The Coming Wave: Where Do Emerging Market Investors Put Their Money?

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Abstract

Using country-level and institution-level data, we find the "coming wave" of emerging-market (EM) investors systematically over- or underweight their equity portfolio holdings in a way that reflects the influences of past capital and trade flows from a foreign country. We interpret this finding as support for the information endowment hypothesis of van Nieuwerburgh and Veldkamp (2009). Strong past capital and trade flows create an information advantage that lead EM investors to overweight disproportionately a given foreign market even relative to developed-market investor counterparts. We also pursue predictions of the information endowment hypothesis by constructing novel information-advantage proxies based on relationships among investment firms and the headquarters of their parent companies. These proxies also offer reliable explanatory power for international portfolio allocations.

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1. Introduction

Emerging markets are playing an increasingly prominent role in global finance, with outflows of financial capital from them rapidly gathering momentum. From 2000 to 2016, foreign exchange reserves of these economies increased by $5.5 trillion, with about half of this buildup accounted for by China. These economies are now increasingly liberalizing private outflows rather than accumulating more low-yielding assets on central bank balance sheets. Rising domestic incomes have increased private sector demand for foreign investments, both for diversification purposes and for the acquisition of higher-quality assets. Institutional investors such as mutual funds, pension funds, and insurance companies are creating ever more avenues for portfolio diversification through outward investments. These factors, along with continued capital account liberalization and domestic financial market development, are likely to lead to further increases in private capital outflows from emerging markets, something we will call the "coming wave."

Portfolio outflows from emerging markets are still relatively small but growing rapidly. Figure 1 shows using official data on international investment positions that emerging markets' external portfolio equity increased from less than $100 billion in the early 2000s to $905 billion in 2016. The share of foreign holdings of U.S. equities accounted for by emerging market investors rose sharply from 5 percent in 2005 to 13 percent in 2013, before dropping back to 10 percent by 2016. Our goal in this paper is to characterize comprehensively—to the best of our knowledge for the first time—the global allocation of foreign portfolio equity assets of emerging market investors. We conduct our analysis using country-level investment positions based on the IMF's Coordinated Portfolio Investment Survey (CPIS) and using institution-level holdings data based on FactSet Ownership (formerly known as "Lionshares").

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We study the behavior of institutional investors given their importance in intermediating portfolio flows. Prior research on cross-border equity investment patterns of institutional investors has almost entirely focused on investments among developed markets or from developed to emerging markets. For instance, an earlier study by Chan, Covrig, and Ng (2005) examined the extent of foreign bias in mutual

fund equity allocations of 26 source countries that include only a couple of emerging markets. In another related paper, Ferreira and Matos (2008) examine which firms attract institutional investors from around the world using a dataset that has mostly developed and 3 emerging market source countries. We use the existing body of research as a point of departure but emphasize the novelty of our analysis as one of the first attempts to examine investments *from* emerging markets.[1]

A basic theoretical benchmark is that investors in all countries, including emerging markets, should hold the same market capitalization-weighted basket of major stock market indexes—the world market portfolio. But a large body of research in international finance has documented that this benchmark is violated in two dimensions. First, investments in the home market are disproportionately favored, such that the "home bias" is a pervasive phenomenon.[2] Second, a substantial fraction of the aggregate outward portfolio investment reveals systematic over- and underweightings across countries—the so-called "foreign allocation bias"—that tend to be driven by factors such as geographic proximity, linguistic similarity, cultural ties, and other factors that reflect a "familiarity" bias.[3]

In this paper, we focus on the foreign bias to study foreign portfolio investment patterns among emerging market investors. We specifically define the foreign allocation bias as the extent to which international portfolio allocations across destination countries deviate from their respective market-capitalization weights in the world market portfolio. We find emerging market investors' allocations on average exhibit significantly greater overall foreign allocation biases in *absolute* magnitudes and higher country concentrations than those in developed markets.

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[1] Other studies on the determinants of foreign investments are mostly based on data for developed markets. Insider holding and corporate governance have been found to limit investments by foreign investors (Dahlquist, Pinkowitz, Stulz, and Williamson, 2003). Information asymmetry leads to lower foreign investment (Brennan and Cao, 1996). Investors' behavioral biases make them view foreign assets mainly as vehicles for placing risky bets, often resulting in poor portfolio performance (Bailey, Kumar, and Ng, 2008). Investors avoid investing in countries with less liquid financial markets (Karolyi, Lee, and Van Dijk, 2012). Bartram, Griffin, Lim, and Ng (2013) show the effects of institutional ownership on correlations of asset prices across the world.
[2] See, for example, French and Poterba (1991), Bohn and Tesar (1996), Baxter and Jermann (1997), Coval and Moskowitz (1999), and Ahearne, Griever, and Warnock (2004). For a survey of the home bias literature, see Lewis (1999).
[3] See, among others, Portes and Rey (2005). Karolyi and Stulz (2003) position the literature on the home bias relative to theories on international portfolio choice. See Cooper, Sercu, and Vanpeé (2013) for a more recent survey of home/foreign bias papers.

