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ABSTRACT

Nonlinearities arise in international investment because of a pecking order in barriers. Some severe barriers render all others meaningless, and only when they are alleviated do other barriers become important. We show, using quantile regressions designed to model relations at more points than just the conditional mean, how various investment theories hold at different points in the distribution of bilateral cross-border equity holdings. Our results reconcile a number of findings in the literature by highlighting that datasets that focus on different points of the barriers (investment) distribution can naturally lead to different results.

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1. Introduction

There is growing recognition of nonlinearities in factors that drive cross-border investment. For example, nonlinearities naturally arise in models of information acquisition (van Nieuwerburgh and Veldkamp, 2009; De Marco, Macchiavelli and Valchev, 2021). But even as the importance of nonlinearities is becoming more apparent, much of the existing work on international portfolio investment is through a decidedly linear lens. For example, many studies show that investors exhibit *on average* substantial home bias in their tendency to invest abroad (see, among many others, French and Poterba, 1991; Lewis, 1999; Karolyi and Stulz, 2003; Ahearne, Griever, and Warnock, 2004; Chan, Covrig, and Ng, 2005; Bekaert and Wang, 2009). Investors' unwillingness *on average* to exploit diversification benefits is a long-standing puzzle. Recent work on nonlinearities in cross-border investment prompt us to ask: Are there important nonlinearities that have been obscured by the literature's focus on linear models? That is, what factors affect international investment on average, at levels far below average – a very common outcome – or far above average?

One possible source of nonlinearities is a pecking order in barriers to cross-border investment. Barriers are not easily measured and, in empirical work, many reasonable measures of barriers—some direct, others proxies—have been shown to impact cross-border investment.[1] These barriers range from legal restrictions that bar foreign investment, such as capital controls, to indirect barriers such as lack of information and familiarity. And between direct and indirect barriers, perhaps along a continuum, are a host of other barriers such as transaction costs,

[1] Studies referred to in the next two sentences include Bekaert and Harvey (1995), Edison and Warnock (2004), Kang and Stulz (1997), Ahearne, Griever and Warnock (2004), Van Nieuwerburgh and Veldkamp (2009), Andrade and Chhaochharia (2010), Karolyi, Ng, and Prasad (2020), Chan, Covrig, and Ng (2005), Bekaert and Wang (2009), Glassman and Riddick (2001), Dahlquist, et al. (2003), Giannetti and Siminov (2006), Kho, Stulz and Warnock (2009), Ammer et al. (2012), Fidora, Fratzscher, and Thimann (2006), and Cooper, Sercu and Vanpee (2012).

governance issues/expropriation risk, and exchange rate risk. The pecking order view recognizes that direct barriers can render all other barriers immaterial. For example, if no investment is allowed between two countries, alleviating information costs shouldn't impact investment levels. As direct barriers are reduced, barriers such as information costs and governance issues come into play. And when all of those types of barriers are low, then factors like diversification benefits might matter.

A difficulty is that many investment barriers are unobservable, or at least not well measured.[2] While perhaps unobservable, barriers can be inferred through other observable relationships. Bekaert and Harvey (1995) measure the degree of integration using equity return data. Bekaert, Harvey, and Lumsdaine (2002) note that market integration is an all-encompassing event that should change the return-generating process and examine "breaks" in data to infer when changes in restrictions occurred. Bekaert et al. (2011) propose a valuation-based measure of world equity market segmentation. In international portfolio allocation, one can posit that realized investment levels reveal something about the intensity of bilateral investment restrictions. Country pairs for which bilateral investment is zero or near zero likely have severe bilateral investment restrictions. Country pairs with exceedingly high bilateral investment have no bilateral restrictions. And nonlinearities arise as the returns to mitigating barriers evolve across the distribution.

To identify possible nonlinear effects, we use quantile regressions (QRs) to examine relationships across the entire distribution of cross-border investment. QRs characterize the marginal effects across the distribution of investment, allowing us to describe the relationship of

[2] Measures of explicit *de jure* restrictions exist, but none adequately capture the intensity of restrictions. Even the best of de jure restrictions measures (see, e.g., Fernández et al. 2016) rely on aggregating binary indicators of whether restrictions exist, not how restrictive the measures might be. And no measure captures indirect barriers to cross-border investment, nor does any measure capture the bilateral nature of restrictions (if, for example, restrictions vary across country pairs).

covariates and investment at different points of the distribution rather than just focusing on the conditional mean (Koenker and Basset, 1978). Focusing on the effects at various quantiles rather than just the average effects, and guided by a proposed pecking order in barriers, we explore the determinants of bilateral investment pairs in regressions that include proxies for information, familiarity, diversification motives, transaction costs, and governance. Rather than reduce the effect of outliers on coefficient estimates of various factors on average investment, QR reveals nonlinearities of international investment factors.

To identify nonlinearities in cross-border investment, we construct a broad global dataset of bilateral equity investment from 47 source countries into 46 destination countries across 17 years from 2001 to 2017. Three empirical facts are immediate from our dataset. First, the most common investment level for country investor-destination pairs in our sample is zero investment.[3] For example, the 2010 cross-border equity investment from Mexico to the Netherlands is zero. Second, most country-pair observations have investment levels far below an international CAPM benchmark. For example, the 2010 cross-border equity investment from Canada, Japan, and the U.S. to all destination countries was below the benchmark. Third, some county-pairs reflect levels of international investment that are extremely high. For example, the 2010 cross-border equity investment from New Zealand to Australia was thirteen times higher than the share implied by the international CAPM. The heterogeneity in investment levels revealed by these facts suggests that regressions of average effects are ill-suited for the analysis of international portfolios when the unobservable pecking order of barriers to international investment creates nonlinear effects.

The variation in coefficients from our quantile regressions indicate that the impact of many

[3] That there are many zeros in datasets of international investment has been noted by many, including Ferreira and Matos (2008) and Leuz et al. (2009). De Marco, Macchiavelli, and Valchev (2021) examine this 'scarceness' in international portfolios both theoretically and empirically.

factors differs greatly across the distribution, reinforcing the presence of nonlinearities for several factors. Specifically, more than a third of the variables are significant at distinct points of the distribution, but do not affect average investment globally and so cannot explain investment for the average bilateral investment pair in the global dataset. Coupled with the heterogeneity inherent in specific portfolio datasets, our approach helps resolve differences in two sets of past findings.[4] On the roles of information and familiarity, Bekaert and Wang (2009) conclude that their results are "more subtle" than Chan et al. (2005) because they do not find consistent effects for variables associated with bilateral trade, which is insignificant in the preferred specification of Bekaert and Wang (2009) but positive and significant in Chan et al. (2005). The Bekaert and Wang (2009) dataset is broad like ours—many zeros, some very high investment levels, most observations indicating substantial underweighting vis-à-vis the international CAPM benchmark—whereas the Chan et al. (2005) dataset, with few zeros and likely twice as many observations in the 90-100 percentile, corresponds more closely to the right side of the distribution. Our results that bilateral trade does not matter on average and so is insignificant in a dataset like Bekaert and Wang's, but does matter for higher levels of investment, i.e., for the portion of the distribution most represented in the Chan et al. (2005) sample. From a pecking order perspective, while the returns to information decline, familiarity remains important in the absence of more basic direct barriers (i.e., at the right side of the distribution).

As a second example on the role of governance, Dahlquist et al. (2003) conclude that, "for a given supply of shares, U.S. investors do not invest less in a country because minority shareholders are less well protected or because laws are not enforced" (p. 104). In contrast, in a

[4] Our finding that some variables matter on average and others are significant suggests that one should be cautious when eliminating variables based on the statistical significance of average effects. There are good reasons to eliminate variables – as the literature has grown so has the number of variables readers expect to see – but we caution that variables insignificant on average may well be quite important at other points in the distribution.

firm-level study of Swedish firms, Giannetti and Simonov (2006) find that foreign investors are less likely to invest in a Swedish firm if its controlling shareholders have greater incentives to expropriate outside investors. We find that the effects of investor protections against self-dealing in destination markets are near zero or even negative at low investment (high barriers) levels but tend to increase at higher investment levels; governance matters more at the right side of the distribution. The contrasting results in the existing literature can be explained as follows. The Dahlquist et al. (2003) dataset is of U.S. investors in 50 foreign countries that include some (Zimbabwe, Venezuela, and others) with substantial direct barriers, whereas the Giannetti and Simonov (2006) sample includes firms (Swedish) for which there are no investment barriers. In a dataset of no investment barriers (Giannetti and Simonov, 2006), information and governance issues can drive differences in investment levels, while in one in which direct barriers to investment vary substantially (Dahlquist et al., 2003) information and governance issues might be trumped by variation in direct barriers.

Our analysis should influence future work. The focus of van Nieuwerburgh and Veldkamp (2009), De Marco, Macchiavelli and Valchev (2021) and Valchev (2017) on a nonlinearity in one particular factor – information acquisition –should be broadened. We take a step in that direction, focusing on nonlinearities inherent in a world with heterogeneous investors and a pecking order of barriers. The next wave of progress on understanding international portfolio allocation should focus on nonlinearities more generally. Our analysis should also help inform future researchers to interpret results derived from a particular portion of the investment distribution. As the empirical literature progresses, emphasis has been on datasets that feature micro datasets (e.g., Bekaert, Hoyem, Hu, and Ravina, 2015; Coppola, Maggiori, Neiman, and Schreger, 2021) that necessarily use a particular slice of the investment distribution; a recognition that results supporting various

theories depend on the particular slice of the distribution should help link micro and macro evidence. Reliance on specific dataset might mask the effect of important nonlinearities in factors that drive international investment.

The paper proceeds as follows. Section 2 motivates the pecking order of barriers. Section 3 presents our investment data. Section 4 provides an initial discussion of the distribution of the global matrix of cross-border investment. Section 5 assesses the determinants of global equity investment on average and across the distribution. Section 6 concludes.

2. The Pecking Order of Cross-border Investment Barriers

A standard international CAPM-based model of international portfolio allocation with country-specific proportional investment costs, such as Cooper and Kaplanis (1986), can illustrate the practical complexities of a pecking order in barriers to international investment.[5] Under usual international CAPM assumptions, the i^{th} investor's optimization problem is to choose x_i, the allocation of her wealth among risky securities in n countries, to maximize expected returns net of costs, or:

$$\max (x_i'R - x_i'c_i) \tag{1}$$

subject to

$$x_i'Vx_i = v \text{ and } x_i'I = 1 \tag{2}$$

where

x_i is a column vector, the n^{th} element of which, x_{in}, is the proportion of individual i's wealth invested in securities in country n

R is a column vector of pre-cost expected returns

[5] The seminal articles are Black (1974) and Stulz (1981).

c_i is a column vector, the n^{th} element of which, c_{in}, is the cost to investor i of holding securities in country n

v is a constant

V is the variance/covariance matrix of the gross (pre-cost) returns of the securities

I is a unity column vector

For simplicity, assume that the covariance matrix, V, is diagonal with all variances equal to s^2. Impose the world capital market clearing condition, $\sum W_i x_i = M$, where W_i is the proportion of world wealth owned by country i and M is a column vector, the i^{th} element of which, M_i, is the proportion of world market capitalization in country i's market. Then the solution to this problem simplifies to

$$hs^2(x_{in} - M_n) = -c_{in} + b_n + a_i - d, \quad (3)$$

where:

$a_i = z'c_i$ (weighted average marginal cost for investor i)

$b_n = \sum M_j c_{jn}$ (world weighted average cost in country n)

$d = z' \sum M_i c_i$ (world weighted average cost)

and h is the Lagrange multiplier on the constraint $x_i' V x_i = v$.

In the case with no costs to investing, c_i is a zero vector and the right-hand side of (3) is zero. Hence $x_{in} = M_n$; that is, investor i allocates her wealth across countries according to market capitalizations.

In the more general case with non-zero and non-uniform costs, a logic similar to that of multilateral resistance in the gravity theory holds: if the actual cost to investor i of investing in country n (c_{in}) is high relative to investor i's average cost to investing (a_i) or relative to all

investors' costs to investing in country n (b_n), then the right-hand side of (3) is likely negative and investor i will underweight country n in her portfolio. The higher are costs in a particular foreign market, the more severely underweighted that country will be in the investor's portfolios. Moreover, since investors do not face such costs in their home market, equation (3) predicts an overweighting of domestic stocks—the equity home bias—when costs exist in other countries.

The issue we highlight is that c_{in} represents costs that are both explicit, which may or may not be measurable, and implicit (and unmeasurable). Moreover, c_{in} is country-pair specific. For the empiricist, there is no available measure of cross-border barriers that is country-pair specific and adequately captures indirect barriers. More generally, in practice there is a pecking order in costs (and benefits) of cross-border investment.[6] Direct barriers can render all other barriers immaterial. For example, if no investment is allowed between two countries, alleviating information costs should have no impact on investment levels. As direct barriers are reduced, barriers such as information costs and governance issues come into play. And when all of those types of barriers are low, then factors like diversification benefits might matter. In general, barriers range from legal restrictions that bar foreign investment, such as capital controls, to indirect barriers such as lack of information and familiarity. And between direct and indirect barriers, perhaps along a continuum, are a host of other barriers such as transaction costs, governance issues/expropriation risk, and exchange rate risk. As the returns to mitigating these barriers evolve across the distribution, nonlinearities in the effects on international investment arise. Our endeavor in this paper is to use the pecking order to inform our understanding of determinants of cross-border investment through the entire distribution of holdings.

[6] The Cooper Kaplanis approach we adopt lends itself to incorporating costs more generally, allowing for specific costs to dominate. Mondrian and Wu (2010) model the interaction between the implicit barrier of information acquisition and the explicit barrier of financial liberalization.

