The Geography of Information: Cross-Border Investment and the Liquidity of Asia-Pacific Real Estate Firms

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Abstract:
We investigate the influence of inter-jurisdictional, 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 metrics are of increased importance to firms within this industry. Given this context, we find strong evidence that Asia-Pacific real estate firms facing enhanced level of political risk and uncertainty are characterized by increased information barriers, and reduced financial market liquidity as measured by higher bid-ask spreads.

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I. Introduction

Information moves markets. As such, firms and other financial market participants possessing a sustainable competitive advantage in terms of acquiring and/or processing value relevant information stand to benefit, but what are the key sources, drivers, and characteristics of such information acquisition difficulties? Clearly, corporate disclosures, operating characteristics, and investment activities play a central role in establishing and/or mitigating information externalities, however, the past decade has seen considerable attention given to a more exogenous source of information barriers – geographic risk.

As outlined in more detail below, the recent finance and investments literature has arrived at an emerging consensus that geographic considerations materially impact the information generation and transmission process. To date, studies of geographic information barriers have primarily focused on issues of physical distance and either the (in)ability of firms to credibly communicate soft information to non-local stakeholders, or the ability of analysts to efficiently process such information from a distance. Additionally, these studies have typically been descriptive in nature, identifying observable linkages between key operational variables of interest, but offering relatively little insight into the direct mechanism through which information barriers arise.

Given the continuing and rapid advancement of information technology, a more subtle form of geographic information barrier focusing on cultural, political, and regulatory (as opposed to physical) risk may well prove substantively more important within financial markets. Consider, for example, a firm or business entity making a sizable cross-border investment. Physical distance would suggest investment risk and uncertainty may increase simply because the physical location of the potential investment project is not proximate to the firm's existing

operations, and as a consequence it may well be relatively difficult for the firm to assess local soft information which may be materially value relevant. Similarly, increasing the geographical scope of an organization's business activities may well engender increased monitoring difficulties and associated agency costs. While this study does not dispute the potential for either of the aforementioned possibilities to exert significant influence over the investment process, we instead focus on the related, yet separable construct of geo-political risk.

More specifically, geo-political risk suggests investors may have a difficult time efficiently processing information signals from heterogeneous social, political, economic, and/or regulatory systems. For example, investors may exhibit more confidence and experience ease of valuation with respect to firms/investments in which they share a common language, accounting convention (e.g., GAAP vs. IFRS), or foundational legal system (common law vs. civil law). Given the nature of real estate markets, particularly the observation that many/most international real estate conglomerates either possess or retain local market participants (in the form of professional advisors), knowledge, and/or expertise when acquiring or disposing of tangible assets, we focus on this latter concept of geo-political risk as a potential source mechanism through which information barriers arise, and examine this concept throughout our empirical analyses which follow. More specifically, the purpose of the current investigation is to examine whether, and to what extent, informational opacity barriers created by geo-political risk influences the liquidity of publicly traded real estate firms across the Asia-Pacific region. Previewing our results, we find strong support for the notion that legal, regulatory, and political risk create information uncertainty barriers, and thus reduce the financial market liquidity of publicly traded real estate firms across this region.

The remainder of this paper is organized as follows. Section two reviews the relevant literature on home bias, information asymmetry and immobility, and the importance of geography to firm characteristics and market outcomes. The following section outlines our empirically testable hypotheses, and the data and methodologies employed to evaluate them. Section four presents the results of our empirical analysis, while finally, section five summarizes and concludes our investigation.

II. Literature Review

Why Geography Matters?

Do "local" investors have access to better information which 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 fifteen 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 (1999 and 2001), a number of these investigations document local market participants may well possess, or have systematic advantages in acquiring, value relevant information regarding local enterprises. For example, Coval and Moskowitz demonstrate that investors exhibit a "home bias," over-investing in geographically proximate firms, which generates significantly positive, risk-adjusted returns. 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] Consistent with these early findings, Ivkovic and Weisbrenner (2005) find evidence that retail investors overinvest in local firms, and also earn higher returns on the local component of their portfolios.[2] But what drives this superior performance of local investments? One solution frequently proffered by the literature is the notion that local market participants possess an inherent, systematic advantage in accessing value relevant soft information.[3] As evidence of this advantage, researchers point to the work of Malloy (2005) and Bae, Stulz, and Tan (2008). These papers find local analysts typically provide more accurate forecasts and firm recommendations. Similarly, Berry and Gamble (2013) find trading patterns by local retail investors are useful in predicting a security's return following an earnings announcement.

Turning to the literature on market microstructure, additional evidence on the importance of geography to perceived information flow is offered by Hau (2001), who shows local traders outperform their non-local counterparts. Additionally, Schultz (2003) finds regional market makers tend to focus, specialize, or concentrate their book making activities on local firms. Continuing, Anand et al. (2011) argues local market makers enhance and improve the efficiency of the price discovery process, while Kedia and Zhou (2011) find firms with high participation by local market makers experience enhanced market liquidity. Finally, Meshcheryakov (2014) offers preliminary evidence that non-local traders with access to the holdings information of

[1] Early work examining home bias and the benefits of international portfolio diversification includes Grubel (1968), Levy and Sarnat (1970), Stulz (1981a and 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 upon 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 also found within 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.

local market makers may be able to mimic their strategies and generate positive returns for stocks with relatively high levels of information asymmetry. On the other hand, given the previously documented home bias issues, such a trading strategy leads to predictably non-positive returns within the universe of more informationally transparent securities. Taken together, these findings provide strong evidence that geography matters to financial market outcomes.

Why Asia-Pacific Real Estate Firms?

In examining issues of financial market liquidity, properly identifying and isolating the exact relation between two constructs is often quite difficult. Simplifying decision heuristics are often a useful tool to help guide the process, and we employ a number of these as outlined below. First, given the vastly different nature of the information environment across industries, we chose to focus exclusively on firms within a single industry to minimize as much exogenous variation in firm transparency as possible. For example, by construction, firms within certain industries (e.g., bio-tech, defense, etc.) will be uniquely difficult to value and informationally opaque given their high levels of research & development, and/or investment in assets whose values are contingent on intellectual property rights. Therefore, we choose to concentrate our analysis on real estate firms across the Asia-Pacific reason. By focusing exclusively on this one industry, we are not only able to mitigate potential inter-industry complications, but we are also able to hone in more directly on a subset of firms for which such transparency issues may be uniquely important. Unlike firms in industries with high levels of intangible assets, real estate firms tend to invest in highly recognizable real assets. While some valuation complexities are certainly magnified for firms within this industry, as individual lease terms regarding specific

occupants of investment properties are generally not widely available to prospective individual investors, the underlying assets responsible for generating these cashflow streams are typically well known. Additionally, given the high, regulatory mandated payout requirements for firms electing REIT status, it is difficult for firms to retain sufficient internally generated cashflows to entirely fund new projects. Even for firms not pursuing REIT status, many find it necessary to offer substantive dividends to remain competitive in the marketplace, while irrespective of payout policies the sheer scale 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 acquisition, firms within the real estate industry are uniquely positioned to reap the benefits, or suffer the consequences, of activities which influence the transparency of their operations.