Our empirical work is anchored in the concept of information immobility proposed by van Nieuwerburgh and Veldkamp (2009). Rather than relying on information asymmetries, which should in principle decline over time, their theoretical model recognizes that investors face a choice in deciding about which assets to acquire information when there are multiple risky assets in the investment opportunity set. For instance, investors have a comparative advantage in learning about their domestic assets. Even as information about foreign markets becomes easier to obtain, an initial information endowment leads investors to exert more effort in acquiring additional information about domestic assets, magnifying their comparative advantage. Similarly, investors would prefer to invest in foreign countries where they had initial information endowment. This helps to rationalize the persistence of home bias and a further prediction about where foreign biases are most acute. Given investors in developed markets presumably have better channels for information processing, our analysis of emerging markets' outward investments and the comparison of emerging versus developed market investors together offer a more powerful test of the information endowment hypothesis than the literature to date.

While the information endowment hypothesis provides a useful lens for analyzing international portfolio allocations, other theoretical models have been used to study alternative types of international investments. For instance, Mariassunta and Laeven (2012) show that cross-border flows in the market for syndicated loans are affected by an increase in the home bias of lenders when their home countries experience financial distress. Caballero and Simsek (2017) examine how reach-for-safety and reach-for-yield interact in influencing flows between developed and emerging markets. It is not feasible to nest such models in a way that we can test them against one another, especially since they mostly capture home-versus-foreign allocations rather than foreign allocation bias. We use the information endowment hypothesis as our interpretive framework mainly because it is relevant to portfolio equity flows and generates some clear predictions to distinguish between the foreign allocation patterns of emerging market and developed market investors. Moreover, it has specific testable implications not just at the macro but also at the micro levels, allowing us to construct tests of this theory using our institution-level data.

We propose empirical proxies on a country level and on an institutional investor level to detect possible emerging market investors' information endowments for a particular destination country for their outbound investments. On a country level, the proxies are historical foreign direct investment (FDI) and trade flows between the home and destination country for outward portfolio investments.[4] Such historical FDI and trade flows typically result in business contacts and investment relationships that could serve as a source of the initial information endowment. We focus on trade as the main source of information endowment and complement that with FDI flows, which have become dominant in gross inflows into emerging markets and which are more likely to have information content for those countries' institutional investors.[5] The prospect of endogeneity problems and omitted variable bias contaminating our results in a systematic way is alleviated in part by our use of historical trade and FDI flows (in the decade before the beginning of our sample) as measures of information endowment.

On an institutional investor level, we propose new empirical proxies for information endowments by exploiting the granularity of the FactSet Lionshares data. Many emerging market-based investment institutions are foreign subsidiaries of parent institutions headquartered abroad. Through corporate relationships between parent and subsidiary units, these subsidiaries may build up information endowments on their parent institutions' home country and on "peer" countries where their parent institutions have set up other foreign subsidiaries. Many developed market institutions have similar corporate relationships of course, but these institutions presumably rely less on information endowments for their investment decisions since they are typically more mature than emerging market institutions and have better access to other sources of information.

We find reliable evidence in support of the information endowment hypothesis. More importantly, information endowments show themselves to play a bigger role in explaining the investment patterns of emerging market allocations relative to those of developed markets and to institutional investors domiciled

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[4] FDI as an information endowment proxy was used by Andrade and Chhaochharia (2010), drawing on theories of Razin, Sadka and Yuen (1998, 1999) and Goldstein and Razin (2006). As a motivation for the second proxy, Lane and Milesi-Ferretti (2008) find that bilateral trade in goods and services is an important determinant of cross-border portfolio equity holdings.
[5] See Prasad (2012).

in developed markets. The results generally remain significant when we use additional tests to examine the investment patterns of specific institutional investors using information endowment proxies based on the location of the parent company of emerging market institutional investors that are foreign subsidiaries and the location of other foreign subsidiaries of the parent company. Both of these proxies turn out to be important determinants of the allocation patterns of emerging market institutional investors. By contrast, similar proxies have less influence on the allocations of developed market institutional investors.

We also find that the information endowment proxies are more important in explaining emerging market portfolio allocations when those portfolios are more concentrated. This finding is consistent with van Nieuwerburgh and Veldkamp's (2009, 2010) concept of information advantage where investors who can first collect information systematically deviate from holding a diversified portfolio. These findings are also consistent with those of Choi et al. (2014) who find that—as suggested by the information advantage model—institutional investors with higher industry and country concentration in their investment allocations exhibit better portfolio performance. We find that emerging market countries that have sustained restrictions on portfolio equity outflows, and which therefore have continued to maintain weaker connections to global financial markets, do rely more on information endowments for their portfolio allocation decisions. Finally, we examine another ancillary implication of van Nieuwerburgh and Veldkamp's (2009) model, which is that the information endowment effect is more important when the investment destination country is larger. In principle, the channels for securing an information advantage should become more important in affecting portfolio allocations when the incentive to use this information, as measured by the size of the destination market, is larger. However, we do not find conclusive evidence to support this hypothesis.

Our paper is most closely related to the work of Andrade and Chhaochharia (2010) and Chan, Covrig, and Ng (2005). But it contributes to the larger debate on determinants of foreign portfolio choice. Brennan and Cao (1997) discuss how information endowments help explain the sensitivity of U.S. investors' portfolio allocations to return differentials between U.S. and foreign markets. Chitu et al. (2014)

find that U.S. investors' holdings of foreign bonds reflect a "history effect," with investors' holdings seven decades earlier influencing their current holdings. One key distinguishing feature that separates our work from these is our signature focus on emerging markets as *source* countries for portfolio investments which, in turn, also allows us to construct and implement new ancillary tests of the information endowment hypothesis. Kang and Stulz (1997), Ahearne et al. (2004), and Gelos and Wei (2005) associate the home/foreign biases revealed in foreign allocations to firm and country characteristics in the target market. Grinblatt and Keloharju (2001), Hau (2001), Choe et al. (2005), Dvorak (2005), Massa and Simonov (2006), and Ke et al. (2012) emphasize the role of common firm/country attributes of the source countries of investors and of destination countries for their investments toward understanding familiarity-driven or informational asymmetry factors, in general (and thus not necessarily in the context of theories of information endowments or information immobility).