3. The Data

3.1 Cross-border Holdings

To operationalize the model, our dependent variable is as follows:

$$RWF_{i,j} = \frac{H_{j,i}/H_{j,world}}{F_i/F_{world}}, \quad (4)$$

where $RWF_{i,j}$ is the relative weight of destination country *j* in investor country *i*'s float-adjusted equity portfolio, F_i is the float (market capitalization less insider ownership) in country *i*, F_{world} is world float, $H_{j,i}$ is investor country *j*'s holdings of *i*'s equities, and $H_{j,world}$ is investor country *j*'s float-adjusted holdings of all equities. The relative weight of destination country *j* in investor country *i*'s portfolio is just the ratio of its weight in country *i*'s portfolio to its weight in the world float portfolio.[7] When *i* holds no *j* equities, $RWF_{i,j}$ is zero. If the weight of *j* in *i*'s portfolio is identical to *j*'s weight in the world float portfolio, $RWF_{i,j}$ equals one. When $RWF_{i,j}$ is greater than one, *j* is overweight in *i*'s portfolio; that is, *i*'s holdings of *j* equities exceed the global benchmark weight.

Our relative weight measure has three desirable features. First, it is consistent with the theory discussed above. Second, it is based on float, not market capitalization. Dahlquist et al. (2003) argue that shares held by insiders, which are not available to dispersed portfolio shareholders, should be omitted from portfolio analysis. While no exact measure of shares held by controlling shareholders is available both across a range of countries and through time, we follow Kho et al. (2009) and many others and create a country-level measure of insider ownership built

[7] In the language of Chan et al. (2005) and Cooper et al. (2012), our relative weight measure is one of foreign bias.

from the firm-level closely-held field in Worldscope.[8] Subtracting the measure of insider ownership (*IO*) from market capitalization (*MC*) provides a measure of the float (*F*). Finally, the relative weight measure (Eq. 1) is free of any size bias. Portfolio share measures, for example, are biased by size in a way that can bias inference on the explanatory variables of interest; see Bekaert and Wang (2009) and Ammer et al. (2012).

Table 1 shows the summary statistics on our cross-border investment measure for our 2001 to 2017 sample period. The float-adjustment in our measure matters. Argentina, for example, constitutes 0.1% of the world market portfolio but only 0.055% of the world float portfolio. Therefore, the international CAPM allocation to Argentina should be 0.055%.

To form the relative weight measure (Eq. 4) requires bilateral holdings data. An uncomfortable truth is that all datasets on cross-border portfolios are flawed in some way; none is completely appropriate for such a study. We choose to go with the devil we know (the IMF's Coordinated Portfolio Investment Survey, or CPIS, data), but our main points should be relevant for other datasets as well. We obtain the dollar amount of foreign equity investment from the CPIS for the years 2001 to 2017. In the CPIS, there are more than 60 source (i.e. investor) countries; we add source countries to our sample as they become available in the CPIS dataset. The CPIS data, used in Bekaert and Wang (2009) and Lane and Milesi-Ferretti (2008), among many others, are not pristine. Like most international investment datasets, the CPIS has a severe financial center

[8] Note that we are not claiming that the Worldscope closely-held field is perfect since it is a measure based on numerical cutoffs that cannot truly discern who has controlling interest and who does not. Moreover, reporting requirements and their enforcement varies across the world, and the coverage of Worldscope has changed over time. That said, the Worldscope closely held variable is available over time and for a large number of countries, and potentially includes insiders who are not controlling shareholders but might be part of the controlling coalition. Some studies painstakingly gather information on the holdings by controlling shareholders (e.g., Claessens, Djankov, and Lang 2000; Faccio and Lang 2002; and Lins 2003), which should provide a truer measures of insider holdings. Unfortunately, such datasets are typically as of a point in time. To mitigate the effect of outliers in the more readily available Worldscope data, we use a smoothed measure of closely held shares; if the change in the market value weighted aggregate country-level closely held measure is greater than 1.5 standard deviations, then country-level closely held is set to the average of the previous year, the current year, and the next year.

bias that at the very least renders data vis-à-vis financial centers meaningless for the purpose of analyzing international investment.[9] Thus, as is usually done in the literature, we omit Ireland and Luxembourg due to the financial center bias for these countries. The primary benefit of the CPIS dataset is that it is readily available for a range of countries across a range of dates. Table 2 shows the time-series average relative investment weight in percent for a broad sample of 27,428 home and host market pairs from 2001 to 2017 across 46 investor and 47 destination countries.

3.2 Explanatory Variables

We organize our set of explanatory variables around a broad range of theories implied by the literature in which international investment depends on information barriers, familiarity barriers, hedging motives, transactions costs, and governance. The literature suggests, for example, that lower barriers to information (Ahearne, Griever, and Warnock (2004), Bekaert and Wang (2009), Valchev (2017)) and lower barriers to familiarity (Chan, Covrig, and Ng (2005), Bekaert and Wang (2009)) increases relative investment. As proxies for information barriers, we use the proportion of destination country market capitalization available in the investor country market through cross-listing, internet users in a country, and a dummy variable that equals 1 when two countries share an official language. Previous evidence (Froot, Scharfstein, and Stein, 1992; Bohn and Tesar, 1996; Brennan and Cao, 1997) suggests market returns affect investor behavior. Similar to Chan et al. (2005) and Bekaert and Wang (2009), we include measures of past returns. To proxy for familiarity with the investment opportunity set, we use bilateral and unilateral trade, log of

[9] CPIS data are also subject to a geographical bias because, especially in the first decade of the CPIS, most countries did not follow best practices and conduct security-level surveys to report data to the CPIS. Without knowing the exact security the investor holds, in many cases it can be very difficult to assign it to a particular country. We do not use the 1997 CPIS data, which had 27 source countries, of which only five followed best practices for data collection. Note that even when countries follow best practices, if their citizens' holdings are with foreign custodians (e.g., an Italian purchasing a US bond fund through a Luxembourg-based mutual fund) the CPIS – and most other datasets – will have noise; on this, see Coppola et al. (2021).

distance between major cities, and dummy variables that equal 1 when two countries have ever had a colonial link or have contiguous borders. With respect to hedging motives, we note that real exchange rate volatility leads to less investment due to hedging difficulty (Fidora et al., 2006; Bekaert and Wang (2009)) and greater diversification benefits leads to increase international investment. For hedging and diversification proxies we use real exchange rate volatility and stock return correlations as a measure of diversification opportunities (Bekaert and Wang, 2009; Coeurdacier and Gruibaud, 2011). Third, lower trading costs leads to increases in international investment. To proxy for transaction costs, we include a dummy variable that equals 1 when two countries use the same currency, the ratio of market capitalization to GDP, and equity capital controls from Fernandez et al. (2016). We also include two governance variables as determinants consistent with Chan et al. (2005) and Bekaert and Wang (2009): shareholder protections as proxied by the Djankov et al. (2008) anti-self-dealing index and institutional quality as proxied by the La Porta et al. (1998) rule of law index. Because we are investigating bilateral investment between many countries, we follow Bekaert and Wang (2009) and include a set of destination- and investor-country unilateral variables. Finally, the extent to which investors favor own-country investment may impact global allocations, so we include a measure of domestic bias similar to Chan et al. (2005). After incorporating data for independent variables, our final working sample includes 39 source (investor) countries and 39 destination (recipient) countries, with as much as 17 annual observations per country pair for a total of 20,396 country-pair-year observations. Table 3 shows variable definitions and summary statistics for the explanatory variables organized around the main theories. Familiarity dominates other barriers because the returns to more precise information or reducing trading costs are low when investors have limited knowledge about the investment opportunity set. Mitigating information barriers will dominate reducing trading costs

in the pecking order if estimating transaction costs is challenging in an opaque environment. On the other hand, with high trading costs, learning more about return distributions is less valuable and lowers the returns to information.

3.3 The Global Matrix of Cross-listings

We follow the literature (for example, Chan et al., 2005; Lane and Milesi-Feretti, 2008; and Bekaert and Wang, 2009) in our choice of proxies for cross-border barriers. A potentially important determinant missing from these studies is the proportion of destination country market capitalization available in the investor country market through cross-listing. In the U.S. setting, much work has noted that U.S. investment in foreign stocks tends to be higher in stocks that cross-list on a U.S. exchange, suggesting cross-listing is an important determinant (Ahearne, Griever, and Warnock 2004; Bradshaw, Bushee, and Miller 2004; Edison and Warnock 2004; Aggarwal, Klapper, and Wysocki 2005; Kho, Stulz, and Warnock 2009). Moreover, while the theoretical literature has proposed an important role for information in international investment, measuring information with internet users (Bekaert and Wang, 2009; Cotter, Gabriel, and Roll, 2019; and Valchev, 2017) may not completely capture the type of information important to investors and cannot capture bilateral variation. Cross-listing may play a more sophisticated role by enabling foreign investors to correctly interpret publicly available information as in the differences of opinion model in Dumas, Lewis, and Osambela (2017).

The most substantial obstacle to addressing the appropriate role of cross-listing in a global study is that it requires a global panel dataset of cross-listing. For this we updated the Sarkissian and Schill (2012, 2016) annual dataset of 2,838 listings on foreign stock exchanges (i.e., not OTC listings). Data is available from 1985 (the start date of Worldscope market and accounting data) to

2017, based on surveys of world stock exchanges as of the end of 1998, 2003, 2006, 2012, and 2018. Surveys were completed for all country exchanges indicated as having foreign listings by the World Federation of Exchanges, except for corporate tax havens (such as the Cayman Islands, Bermuda, and Jersey) and exchanges outside main boards of country stock exchanges. Exchange research departments or exchange websites were consulted for a summary of all foreign companies, excluding investment funds and trusts, listed on their exchange. In all but the initial (1998) survey, the history of all foreign companies that were once listed but had since delisted their shares was also requested.[10] Listings of foreign shares were received for all exchanges. Delistings data are less complete. In some cases, listing and delisting histories in each survey year were only partial or unavailable.[11] See Sarkissian and Schill (2016) for more details. For stocks listed in the United States, we supplement data from CRSP and Compustat following Ammer et al. (2012).

Using the survey data, we construct the proportion of home country market capitalization listed in investor country host markets using market value data from Datastream. Table 4 shows the average proportion of equity listed in foreign markets for all pairs of home (listed down the first column) and host (listed across the top row) markets. The United States and United Kingdom are the largest hosts of foreign equities. More than 40 percent of the home market capitalization of Argentina, Canada, Finland, Israel, Netherlands, Spain, and the United Kingdom is cross-listed in the United States; more than 30 percent of the home market capitalization of Egypt, Finland, Greece, Netherlands, and South Korea is cross-listed in the United Kingdom. Germany, Switzerland, and Netherlands also host many foreign firms, and some country pairs are noticeable,

[10] For some, but not many, exchanges, foreign listing and delisting data are posted on the exchange website.
[11] For the U.S., incomplete delisted history was complemented with ADR delist codes from CRSP, following the procedure of Chaplinsky and Ramchand (2012).

with substantial cross-listings of Austrian equities in Germany, of Australian equities in New Zealand and New Zealand equity listed in Australia, and of Netherlands equity in Switzerland.[12]

4. International Investment through the Distribution

International investment varies substantially across investor country and investment destination pairs. Figure 1 shows for the full sample the cumulative frequency of relative investment weight defined as the weight of the destination market in the source country's portfolio divided by its weight in the world float portfolio (as in Eq. 1). Plotting the relative investment weight shows relative weights ranging from 0 to 7.53 (the winsorized 99th percentile). More than ninety percent of the observations fall below – many fall far below – the international CAPM benchmark of 1, the point at which the proportion of investor country holdings in the investment destination country equals the destination country weight in the world market portfolio. For the full sample, the median relative investment weight is only 2.75%, or the weight of *j* in *i*'s portfolio is less than 2.75% of the benchmark weight, implying that most international investments are quite low. In contrast, some country investment pairs have substantial amounts of investment. The mean relative investment weight is 0.82. Figure 1 confirms the effect of "outliers" driving the difference in mean and median relative weight.

By far the most common outcome for investor country/investment destination pairs in our full sample is zero investment (8,444 observations), as seen by the first 30 percent of all observations in Figure 1 (red circle). The group of zero-investment pairs include, for example, Mexico-to-Netherlands [2010], New Zealand-to-Israel [2002], and Philippines-to-Japan [2009]. Another 5,269 observations have relative weight between 0 and 0.0275, shown by the dotted red

[12] Indonesia is the only country in our sample that hosts no foreign firms.

line. These include such country-pairs as Italy-to-Argentina [2013] and Singapore-to-South Africa [2001]. The solid blue line shows that about 60% of the sample displays moderate amounts of investment with relative weight above 0.0275 but below 1, and includes country pairs like Italy-to-Canada [2003] and United States-to-Greece [2014]; Even this moderate investment subsample, with mean relative weight of 0.283, shows variation similar to the entire sample. Finally, although most country pairs show very low to moderate investment, the remaining 8% of the sample shown in the dashed green line has relative weight greater than 1. The cumulative frequency increases quickly, illustrating investment well above the threshold of 1 to levels that are three, four, five times the destination weight in the market portfolio, levels that we could characterize as overinvestment relative to an international CAPM benchmark. These include country pairs such as Germany-France [2016], Australia-New Zealand [2016], and Austria-Germany [2013]. Rather than clustering just above 1, the frequency at which relative weight exceeds 1 increases steadily out. The dark green square shows the relative weight of 7.53 at the 99th percentile for illustrative purposes only. The relative weight continues to increase beyond this point, with a mean value of 8.73 for this subsample.[13]

The shape of the distribution illustrates that there is broad variation across country-pair investment level. With such wide variation in cross-border investment across country pairs, few country pairs can be considered "average." The inference obtained from applying the standard empirical approach of identifying average effects then may not satisfactorily explain what drives

[13] For the regression analysis, we limit the sample to country pairs with sufficient data on determinants of international investment. The limited sample has 20,396 observations, with a mean and standard deviation of relative weight of 0.327 and 1.26. There are 5,560 observations with relative weight equal to 0, and 4,665 observations with relative weight between 0 and less than the median 0.040; combined these two very low investment levels have 10,225 observations with mean and standard deviation of 0.005 and 0.010. The moderate investment subsample with relative weight between 0.040 and 1 has 8,686 observations with mean and standard deviation of 0.305 and 0.239. The very high investment subsample with relative weight greater than 1 has 1,485 observations with mean and standard deviation of 2.67 and 3.90.

investment across most of the sample pairs and may not adequately account for important nonlinearities in factors. Thus, when testing theories of international investment, it is critical to decide whether to minimize the effects of the outliers or to try to explain them. We argue that for this distribution it is economically important to explain the outliers. The sample pairs on the far right tail are likely to have economically meaningful effects on asset pricing and capital-raising. The pairs on the far left can have an economically meaningful effect on access (or barriers) to global financial markets.