Finally, why do we focus exclusively upon the Asia-Pacific region? In short, unlike their U.S. based counterparts, major real estate firms across the Asia-Pacific region have exhibited a strong willingness to commit significant investment dollars across international boundaries. While the typical American REIT focuses almost exclusively on properties located within the United States, A-P real estate firms exhibit a strong proclivity toward international investment activities, thus providing some useful variation along the geo-political risk dimension we seek to analyze. To illustrate this variation, Table #1 outlines the location of firm headquarter and investment property locations. Figure #1 provides further insight into the geographically diversified nature of our sample by graphing the headquarters location for each sample entity. Similarly, Figure #2 graphically depicts geographic location of each individual investment property. As should be readily apparent from these graphs, sample firms and properties are spread widely across the entire Asia-Pacific region, and represent a broad cross-section of the

commercial real estate entities operating throughout this marketplace. A more complete, detailed breakout of the individual property locations is provided in Appendix A.

Financial Market Transparency

The finance literature has long recognized important linkages between a firm's information environment and its financial market liquidity.[4] In general, these studies conclude that informational opacity concerns directly influence 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's market trading activity. Building upon these notions, a limited number of real estate investigations have examined important economic questions through the lens of market microstructure based metrics. Of particular note, within this sector, Cannon and Cole (2011) find intraday variation in the level of REIT spreads provides very little value added in terms of explanatory power relative to simply using end of day closing values. Capitalizing upon this observation, we employ spread metrics calculated exclusively using end of trading day values throughout our empirical analysis which follows.[5] Even though real estate firms are generally regarded as being informationally transparent relative to the typical industrial firm trading in the marketplace, real estate market microstructure studies consistently document direct linkages

[4] Early work in this area includes, but is not limited to Glosten and Milgrom (1985), Amihud and Mendelson (1986), and Amihud and Mendelson (2000).
[5] This finding is of particular import within Asia-Pacific real estate markets, as intra-day trading data is not readily available to researchers within this market sector.

between increasing informational asymmetry and higher observable levels of the bid-ask spread for their sample real estate firms.[6]

III. Data and Method

In assembling our dataset, we begin by identifying all Asia-Pacific REITs and listed property trusts followed by SNL Financial (as of January 2014) that trade on the Australian Stock Exchange, Bombay Stock Exchange, Hong Kong Stock Exchange, Singapore Exchange, or Tokyo Stock Exchange at any point over the period from January 2001 to December 2013. This yielded a total of 234 unique real estate firms. Next, based upon ticker, institution name, and exchange, we match each firm with Bloomberg data to get their 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 ratio, leverage ratio, market capitalization, and total number of analysts making recommendations. We are unable to match nine SNL firms to corresponding Bloomberg data, thus reducing our sample to 225 firms. Additional accounting information employed throughout our empirical investigation, such as total asset values and the book value of equity, are obtained directly from SNL Financial. In constructing our monthly average values, we employ daily data. For example, we calculate our monthly closing price for each sample firm as the average of its daily closing prices for a specific month.

Using techniques employed by prior researcher to ensure the accuracy and consistency of the spread data included in our analysis, we also impose a few restrictions. 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 the previously observed value. To minimize the effect of outliers on our dataset, we winsorize the market-to-book and leverage ratios at the 1%

[6] 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), Glascock, Hughes, and Varshney (1998), Danielsen and Harrison (2000 & 2007), Anglin et al. (2011), Chatrath, Christie-David, and Ramchander (2012), Tidwell et al. (2013), and Danielsen, Harrison, Van Ness, and Warr (20xx & 2014). ALSO ADD Bhasin/Cole/Kiely and Clayton and MacKinnon works.

level. The above criteria yield 18,289 firm-month observations, from 184 distinct Asia-Pacific real estate firms.

We next explicitly define each of three dependent variables employed throughout our empirical specifications. First, the monthly quoted spread, $\text{Spread}_{i,t}$, is defined as the average difference in the daily closing ask and bid prices for each firm i, each day in month t:

$$\text{Spread}_{i,t} = E_t(DailyAsk_i\text{-}DailyBid_i). \quad (1)$$

Second, to construct the relative spread, we define the $\text{Price}_{i,,t}$ as the average daily closing price for each firm i, throughout month t:

$$\text{Price}_{i,t} = \text{E}_\text{t}\,(\text{Price}_i)\,. \quad (2)$$

Thus, our relative spread equals:

$$\text{Spread}_{i,t}/\text{Price}_{i,t} = \text{E}_\text{t}\left(\frac{\text{Spread}_i}{\text{Price}_i}\right) \quad (3)$$

Third, to calculate the percentage spread, we define the midpoint of the quoted spread as the mean of the daily closing ask and bid prices for each firm i, at each month t:

$$\text{Midpoint}_{i,t} = \frac{E_t(DailyAsk_i + DailyBid_i)}{2}. \quad (4)$$

As such, the Percentage $\text{Spread}_{i,t}$ is defined as the average quoted spread divided by the midpoint of the quoted spread:

$$\text{Percentage Spread}_{i,t} = \text{E}_\text{t}\left(\frac{\text{Spread}_i}{\text{Midpoint}_i}\right). \quad (5)$$

Similar to Cashman, Harrison, and Seiler (2012) and Cashman, Harrison, and Sheng (2014), we use the geographic location (country) of every individual real estate property held by each firm in the sample to estimate measures of each firm's contracting environment and its specific value of local geo-political risk. Specifically, for each firm-month we count the number of each firm's investment properties located within every country, and then calculate the percentage of each firm's portfolio located within each country. Lastly, we construct each firm's geo-political risk measures by using these portfolio weights, combined with country level risk

metrics obtained from both the World Bank and Business Risk Service (BRS), to calculate a property weighted average geo-poltical risk score for each firm-month observation.