We acknowledge two contemporaneous papers that also draw on the theory of van Nieuwerburgh and Veldkamp (2009). Schumacher (2018) uncovers how mutual funds in their foreign investment choices overweight industries that are comparatively large in their domestic markets with which they are well familiar and he reveals superior investment performance that arises for them. He, like us and like Choi et al. (2014), motivates this industry-based link as a source of information advantage. Bekaert et al. (2015) study international equity allocations of 3.8 million individuals in 401(k) plans in the U.S. showing enormous cross-individual variation, strong cohort effects by age and geographic location within the U.S., and the critical influence of financial advisors. The authors associate the individual investor's heterogeneity in preferences or background to familiarity and information asymmetry effects.[6]

This paper is organized as follows: Section 2 presents our data and methodology. Section 3 explores the patterns in foreign allocation bias. Section 4 describes the factors affecting emerging market countries'

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[6] Bekaert et al. (2015) compare the magnitude of foreign biases among individual investors across the U.S. based on their working for international versus domestic firms to those in Brown et al. (2015) of an in-state equity bias for state pension plans in the U.S.

external portfolio allocations while Section 5 examines the information endowment hypothesis in that context. Section 6 discusses extensions and Section 7 concludes.

2. Data and Methodology

2.1 Data

We use two sources to construct data on country-level external portfolio investment stocks. The first is the IMF's Coordinated Portfolio Investment Survey (CPIS), which provides data on aggregate bilateral portfolio equity holdings for most major developed and emerging markets. This dataset has been employed in previous studies, mostly analyzing portfolio allocations of developed economies.

The second, and relatively more novel, source that we use is FactSet Lionshares, which covers tens of thousands of security-level domestic and international holdings of institutional investors (mostly mutual funds and investment companies) around the world. Lionshares contains two main databases: aggregate institutional filings (similar to 13F in the U.S.), and a mutual fund holdings database (similar to N-CSR mutual fund filings in the U.S.).[7] Lionshares provides the number of shares held by a fund or institution, as well as the total number of shares outstanding for each stock at a point in time. In order to maximize data coverage, we use the institutional database as our primary source but incorporate additional ownership data from the fund database if the parent institution's holdings are not in the institutional ownership database. We carry the holdings information forward to the next available report date for up to three quarters. We complement this with Thomson Reuters' Datastream for source and destination country index returns.

Both of our investment holdings datasets have their strengths and weaknesses. CPIS is based on reporting by country authorities and does not contain data for a few important countries such as China as a source country. However, China does appear in the dataset as a destination country since other countries that report to the CPIS include it in their own portfolio asset allocations. Lionshares provides broader country coverage, including China, although the coverage of institutions in some emerging markets is

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[7] We follow the procedures outlined in Ferreira and Matos (2008) and Bartram, Griffin, Lim, and Ng (2015) for cleaning this dataset and augment that with other standard checks for 13f filings. We obtain the historical FactSet Lionshares database that is free from survivorship bias. FactSet Ownership compiles publicly available information, including filings obtained in various countries supplemented by companies' annual reports.

limited, especially in the early period of the sample. By analyzing both sets of data, which no other authors have done, we aim to provide a more comprehensive and reliable picture of patterns of international equity allocations of emerging markets. Some authors have used the EPFR dataset to examine institutional investor allocations but that dataset does not include institutions based in emerging markets.

We start with a sample of 53 source countries from CPIS, classified into 26 developed markets and 27 emerging markets based on the Morgan Stanley Capital International (MSCI) Market Classification framework as of 2011. Nine other emerging market countries appear only as destination countries. We dropped Luxembourg from our dataset since, as a small but prominent financial center, it is an obvious outlier in our sample. Appendix A lists the countries in CPIS and shows how we classify them. Panel A of Appendix B shows the availability of CPIS data on source country-destination country pairs, where the source countries are limited to the group of emerging markets. We dropped countries that had no data or had spotty missing data in certain years. The total number of country-pair-year observations after applying these screens is 9,717, resulting in an average of 883 observations per year (a source-country destination-country pair with data available for a given year counts as one observation). About two-third of the observations (6,335) indicate positive holdings. The CPIS distinguishes between zeroes and missing observations, so the remainder (3,382 observations) constitutes true zero holdings.

Panel B of Appendix B shows the extent of institutional coverage provided by FactSet Lionshares. Over the period 2001-2011, the average number (per year) of institutional investors based in developed markets is 2,833 while the corresponding number for emerging markets is 73. The coverage of institutional investors in both sets of countries increases over time, with 3,330 institutions in developed markets and 151 in emerging markets in 2011. The bottom rows of this panel show the number of institution-destination country observations by year for institutions based in emerging markets. The total number over the full sample is 9,970 observations (an average of 906 per year). If we assume that the non-reported institution-destination country observations represent zero investments rather than missing observations, we add 34,510 observations (an average of 3,137 per year) to yield a total of 44,480 observations (average of 4,044

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per year). While it is plausible that missing observations are in fact zeroes, in the empirical work we will examine the sensitivity of the results to this assumption.