As a first step, we delve deeper into what country-destination pairs drive this distribution. Some country pairs exhibit the extremes seen in the distribution in Figure 1 and Table 2. As investor (i.e., source) countries, Argentina, Mexico, Pakistan, Philippines, Thailand, and Turkey are examples of source countries that have close to zero investments on average. For destination (i.e., host) countries, over one-third of the investor countries have zero investment in Colombia including other neighboring South American countries, with an additional three countries that have relative weight ratios of below 0.05. In contrast, almost all investor countries have positive relative weight in Australia, Germany, the Netherlands, Switzerland, the U.K., and the U.S. At the other end of the distribution, 170 of the 2100 country pairs shown in Table 2 are on average over 100% of the benchmark weight, such as New Zealand's investment in Australia and Finland's investment in Sweden. The most common investment destination countries with above-the-benchmark average investment weights are Austria, Finland, and the Netherlands, and the most common investor (source) countries with average relative weights above 100% are Belgium, Denmark, the Netherlands, and Norway. Very high investment, however, is not limited to European investor or destination countries. In fact, most countries in our sample have at least one destination country pair that they overweight on average. The only investor countries that don't have at least one

destination country that maintains holdings above 100% of the benchmark weight are Canada, Egypt, Indonesia, India, Israel, Japan, Korea, Mexico, Pakistan, the Philippines, Turkey, and the U.S. In a similar vein, most destination countries are overweighted on average with at least one investor country—the exceptions are Canada, Israel, Japan, Pakistan, South Africa, and the U.S.

5. Assessing Global Portfolios

A standard way to assess the variation in cross-border equity investment is to use an OLS estimator and regress bilateral relative weight on bilateral and unilateral variables:

$$RWF_{i,j,t} = \gamma_1 X_{i,j,t} + \gamma_2 X_{i,t} + \gamma_3 X_{j,t} + \theta_t + \varepsilon_{i,j,t}, \quad (5)$$

where $RWF_{i,j,t}$ is the relative weight of destination country j in investor country i's float-adjusted equity portfolio as in Eq. (4), $X_{i,j,t}$ is a matrix of bilateral investment determinants, $X_{i,t}$ is a matrix of investor country i characteristics, $X_{j,t}$ is a matrix of destination country j characteristics, θ_t are year fixed effects, and $\varepsilon_{i,j,t}$ is an error term.

However, the heterogeneity in unobserved bilateral investment barriers means that estimators such as OLS that are designed to capture average effects might be misleading and fail to capture nonlinearities. We focus instead on Quantile Regression (QR) estimators, which are generalizations of Least Absolute Deviations (LAD) and as such are designed to estimate unobserved heterogeneity and are more robust to outliers than least squares estimates, meaning they are preferred whenever fat tails are a concern (Koenker and Basset, 1978; Koenker, 2005).[14]

[14] QR is not the only way to characterize determinants when the distribution has outliers. One could winsorize, but the distribution in Figure 1 suggests the observations in the tails are not necessarily "problematic." We could also take logs, but taking logs of relative weight (our theory implied measure) is still right skewed with fat tails. QR allows us to describe affects across the distribution where some barriers might be more important than others, driving nonlinearities in factors.

QRs yield a family of slopes across the conditional distribution of a latent variable, which in the present context can be used to assess the extent of heterogeneity in the investment response to various barriers to international investment. That is, rather than estimating the conditional mean as with OLS, QR estimates the conditional percentile or quantile relation at any specified percentile level. For example, when estimating the 50th percentile, one estimates the conditional median by finding the coefficient that minimizes the sum of absolute values of the deviations from the median. Following this same logic, we can estimate the quantile coefficient at any percentile level. The quantile coefficient estimates the expected marginal change at a specified quantile of the dependent variable produced by a change in an independent variable using the entire distribution rather than just a sub-sample. We use QRs to characterize the relations across the distribution of investment, allowing us to describe the relation of covariates and investment at different points of the distribution rather than just focusing on the conditional mean.[15]

5.1 Investment Drivers across the Quantiles

Figure 2 illustrates the effects for points of the distribution above the relative weight of 0. Each graph plots coefficient point estimates with 95 percent confidence bounds from quantile regressions. The solid horizontal line is the coefficient estimate from the OLS regression, and the dashed horizontal lines are the associated 95 percent confidence bounds (with standard errors calculated clustering at the destination-country pair). The coefficient estimates for OLS and for the 50^{th}, 70^{th}, 92^{nd} (corresponding to a relative weight of one) and 95^{th} quantiles are shown in Table 5. In Figure 2, Panels A and B plot coefficient estimates for the proxy variables for information

[15] QRs are increasingly being used in a variety of settings. See Misra and Surico (2014) for an application in a micro/macro setting, while QRs form the basis of the Adrian, Boyarchenko and Giannone (2019) growth at risk framework.

and familiarity barriers. Panel C plots coefficient estimates for the variables for hedging motives. Panels D and E plot coefficient estimates for the transaction costs and governance variables, respectively.

We do not discuss the coefficient estimates of each and every variable in detail. But we note that for many variables Figure 2 shows considerable heterogeneity in coefficient estimates across quantiles, reflecting nonlinearities in many drivers of international investment. Briefly, more than a third of the variables are significant at distinct points of the distribution, but do not affect average investment globally and so cannot explain investment for the average bilateral investment pair in the global dataset.[16] Other variables are statistically significant on average, but affect relative investment weight only for country pairs in the middle of the distribution. Many other variables change significance levels or even signs across the distribution, perhaps because unobserved barriers, both direct and indirect, vary in ways we cannot capture.[17] The effect of distance, for example, is quite small for country pairs that have zero bilateral investment (and, we would posit, likely have substantial direct barriers to investment) but increases materially at higher investment levels. In what follows we discuss results that help resolve conflicting findings in previous studies and results that shed light on certain relationships.

5.1.1 Results that Help Resolve Conflicting Findings

The effects of some variables across quantiles coupled with noting the likely nature of various datasets helps resolve some conflicting results in the existing literature. As a starting point,

[16] For example, the proportion of market capitalization listed on the investor country exchange only has a significant effect on investment in the middle of the distribution while the amount of bilateral trade between the two countries has a positive effect on investment only when investment levels are already high – two variables that are often positive and significant in cross-border investment studies.

[17] Only four variables are significant on average and across the investment distribution: investor country internet users, the distance between the investor and the foreign equity market, whether the two countries share a common border, and financial market development of the investor source country.

the findings of Bekaert and Wang (2009) conflict with those of Chan et al. (2005) with respect to the effect of information and familiarity barriers. Bilateral trade, for example, is insignificant in the preferred specification of Bekaert and Wang (2009) but positive and significant in Chan et al. (2005). Bekaert and Wang (2009) conclude that their results are "more subtle" than Chan et al. (2005). The Bekaert and Wang (2009) dataset uses a broader sample (similar to ours) with wide variation in cross-border holdings--many pairs with zeros, some pairs with very high investment levels, and most pairs indicating substantial underweighting vis-à-vis the international CAPM benchmark. Whereas the Chan et al. (2005) dataset has country pairs that are much more concentrated in the 90-100 percentile and correspond more closely to the right side of the distribution in our Figure 1. To examine this discrepancy, we show that for bilateral trade (Figure 2 Panel B), the traditional regression coefficient is insignificant with a broad data set like ours or Bekaert and Wang's, but is significant for country pairs with higher levels of investment, i.e., for the portion of the distribution most represented in the Chan et al. (2005) sample. Knowledge of the effects through the distribution and the likely nature of the datasets help reconcile these existing contradictory findings.[18]

Another example concerns a proxy for real risks investors might want to hedge: real exchange rate (RER) volatility. In the model of Fidora et al. (2007), RER volatility is the main source of discrepancies between home and foreign portfolios; the greater the volatility of RERs, the lower should be the weight on foreign securities. Coeurdacier and Guibaud (2011), in a different setup, have a similar prediction. The notion that RER volatility affects portfolio choice can also work through the Cooper and Kaplanis model as it would affect the variance of returns.

[18] We note that bilateral trade might be better proxy for familiarity about the return distribution (Heath and Tversky 1991, Merton 1987), and so the effect shows up at the right side of the distribution. Distance and language might be proxies for familiarity about the investment opportunity set, and hence affect investment (nearly) across the distribution.

Empirically, Fidora et al. find ample evidence of a negative effect of RER volatility on foreign holdings, although Cooper et al. (2012) note that the evidence is not robust to different measures of foreign bias. Our analysis sheds light on this: We find the RER volatility matters on average (i.e., in OLS regressions) but is only significant mostly in the middle, with near zero effect at the far right of the distribution of investment pairs, where such barriers might be lower.

A third example addresses governance variables. Dahlquist et al. (2003) conclude that, "for a given supply of shares, U.S. investors do not invest less in a country because minority shareholders are less well protected or because laws are not enforced" (p. 104). In contrast, in a firm-level study of Swedish firms, Giannetti and Simonov (2006) find that foreign investors are less likely to invest in a Swedish firm if its controlling shareholders have greater incentives to expropriate outside investors. The Dahlquist et al. (2003) dataset is of U.S. investors in 50 foreign countries that include some (Zimbabwe, Venezuela, and others) with substantial direct barriers, whereas the Giannetti and Simonov (2006) sample includes firms (Swedish) for which there are no investment barriers. In a dataset of no investment barriers (Giannetti and Simonov, 2006), one might expect information and governance issues to drive differences in investment levels, while in one in which direct barriers to investment vary substantially (Dahlquist et al., 2003) information and governance issues might be trumped by variation in direct barriers. Figure 2 Panel F shows evidence somewhat consistent with this view. While coefficients are mostly insignificant, the effects of investor protections against self-dealing in destination markets are near zero or even negative at low investment (high barriers) levels but tend to increase at higher investment levels.

5.1.2 Results that Shed Light on Nonlinearities

Cross-listing on a U.S. exchange can mitigate information asymmetries and increase U.S. investment in foreign stocks (Ahearne, Griever, and Warnock 2004; Bradshaw, Bushee, and Miller

2004; Edison and Warnock 2004; Aggarwal, Klapper, and Wysocki 2005; Kho, Stulz, and Warnock 2009). In our global dataset of investment, we find cross-listing (Figure 2, Panel A) has a marginally insignificant effect on investment for the average country-destination pair. The least squares estimate, however, masks differences across the distribution. In the QRs, cross-listing in the investor country market has a positive and statistically significant effect for all but the 95th percentile, and the effect increases at higher investment levels. The results suggest that cross-listing is effective at mitigating barriers, especially those that are more meaningful for moderate to high investment.[19]

Source-country internet has been a proxy for information in several studies (e.g, Bekaert and Wang (2009)). Figure 2 Panel A shows that (i) it is indeed positive and significant in OLS regressions and (ii) consistent with the Valchev (2017) model of non-linearity its effect is near zero at low levels of investment (high barriers), increases substantially along intermediate levels and then declines (when, as in Valchev (2017), decreasing returns to information might kick in). Sharing a similar language facilitates information sharing. Like source-country internet, the coefficient on the common language indicator is positive and significant on average, with an increasing effect at moderate levels of investments, but like cross-listing has no statistically significant effect at the highest investment levels. A similar pattern holds in past returns (another proxy for information following the model of Brennan and Cao (1997)). Overall, the QR results in Figure 2 Panel A provide nuance to the long-standing information story, nuance that is consistent with recent theory.

[19] Cross-listing is a variable for which causality plausibly goes both ways, as it can influence and be influenced by cross-border investment. In unreported tests we instrument for cross-listing using the method proposed by Lee (2007) or, because quantile IV estimation is influenced by zeros, the censored quantile instrumental variables technique of Chernozhukov, Fernandez-Val, and Kowalski (2015). Our results are robust to instrumental variables estimation, suggesting cross-listing influences investment.

Of course, QRs cannot solve every mysterious result. Hedging and diversification benefits – investing in markets less correlated with the investor country market – do not hold anywhere in the distribution (Figure 2 Panel C). The puzzling result found in previous studies of positive correlation increasing investment is not apparent on average, but is in the quantile regressions. In this case, the mystery regarding the impact of return correlation on cross-border holdings remains unanswered.

6. Conclusion

In this paper, we contribute to the literature on cross-border investment by highlighting two important characteristics of cross-border investment: the distribution of bilateral equity investment varies more than OLS estimators would suggest and barriers to cross-border investment are difficult to precisely measure. We show that these two characteristics have important implications for empirical tests in this literature, as the theories that find support depend highly on a particular dataset. While almost half of cross-border positions are moderate investment positions consistent with moderate but surmountable investment barriers, the distribution of relative investment weight is quite broad. At the extremes investment ranges from a large group of country pairs with effectively no investment to amounts that far exceed expected investment benchmarks. This broad distribution suggests the average investor country destination market pair is not a good basis for testing theories of cross-border investment. Using quantile regressions, we find that the effect of investment drivers varies considerably across investment quantiles; many variables change significance or even signs across quantiles. We suggest that a pecking order of barriers can give rise to nonlinearities in factors that drive international investment.