Based on previous findings regarding the determinants of bid-ask spreads, throughout the multi-variate portion of our analysis, our regression models for the whole sample will employ the following general form:

$$\text{Liquidity} = \alpha_0 + \beta_1 PoliticalRisk_{i,t} + \beta_2 \text{Ln\_mid\_stdev}_{i,t} + \beta_3 \text{Ln\_vol}_{i,t} + \beta_4 \text{Ln\_price}_{i,t} + \beta_5 \text{Tot\_analyst\_rec}_{i,t} + \beta_6 Ln\_MVE_{i,t} + \beta_7 MTB_{i,t} + \beta_8 Total\_Prop_{i,t} + \beta_9 \text{leverageratio}_{i,t} + \beta_{10} ShortSales_{i,t} + \beta_{11} PureInvest_{i,t} + \beta_{12} pw\_uk\_lo_{i,t} + \beta_{13} selloff_{i,t} + \beta_{14} buyback_{i,t} + \beta_{15} \text{pw\_GoodGov\_LLSV1}_{i,t} + \beta_{16} development\varepsilon_{i,t} + \varepsilon_{i,t}, \quad (6)$$

Furthermore, in accordance with the insights of Petersen (2009), we include not only exchange and property type fixed effects, but also firm and time (month) fixed effects for each regression to control for potential autocorrelations.

Turning to the individual variables contained within these models, $\text{Tot\_analyst\_rec}_{i,t}$ is a dummy variable for analyst recommendations. Its value is set to one if there is at least one analyst making recommendations for firm i within a given quarter, otherwise it is set to zero.[7] 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 liquidity, we expect to observe a positive relation between analyst coverage and firm liquidity, and thus a negative association between analyst coverage and firm spreads. $\text{Ln\_vol}_{i,t}$ is the log transformation of the total number of shares traded for firm i during month t, while the log transformation of the standard deviation of the quote midpoint, $\text{Ln\_mid\_stdev}_{i,t}$, is the monthly average of the daily standard deviation of the quote midpoint. As with previous investigations into firm liquidity, we expect increased volume to reduce spreads, while increased volatility should be associated with higher spreads. $ln\_mve_{i,t}$ is the log of the market value of equity for firm i, during month t. According to Capozza and Lee (1995), Hamelink and Hoesli (2004), and Nelling, Mahoney, Hildebrand and Goldstein (1995), REIT

[7] 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).

spreads are inversely related to market capitalization, which is the primary determinant of REIT bid-ask spreads. $mebe_{i,t}$ represents the market-to-book equity ratio for firm i, at month t, as reported by Bloomberg. Hamelink and Hoesli (2004) find the market-to-book ratio is volatile and has a substantial effect on the returns of REIT stocks. As such, we would expect MTB ratios to be positively related to both a firm's informational opacity and bid-ask spread. $Total\_Prop_{i,t}$ is the total number of properties a firm i owns, at month t, across all countries. Enhanced property holdings increase firm diversification levels and may thus be associated with reduced risk and lower spreads. On the other hand, increased property holdings may well be associated with increased coordination, monitoring, and agency problems leading to increased informational opacity and therefore higher bid-ask spreads. $leverageratio_{i,t}$ is the total debt to common equity ratio for firm i at month t. It is calculated as total debt (which is the sum of short-term and long-term borrowings) divided by total common equity (which is defined as share capital and additional paid in capital plus retained earnings). All else the same, higher financial leverage increases firm volatility, and is thus expected to be associated with reduced financial market liquidity and increased bid-ask spreads. $ShortSales_{i,t}$ is a dummy variable which equals 1 if the stock exchange on which the firm's securities are traded allows investors to participate in short sell transactions. If such transactions are prohibited, this variable is set to zero. Short sale transactions are believed to enhance the efficiency of the price discovery process, thereby reducing the amount of private information about the firm. Allowing such transactions should reduce the risk to the market maker of trading against an informed counterparty, and therefore we anticipate the ability to participate in such transactions will be associated with reduced bid-ask spreads and enhanced firm liquidity. $PureInvest_{i,t}$ is a dummy variable which is set equal to one if the entire firm's investment property portfolio holdings are located within a single country, and zero otherwise. As in evident in Table #2, this is a relatively rare occurrence for publicly listed real estate firms across the Asia-Pacific region with less than 1% of sample firm-month observations exhibiting such an investment pattern. That said, the enhanced geographic focus of such firms could well be associated with an increased ease of valuation, and thus enhanced liquidity and lower spreads. Alternatively, the geographic diversification of investment property holdings may well reduce the volatility of firm cashflows, thus enhancing the ease of valuation, increasing financial market liquidity, and reducing observable bid-ask

spreads. Following this same logic, $selloff_{i,t}$, is an indicator variable that is set equal to one if a firm permanently divests all of its investment property holdings within any given country during a particular sample year. Such transactions effectively serve to increase (decrease) the geographic focus (diversification) of the firm, and thus may be expected to reduce (increase) observed spreads. Conversely, $buyback_{i,t}$ is an indicator variable that is set equal to one if the sample firms acquires an investment property within a new country during the year. Such acquisitions should serve to increase (decrease) firm level geographic diversification (focus), and thereby potentially impact a firm's financial market liquidity and associated spread metrics. $pw\_uk\_lo_{i,t}$, is the property weighted average of the percentage of a real estate company's investment properties that are located in countries with a legal system founded on the tenants of Civil Law, as opposed to British Common Law, and $pw\_goodgov\_llsv1_{i,t}$ is a similarly constructed governance index designed to measure the efficacy of the contracting environment within a particular geographic jurisdiction. While the traditional finance literature argues Common Law based legal systems are superior for most forms of business contracting, previous studies of international real estate markets have found a distinct preference for the written, contractual surety of Civil Law based systems in mitigating contracting uncertainty and facilitating dispute resolution. As such, while we expect Civil Law based systems (and those with greater contractual surety) to reduce information uncertainty within real estate markets, we acknowledge the potential for alternative findings along this dimension. Finally, $development_{i,t}$ is an indicator variable which is set equal to one if the firm engages in the physical process of property development, and zero otherwise. As real, tangible assets such as those employed throughout the development process provide reduced collateral value uncertainty, we expect sample real estate firms with active property development programs and/or pipelines to enjoy enhanced financial market liquidity and exhibit reduced bid-ask spreads. For additional information about each of these variables, including complete variable definitions, please refer to the attached appendix A.

Finally, in order to assess the robustness of our core findings regarding how local business environments and geo-political risk affect the financial market liquidity of Asia-Pacific real estate firms, we also separate our complete regression sample into various subsamples designed to provide unique insight into the fundamental drivers of firm liquidity. More

specifically, we separate and analyze subsamples based upon development versus non-development firms, low MTB vs. high MTB firms, and geographic headquarter locations in Dragon vs. Non-Dragon countries across Asia. For the purposes of this investigation, our Dragon country sample includes Hong Kong and Singapore, while the Non-Dragon country sample includes firms headquartered in any other location across the Asia-Pacific region. Throughout these robustness tests, the same set of control variables are employed as are used in the full sample. As with our primary results, property type, trading venue (exchange), firm, and time (month) fixed effects are also included in the regressions for each of these subsamples.