In Table 1, we examine the representativeness of the institutional-level data. The first column of the table shows, for the last five years of the sample (2007-2011), the total foreign investments of all institutions located in a source country in the Lionshares dataset as a fraction of the total foreign investments of that country reported in the CPIS dataset. The mean ratio is 0.29 and the median is 0.11 for the emerging market source countries in our sample. The corresponding mean and median for developed market source countries are 0.28 and 0.20, respectively. The coverage of emerging markets' investments in just the U.S. is lower (mean of 0.16 and median of 0.04) both relative to emerging markets' investments worldwide and relative to developed countries' investments in the U.S. (mean of 0.32 and median of 0.23). One implication of these numbers for emerging markets is that, despite the small number of institutions that Lionshares covers in these countries, the coverage of this database is similar to that for developed markets (assuming that the CPIS data are a good measure of actual total external portfolio allocations). Another implication is that using Lionshares and similar datasets and focusing only on the U.S. as a destination country for EM portfolio investment would provide at best a more limited picture.

< INSERT TABLE 1 HERE>

We collected data on bilateral FDI, one of our key information endowment proxies, from the website of the United Nations Conference on Trade and Development. Bilateral export and import data are available from the IMF's Direction of Trade Statistics. We use the version of these data provided by Andrew Rose at http://faculty.haas.berkeley.edu/arose/ (Rose and Spiegel, 2011). Data for the country characteristics used in our study are from Rose (2005) and Karolyi (2015). Appendix C contains a detailed description of all variables used in our empirical analysis.

We also hand-collected information from websites to create information endowment variables based on subsidiary-parent relationships. For each of the emerging market and industrial country institutional investors in FactSet Lionshares, we started by using institution names to uncover evidence of

subsidiary-parent relationships. Based on the names, we use two different information sources, Hoover (for U.S. based institutions) and Bloomberg (for institutions in all other countries), along with Google searches on the websites on the specific institutions. Using these sources, we were able to determine whether a fund management institution is a foreign subsidiary of a parent institution in another country. If it is a foreign subsidiary of a parent institution, then we would identify the name of and location where the parent institution is domiciled. Based on the search results, we identify other countries where the parent institutions have other foreign subsidiaries. These classifications are available from the authors upon request.

The total number of unique institutions in the Lionshares dataset is 3,481. Of these, 486 have parents and 331 have peers that are also foreign subsidiaries. There are about 236 unique parent institutions in the dataset, so on average each of these has about 2 institutions in the dataset that consider them to be their parent institution. Among institutions with peers, the average number of peer institutions in the dataset is 4.57. Of the institutions with peer subsidiaries, the ten largest institutions have an average of 6 peer institutions each. Not surprisingly, larger institutions tend to have subsidiaries in more countries.

2.2 Methodology

We begin with a simple cross-country regression framework to examine international portfolio allocations. The basic regression equation is:

$$I_{i,j,t} = \alpha + \gamma_1 C_{j,t}^1 + \cdots + \gamma_n C_{j,t}^n + \varepsilon_{i,j,t}.$$

The independent variables, denoted by $C_{j,t}$, represent destination country characteristics. The dependent variable $I_{i,j,t}$ is defined as the "excess investment" by investors in source country *i* in destination country *j* at time *t*. This is given by the share of country *i*'s total external portfolio allocation accounted for by country *j,* with this share then expressed as a difference from a benchmark ratio.

The baseline benchmark ratio is a traditional measure used in the literature on international portfolio allocation: *world market portfolio*, which equals the stock market capitalization of destination country *j* scaled by world stock market capitalization (where "world" excludes country *i*). This benchmark is based on the concept that investors in every country should in theory hold the market capitalization-

weighted world portfolio. Excess investment in a particular country is then a measure of how much investors in a given home country overweight or underweight investments in a particular destination country relative to that benchmark.

We use a set of control variables that draws on various literatures, including the so-called "gravity approach" to modeling trade and financial flows. They can be divided into the following categories: *Gravity variables*, such as distance, common border, and common language; *Market depth*, including the ratio of market capitalization to GDP, market turnover, and transaction fees in the destination countries; *Returns-based measures*, such as the differences in stock market returns between destination and source countries in the past year, and return correlations between the source and destination countries over the past five years; *Market integration variables*, which include ownership restrictions on foreign investors, and currency convertibility limits in the destination countries; and, *Governance indicators*, including regulatory burden, and rule of law in the destination countries. All of the regressions include year, source country, and destination country fixed effects. We also allow for robust standard errors with double clustering by destination country and year.

Our empirical evaluation of the information endowment hypothesis involves examining how past inflows of FDI into an emerging market (indexed by *i*) from a particular foreign country (indexed by *j*) affect portfolio investment from that emerging market into that specific foreign country. Alternatively, the information endowment could be created by a historical trading relationship as proxied by the share of the emerging market's past trade accounted for by a particular foreign country. More specifically, we ask if bilateral FDI inflows (from country *j* to country *i*) or bilateral trade (between country *j* and country *i*) during a reference period (1991-2000) influence portfolio investment in the reverse direction (from country *i* to country *j*) during a subsequent period (2000-2011). The regression equation then becomes:

$$I_{i,j,t} = \alpha + \beta_1 IE_{i,j,91-00} + \gamma_1 C_{j,t}^1 + \cdots + \gamma_n C_{j,t}^n + \varepsilon_{i,j,t},$$

where "*IE*" stands for information endowment and $IE_{i,j,91-00}$ denotes $Trade_{i,j,91-00}$ or $FDI_{i,j,91-00}$. Our use of lagged FDI inflow and trade shares as information endowment proxies partly obviates potential

concerns about endogeneity. The choice of a reference period of the 1990s is an arbitrary one based on data availability. The key is it well predates the period of evaluation of foreign portfolio allocations (2000s).