Our analysis has important implications for research on international investment. On the

empirical side, datasets used in this field are almost by necessity specialized, focusing on a particular slice of the investment distribution and subsequently masking important nonlinearities. Our results highlight that some theories are more likely to find empirical support at certain parts of the distribution, so in a sense the choice of a dataset will drive many results. For theorists, our evidence might expand models exploring the nonlinearities of effects that vary through the investment distribution.

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Table 1. Weight in World Market Portfolio

This table shows in percent the average market capitalization (cap) in country *i* (MC_i) scaled by the world market cap (MC_{world}) as well as float-adjusted market cap in country *i* (F_i) scaled by the float-adjusted world market cap (F_{world}) for all sample countries, which is the denominator of float-adjusted relative weight. Observations in bold type are in the final sample that is limited by data available to construct investment determinants.

	World Market Portfolio	Float-Adjusted World Market Portfolio
ARGENTINA	**0.103**	**0.055**
AUSTRALIA	**2.155**	**2.152**
AUSTRIA	**0.222**	**0.143**
BELGIUM	**0.610**	**0.548**
BRAZIL	**1.584**	**1.175**
CANADA	**3.411**	**3.898**
CHILE	**0.394**	**0.176**
CHINA	6.755	7.355
COLOMBIA	**0.260**	**0.146**
CYPRUS	0.013	0.010
CZECHREPUBLIC	0.081	0.036
DENMARK	**0.412**	**0.340**
EGYPT	**0.141**	**0.126**
FINLAND	**0.465**	**0.521**
FRANCE	**3.998**	**3.496**
GERMANY	**3.082**	**2.783**
GREECE	**0.220**	**0.153**
HONGKONG	**4.112**	**2.654**
HUNGARY	0.053	0.046
INDIA	**2.198**	**1.426**
INDONESIA	**0.456**	**0.322**
ISRAEL	**0.319**	**0.255**
ITALY	**1.572**	**1.433**
JAPAN	**8.297**	**7.994**
KOREA	**1.742**	**1.659**
MALAYSIA	**0.623**	**0.392**
MEXICO	**0.672**	**0.495**
NETHERLANDS	**1.414**	**1.451**
NEWZEALAND	**0.099**	**0.084**
NORWAY	**0.422**	**0.286**
PAKISTAN	**0.087**	**0.091**
PERU	**0.112**	**0.106**
PHILIPPINES	**0.241**	**0.119**
POLAND	0.256	0.155
PORTUGAL	**0.158**	**0.111**
RUSSIA	1.245	0.653
SINGAPORE	**0.922**	**0.671**
SLOVAKIA	0.009	0.004
SOUTHAFRICA	**1.376**	**1.186**
SPAIN	**2.135**	**1.900**
SWEDEN	**0.985**	**1.051**
SWITZERLAND	**2.360**	**2.699**
THAILAND	**0.455**	**0.312**
TURKEY	**0.357**	**0.172**
UNITEDKINGDOM	**6.973**	**7.537**
UNITEDSTATES	**40.269**	**45.872**
VENEZUELA	0.019	0.019

Table 2. Relative Weight by Country

This table shows the average float-adjusted relative weight in percent by investment destination markets for all pairs of investor/home markets(columns) and destination/host markets (rows). In this table, 100 means that the weights of the destination market in the investor-country portfolio and in the world float portfolio are identical. Asterisks (*) denote investor-destination pairs with insufficient data. Relative weight is constructed using data from IMF CPIS, World Bank, and ThomsonReuters Worldscope. Observations in bold type are in the final sample that is limited by data available to construct investment determinants.

Table 2 cont.

Destination \ Investor	ARGENTINA	AUSTRALIA	AUSTRIA	BELGIUM	BRAZIL	CANADA	CHILE	CHINA	COLOMBIA	CYPRUS	CZECH REP.	DENMARK	EGYPT	FINLAND	FRANCE	GERMANY	GREECE	HONGKONG	HUNGARY	INDIA	INDONESIA	ISRAEL	ITALY
ARGENTINA		**1.0**	**8.4**	**8.6**	**245**	**6.4**	**225**	.42	**0**	0	.54	**221**	**0**	**.10**	**15**	**4.5**	**0**	**0**	.84	**0**	**0**	**0**	**36**
AUSTRALIA	**2.0**		**18**	**5.5**	**.10**	**27**	**2.6**	2.3	**0**	19	3.4	**24**	**0**	**9.8**	**8.4**	**13**	**.49**	**9.5**	2.3	**.31**	**1.3**	**.96**	**10**
AUSTRIA	**.52**	**15**		**86**	**.71**	**30**	**3.7**	1.3	**0**	2520	6280	**157**	**0**	**100**	**101**	**431**	**5.1**	**1.1**	2674	**0**	**0**	**43**	**194**
BELGIUM	**.05**	**16**	**82**		**21**	**23**	**6.3**	3.2	**.03**	.10	1572	**53**	**4.2**	**44**	**256**	**89**	**20**	**1.7**	379	**.07**	**.36**	**3.7**	**27**
BRAZIL	**184**	**13**	**16**	**12**		**34**	**130**	1.3	**12**	1.3	2.8	**79**	**0**	**7.3**	**26**	**19**	**.92**	**.14**	3.5	**.09**	**<.01**	**.89**	**23**
CANADA	**.77**	**14**	**17**	**7.7**	**.62**		**4.7**	1.3	**4.7**	35	3.6	**14**	**0**	**2.9**	**8.1**	**11**	**5.4**	**4.3**	3.3	**.03**	**<.01**	**2.0**	**3.8**
CHILE	**29**	**8.5**	**4.0**	**4.2**	**20**	**18**		1.2	**101**	0	.01	**21**	**0**	**0**	**8.5**	**3.0**	**.02**	**.12**	1.2	**.16**	**0**	**.17**	**6.1**
CHINA	2.0	2.5	8.1	2.4	.06	6.5	.53		.01	.46	7.3	27	.06	4.4	12	4.9	1.01	261	2.9	.15	9.3	1.4	4.1
COLOMBIA	**.14**	**3.9**	**1.7**	**2.3**	**6.0**	**7.0**	**100**	.37		0	.03	**6.9**	**0**	**0**	**6.2**	**1.4**	**0**	**0**	.49	**0**	**0**	**0**	**.67**
CYPRUS	<.01	1.1	199	467	.70	66	1.3	160	0		5235	235	36	715	127	74	2523	2.4	447	9.0	0	12	26
CZECH REP.	6.4	16	701	94	.53	17	13	*	0	0		241	0	32	42	74	32	.18	3518	0	0	0	40
DENMARK	**.01**	**20**	**45**	**29**	**.71**	**32**	**.71**	*	**0**	7.8	3.2		**0**	**243**	**38**	**50**	**3.2**	**1.3**	4.0	**.25**	**0**	**2.1**	**12**
EGYPT	**0**	**2.1**	**3.7**	**2.5**	**.03**	**7.9**	**1.7**	2.1	**0**	247	.88	**31**		**0**	**30**	**4.2**	**371**	**.02**	9.6	**.05**	**0**	**0**	**2.9**
FINLAND	**15**	**18**	**121**	**132**	**.48**	**31**	**.65**	*	**.001**	28	20	**216**	**0**		**144**	**194**	**9.4**	**2.3**	8.8	**0**	**.01**	**3.2**	**53**
FRANCE	**2.5**	**21**	**130**	**342**	**2.6**	**36**	**5.6**	1.9	**.28**	33	71	**77**	**5.3**	**93**		**176**	**24**	**2.9**	28	**.03**	**.01**	**43**	**168**
GERMANY	**2.2**	**26**	**660**	**134**	**2.0**	**34**	**22**	2.4	**.43**	42	110	**125**	**2.5**	**91**	**236**		**20**	**4.2**	138	**.03**	**.05**	**38**	**78**
GREECE	**.18**	**11**	**75**	**73**	**.03**	**22**	**1.4**	.98	**0**	2496	33	**54**	**0**	**92**	**82**	**60**		**.93**	33	**0**	**0**	**13**	**36**
HONG KONG	**<.01**	**21**	**13**	**5.4**	**.06**	**16**	**3.8**	35	**.13**	1.9	1.6	**33**	**.17**	**14**	**14**	**8.4**	**.58**		1.8	**.45**	**30**	**5.4**	**5.8**
HUNGARY	0	15	736	31	5.1	25	14	2.0	0	0	1366	200	0	36	140	112	29	.03		0	0	2.0	16
INDIA	**.75**	**20**	**23**	**5.2**	**.02**	**17**	**5.1**	.44	**0**	27	.91	**54**	**.02**	**27**	**22**	**5.7**	**.21**	**6.2**	.26		**74**	**0**	**4.9**
INDONESIA	**<.01**	**15**	**42**	**10**	**.001**	**26**	**141**	1.8	**0**	0	.51	**76**	**0**	**11**	**26**	**19**	**0**	**26**	30	**2.0**		**0**	**43**
ISRAEL	**.01**	**9.0**	**21**	**14**	**4.9**	**33**	**2.3**	1.2	**0**	.39	6.5	**78**	**0**	**10**	**13**	**16**	**2.0**	**.23**	56	**.01**	**0**		**13**
ITALY	**2.8**	**15**	**82**	**73**	**1.6**	**26**	**.87**	*	**0**	24	13	**65**	**13**	**44**	**199**	**125**	**8.3**	**3.0**	9.9	**0**	**<.01**	**7.1**	
JAPAN	**2.0**	**24**	**19**	**8.6**	**.06**	**27**	**1.3**	1.6	**.13**	1.8	.89	**46**	**.56**	**13**	**29**	**17**	**.47**	**7.1**	1.5	**.03**	**.45**	**3.0**	**13**
KOREA	**.32**	**21**	**17**	**6.7**	**.01**	**30**	**8.3**	1.4	**0**	1.1	1.2	**57**	**.05**	**15**	**23**	**15**	**.50**	**17**	2.8	**.44**	**.13**	**.07**	**12**
MALAYSIA	**0**	**14**	**17**	**5.3**	**.02**	**14**	**5.5**	.53	**0**	0	.04	**43**	**3.5**	**16**	**11**	**6.3**	**0**	**28**	.27	**.19**	**.88**	**.03**	**7.3**
MEXICO	**69**	**11**	**12**	**5.3**	**1.8**	**50**	**53**	1.4	**3.0**	2.2	1.3	**104**	**0**	**3.3**	**18**	**11**	**.38**	**.03**	1.4	**.16**	**0**	**1.7**	**12**
NETHERLANDS	**5.8**	**62**	**164**	**221**	**5.8**	**46**	**11**	2.1	**.03**	1007	186	**109**	**.92**	**116**	**251**	**193**	**18**	**2.6**	36	**.08**	**2.2**	**16**	**91**
NEWZEALAND	**0**	**467**	**12**	**3.4**	**.01**	**41**	**42**	3.0	**0**	0	.09	**28**	**0**	**.05**	**10**	**12**	**0**	**6.0**	3.9	**.41**	**<.01**	**.58**	**23**
NORWAY	**.14**	**18**	**77**	**54**	**.93**	**38**	**7.6**	1.6	**0**	68	4.0	**293**	**0**	**316**	**46**	**85**	**17**	**1.6**	18	**.12**	**0**	**12**	**15**
PAKISTAN	**0**	**1.2**	**.93**	**.02**	**0**	**2.2**	**.05**	.14	**0**	0	0	**14**	**0**	**0**	**.52**	**.28**	**0**	**1.6**	0	**0**	**0**	**0**	**.06**
PERU	**5.6**	**2.8**	**4.3**	**.92**	**5.0**	**7.6**	**256**	.21	**81**	0	2.5	**10**	**0**	**1.2**	**2.4**	**2.0**	**0**	**0**	.46	**0**	**0**	**0**	**4.2**
PHILIPPINES	**0**	**11**	**29**	**5.6**	**.01**	**22**	**13**	1.5	**0**	0	.002	**90**	**0**	**5.7**	**21**	**13**	**0**	**28**	.04	**.22**	**.79**	**4.0**	**7.9**
POLAND	0	7.2	286	25	.07	9.7	6.6	1.5	0	11	459	112	5.4	72	72	119	16	.08	1506	.12	0	.53	16
PORTUGAL	**.52**	**16**	**43**	**80**	**120**	**31**	**.76**	2.0	**0**	0	5.3	**48**	**0**	**43**	**172**	**78**	**21**	**1.6**	2.1	**0**	**0**	**1.1**	**67**
RUSSIA	.83	16	175	13	.04	20	1.3	4.6	0	2977	163	63	0	267	72	44	27	.02	183	0	<.01	.38	8.7
SINGAPORE	**.01**	**39**	**30**	**7.9**	**.24**	**36**	**16**	2.1	**0**	6.5	1.2	**43**	**2.6**	**42**	**15**	**20**	**.25**	**82**	1.5	**.83**	**44**	**1.6**	**13**
SLOVAKIA	0	0	188	105	1.2	3.2	0	*	0	0	5118	50	0	0	4.0	4.9	0	0	93	0	0	0	118
SOUTHAFRICA	**<.01**	**10**	**9.2**	**6.3**	**.34**	**11**	**1.7**	.37	**0**	7.2	.52	**23**	**0**	**6.0**	**8.8**	**7.6**	**12**	**.07**	35	**.23**	**<.01**	**.37**	**4.9**
SPAIN	**82**	**12**	**41**	**59**	**21**	**19**	**7.4**	1.3	**3.9**	15	5.9	**48**	**0**	**31**	**133**	**90**	**4.5**	**.97**	4.0	**.003**	**<.01**	**2.2**	**32**
SWEDEN	**1.5**	**16**	**41**	**23**	**.39**	**22**	**8.4**	*	**.74**	1355	4.5	**402**	**0**	**928**	**30**	**44**	**4.0**	**1.1**	6.9	**.03**	**0**	**1.5**	**15**
SWITZERLAND	**1.3**	**19**	**135**	**47**	**7.3**	**36**	**6.1**	2.1	**.10**	35	14	**114**	**4.4**	**61**	**79**	**116**	**14**	**2.2**	13	**.31**	**.02**	**9.0**	**42**
THAILAND	**0**	**19**	**36**	**15**	**.05**	**24**	**11**	1.4	**0**	94	1.4	**81**	**.59**	**38**	**11**	**24**	**.84**	**77**	14	**1.8**	**16**	**1.1**	**16**
TURKEY	**0**	**17**	**179**	**17**	**.01**	**22**	**7.0**	1.9	**.01**	2.4	111	**83**	**2.6**	**.07**	**27**	**33**	**118**	**.09**	122	**.70**	**0**	**4.1**	**28**
U.K.	**4.1**	**38**	**71**	**39**	**1.1**	**42**	**17**	*	**.14**	44	17	**100**	**2.3**	**92**	**72**	**63**	**40**	**67**	8.2	**.13**	**.03**	**17**	**28**
U.S.A.	**82**	**32**	**23**	**12**	**3.6**	**44**	**40**	2.6	**29**	21	10	**38**	**.21**	**19**	**14**	**17**	**8.5**	**3.5**	17	**.18**	**.74**	**50**	**9.0**
VENEZUELA	.74	0	0	1.3	8.1	9.2	241	*	.001	0	0	.15	0	0	.91	.38	0	0	.66	0	0	0	1.1

Table 2 cont.