IV. Empirical Results

Descriptive statistics for each of the variables employed throughout our empirical specifications which follow are presented in Table #2. Examining these metrics, we find the typical, publicly traded real estate firm across the Asia-Pacific region faces a raw bid-ask spread of approximately 20 cents per share, or slightly less than 1% of both the current share price and the mid-point of the time synchronous closing bid- and closing 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 the heavily skewed nature of this size distribution, and find the median market capitalization to be only $1 billion -- a number much more in line with the size of the typical publicly traded real estate firm within the United States. Continuing, the sample is evenly split between firms focusing on property development activities versus those concentrating on operational activities, while analyst coverage is reported for a robust 86% of sample firms. The average market-to-book ratio for sample organizations is slightly over 1.1x. Given the relatively high mandatory pay-out requirements faced by many publicly traded real estate firms across this

region, this latter finding is entirely consistent with *a priori* expectations. Similarly consistent with the previous literature, we find the typical (book) leverage ratios for sample firms to be well in excess of 50%.[8] While the typical firm in our sample holds investment interests in just over 50 properties, we observe considerable variation along this dimension. On the high focus end of the continuum, we observe a number of firms investing exclusively within a single property or very limited set of properties. More specifically, on average, 18 firms (comprising 15.18% of sample firm-month observations) hold security interests in less than 10 distinct property units per month. On the high diversification side of the spectrum, Federation Centres exhibits a remarkably diverse portfolio of investment holdings, holding 450 unique property investment interests (during 2008).

Finally, with respect to our key measures of geo-political risk we note the raw values of these metrics are of relatively little import. Rather, what matters is the impact upon our spread metrics, and hence firm liquidity, as these measures vary across both time and sample firms. Reassuringly, we observe considerable variation across sample observations for each of these four key metrics. Perhaps more importantly, and somewhat surprising, examining the correlation coefficients reported in Table #3 we find very little reason to be concerned that any of our core geo-political risk proxies are measuring exactly the same dimension of risk. Thus, our multi-variate results which follow should be relatively free of major multi-collinearity issues associated with our focal geo-political risk proxies.

Turning to our results, Table #4 presents cross-tabulations and univariate comparisons of our key liquidity metrics across high and low risk firms for each of our four geo-political risk

[8] 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), and Cashman, Harrison, and Seiler (2013).

metrics. Given dramatic size differences across firms, we posit the percentage spread metrics are far superior indicators (than the raw spreads) of the true financial market liquidity of each underlying firm. As such, we focus the textual portion of our analysis on these measures, and report raw spread findings simply: 1) for completeness, 2) as a robustness check, and 3) to satisfy potential reader curiosity. As should be readily obvious to the reader after only a cursory glance at Table #4, percentage spreads (regardless of whether they are measured using end of day closing prices or the midpoint of the closing bid and closing ask prices) are consistently higher for firms exposed to enhanced levels of geo-political risk. The results with respect to raw spreads are somewhat mixed, with only 2 of our 4 metrics supporting this same conclusion. Taken together, these results are generally supportive of our focal hypotheses, but also highlight the need to control for potentially confounding influences which may materially impact firm spreads (ie., financial market liquidity).

Multivariate Results

Table #5 presents the cornerstone results of our empirical analysis. More specifically, each column presents the results of an OLS regression model of the general form outlined above in equation 6. For brevity, tabulated results employ the percentage spread, calculated as the difference between the closing ask price minus the closing bid price, divided by the midpoint of these two values.[9] Consistent with previous investigations into spread determinants, we find 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. While

[9] Results using the raw bid-ask spread or the percentage spread based upon the end of day closing price rather than the end of day quote midpoint yield qualitatively similar results for our focal geo-political risk metrics. These alternative findings are available directly from the authors, upon request.

on the surface our market capitalization variable exhibits an 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, as short sales serve to enhance the efficiency of the price discovery process, it comes as no surprise that spreads are inversely related to the ability of investors to short the underlying firm's equity shares. Each of these relations hold across all five models reported in Table #5, and suggests the liquidity of our sample firms is broadly driven by the same underlying market forces which influence non-real estate firms.

Continuing on to our firm specific attributes and proxies for the competitive operating environment, we find firms with enhanced growth prospects (as measured by market-to-book ratios), higher use of financial leverage, and investment interests in higher numbers of separate properties to be characterized by enhanced informational opacity, difficulty in valuation, and hence increased bid-ask spreads and reduced financial market liquidity. Similarly, firms focusing their investment activities exclusively on operational as opposed to development activities have increased spreads. We view this latter finding as a result of the reduced collateral value of debt claims and lease obligations relative to the tangible nature of the assets included in the direct development business. A number of additional firm specific controls are also included, but fail to consistently achieve statistical significance with a constant sign pattern.

Finally, turning to our four key geo-political risk metrics, we find strong and consistent evidence that interjurisdictional differences in a firm's political and regulatory operating environment directly influence the ease of valuation for Asia-Pacific real estate firms. In columns 1 through 4, reductions in each of our individual geo-political risk metrics are associated with reduced spreads, while column 5 reveals these results are robust to the

simultaneous inclusion of all four proxies. More specifically, in column one we find increased levels of disclosure aid in the valuation of sample firms, thereby reducing valuation uncertainty and firm spreads. Similarly, in column two the negative coefficient on our weighted average Political Stability Index reveals firms with investment property portfolio holdings more heavily concentrated in locations characterized by a relatively low risk of government destabilization through unconstitutional or violent means (including political violence and/or terrorism) enjoy enhanced financial market transparency and liquidity, and exhibit reduced bid-ask spreads.

Column three employs our weighted average Operations Risk Index to assess firm level exposure to geo-political risk. This index is designed to measure the ease and efficiency of conducting business activities within a particular country. Our results suggest that as the ease of conducting business increases, it becomes easier for financial market participants to correctly value the organization. This reduced valuation uncertainty decreases exposure to market makers, thereby allowing for reductions in observable bid-ask spreads and enhancing financing market liquidity. Column four employs a property-weighted average index of the relative ease and ability of remitting payments and repatriating corporate profits and cashflows across international boundaries as the focal measure of geo-political risk. Once again, higher levels of this index (in which country specific values are provided by Business Risk Service) indicate an enhanced ease of cross-border capital flows. As such, enhanced index values indicate reduced geo-political risk along this dimension, and should be associated with enhanced financial market liquidity and reduced spreads. Finally, column five presents the results from including all four geo-political risk measures simultaneously. While the economic magnitude of each individual risk metric is reduced, all four measures retain their previously observed signs and statistical significance. The reduced coefficient magnitudes should come as no surprise given the modest,

though statistically significant correlations among these metrics reported above in Table #3. In sum, each geo-political risk metric exhibits a consistent, statistically significant relation with firm liquidity (spreads), and these relations are robust to the simultaneous inclusion of multiple metrics.