We are also interested in examining the portfolio allocation patterns of individual institutional investors using a similar empirical framework. The regression then takes the following form:

$$I_{i,j,t} = \alpha + \beta_1 IE_{i,j,91-00} + \gamma_1 C_{j,t}^1 + \cdots + \gamma_n C_{j,t}^n + \varepsilon_{i,j,t},$$

where the dependent variable now represents portfolio investments from an emerging market institution i into destination country j at time t. It is defined as follows: excess investment equals the portfolio investment from emerging market institution i into destination country j divided by the portfolio investment from emerging market institution i to all countries, minus a benchmark ratio. The dependent variable thus measures whether a particular emerging market institution's external portfolio equity investments are *disproportionately* weighted towards a specific foreign country. The baseline benchmark remains the same as for the regressions using the aggregate CPIS data: the *world market portfolio* now equals the stock market capitalization of destination country j scaled by world stock market capitalization, where "world" excludes the country in which institution i is domiciled. The dependent variable captures how allocation patterns of emerging market institutional investors deviate from the market capitalization-weighted world portfolio. The dependent variable is constructed using data for the period 2001-2011.

3. How Pervasive is Foreign Allocation Bias?

We begin with a descriptive overview of patterns of external portfolio (equity) investment from emerging market economies and compare them with the corresponding investment patterns of developed market economies.[8] We define foreign allocation bias as the extent to which countries deviate from the world market portfolio in their foreign allocations. That is, once investors in a country have decided how

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[8] This part of the paper is related to studies of the asset pricing effects of market integration and segmentation (Errunza and Losq, 1985) and the scope of international pricing (Harvey, 1991; Bekaert and Harvey, 1997, 2002, 2003; and Bekaert, Harvey, Lundblad, and Siegel, 2009). Others examine the macroeconomic consequences of relaxation of capital controls (see Prasad and Rajan, 2008, for a survey). Our paper is also related to studies on mutual fund investments in emerging markets, e.g., Kaminsky, Lyons, and Schmukler (2004) and Jotikasthira, Lundblad, and Ramadorai (2011). Almost all of this prior literature is about investments *into* emerging markets.

much of their total portfolio will be allocated to foreign investments, our aim is to examine how much that cross-country allocation deviates from the market capitalization-weighted world portfolio.

We construct a measure of foreign allocation bias for each country as follows. First, the deviation between the share of a country's portfolio allocated to a particular destination country and that destination country's share in the world portfolio is computed. We then sum up the absolute values of that deviation for the home country relative to all of the potential destination countries (including those countries where the home country might not have any investment at all). To account for market size, this sum is adjusted so that each destination country's weight is given by its relative market capitalization (measured relative to the global total market capitalization, expressed in a common currency and excluding the source country). All of these calculations are based on CPIS data.

Figure 2 shows the *absolute magnitude* of foreign allocation bias for each of the source countries in our sample. The extent of foreign allocation bias is generally higher for emerging markets (Graph A) relative to developed markets (Graph B). The median of this measure of foreign allocation bias is 0.11 for emerging markets and 0.08 for developed markets.[9] A value of 0.10 implies that, on average, the country's portfolio over- or underweights investments in potential destination markets by 10 percent, with the weights of each of the potential destination markets in that formula determined by their respective market capitalization. Among emerging markets, foreign allocation bias ranges from 0.21 for Venezuela to 0.02 for Slovenia. Among developed markets, this measure ranges from 0.17 for Hong Kong to 0.03 for the U.S.

< INSERT FIGURE 2 HERE>

A complementary approach to that above is to compute concentration ratios for international portfolios (Choi et al., 2014, Schumacher, 2018). This is a summary measure of how much a country's portfolio allocation is concentrated among destination countries relative to the benchmark of the market capitalization-weighted world market portfolio (results not shown here). For emerging markets, the average concentration ratio was 0.90 in 2001, compared to 0.75 for developed economies, a statistically significant

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[9] This refers to the cross-country median of the foreign allocation bias for all home countries in their respective groups. The median of the unweighted foreign allocation bias was 0.04 for emerging market economies and 0.02 for developed market economies.

difference. The averages for the two groups of countries rise to 1.08 and 0.86, respectively, by 2011 and the average is significantly higher for emerging markets in every year of the sample. This confirms that emerging markets' international portfolios reveal higher *absolute* foreign allocation bias than those of developed markets.

Next, we examine if there are certain destination countries that are systematically under- or overweight (relative to the world market portfolio benchmark described above) in the international portfolio allocation decisions of the countries in our sample. Figure 3 shows how much a given destination country is overweighted (or underweighted) in the international portfolios of developed and emerging market countries, respectively. Only the destination countries among the 10 largest in overweightings and 10 largest in underweightings are displayed. For each destination country, we calculate the excess (positive or negative) investment ratio for each source country in each year, and then take a weighted average across source countries and years. Each source country is weighted by its share of the total market capitalization in its respective group of source countries.