Destination \ Investor	JAPAN	KOREA	MALAYSIA	MEXICO	NETHRLNDS	N. ZEALAND	NORWAY	PAKISTAN	PERU	PHILIPPINES	POLAND	PORTUGAL	RUSSIA	SINGAPORE	S. AFRICA	SPAIN	SWEDEN	SWITZRLND	THAILAND	TURKEY	U.K.	U. S.	VENEZUELA
ARGENTINA	**.96**	**1.8**	**.08**	**.06**	**8.2**	**.24**	**17**	**0**	**2.3**	**0**	0	**0**	.83	**6.1**	**1.3**	**18**	**11**	**6.66**	**.001**	**.02**	**43**	**21**	650
AUSTRALIA	**28**	**10**	**15**	**.04**	**70**	**833**	**69**	**0**	**1.1**	**.16**	.06	**9.6**	5.4	**90**	**3.1**	**.17**	**27**	**19**	**38**	**.04**	**70**	**28**	0
AUSTRIA	**17**	**7.0**	**.19**	**.22**	**131**	**3.6**	**199**	**.91**	**0**	**0**	668	**71**	.52	**38**	**1.5**	**58**	**60**	**191**	**.04**	**.14**	**94**	**37**	0
BELGIUM	**14**	**6.4**	**.13**	**.45**	**131**	**2.1**	**140**	**0**	**2.0**	**.14**	1.2	**109**	1.1	**13**	**5.5**	**43**	**22**	**43**	**.45**	**.45**	**47**	**33**	.06
BRAZIL	**12**	**25**	**.36**	**3.6**	**78**	**1.5**	**71**	**0**	**2.3**	**.19**	.03	**782**	.25	**6.7**	**1.2**	**26**	**19**	**16**	**.04**	**.02**	**60**	**56**	0
CANADA	**14**	**4.3**	**.49**	**.20**	**27**	**18**	**42**	**0**	**4.2**	**.01**	.91	**14**	.24	**20**	**2.1**	**1.1**	**15**	**18**	**.31**	**.18**	**4.0**	**42**	0
CHILE	**3.2**	**4.9**	**.03**	**.19**	**44**	**.23**	**36**	**0**	**609**	**0**	.01	**0**	.02	**2.3**	**.08**	**19**	**7.7**	**7.6**	**.29**	**0**	**22**	**22**	0
CHINA	10	22	3.3	.14	15	.31	15	.01	0	.02	.03	3.8	.02	167	.26	4.4	6.4	3.4	1.8	.03	27	9.8	0
COLOMBIA	**2.9**	**3.8**	**.001**	**0**	**19**	**0**	**19**	**0**	**166**	**0**	0	**0**	1.7	**.50**	**0**	**1.1**	**8.0**	**4.5**	**.03**	**0**	**7.8**	**15**	0
CYPRUS	11	42	89	0	335	1.6	1073	0	0	0	454	0	6344	51	2.3	.84	202	800	.16	0	137	97	0
CZECH REP.	7.3	11	.42	0	65	.27	87	0	*	0	393	0	6.2	26	0	5.7	94	27	0	0	68	47	0
DENMARK	**18**	**11**	**4.7**	**0**	**92**	**8.2**	**455**	**0**	*	**0**	6.3	**71**	0	**19**	**3.8**	**1.8**	**162**	**26**	**<.01**	**.02**	**72**	**38**	0
EGYPT	**2.4**	**3.9**	**1.4**	**0**	**18**	**0**	**55**	**0**	**0**	**0**	0	**9.8**	1.2	**.38**	**22**	**.01**	**4.2**	**3.5**	**1.1**	**0**	**28**	**18**	0
FINLAND	**22**	**2.4**	**.40**	**.11**	**121**	**5.6**	**310**	**0**	*	**0**	.53	**91**	.07	**21**	**1.1**	**36**	**726**	**52**	**.01**	**.11**	**129**	**51**	0
FRANCE	**24**	**7.3**	**.55**	**.66**	**116**	**13**	**145**	**.15**	**11**	**.06**	9.6	**210**	.27	**23**	**2.7**	**103**	**59**	**69**	**2.4**	**.15**	**78**	**40**	0
GERMANY	**23**	**7.9**	**.84**	**.90**	**120**	**23**	**166**	**.05**	**15**	**4.2**	14	**280**	.53	**29**	**7.3**	**64**	**65**	**133**	**.99**	**4.5**	**100**	**41**	0
GREECE	**15**	**2.3**	**2.1**	**.15**	**97**	**.58**	**152**	**0**	**0**	**.44**	9.2	**14**	1.8	**13**	**4.4**	**4.8**	**50**	**26**	**.90**	**7.9**	**99**	**37**	0
H. KONG	**17**	**27**	**37**	**.02**	**54**	**8.1**	**31**	**.04**	**1.4**	**1.4**	0	**4.8**	.02	**168**	**.49**	**3.0**	**17**	**9.1**	**9.8**	**.26**	**53**	**18**	0
HUNGARY	**7.6**	**16**	**.14**	**0**	**123**	**2.3**	**164**	**0**	**0**	**0**	1502	**79**	0	**15**	**6.8**	**3.0**	**85**	**33**	**0**	**1.5**	**95**	**47**	0
INDIA	**10**	**23**	**2.5**	**.02**	**34**	**1.4**	**32**	**0**	**0**	**.34**	.002	**3.9**	.01	**219**	**.88**	**30**	**8.4**	**5.5**	**1.7**	**.04**	**39**	**27**	0
INDONESIA	**20**	**18**	**135**	**0**	**80**	**2.2**	**33**	**0**	**.24**	**.05**	0	**5.5**	0	**1361**	**.23**	**5.0**	**19**	**19**	**178**	**0**	**108**	**44**	0
ISRAEL	**7.8**	**4.7**	**.10**	**.14**	**48**	**1.3**	**51**	**0**	**0**	**0**	1.2	**1.7**	.04	**16**	**.73**	**.52**	**8.5**	**29**	**3.5**	**.16**	**35**	**79**	0
ITALY	**17**	**4.7**	**.34**	**.18**	**89**	**3.5**	**124**	**0**		**0**	8.0	**214**	.09	**25**	**1.4**	**56**	**37**	**36**	**4.1**	**.03**	**73**	**26**	0
JAPAN		**9.0**	**1.6**	**.29**	**48**	**38**	**72**	**0**	**1.6**	**.11**	.01	**21**	.01	**58**	**1.3**	**4.2**	**29**	**19**	**.99**	**.01**	**57**	**32**	.03
KOREA	**10**		**12**	**.06**	**55**	**3.4**	**76**	**0**	**.16**	**.11**	.14	**3.2**	.06	**204**	**.41**	**1.3**	**20**	**15**	**.52**	**0**	**77**	**35**	.01
MALAYSIA	**9.7**	**12**		**.32**	**41**	**3.7**	**38**	**0**	**.53**	**.08**	0	**.72**	.04	**899**	**.31**	**0**	**9.7**	**9.7**	**19**	**.08**	**52**	**19**	0
MEXICO	**5.0**	**8.7**	**.10**		**64**	**1.1**	**60**	**0**	**27**	**.07**	.004	**1.1**	.03	**19**	**1.0**	**27**	**20**	**26**	**.02**	**<.01**	**86**	**78**	0
NETHER.	**23**	**8.7**	**.46**	**5.0**		**12**	**141**	**0**	**11**	**3.8**	51	**237**	34	**18**	**1.8**	**55**	**59**	**85**	**.53**	**1.5**	**132**	**62**	0
NEW ZEALAND	**18**	**7.2**	**1.9**	**0**	**32**		**70**	**0**	**3.7**	**.09**	0	**0**	.33	**71**	**1.8**	**.11**	**28**	**11**	**.06**	**.05**	**51**	**31**	0
NORWAY	**17**	**7.9**	**.38**	**0**	**118**	**9.3**		**0**	**0**	**0**	3.9	**26**	.65	**18**	**1.3**	**10**	**426**	**37**	**<.01**	**.05**	**118**	**44**	0
PAKISTAN	**.10**	**1.3**	**0**	**0**	**8.4**	**0**	**.66**		**0**	**0**	0	**0**	0	**2.4**	**0**	**0**	**2.2**	**.26**	**0**	**.79**	**9.8**	**6.8**	0
PERU	**1.3**	**2.4**	**0**	**.43**	**8.9**	**0**	**8.8**	**0**		**0**	.23	**0**	.65	**.61**	**.37**	**2.3**	**8.0**	**3.6**	**0**	**0**	**21**	**10**	0
PHILIPPINES	**18**	**11**	**57**	**0**	**56**	**0**	**36**	**0**	**0**		0	**1.2**	0	**584**	**.16**	**3.1**	**13**	**13**	**16**	**0**	**79**	**46**	0
POLAND	4.8	12	.03	0	55	0	165	0	0	0		68	.84	8.2	.30	3.0	77	15	.01	0	51	23	0
PORTUGAL	**15**	**3.0**	**.08**	**1.0**	**120**	**.92**	**184**	**0**	**0**	**0**	23		3.9	**32**	**.75**	**409**	**31**	**22**	**<.01**	**.19**	**98**	**33**	0
RUSSIA	7.3	33	91	2.5	103	1.5	105	0	0	.59	13	5.4		6.2	1.8	0	122	37	.01	.32	69	43	0
SINGAPORE	**29**	**16**	**500**	**.01**	**98**	**18**	**72**	**0**	**1.5**	**12**	.01	**1.7**	.03		**4.7**	**.30**	**37**	**20**	**56**	**.01**	**110**	**47**	0
SLOVAKIA	0	23	0	0	0	0	1.7	0	*	0	1934	0	0	0		0	162	0	0	0	3.4	.19	0
S. AFRICA	**3.1**	**3.9**	**1.3**	**0**	**32**	**.53**	**30**	**0**	**.24**	**.02**	.34	**78**	.05	**5.7**		**.66**	**6.6**	**10**	**.01**	**.01**	**26**	**21**	.01
SPAIN	**13**	**4.9**	**.25**	**4.4**	**79**	**4.4**	**90**	**0**	**8.5**	**.03**	3.0	**1328**	.02	**23**	**.86**		**27**	**24**	**.07**	**.04**	**49**	**23**	<.01
SWEDEN	**17**	**2.4**	**.26**	**.05**	**92**	**9.3**	**348**	**.11**	*	**0**	.89	**31**	0	**33**	**1.9**	**6.3**		**29**	**0**	**.05**	**65**	**25**	0
SWITZERLAND	**23**	**7.8**	**.46**	**.65**	**100**	**13**	**151**	**.15**	**12**	**.93**	2.7	**46**	.16	**20**	**3.3**	**20**	**99**		**.46**	**.47**	**75**	**55**	0
THAILAND	**15**	**12**	**47**	**0**	**73**	**4.7**	**40**	**0**	**.46**	**7.8**	0	**.47**	0	**802**	**.45**	**.12**	**12**	**14**		**.003**	**92**	**29**	0
TURKEY	**9.0**	**15**	**.02**	**0**	**74**	**.58**	**128**	**0**	**0**	**.73**	283	**5.6**	11	**8.9**	**1.3**	**11**	**74**	**26**	**<.01**		**102**	**49**	0
U.K.	**27**	**9.3**	**8.1**	**1.3**	**134**	**72**	**161**	**.47**	*	**1.4**	2.0	**208**	.85	**73**	**164**	**23**	**81**	**39**	**.61**	**.30**		**46**	0
U.S.A.	**22**	**11**	**10**	**6.2**	**69**	**44**	**55**	**.02**	**51**	**2.9**	1.6	**37**	.77	**38**	**6.4**	**4.3**	**30**	**20**	**3.2**	**.75**	**28**		4.0
VENEZUELA	0	0	.63	0	320	0	.37	0	*	0	0	1060	0	0	1.2	3.9	<.01	1.8	0	0	17	11	

Table 3. Summary Statistics and Data Description

This table reports the mean and standard deviation for variables on the foreign investment weight and investment determinants used in the foreign investment regressions. The sample size is roughly 39 source countries by 39 destination countries for 17 annual points in time (2001-2017).