Robustness Checks

To assess the stability and robustness of our results, we next sub-divide our sample along three separate dimensions and replicate our preceding analysis on these more focused sets of sample firms. Specifically, in Table #6, we bi-furcate the sample into those firms which have active property development programs and/or pipelines versus those whose investment activities are focused exclusively on the operations and management of existing facilities. Similarly, in Table #7 we split the sample into firms with high versus low anticipated growth prospects based upon observed market-to-book ratios, while Table #8 reports the results for firms headquartered in developed (Dragon) versus developing (Non-Dragon) economies.

Interestingly, in examining the results from these subsamples, geo-political risk appears to exert a material influence on firm spreads across a wide spectrum of firm attributes. In Table #6, both development and non-development real estate companies find geo-political risk exposure (regardless of the metric employed) hinders financial transparency, decreases market liquidity, and increases observable firm bid-ask spreads. In Table #7, we find a similar pattern of results, as geo-political risk appears to influence spreads for both high and low growth organizations. Once again, all four risk measures are both statistically and economically significant across both subsamples, though a number of these results lose their influences when included simultaneously. Finally, in Table #8 we divide the sample into firms headquarter in

economically developed (Dragon) versus developing (Non-Dragon) countries. As with our previous robustness tests, we again find strong evidence that our focal results regarding geo-political risk exposure hold for a broad cross-section of Asia-Pacific real estate organizations. More specifically, seven of our eight reported risk measures are statistically significant and exhibit sign patterns consistent with our focal hypothesis that increased political risk exposure reduces financial market liquidity and increases firm spreads. Interestingly, within the subsample of firms headquartered in Dragon countries, our weighted average Disclosure Index exhibits an unexpectedly positive (though statistically insignificant) coefficient estimate when entering the model in isolation, and an unexpected and statistically significant positive coefficient when entering the model simultaneously with all four geo-political risk measures. We offer no rational explanation for the observed positive coefficient, as increased disclosure should reduce risk, while increasing (decreasing) transparency (spreads) for all firms. That said, we are not surprised that Disclosure is uniquely important for firms with operations and investment activities located in developing nations. Taken together, Tables #6 – 8 provide strong additional support for the notion that exposure to geo-political risk reduces and firm's financial market transparency and increases observable bid-ask spreads.

V. Summary and Conclusions

This study investigates the potential relation between between a firm's geo-poltical risk and its information environment. Consistent with ex-ante expectations, we find strong and statistically significant evidence that firm's characterized by enhanced geo-political risk exhibit higher observed bid-ask spreads reduced financial market liquidity. These results are robust across a number of alternative risk definitions, as well as across subsamples of the data

examining firms focused on raw development activities versus the management and operation of existing structures, high-growth versus low-growth firms, and the geographic headquarters and trading location of firms in countries with developed, versus developing, economic systems. Taken together, these results provide strong, preliminary evidence in support of the notion that geo-political risk factors direct impact the financial market liquidity of real estate firms across the Asia-Pacific region. More specifically, economic systems, regulations, and other policies which facilitate and enhance the generation, collection, and dissemination of information regarding firm activities tend to enhance financial transparency, and thus increase firm liquidity by reducing bid-ask spreads.

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Table 1
Firm and Property Location Breakdown

This table provides a breakdown of the headquarter locations of the real estate firms in our sample, as well as the geographic location distribution of all properties owned by sample firms.

Headquarter	# of R.E. Firms	Percentage of Total R.E. Firms	# of Properties	Percentage of Total property
Australia	30	16.30%	2233	19.92%
China	7	3.80%	1565	13.96%
Hong Kong	52	28.26%	1178	10.51%
India	8	4.35%	164	1.46%
Japan	36	19.57%	3386	30.21%
Singapore	51	27.72%	831	7.41%
Other	0	0.00%	1852	16.52%
Total:	184	100%	11209	100%

Figure 1:
R.E. Firm Distribution

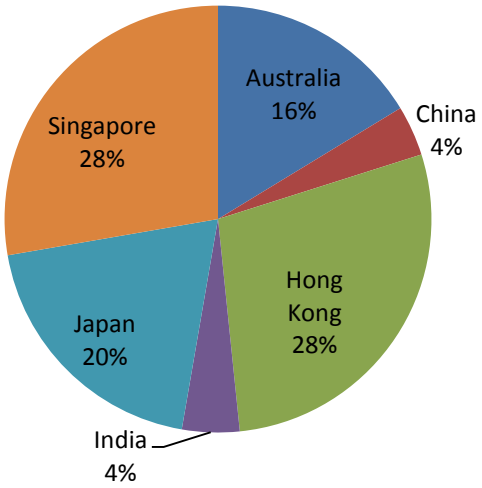

Figure 2:
Property Distribution

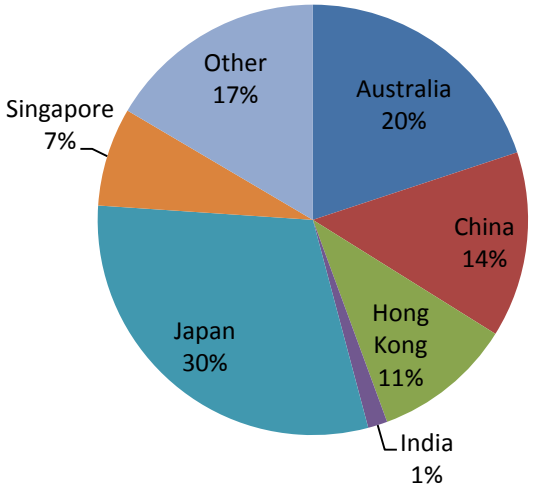

Table 2
Descriptive Statistics

This table provides basic descriptive statistics (sample size, mean, median, standard deviation, minimum, and maximum) for the variables employed throughout our analysis. Disclosure Index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. All other variables are defined in Appendix A.