< INSERT FIGURE 3 HERE>

Among developed market economies (Graph A), there seems to be a systematic overweighting of many European countries in international portfolios. This could be the result of a regional bias among these countries, which tend to invest heavily in each other's markets. There is significant underweighting of Japan, China, and the U.S., and also of the major emerging markets. Emerging markets (Graph B) also underweight China, Japan, and the U.S. in their international portfolios, although the extent of this underweighting of the U.S. is less severe than in the case of developed market portfolios.

Figure 4 shows how the allocations of emerging market and developed market investors to four major destination countries—U.S., U.K., Japan, and Germany—have evolved over time. In 2001, the two groups of source countries underweighted the U.S. in their international portfolios (relative to U.S. market capitalization) by 15% and 35%, respectively. For emerging market investors, investments in the U.S. account for a rising share of their portfolios over time. After a downward blip in 2008, the trend resumes

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and in 2010-11, investors from these countries were actually overweight U.S. markets. Developed market investors have remained slightly (5%) underweight in U.S. markets as of 2011. Investors from both sets of countries have consistently overweighted the U.K. and underweighted Japan in their foreign investment portfolios. In both cases, the extent of the bias was larger in absolute terms for developed market investors.

< INSERT FIGURE 4 HERE>

Table 2 reports the external equity investment positions by emerging and developed market investors according to the top 20 destination markets averaged across the 2000-2011 period. This is for the CPIS dataset only. In addition to the average investment (in current U.S. dollars millions), we report the average investment ratio for that destination market, the average benchmark ratio (according to the world market portfolio), and the average excess allocation. For both emerging and developed market investors, the U.S. is the destination market with the largest average investment ($43 billion among emerging, $1.49 trillion among developed), the highest average investment ratio, but also strikingly the largest *negative* excess allocations relative to the benchmark (-6.98% for emerging markets, -11.89%, for developed markets). Many European markets, such as the U.K., Germany, Switzerland, Netherlands, are among the top destination markets for both sets of investors. But there are also important distinctions between the two groups. The list of top 20 destinations for emerging market investors features Bahrain, Singapore, UAE, Russia, and Turkey, for example, none of which make the top 20 list for developed investors. Furthermore, there are destination countries, such as Switzerland, which feature as an underweight (-0.29%) for emerging market investors and an overweight (0.65%) for developed market investors.

< INSERT TABLE 2 HERE>

The descriptive analysis in this section demonstrates that, consistent with the work of other authors, developed economies' international portfolio holdings show a significant foreign allocation bias. But we find that this bias is even greater for emerging markets. We also uncover that there is significant cross-country variation by destination country and over time that may be systematically different for emerging and developed market investors.

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4. Determinants of Emerging Markets' External Portfolio Allocations

We now carry both the CPIS and FactSet Lionshares datasets forward to conduct a formal analysis of the determinants of the portfolio allocation patterns of emerging market investors. Table 3 presents summary statistics for the variables used in our regression analysis.[10] The analysis that follows draws on various strands of existing literature documenting the importance of several country attributes in influencing allocation decisions. There are some important aspects of the data that are worthy of note. First, the number of country-pair-years for which we could conduct our analysis with the CPIS data (Panel A) ranges between about 12,000 and 18,000 depending on the control variable of choice. But the sample declines based on the availability of the main dependent variable of interest based on the excess allocations. Note that there are summary statistics on two additional benchmarks for these excess allocations shown in the table that will be introduced later in the paper. The sample size for the institution-country-years in the FactSet Lionshares dataset is much larger, averaging well over 40,000 observations.

< INSERT TABLE 3 HERE>

Table 4 contains the baseline specifications using CPIS data. The first six columns of Panel A report a set of regressions for emerging markets. As noted earlier, all of the regressions include year fixed effects as well as source country and destination country fixed effects. For each specification, we use the maximum available number of observations. This results in variations in sample size across different specifications since not all variables are available for all countries.[11]

< INSERT TABLE 4 HERE>

Model (1) shows that, consistent with the results of other authors, such as Portes and Rey (2005), gravity variables are important for portfolio allocations. The level of excess allocations in specific destination countries is negatively related to their distance from the source country, the existence of a

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[10] Summary statistics for the developed country sample of home countries are not presented, but are available from the authors. The excess allocation variables are raw allocations expressed as differences from the relevant benchmarks, rather than the absolute differences that were used to construct the measures of foreign allocation bias in the previous section.

[11] Summary statistics for the restricted sample that has data for all variables are reported in an internet appendix table (Table A2). To ensure that differences in sample size do not affect the results, we also re-estimated each specification using a common sample corresponding to the one used for the composite specification, listed as Model (6). It is based on 4,439 observations. Those results are not shown here but will be discussed briefly below.

common border, and a common language. The latter two coefficients suggest that the notion of a "familiarity" bias is not fully supported by the data. A colonial relationship does increase the excess allocation of emerging market investors to a former colonial power. A common colonial heritage also drives up excess allocations. These are economically large effects: a one-standard deviation increase in geographic distance (0.861) is associated with a 2.4% lower excess allocation, or about 28% of its unconditional variation. Similar economic magnitudes obtain for the other familiarity variables, but they are, of course, correlated with each other. The adjusted R^2 in this specification including fixed effect reaches 22.4%.