				Investment Level		
			Full Sample (N=20,396)	Very Low (N=10,352)	Moderate (N=8,559)	Very High (N = 1,485)
	Variable	Definition and Source	Mean S.D.	Mean S.D.	Mean S.D.	Mean S.D.
Information	Cross-list	Proportion of market capitalization of the destination country listed in the home country Source: Author survey	0.017 0.076	0.000 0.008	0.029 0.094	0.068 0.151
	Internet	Number of internet users per 100 people Source: World Bank	54.529 26.969	41.336 25.846	68.212 20.449	67.642 21.412
	Language	Dummy variable that equals 1 when two countries share a similar official language Source: CIA World Factbook	0.109 0.312	0.085 0.279	0.115 0.319	0.247 0.431
	Annual Returns	Past year and current year market returns Source: MSCI	0.032 0.130	0.041 0.147	0.025 0.107	0.021 0.122
Familiarity	Bilateral Trade	Ratio of total bilateral trade (Imports + Exports) between the holder country and destination country relative to the holder country's total imports and exports Source: Direction of Trade Statistics (DOT) from IMF	0.019 0.042	0.011 0.026	0.022 0.047	0.060 0.067
	Distance	Distance in kilometers between most populated cities of two countries Source: Mayer and Zignago (2011)	8.723 0.943	9.054 0.623	8.595 0.938	7.147 1.048
	Contiguity	Dummy variable that equals 1 when two countries are contiguous Source: Mayer and Zignago (2011)	0.043 0.202	0.012 0.107	0.032 0.177	0.319 0.466
	Colonial	Dummy variable that equals 1 when two countries have ever had a colonial link Source: Mayer and Zignago (2011)	0.036 0.186	0.023 0.149	0.049 0.216	0.052 0.222
	Unilateral Trade	Ratio of sum of import and export to GDP Source: World Bank	0.876 0.775	0.837 0.796	0.894 0.730	1.042 0.854

Table 3 cont.

Hedging motives	Correlation	Correlation of past year daily market returns of holder country and destination country Source: Datastream market indices	0.379 0.240	0.296 0.201	0.436 0.236	0.635 0.240
	RER Volatility	Standard deviation of monthly real exchange rate changes during the past 12 months Source: IMF	1.933 11.865	2.064 11.272	1.890 13.173	1.267 6.871
Transaction costs	Currency	Dummy variable that equals 1 when two countries use a common currency Source: de Sousa (2012)	0.065 0.247	0.007 0.084	0.082 0.275	0.372 0.483
	Stock Market Size	Ratio of market capitalization to GDP Source: World Bank	1.018 1.509	1.025 1.779	1.042 1.234	0.828 0.613
	Equity Controls	Index for average equity restrictions Source: Fernandez et al. (2016)	0.320 0.362	0.489 0.387	0.147 0.227	0.139 0.231
	Turnover	Ratio of annual total traded volume to market capitalization Source: Datastream	2.359 29.372	4.467 40.692	0.202 6.505	0.098 0.216
Governance	Investor Protection	Index based on the number of obstacles a controlling shareholder must overcome to complete a (hypothetical) self-dealing transaction successfully Source: Djankov et al. (2008)	0.532 0.239	0.556 0.243	0.509 0.230	0.491 0.244
	Rule of Law	Rule of law index Source: La Porta et al. (1998)	7.394 2.449	5.930 2.232	8.874 1.641	9.073 1.326
Domestic bias	Domestic bias	 Source: IMF CPIS	268.637 657.156	455.800 746.611	92.355 352.546	-20.060 907.324

Table 4. Summary Statistics for Cross-Listings

This table reports the average percent of equity listed in foreign markets for all pairs of home (listed down the first column) and host (listed across the first row) markets. The sample size is roughly 39 source countries by 39 destination countries for 17 annual points in time (2001-2017). Asterisks (*) denote investor/destination pairs with insufficient data.

Destination	ARGENTINA	AUSTRALIA	AUSTRIA	BELGIUM	BRAZIL	CANADA	CHILE	COLOMBIA	DENMARK	EGYPT	FINLAND	FRANCE	GERMANY	GREECE	HONGKONG	INDIA	INDONESIA	ISRAEL	ITALY
ARGENTINA		0	0	0	34	0	0.33	0	0	0	0	0	0	0	0	0	0	0	0
AUSTRALIA	0		0	0	0	1.3	0	0	0	0	0	0.74	9.1	0	0	0	0	0	0
AUSTRIA	0	0		0	0	0	0	0	0	0	0	3.5	20	0	0	0	0	0	0
BELGIUM	0	0	0		0	0	0	0	0	0	0	3.7	8.0	0	0	0	0	0	2.4
BRAZIL	5.7	0	0	0		0	0	0	0	0	0	3.2	0	0	2.3	0	0	0	0
CANADA	0	0.13	0	2.9	0.05		0.13	0.0001	0	0	0	0.82	0.03	0	2.2	0	0	0.01	0.12
CHILE	0	0	0	0	1.0	0		*	0	0	0	0	0	0	0	0	0	0	0
COLOMBIA	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
DENMARK	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
EGYPT	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
FINLAND	0	0	0	0	0	0	0	0	0	0		19	36	0	0	0	0	0	16
FRANCE	0	0	0	12	0	0.001	0	0	0	0	0		5.7	0	0	0	0	0	25
GERMANY	0	0	6.7	0.10	0	0	0	0	0	0	0	4.7		0	0.003	0	0	0	36
GREECE	0	2.6	0	0	0	0	0	0	9.2	0	0	0	0		0	0	0	0	0
HONG KONG	0	0.01	0	0	0	0.001	0	0	0	0	0	0	0	0		0	0	0	0
INDIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
INDONESIA	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
ISRAEL	0	0	0	0.04	0	0	0	0	0	0	0	0	0.06	0	0	0	0		0
ITALY	0	0	0	2.3	0	0	0	0	0	0	0	1.4	8.0	0	0.71	0	0	0	
JAPAN	0	0	0.40	0.12	0	0.72	0	0	0	0	0	1.8	9.0	0	0.21	0	0	0	0
KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALAYSIA	0	0.0004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NETHERLANDS	0	44	4.5	12	0	0	0	0	0	0	0	10	55	0	0	0	0	0.10	19
NEW ZEALAND	0	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORWAY	0	0	0	0	0	0	0	0	0.46	0	0	0	5.3	0	0	0	0	0	0
PAKISTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	0
PERU	0	0	0	0	0	0	2.2	0	0	0	0	0	0	0	0	0	0	0	0
PHILIPPINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PORTUGAL	0	0	0	0	0	0	0	0	0	0	0	0	6.8	0	0	0	0	0	0
SINGAPORE	0	6.2	0	0	0	0.0002	0	0	0	0	0	0	0.003	0	0.16	0	0	0	0
SOUTHAFRICA	0	0.40	0	5.1	0	*	0	0	0	0	0	0.50	1.6	0	0	0	0	0	0
SPAIN	18	0	0	0	6.6	0	0	8.1	0	0	0	6.5	20	0	0	0	0	0	9.5
SWEDEN	0	0	0	2.3	0	0.58	0	0	7.4	0	4.5	0.68	9.6	0	0	0	0	0	0
SWITZERLAND	0	0	0.49	9.1	0.08	0.01	0	0	0	0	0	7.5	20	0	0	0	0	0	0.15
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.K.	0	0.33	0.01	0.05	0	7.6	0	0	0.17	0	0	9.5	10	0	0.36	0.69	0	0.001	0
U.S.A.	0	0.32	0.32	4.1	2E-05	2.6	9.9	0	0	0	0.002	6.4	12	0	0.03	0	0	0.02	0

Table 4 cont.

Destination	JAPAN	KOREA	MALAYSIA	MEXICO	NETHERL.	N.ZEALAND	NORWAY	PAKISTAN	PERU	PHILIPPINES	PORTUGAL	SINGAPORE	SOUTHAFRICA	SPAIN	SWEDEN	SWITZER.	THAILAND	TURKEY	U.K.	U.S.A
ARGENTINA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.57	0	0	0.98	59
AUSTRALIA	4.7	0	0	0	0	30	0	0	0	0	0	0.15	0.97	0	0	9.0	0	0	20	26
AUSTRIA	0	0	0	0	0.03	0	0	0	0	0	0	0	0	0	0	0.03	0	0.26	0	5.2
BELGIUM	0	0	0	0	7.7	0	0.01	0	0	0	0	0	0	0	*	1.5	0	0	0	14
BRAZIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4	35
CANADA	4.0	0	0	0	2.9	0.02	0.01	0	0	0	0	0.0004	0.03	0	0.03	8.4	0	0	20	50
CHILE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9	22
COLOMBIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9
DENMARK	0	0	0	0	0	0	0.09	0	*	0	0	0	0	0	0.12	4.8	0	0	17	19
EGYPT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0
FINLAND	0	0	0	0	33	0	0	0	*	0	0	0	0	0	18	0	0	0	34	42
FRANCE	3.5	0	0	0	18	0	0	0	0	0	0	0	0	0.80	1.7	4.7	0	0	12	25
GERMANY	7.7	0	0	0	23	0	0	0	0	0	0	1.6	0	6.1	0.73	38	0	0	24	28
GREECE	0	0	0	0	0	0	0.71	0	0	0	0	0	0	0	0	0	0	0	64	25
HONG KONG	0.48	0	0	0	0	0	0.01	0	0	0	0	6.6	0	0	0	0	0	0	0.59	9.6
INDIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.7	4.6
INDONESIA	0	0	0	0	0	0	0	0	0	0	0	0.22	0	0	0	0	0	0	9.5	8.3
ISRAEL	0	0	0	0	0	0	0	*	0	0	0	0	0	0	0	0.15	0	0	6.7	43
ITALY	0	0	0	0	17	0	0	0	*	0	0	0	0	0.48	0	0.03	0	0	0	31
JAPAN		7E-05	0	0	3.1	0	0	0	0	0	0	0.79	0	0	0	2.3	0	0	18	15
KOREA	2.6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	17
MALAYSIA	1.4	0		0	0	0	0	0	0	0	0	4.4	0	0	0	0	0	0	3.4	0
MEXICO	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
NETHERLANDS	2.8	0	0	0		0	0	0	0	0	0	9.6	0	1.8	0.61	59	0	0	58	59
NEW ZEALAND	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	12
NORWAY	0	0	0	0	4.4	0		0	0	0	0	0.06	0	0	4.8	8.7	0	0	3.8	34
PAKISTAN	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
PERU	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	20
PHILIPPINES	0	0	0	0	0	0	0	0	0		0	0.07	0	0	0	0	0	0	0	0.002
PORTUGAL	0	0	0	0	7.1	0	0	0	0	0		0	0	0	0	0	0	0	9.6	27
SINGAPORE	0	0	0	0	0	0	0.01	0	0	0	0		0	0	0	0	0	0	0.02	0.89
SOUTHAFRICA	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1.6	0	0	20	11
SPAIN	6.5	0	0	0	13	0	0	0	0	0	1.3	0	0		0	16	0	0	23	65
SWEDEN	1.7	0	0	0	0.004	0	0.41	0	*	0	0	6.8	0	0		7.3	0	0	9.6	19
SWITZERLAND	6.7	0	0	0	3.0	0	0	0	0	0	0	0.22	0	0	4.6		0	0	20	32
THAILAND	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	0		0	0	0
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		20	7.7
U.K.	9.2	0	0	0.27	0.94	0.88	0.06	0	*	0	0	5.7	1.4	0	2.3	6.0	0	0		44
U.S.A.	7.1	0	0	0.20	11	0.0003	0.05	0	0	0	0	0	0.002	0	0.03	12	0	0	19	

Table 5. Determinants across the Foreign Investment Distribution

This table presents the results from OLS and quantile regressions of relative weight. OLS results are in column (1); Quantile regression results are in columns (3-5). The sample size is roughly 39 source countries by 39 destination countries for 17 annual points in time (2001-2017). Variable definitions are reported in Table 3. Standard errors clustered at the country-destination level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

			Quantile Regressions			
		OLS	50	70	92	95
Information	Cross-list	0.735	0.760***	0.968***	1.232**	2.640
		(0.484)	(0.154)	(0.221)	(0.568)	(2.764)
	Investor Internet	0.003**	0.002***	0.003***	0.004***	0.004***
		(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
	Destination Internet	0.002*	0.000	0.000	0.000	-0.000
		(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
	Language	0.302***	0.044***	0.072***	0.180**	0.262
		(0.107)	(0.010)	(0.018)	(0.090)	(0.281)
	Investor Returns	-0.054	0.044***	0.075***	0.090**	0.057
		(0.128)	(0.007)	(0.015)	(0.044)	(0.052)
	Investor Returns Lag 1 Year	-0.216	0.053***	0.071***	0.054	0.016
		(0.135)	(0.007)	(0.015)	(0.049)	(0.066)
	Destination Returns	0.033	0.026***	0.040**	0.104*	0.150
		(0.103)	(0.009)	(0.016)	(0.055)	(0.113)
	Destination Returns Lag 1 Year	-0.023	0.026***	0.037**	0.035	-0.068
		(0.123)	(0.010)	(0.019)	(0.056)	(0.064)
Familiarity	Bilateral Trade	2.947	0.477	1.342***	6.209***	7.746**
		(2.013)	(0.349)	(0.476)	(1.762)	(3.425)
	Distance	-0.199***	-0.058***	-0.108***	-0.278***	-0.377***
		(0.039)	(0.007)	(0.013)	(0.044)	(0.053)
	Contiguity	0.702***	0.462**	0.975*	2.599***	3.224***
		(0.241)	(0.186)	(0.503)	(0.420)	(0.672)
	Colonial	0.182	0.005	0.104	0.440	0.576
		(0.180)	(0.043)	(0.070)	(0.390)	(0.606)
	Investor Unilateral Trade	0.205***	-0.012**	0.023*	0.220***	0.310**
		(0.073)	(0.006)	(0.013)	(0.082)	(0.124)
	Destination Unilateral Trade	0.070**	0.010**	0.024***	0.067*	0.051
		(0.027)	(0.005)	(0.009)	(0.037)	(0.036)
Hedging motives	Correlation	-0.053	0.039***	0.054***	0.110**	0.149**
		(0.093)	(0.012)	(0.019)	(0.055)	(0.072)
	RER volatility	-0.001**	-0.000***	-0.000***	-0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Table 5 cont.