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Dependent Variables						
Ln(spread/price)	18289	-4.8834	-4.9162	0.8804	-8.7739	-0.7660
Ln(spread/midpoint)	18289	-4.8832	-4.9159	0.8805	-8.7721	-0.3710
Spread	18289	0.2040	0.0104	0.6323	0.0001	3.9628
Political Risk Variables						
Disclosure Index	18289	0.8351	0.8817	0.1261	0.0233	1.0000
Operations Risk Index	18289	0.6136	0.6300	0.0716	0.3152	0.7570
R-Factor	18289	0.6923	0.7210	0.1669	0.3642	0.9700
Political Stability Index	18289	1.6065	0.8554	5.3908	-1.5269	60.1847
Control Variables						
TOT_ANALYST_REC	18289	0.8603	1.0000	0.3467	0.0000	1.0000
MTB	18289	1.1426	0.9097	1.1019	0.0839	8.6702
leverageratio	18289	0.7338	0.5518	0.7534	0.0000	5.0765
total_prop	18289	48.7641	29	52.5632	1	458
pw_UK_LO	18289	0.7999	1.0000	0.3519	0.0000	1.0000
pw_GoodGov_LLSV1	18289	0.8551	0.9000	0.1490	0.0209	1.0000
short_sales	18289	0.6968	1.0000	0.4596	0.0000	1.0000
selloff	18289	0.0504	0.0000	0.2188	0.0000	1.0000
buyback	18289	0.0820	0.0000	0.2744	0.0000	1.0000
ln_vol	18289	13.4744	14.0710	2.6027	3.6507	19.7645
ln_mid_stdev	18289	-2.7906	-3.1083	2.2458	-10.1663	6.1608
ln_price	18289	0.7217	0.3640	2.2605	-5.9727	8.2278
ln_MVE	18289	6.9397	6.9098	1.6073	1.0015	10.8713
pureinvest	18289	0.0079	0.0000	0.0887	0.0000	1.0000
Development	18289	0.5007	1.0000	0.5000	0.0000	1.0000

Table #3

Political Risk Correlation Matrix

This table reports the Pearson correlation coefficients associated with the four measures of political risk employed throughout this investigation. Disclosure Index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

	Disclosure Index	**R-Factor**	**Operations Risk Index**
pw_political_stability	-0.69593***		
R-Factor	0.34791***	-0.13945***	
Operations Risk Index	0.17892***	0.13358***	0.23488***

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Table #4
Univariate Analysis

This table provides mean, median values and univariate tests of differences in means for our financial market liquidity measures disaggregated by the firm's relative political risk exposure. Disclosure Index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. High Risk Exposure firms are those in the lowest tercile of Disclosure, Political Stability, Operations Risk, or R-Factor Indices, respectively.

	High risk exposure			Low risk exposure			Test for difference
	Obs.	Mean	Median	Obs	Mean	Median	Mean (Satterthwaite T-test)
Variable							
Disclosure Index							
Spread/Price	6098	0.013229	0.0087333	8071	0.0111776	0.0067083	0.00149***
Sread/Midquote	6098	0.013218	0.0087325	8071	0.0112331	0.0067094	0.00140***
Spread	6098	0.577654	0.0386755	8071	0.0171191	0.0067757	0.5605***
pw_political_stability							
Spread/Price	6093	0.011395	0.0070209	5968	0.010014	0.0069969	0.00138***
Sread/Midquote	6093	0.011374	0.0070262	5968	0.0100297	0.0070025	0.00134***
Spread	6093	0.018559	0.006319	5968	0.2236755	0.0113993	-0.2051***
R-Factor							
Spread/Price	6092	0.0166	0.0111758	6101	0.00884	0.0052416	0.00778***
Sread/Midquote	6092	0.0166	0.0111705	6101	0.00892	0.0052462	0.00767***
Spread	6092	0.0397	0.0171305	6101	0.5626	0.0156833	-0.5229***
Operations Risk Index							
Spread/Price	6111	0.011234	0.0058897	6099	0.0103108	0.0067674	0.000923***
Sread/Midquote	6111	0.011232	0.005892	6099	0.0104036	0.0067711	0.000828**
Spread	6111	0.38012	0.0079833	6099	0.1132039	0.0086878	0.2669***

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Table #5

Geo-Political Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms

This table presents the results of five regressions. Each model regresses the firm's percentage spread against alternative measures of political risk, while controlling for many other variables. Disclosure index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. In Model (1), the Business Extent of Disclosure index is used. In Model (2) the Political Stability and Absence of Violence/Terrorism Index is utilized. In Model (3), the Operations Risk index is applied, while Model (4) employs the R-Factor. Model (5) contains all four of our political risk measures simultaneously. The t-tests reported in parenthesis are robust to heteroskedasticity.

	Dependent Variable: Ln (Spread/midquote)				
	(1)	(2)	(3)	(4)	(5)
Variable					
Intercept	-1.522***	-1.101***	-0.979***	-1.054***	-0.641***
	(-7.55)	(-6.22)	(-4.07)	(-4.52)	(-3.12)
Disclosure Index	-4.528***				-1.856***
	(-9.74)				(-3.47)
Political Stability Index		-0.035***			-0.020***
		(-11.46)			(-6.47)
Operations Risk Index			-2.317***		-0.788***
			(-11.04)		(-2.98)
R-Factor				-2.838***	-1.860***
				(-16.63)	(-7.34)
short_sales	-0.778***	-0.793***	-0.617***	-0.993***	-0.642***
	(-5.15)	(-4.64)	(-3.52)	(-5.49)	(-4.07)
ln_vol	-0.171***	-0.169***	-0.172***	-0.171***	-0.173***
	(-27.86)	(-27.55)	(-28.32)	(-28.05)	(-28.44)
ln_mve	0.026*	0.033**	0.047***	0.037***	0.035***
	(1.92)	(2.48)	(3.52)	(2.82)	(2.61)
ln_price	-0.516***	-0.517***	-0.517***	-0.529***	-0.522***
	(-33.71)	(-33.68)	(-33.61)	(-34.49)	(-34.06)
ln_mid_stdev	0.115***	0.112***	0.112***	0.110***	0.110***
	(16.13)	(15.71)	(15.75)	(15.46)	(15.46)
tot_analyst_rec	-0.091***	-0.088***	-0.097***	-0.093***	-0.085***
	(-4.96)	(-4.75)	(-5.33)	(-5.12)	(-4.69)
MTB	0.039***	0.039***	0.037***	0.046***	0.044***
	(6.45)	(6.47)	(6.07)	(7.57)	(7.15)
pw_goodgov_llsv1	3.841***	-0.916***	0.659***	2.261***	2.807***
	(8.90)	(-4.97)	(3.72)	(10.41)	(6.50)
Leverageratio	0.065***	0.061***	0.057***	0.052***	0.052***
	(8.76)	(8.30)	(7.67)	(6.98)	(7.07)
total_prop	0.003***	0.002***	0.001***	0.002***	0.002***
	(13.14)	(9.66)	(7.82)	(10.36)	(9.51)
pw_uk_lo	0.608***	-0.067	0.033	-0.915***	-0.370**
	(4.88)	(-0.68)	(0.33)	(-7.82)	(-2.13)
Selloff	0.072***	0.072***	0.074***	0.070***	0.067***
	(4.74)	(4.74)	(4.85)	(4.65)	(4.50)
Buyback	-0.069***	-0.064***	-0.063***	-0.070***	-0.069***
	(-6.17)	(-5.70)	(-5.57)	(-6.25)	(-6.19)
Pureinvest	0.477***	0.122***	0.031	0.149***	0.183***
	(10.02)	(3.17)	(0.75)	(3.89)	(3.52)
Development	-0.392***	-0.515***	-0.331***	-0.119*	0.375***
	(-6.63)	(-6.94)	(-5.59)	(-1.95)	(3.08)
Exchange Fixed Effects	yes	yes	yes	yes	yes
Property Fixed Effects	yes	yes	Yes	yes	yes
Time Fixed Effects	yes	yes	Yes	yes	yes
Firm Fixed Effects	yes	yes	Yes	yes	yes
Observations	18,289	18,289	18,289	18,289	18,289
Adjusted R-squared	0.801	0.801	0.801	0.803	0.803