Model (2) controls for a number of destination country characteristics related to market size and depth. The results show that the excess allocation among destination countries is negatively related to the number of listed firms adjusted for population size in those countries and—somewhat surprisingly—positively related to the fee variable, which measures transaction costs. Overall, the explanatory power from the market size proxies is lower with an adjusted R^2 of 15.3%.

Model (3) controls for a set of financial market variables. Return differentials between the destination and source countries do not seem to influence portfolio allocations. A higher variance ratio—defined as the five-year volatility of stock returns in the destination country relative to the five-year volatility of stock returns in the source country—is associated with a lower excess allocation. Belying the notion of improving diversification by investing in foreign markets whose returns are less correlated with domestic returns, correlations with destination country returns do not seem to matter for excess allocations. Model (4) controls for market integration variables, all of which have statistically significant coefficients that look reasonable. Registration and ownership restrictions as well as limits on currency convertibility are associated with smaller excess allocations. This group of variables has the weakest overall explanatory power (adjusted R^2 of only 11.7%).

Model (5) controls for country level governance variables. A higher regulatory burden has a negative effect on excess allocations but low government effectiveness in the destination countries does not seem to deter emerging market investors. In fact, a higher level of government effectiveness has a slightly

negative effect on excess allocations. *F*-tests for the variables examined in Models (1) to (5) indicated that each set of them was jointly statistically significant at the 1 percent level. Model (6) is a composite one that includes all the variables considered in the previous columns. The statistical significance of the key coefficients from the previous regressions is mostly preserved although not all the gravity variables remain significant and the governance variables lose their significance. We re-estimated Models (1) to (5) using the common sample of 4,274 observations for which we had data on all control variables. There were few major differences between those results and the results shown in Table 4.

The remaining columns of Table 4 in Models (6) to (12) replicate the benchmark CPIS regressions but only for developed markets. The determinants of developed markets' international portfolio allocations differ in some important ways from those of emerging markets. The gravity variables as a group are strongly significant but, unlike in the case of emerging markets, a common border and common language have positive effects on excess allocations. More developed countries, as proxied by their per capita GDP, seem to receive reliably negative excess allocations from developed market investors. Destination countries with larger stock market capitalization relative to their GDP receive negative excess allocations while those with higher market turnover receive larger excess allocations. A larger difference in stock returns reduces allocations while, as in the case of emerging market allocations, positive return correlations are associated with higher excess allocations, contrary to one criterion that ought to drive portfolio diversification. The statistical significance of most of these coefficients is preserved in the composite specification reported in Model (12). Again, *F*-tests for the variables examined in Models (7) to (11) indicated that each set of them was jointly statistically significant at the 1 percent level.

Panel B of Table 4 contains estimates of the same twelve regressions as in Panel A but now using the FactSet Lionshares data. The individual coefficient estimates are broadly consistent with the results using CPIS but there are some differences. To investigate these further, we also run a composite specification with all independent variables. Comparing this specification for emerging market allocations using CPIS and Lionshares in Model (6) in Panels A and B shows considerable similarity but also a few

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important differences. Some gravity variables have greater influence on the allocation decisions of institutional investors than on aggregate country allocations. For institutional investors, a common colonial heritage and common language have positive effects on excess allocations but a past colonial relationship has a negative effect. Consistent with the results based on aggregate allocations, higher transaction fees in the destination country are associated with larger excess allocations by institutional investors but other market integration and market openness variables do not affect their allocations. As expected, greater government effectiveness and a lower regulatory burden are associated with larger excess allocations.

The remaining columns present results for institutional investors in developed markets. For these investors as well, the gravity variables seem to have strong effects on portfolio allocation. In addition, measures of destination market size and depth have a positive effect on excess allocations while market restrictions have a negative effect. In other words, developed market institutional investors seem to be more responsive to market factors than their emerging market counterparts. One question at this juncture is whether, notwithstanding some statistically significant coefficients, most of the explanatory power in our regressions comes from the various fixed effects. To address this concern, we ran regressions just on each set of fixed effects. The results are reported in an internet appendix table (Table A3).[12]

Our main conclusion from the baseline regressions based on the CPIS and Lionshares datasets is that country attributes previously documented in other papers based on developed economy data (e.g., Chan, Covrig, and Ng, 2005) are important for emerging market portfolio allocations as well. Interestingly, there seem to be few destination country characteristics that robustly influence EM international portfolio allocation decisions in a manner different from those of DM allocations. Variables that capture (i) market size and depth and (ii) market integration of destination countries seem to have differential effects, although few of these results are fully robust across different datasets and different regression specifications.

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[12] For emerging market allocations, year fixed effects have little explanatory power. In the CPIS data, the source country fixed effects account for about 25% of the adjusted R^2 of the composite regression while the destination country fixed effects account for about 44%. When we switch to the FactSet Lionshares data, year and source country fixed effects become unimportant while the destination country fixed effects account for about two-thirds of the overall explanatory power. It appears destination country fixed effects are important in the overall adjusted R^2 of the composite specifications, but the other control variables in our regressions together still add considerable explanatory power. When we repeat this exercise for developed markets, year and source country fixed effects turn out to be weak.

