), Levy and Sarnat (1970), Stulz (1981a, 1981b), Grauer and Hakansson (1987), and French and Poterba (1991). For an early example of work examining international diversification within real estate portfolios, see Eichholtz (1996).
2. Additional evidence on the importance of geography in financial markets can be found in Degryse and Ongena (2005) and Agarwal and Hauswald (2010), who demonstrate that bank lending terms are contingent on the geographic proximity of borrowers and lenders, and Butler (2008) who documents that investment banks charge lower fees to their local clientele.
3. An alternative explanation in the literature suggests local investors provide an enhanced monitoring capacity. This is entirely consistent with the findings of Gaspar and Massa (2007), who show local ownership is associated with enhanced corporate governance quality.
4. Meshcheryakov (2015) offers evidence that non-local traders with access to local market makers' holdings can replicate the superior returns locals make on their local trades.
5. To be clear, we focus on all listed property companies across this region, not just those firms that have elected REIT status. As such, the numbers in Panel A of Exhibit 1 are meant simply to illustrate the growth and development of this sector, and should not be used as a direct measure of the entire size and scope of publicly traded real estate markets across this region.
6. Early work in this area includes, but is not limited to, Glosten and Milgrom (1985) and Amihud and Mendelson (1986, 2000).
7. Examples of academic investigations into the determinants of real estate firm liquidity as measured by bid-ask spreads include, but are not limited to, Damadoran and Liu (1993), Below, Kiely, and McIntosh (1995), Wang, Erickson, Gau, and Chan (1995), Bhasin, Cole, and Kiely (1997), Glascock, Hughes, and Varshney (1998), Clayton and MacKinnon

- (2000), Danielsen and Harrison (2000, 2007), Danielsen, Harrison, Van Ness, and Warr (2009, 2014), Anglin, Edelstein, Gao, and Tsang (2011), Chatrath, Christie-David, and Ramchander (2012), and Tidwell, Ziobrowski, Gallimore, and Ro (2013).
8. Alternatively, to the extent privately informed parties have unique insight into the probability of regime change, market makers may also widen spreads to avoid potential losses associated with trading against informed parties. We view this alternative explanation as substantively less likely to be driving equilibrium spreads, but note it is entirely consistent with the political risk exposure paradigm we espouse.
 9. Due to the availability of JLL Transparency Index data, we begin our sample in 2004. This time frame also corresponds broadly to the beginning of the REIT era for the Asian firms in our sample.
 10. Cannon and Cole (2011) find intraday variation in the level of REIT spreads provides very little added value in terms of explanatory power relative to simply using end of day closing values. This finding is of particular import within Asia-Pacific real estate markets, as intra-day trading data are not readily available to researchers within this market sector. As such, capitalizing on this observation, spread metrics calculated exclusively using end of trading day values are employed throughout our empirical analysis. Additionally, results using the raw bid-ask spread or the relative spread based on the end of day closing price rather than the end of day quote midpoint yield qualitatively similar results for our geopolitical risk metrics. These alternative findings are available directly from the authors, upon request.
 11. We rescale each of our geopolitical risk metrics to ease interpretation.
 12. While we would prefer to base such weightings on the relative market value of the properties held by each firm, we do not have access to this level of data. As such, our index weightings are based on the number of property holdings within each country.
 13. To mitigate potential autocorrelation concerns as outlined in Petersen (2009), all of our model specifications also include fixed effects for exchange (i.e., trading venue), property type (i.e., investment focus), firm (i), and time (t).
 14. Transactions have also been shown to reveal information to the market, and as such, higher volume should be associated with reduced information externalities and asymmetries regarding the firm. These influences would also suggest a negative relation between volume and spreads.
 15. All monthly observations for the quarter in which the estimate is provided are given a value of 1, regardless of the actual timing of the specific recommendation(s).
 16. As our data only allow us to observe the current REIT status of each organization, to the extent sample firms alter their structure along this dimension minor misclassifications are possible. Conventional wisdom suggests this is not a common occurrence, and hence it is unlikely to materially alter our reported results.
 17. We note that less than 1% of the firms in our sample invest exclusively within a single country.
 18. Real estate firms across the globe generally report debt ratios substantively higher than those of similarly situated industrial organizations, largely due to the real asset nature of the collateral securing the debt claims against these organizations. For additional insight into these issues, see Feng, Ghosh, and Sirmans (2007), Boudry, Kallberg, and Liu (2010), Harrison, Panasian, and Seiler (2011), Cashman, Harrison, and Seiler (2014), and Cashman, Harrison and Sheng (2015).
 19. Additionally, the low correlations suggest our multivariate results should be relatively free of major multicollinearity issues associated with our geopolitical risk metrics.
 20. Given the regulatory environment in which Asia-Pacific REITs operate, this development versus non-development sample split is very similar to that obtained using a REIT versus non-REIT sample bifurcation. Not surprisingly, unreported results using this alternative split (REIT versus non-REIT) produce qualitatively similar results.
 21. Once again, our only anomalous finding is with respect to our repatriation difficulty (R-factor) index. Results from untabulated, alternative regression model specifications employing interaction terms to test the statistical significance of these differences across economic regimes confirm the significance of our core findings.

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