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Table 6
Geo-Political Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms:
Development versus Non-Development Activities

This table presents the results of five regressions. Each model regresses the firm's percentage spread against four measures of geo-political risk, while controlling for many other variables. Disclosure index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. In Model (1), the Disclosure Index is used. In Model (2) the Political Stability Index is utilized. In Model (3), the Operations Risk index (ORI) is applied, while Model (4) employs the R-Factor. Model (5) contains all four of our political risk measures simultaneously. Panel A reflects the analysis of firms with active property development programs and/.or pipelines. Panel B reports results for firms with no current property development activity. The t-tests reported in parentheses are robust to heteroskedasticity.

Panel A: Ln (Spread/midpoint), Development	(1)	(2)	(3)	(4)	(5)
VARIABLES					
Intercept	0.095	-1.192***	-0.417	-0.110	0.178
	(0.20)	(-4.15)	(-1.48)	(-0.37)	(0.38)
Disclosure Index	-3.440***				-0.467
	(-4.11)				(-0.51)
Political Stability Index		-0.050***			-0.027***
		(-6.60)			(-3.46)
Operations Risk Index			-2.957***		-1.808***
			(-9.33)		(-4.64)
R-Factor				-2.956***	-1.576***
				(-10.20)	(-4.02)
Control Variables	yes	yes	yes	Yes	yes
Exchange Fixed Effects	yes	yes	yes	Yes	yes
Property Fixed Effects	yes	yes	yes	Yes	yes
Time Fixed Effects	yes	yes	yes	Yes	yes
Firm Fixed Effects	yes	yes	yes	Yes	yes
Observations	9,157	9,157	9,157	9,157	9,157
Adjusted R-squared	0.786	0.786	0.788	0.788	0.789

Panel B: Ln (Spread/ midpoint), Non-Development	(1)	(2)	(3)	(4)	(5)
VARIABLES					
Intercept	-1.838***	-3.164***	-3.330***	-2.296***	-1.681***
	(-5.14)	(-11.58)	(-11.79)	(-7.91)	(-4.58)
Disclosure Index	-4.501***				-2.078***
	(-8.09)				(-3.18)
Political Stability Index		-0.021***			-0.012***
		(-6.99)			(-3.95)
Operations Risk Index			-0.865***		0.822**
			(-3.34)		(2.48)
R-Factor				-2.402***	-2.063***
				(-11.49)	(-6.39)
Control Variables	yes	yes	yes	Yes	yes
Exchange Fixed Effects	yes	yes	yes	Yes	yes
Property Fixed Effects	yes	yes	yes	Yes	yes
Time Fixed Effects	yes	yes	yes	Yes	yes
Firm Fixed Effects	yes	yes	yes	Yes	yes
Observations	9,132	9,132	9,132	9,132	9,132
Adjusted R-squared	0.823	0.822	0.821	0.824	0.824

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Table 7

Geo-Political Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms: High Versus Low Market-to-Book Ratios

This table presents the results of five regressions. Each model regresses the firm's percentage spread against measures of geo-political risk, while controlling for many other variables. Disclosure Index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. In Model (1), the Disclosure Index is used. In Model (2) the Political Stability Index is utilized. In Model (3), the Operations Risk index (ORI) is applied, while Model (4) employs the R-Factor. Model (5) employs all four of our geo-political risk measures simultaneously. Panel A reflects the analysis of the lowest tercile of MTB firms. Panel B reports results for the highest tercile of MTB firms. The t-tests reported in parenthesis are robust to heteroskedasticity.

Panel A: Ln (Spread/midpoint),	**Lowest MTB Tercile**	(1)	(2)	(3)	(4)	(5)
VARIABLES						
Intercept		1.038***	0.251	1.651***	2.069***	0.388
		(3.33)	(0.85)	(5.15)	(6.70)	(1.39)
Disclosure Index		-4.764***				-2.048**
		(-6.45)				(-2.58)
Political Stability Index			-0.017***			-0.002
			(-3.89)			(-0.47)
Operations Risk Index				-2.028***		-0.342
				(-6.65)		(-0.90)
R-Factor					-3.196***	-2.769***
					(-10.98)	(-6.93)
Control Variables		yes	yes	yes	yes	yes
Exchange Fixed Effects		yes	yes	yes	yes	yes
Property Fixed Effects		yes	yes	yes	yes	yes
Time Fixed Effects		yes	yes	yes	yes	yes
Firm Fixed Effects		yes	yes	yes	yes	yes
Observations		9,144	9,144	9,144	9,144	9,144
Adjusted R-squared		0.863	0.862	0.863	0.864	0.865

Panel B: Ln (Spread/ midpoint),	**Highest MTB Tercile**	(1)	(2)	(3)	(4)	(5)
VARIABLES						
Intercept		-1.159**	-3.197***	-4.090***	-3.544***	-1.031***
		(-2.13)	(-9.78)	(-11.00)	(-10.95)	(-2.82)
Disclosure Index		-4.329***				-3.262***
		(-7.76)				(-4.52)
pw_political_stability_index			-0.040***			-0.035***
			(-9.04)			(-7.46)
Operations Risk Index				-0.637*		0.280
				(-1.84)		(0.63)
R-Factor					-1.574***	-0.449
					(-5.81)	(-1.04)
Control Variables		yes	yes	yes	yes	yes
Exchange Fixed Effects		yes	yes	yes	yes	yes
Property Fixed Effects		yes	yes	yes	yes	yes
Time Fixed Effects		yes	yes	yes	yes	yes
Firm Fixed Effects		yes	yes	yes	yes	yes
Observations		9,145	9,145	9,145	9,145	9,145
Adjusted R-squared		0.754	0.755	0.753	0.754	0.756