Transaction costs	Currency	0.448***	0.439***	0.506***	0.570***	0.660
		(0.156)	(0.063)	(0.101)	(0.162)	(0.412)
	Investor Stock Market Size	-0.114***	-0.005***	-0.025***	-0.100***	-0.130***
		(0.028)	(0.002)	(0.004)	(0.025)	(0.037)
	Destination Stock Market Size	-0.043***	-0.005**	-0.011**	-0.027**	-0.022
		(0.011)	(0.002)	(0.005)	(0.013)	(0.014)
	Investor Equity Controls	0.073	-0.001	-0.021*	-0.010	0.026
		(0.048)	(0.008)	(0.012)	(0.037)	(0.043)
	Destination Equity Controls	0.184**	0.014*	0.035**	0.108**	0.154***
		(0.078)	(0.008)	(0.014)	(0.042)	(0.057)
	Investor Turnover	-0.000	-0.000*	-0.000***	-0.000**	-0.001***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	Destination Turnover	-0.000	-0.000	-0.000	-0.000**	-0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Governance	Investor Protection	0.156*	0.005	0.033	0.132	0.184
		(0.093)	(0.014)	(0.024)	(0.102)	(0.145)
	Destination Investor Protection	0.060	-0.015	-0.014	0.035	0.104
		(0.113)	(0.010)	(0.018)	(0.062)	(0.076)
	Investor Rule of Law	-0.000	0.014***	0.013***	0.016***	0.013
		(0.010)	(0.002)	(0.003)	(0.006)	(0.009)
	Destination Rule of Law	-0.003	0.005***	0.003	-0.009	-0.012*
		(0.011)	(0.001)	(0.003)	(0.008)	(0.007)
Domestic bias	Domestic Bias	-0.000**	0.000***	0.000	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations		20,396	20,396	20,396	20,396	20,396
R-squared		0.192	0.143	0.156	0.160	0.161

Figure 1. The Frequency of Relative Weight

The figure shows the cumulative frequency of float-adjusted relative weight using the full 46-by-47 matrix of holdings. For the full sample of 27,428 observations, mean and standard deviation of relative weight are 0.82 and 17.49. The red circle shows the sample for relative weight equal to 0 (8,444 observations), while the dotted red line shows the sample for relative weight between 0 and less than the median 0.0275 (5,269 observations); combined these two very low investment levels have 13,713 observations with mean and standard deviation of 0.003 and 0.006. The solid blue line shows the sample for relative weight between 0.03 and 1; this moderate investment group has 11,504 observations with mean and standard deviation of 0.283 and 0.240. The dashed green line shows the frequency for relative weight greater than 1; for these very high investment levels there are 2,211 observations with mean and standard deviation of 8.73 and 61.06. The figure shows the cumulative frequency with float-adjusted relative weight winsorized at the 99th percentile value of 7.53.

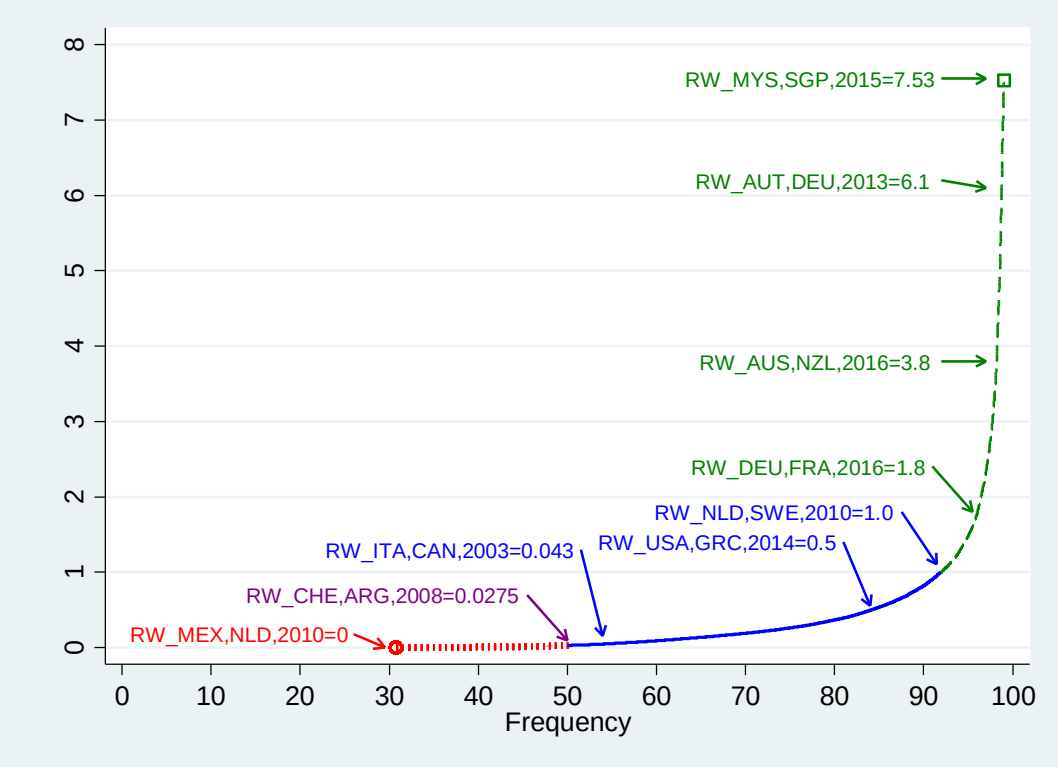
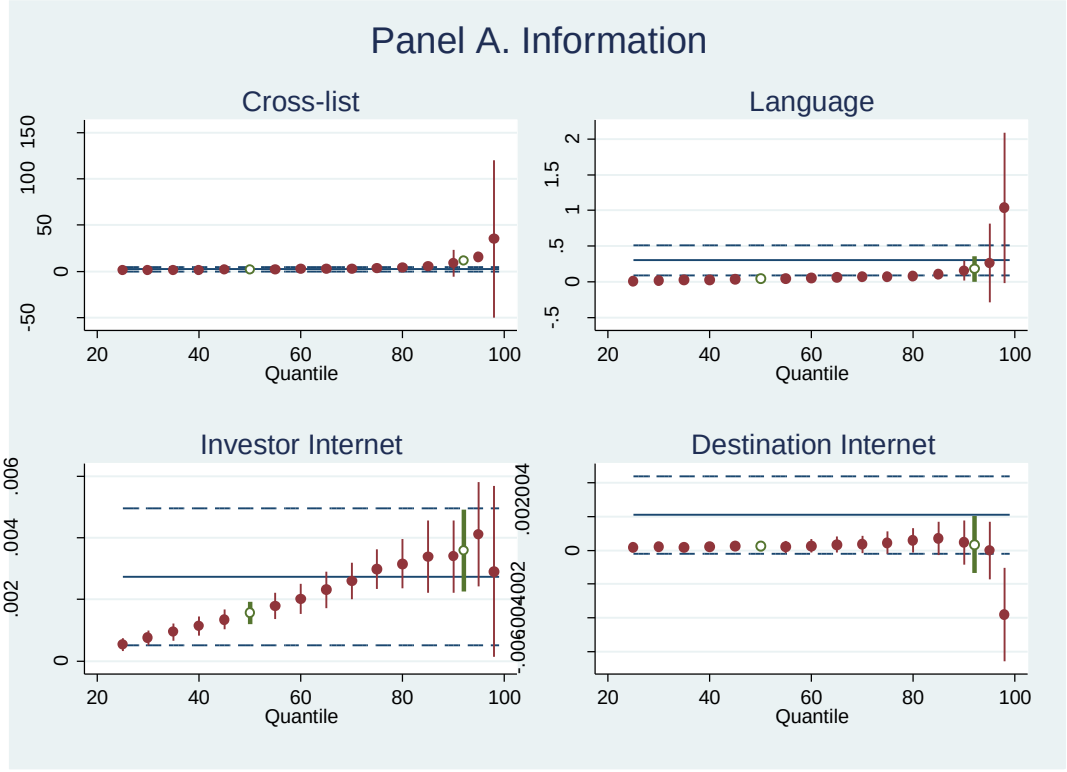
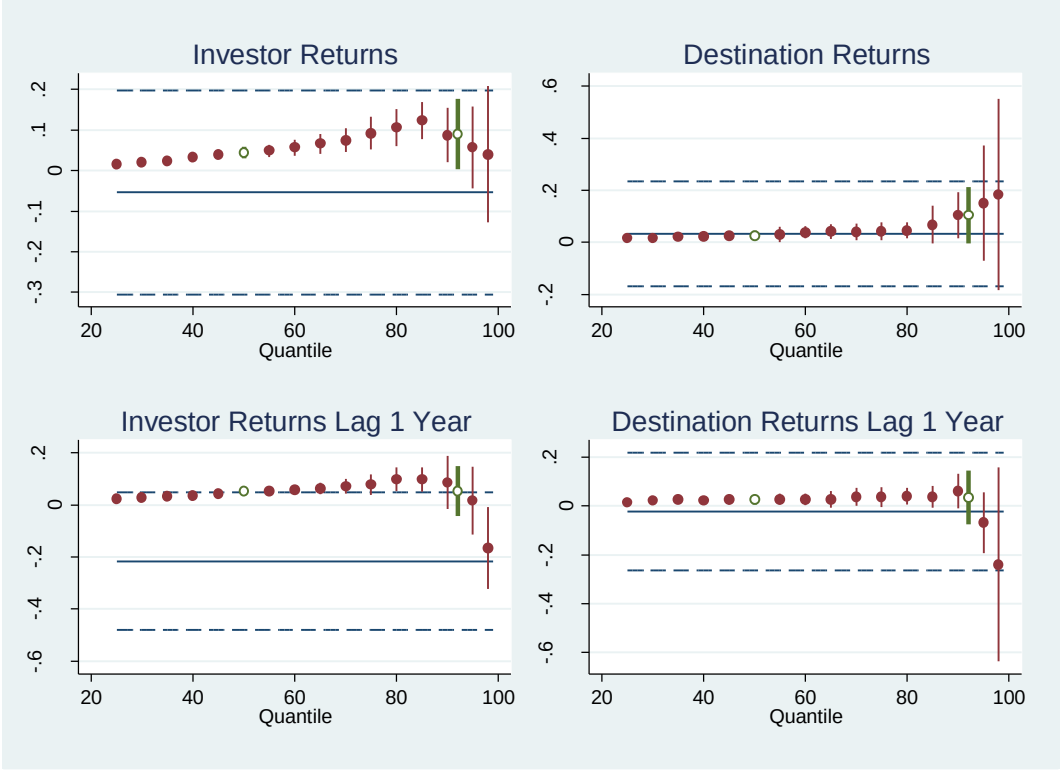
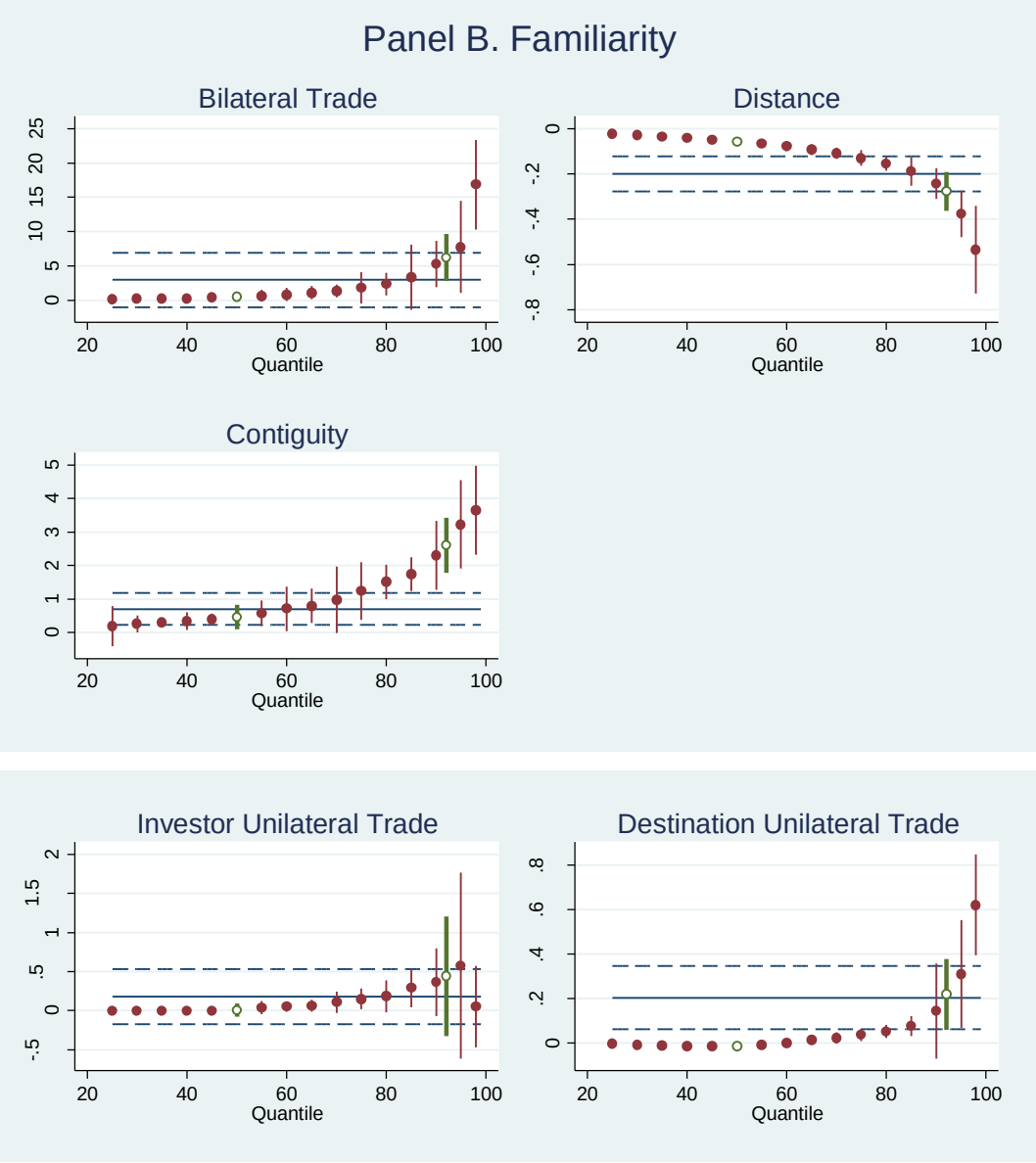


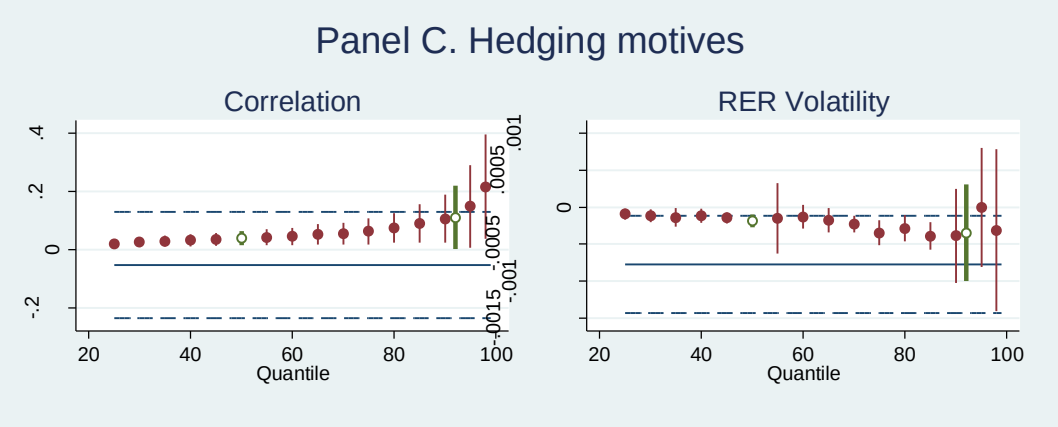
Figure 2. Determinants of Relative Investment Weight

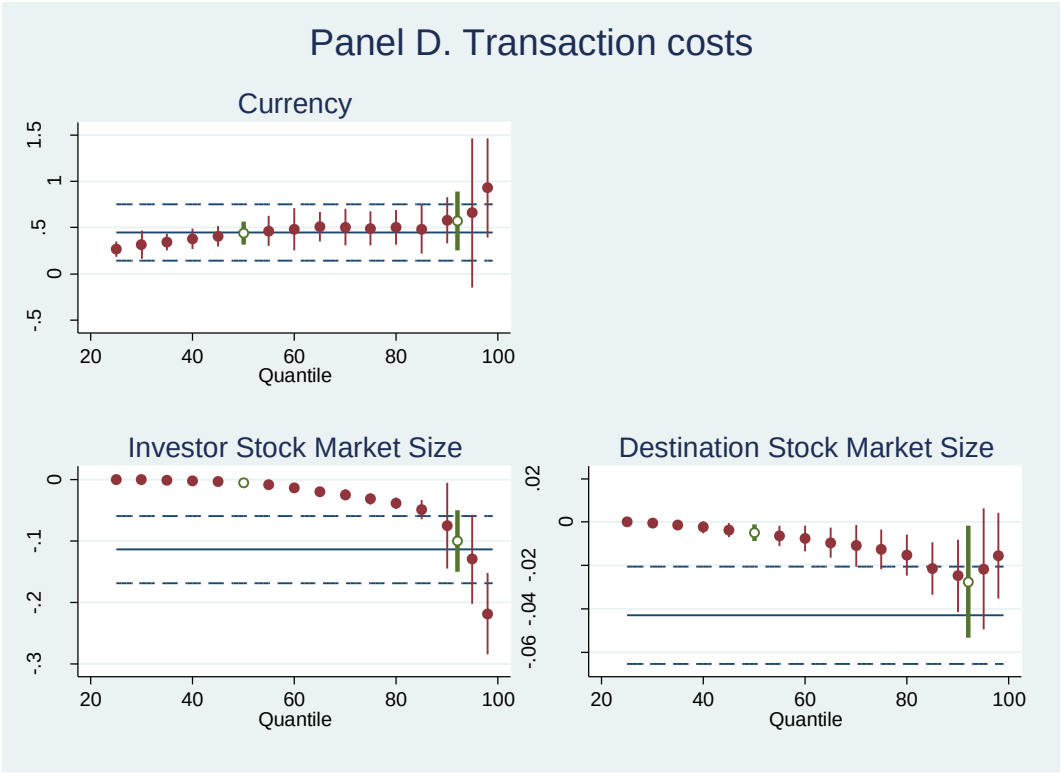
The figure shows results from a regression of float-adjusted relative investment weight on proposed determinants. Each subplot shows coefficient estimates from a quantile regression and 95% confidence bounds for the 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 92, 95, and 98 quantiles. Quantile coefficient estimates at the 50 and 92 quantile (corresponding to previous buckets) are shown in dark green. The solid horizontal line in each subplot shows the coefficient estimate from a full sample OLS regression, and the dashed line shows the associated 95% confidence bound. All standard errors are clustered at the investor-destination pair. Panel A shows results for variables for information barriers. Panel B shows results for the proxy variables for familiarity barriers. Panel C shows results for hedging motives. Panel D shows results for transaction cost variables. Panel E shows results for governance determinants.

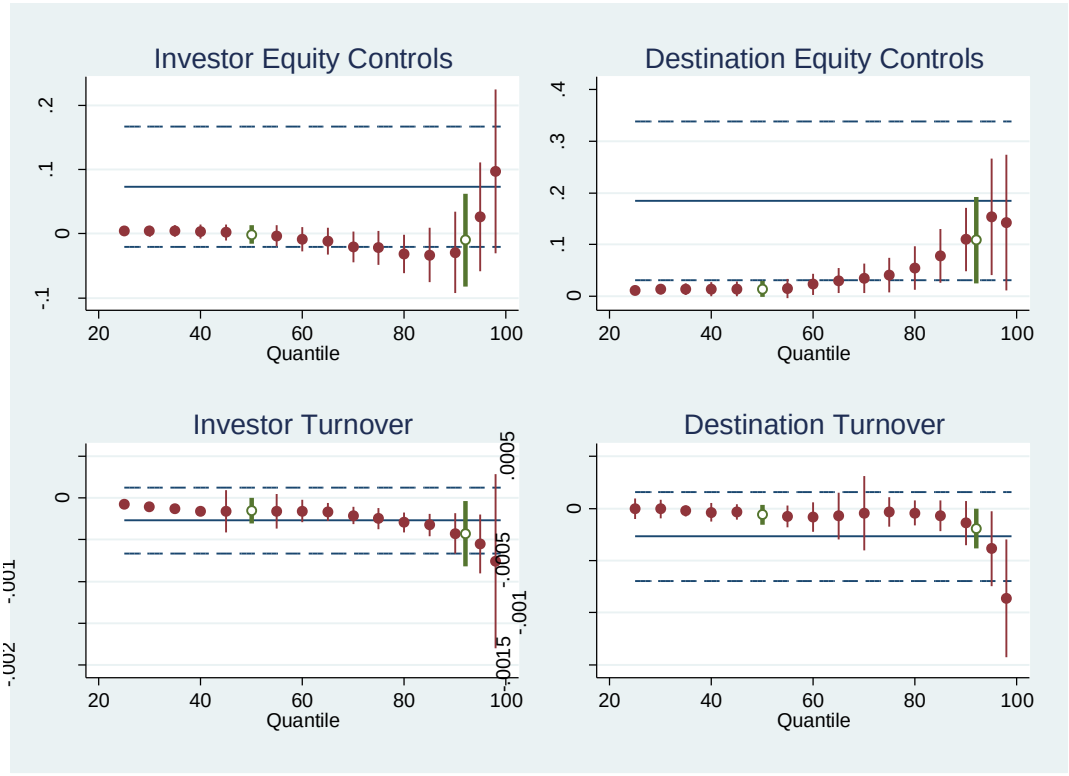

Panel A. Information
Cross-list
-50
0
50
100
150
20
40
60
80
100
Quantile
Language
-.5
0
.5
1
1.5
2
20
40
60
80
100
Quantile
Investor Internet
0
.002
.004
.006
-.006
-.004
-.002
0
.002
.004
20
40
60
80
100
Quantile
Destination Internet
0
20
40
60
80
100
Quantile

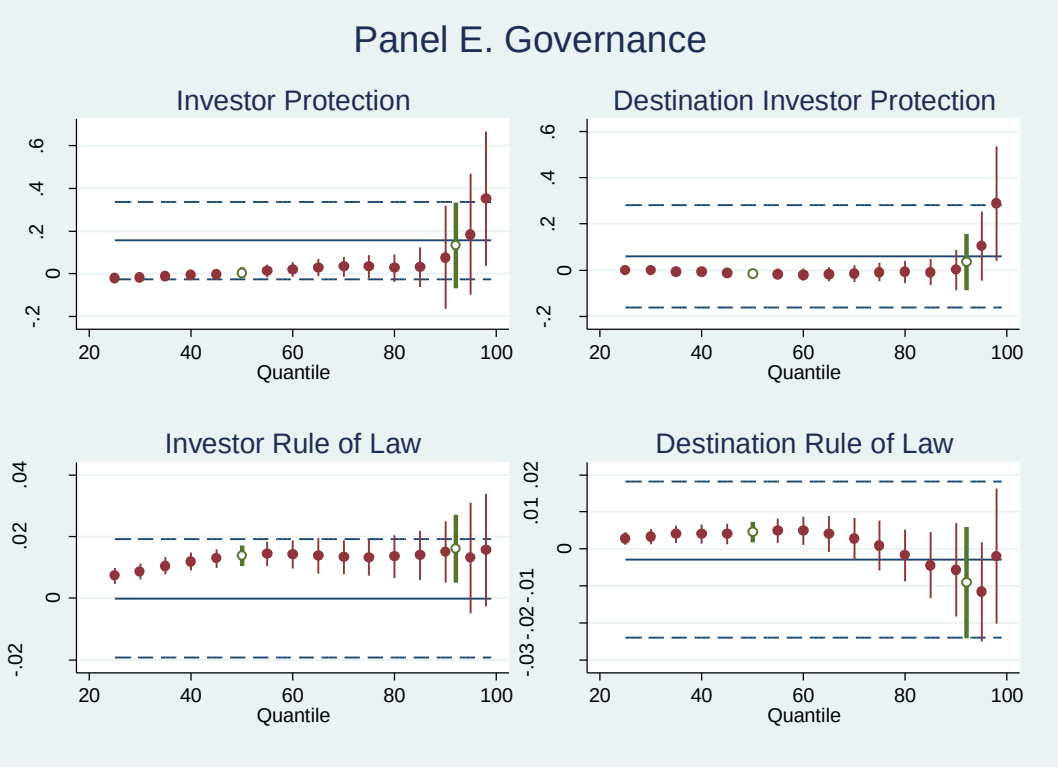

Investor Returns
-.3
-.2
-.1
0
.1
.2
20
40
60
80
100
Quantile
Destination Returns
-.2
0
.2
.4
.6
20
40
60
80
100
Quantile
Investor Returns Lag 1 Year
-.6
-.4
-.2
0
.2
20
40
60
80
100
Quantile
Destination Returns Lag 1 Year
-.6
-.4
-.2
0
.2
20
40
60
80
100
Quantile


Panel B. Familiarity
Bilateral Trade
0
5
10
15
20
25
20
40
60
80
100
Quantile
Distance
0
-.2
-.4
-.6
-.8
20
40
60
80
100
Quantile
Contiguity
0
1
2
3
4
5
20
40
60
80
100
Quantile
Investor Unilateral Trade
-.5
0
.5
1
1.5
2
20
40
60
80
100
Quantile
Destination Unilateral Trade
0
.2
.4
.6
.8
20
40
60
80
100
Quantile


Panel C. Hedging motives
Correlation
RER Volatility
-.2
0
.2
.4
-.0015
-.001
-.0005
0
.0005
.001
20
40
60
80
100
Quantile
0
20
40
60
80
100
Quantile


Panel D. Transaction costs
Currency
Investor Stock Market Size
Destination Stock Market Size
Quantile


Investor Equity Controls
Destination Equity Controls
Investor Turnover
Destination Turnover
Quantile


Panel E. Governance
Investor Protection
Destination Investor Protection
Investor Rule of Law
Destination Rule of Law
Quantile
Quantile
Quantile
Quantile