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Table 8

Geo-Political Risk and the Bid-Ask Spreads of Asia-Pacific Real Estate Firms: Dragon versus Non-Dragon Country Headquarters Location

This table presents the results of five regressions. Each model regresses the firm's percentage spread against measures of political risk, while controlling for many other variables. Disclosure Index measures the extent to which investors are protected through disclosure of ownership and financial information. Operations Risk Index (ORI) measures the degree to which complex operating conditions affect production and profits earned in the local currency by a foreign firm. R-Factor stands for remittances and repatriation of capital factor, and is a measure of each country's ability and willingness to allow private foreign companies to repatriate their profits. Political Stability Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. In Model (1), the Disclosure Index is used. In Model (2) the Political Stability Index is utilized. In Model (3), the Operations Risk Index (ORI) is employed, while Model (4) uses the R-Factor. Model (5) simultaneously includes all four of our political risk measures. Panel A reflects the analysis of firms with their headquarters located in Dragon (highly developed and economically free) countries, while Panel B reports results for firms with their headquarters located in Non-Dragon (economically constrained or developing) countries. The t-tests reported in parenthesis are robust to heteroskedasticity.

Panel C: Ln (Spread/midpoint), Dragon	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES							
Intercept	-0.464**	-0.179	0.024	-0.154	0.056	-0.228	-0.152
	(-2.12)	(-0.79)	(0.11)	(-0.71)	(0.24)	(-0.00)	(-0.00)
Disclosure Index	1.126				0.693	2.852***	2.545***
	(1.37)				(0.83)	(3.19)	(2.82)
Political Stability Index		-0.010***			-0.004	-0.001	-0.001
		(-3.27)			(-1.18)	(-0.43)	(-0.17)
Operations Risk Index			-1.365***		-1.238***		-0.358
			(-5.61)		(-4.76)		(-1.18)
R-Factor				-1.524***		-1.702***	-1.516***
				(-7.46)		(-7.55)	(-5.69)
Control Variables	yes	yes	yes	yes	yes	yes	yes
Exchange Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Property Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Time Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Firm Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Observations	11,690	11,690	11,690	11,690	11,690	11,690	11,690
Adjusted R-squared	0.825	0.825	0.825	0.825	0.825	0.826	0.826

Panel D: Ln (Spread/ midpoint), Non-Dragon	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES							
Intercept	-4.703***	-1.462**	-0.892	-2.110***	-1.135	-4.546***	-3.582***
	(-8.04)	(-2.20)	(-1.28)	(-2.99)	(-1.45)	(-5.68)	(-4.36)
Disclosure Index	-3.093***				-1.839***	-7.153***	-11.429***
	(-4.84)				(-2.89)	(-8.58)	(-13.59)
Political Stability Index		-0.039***			-0.035***	-0.033***	-0.031***
		(-6.85)			(-6.09)	(-5.86)	(-5.41)
Operations Risk Index			-3.787***		-3.647***		-8.963***
			(-8.10)		(-7.68)		(-14.73)
R-Factor				2.446***		4.812***	11.006***
				(6.27)		(9.81)	(16.72)
Control Variables	yes	yes	yes	yes	yes	yes	yes
Exchange Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Property Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Time Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Firm Fixed Effects	yes	yes	yes	yes	yes	yes	yes
Observations	6,599	6,599	6,599	6,599	6,599	6,599	6,599
Adjusted R-squared	0.829	0.829	0.831	0.830	0.832	0.832	0.842

*** Indicates statistical significance at one percent level

** Indicates statistical significance at five percent level

* Indicates statistical significance at ten percent level

Appendix A

Spread	Equals the average difference in the daily closing ask price and bid price for each firm i, each day in month t
spread/price	Equals the monthly average quoted spread divided by closing price
spread/midpoint	Equals the monthly average quoted spread divided by the midpoint of the quoted spread
Ln(spread/price)	Equals the log transformation of (spread/price)
Ln(spread/midpoint)	Equals the log transformation of (spread/midpoint)
Disclosure Index	This is the property weighted average of Business Extent of Disclosure Index, as reported by the World Bank. Higher values indicate that investors are protected through more disclosure of ownership and financial information.
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 less 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 easier to repatriate profits back to the home country of the REIT or listed property trust.
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 lower perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and/or terrorism.
TOT_ANALYST_REC	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.
MTB	Represents the market-to-book equity ratio
leverageratio	Equals the total debt (short term plus long term debt) divided by total common equity ratio for firm i at month t, as reported by Bloomberg.
total_prop	Equals the total number of properties for a firm each year and month.

pw_UK_LO	This is the property weighted average of the percentage of a real estate company's properties located in countries with a legal system based on the foundational tenants of Civil Law.
pw_GoodGov_LLSV1	This is the property weighted average of the sum of a Property Rights Index and Business Regulation Index. Higher scores mean private property is protected and regulations are less burdensome to business.
short_sales	It is an indicator for whether a headquarter country exchange allows short sales. It equals 1 if the country allows short sales, and zero otherwise.
selloff	It is an indicator 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 1 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.
buyback	It is an indicator for whether a firm is buying a property in a given country for the first time in our sample period. It equals to 1 if it is the first time to buy a property in a given country, and zero otherwise.
ln_vol	Equals the log transformation of trading volume.
ln_mid_stdev	Equals the log transformation of the monthly standard deviation of the quote midpoint
ln_price	Equals the log transformation of the monthly average of daily closing prices.
ln_MVE	Equals the log transformation of market capitalization reported by Bloomberg.
pureinvest	It is an indicator for whether a firm only has properties in one country. It equals to 1 if the firm only invested in one country during the given month, and zero otherwise.
Development	An indicator variable equal to 1 if the firm engages in investment property development, construction programs, or has an active property development pipeline; 0 otherwise

Appendix B

Detailed Distribution of Properties

Country	# of Properties	% of Total properties
Australia	2233	19.9215
Belgium	5	0.0446
Brazil	6	0.0535
Burma	4	0.0357
Cambodia	2	0.0178
Canada	11	0.0981
China	1565	13.962
Czech Republic	3	0.0268
Fiji	5	0.0446
France	61	0.5442
Germany	45	0.4015
Hong Kong	1178	10.5094
Hungary	1	0.0089
India	164	1.4631
Indonesia	62	0.5531
Ireland	1	0.0089
Italy	1	0.0089
Japan	3386	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
USA	983	8.7697
United Arab Emirates	4	0.0357
United Kingdom	242	2.159
Vanuatu	1	0.0089
Vietnam	37	0.3301
Total:	11,209	100%