5. Testing the Information Endowment Hypothesis

We now turn to an empirical implementation of the information endowment hypothesis of van Nieuwerburgh and Veldkamp (2009). Portfolio outflows from emerging market economies are a relatively recent phenomenon, with many of these economies freeing up capital outflows only in the last decade or two, and also because investors in these economies are presumably less sophisticated than those in developed economies. In view of their limited exposure to international financial markets, it is plausible that emerging market investors rely to an even greater extent on information endowments accumulated through earlier trade and financial relationships. Analyzing emerging market economies' outward investments and comparing the portfolio allocation decisions of emerging versus developed economy investors together therefore offer a powerful test of the information endowment hypothesis.

5.1 Measuring information endowments

We now examine whether emerging market countries allocate a larger proportion of their external equity portfolios to countries that have served as important trading partners or major sources of FDI inflows. Past trade linkages can be seen as an important basis for information endowments. To capture financial linkages, we focus on FDI inflows, which have become dominant in gross inflows into emerging markets (Prasad, 2012). By the mid-2000s, FDI liabilities accounted for more than half of external liabilities of emerging markets. Portfolio equity liabilities account for less than 10 percent of external liabilities of emerging markets economies, many of which still have relatively underdeveloped equity markets. Debt flows are usually intermediated through foreign and domestic financial institutions such as banks and have lower information content from the perspective of portfolio investors in emerging markets.

We construct two proxy measures to capture the notion of an information endowment: (1) *Trade,* which equals the sum of all trade flows between emerging market i and country j during the 1991-2000 period divided by the sum of emerging market i's total external trade during that same 1991-2000 period; and, (2) *FDI*, which equals the sum of FDI flows from country j into emerging market i during 1991-2000 divided by the sum of all FDI inflows into emerging market i during 1991-2000. Since we use data on trade

and FDI shares from the prior decade to explain portfolio holdings during the 2000s, our regressions are unlikely to be affected by endogeneity (or reverse causality) problems.

5.2 Country-level regressions

Table 5 reports the results from CPIS regressions that include the full set of controls used in Table 4 as well as each of the information endowment proxies. The coefficient on the information endowment variable in Model (1) is statistically significant and large. The coefficient indicates that a 1 percentage point increase in the past level of the home country's trade (exports plus imports) accounted for by a particular trading partner is associated with an increase of 0.5 percentage points in the excess allocation of the source emerging market's international portfolio to that destination country (relative to the destination country's market capitalization-weighted share in the world portfolio).[13]

< INSERT TABLE 5 HERE>

The coefficient on the other information variable, captured by past FDI, is reported in Model (2) and is also significantly positive, although smaller. A one percentage point increase in the share of FDI from a particular country to the relevant emerging market subsequently increases that emerging market's allocation to the concerned destination country by about 0.03 percentage points. The standard deviation of the FDI share is about four times that of the trade share variable (0.27 versus 0.07, see internet appendix, Table A2), so the quantitative significance of these two information endowment variables is in fact somewhat closer than suggested by the simple calculations above. These results together constitute prima facie evidence in support of the information endowment hypothesis. In Models (3) and (4), we compare these results with those for developed market portfolio allocations. The coefficients on both information endowment variables are positive and statistically significant, suggesting that these endowments play an important role in determining portfolio allocations even of reasonably sophisticated investors.

5.3 Do the Benchmarks for Measuring Excess Allocations Matter?

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[13] To facilitate comparison across specifications, this table also shows, in square brackets below each of the coefficients, the corresponding coefficient estimates based on standardized variables. We constructed standardized versions of the dependent and independent variables (except time and source/destination country dummies) by removing variable-specific means and dividing by their respective standard deviations.

One question is whether the results are driven by our use of a benchmark based on the market-capitalization weighted world market portfolio. To address this point, we now present results using two alternative benchmarks that also provide a more direct comparison with the results for developed markets.

We first construct a measure that directly compares emerging market allocations in a particular destination country relative to the allocations of developed markets (within the same region as the source country) in that destination country. In other words, we ask whether, relative to their regional developed market counterparts, emerging market investors overweight a particular country in their portfolios. This provides a direct comparison between the external investment patterns of emerging market investors and their developed market counterparts, with the implicit assumption that investors from both types of economies care about the same set of destination country characteristics when making their portfolio allocation decisions. We call this benchmark, *Benchmark 2*, a regional developed-market benchmark, which we compute as the portfolio investment from all developed markets within the region of emerging market i to country j divided by the portfolio investment from all developed markets within the region of emerging market i to all countries. The dependent variable now captures how emerging market foreign allocation patterns differ from those of developed markets.

Models (5) and (6) show the results from regressions using regional developed market benchmark. The coefficient on the trade variable is positive and significant. The estimate indicates that a one percentage point increase in the home country's share of past trade accounted for by a particular trading partner country has a 0.6 percentage point higher effect on average emerging market portfolio allocations to that trading partner country relative to average developed economy allocations to that country. The FDI ratio, however, does not have differential effects on the allocation patterns of emerging versus developed market investors.

Next, instead of using developed markets in the same regions, we create an alternative benchmark, which we call *Benchmark 3*, based on propensity score matching between a given emerging market and all developed markets in the sample using a set of variables that include physical distance, a dummy for a common border, common language, common colonial heritage, previous colonial relationship, and

participation in a regional trade agreement. The allocations of the propensity-score matched developed market i are then used as the benchmark against which the concerned emerging market's allocations are evaluated. Specifically, the propensity score-matched benchmark is equal to the portfolio investment from propensity score-matched developed market i to destination country j divided by the portfolio investment from propensity score-matched developed market i to all countries.

Models (7) and (8) show the results from regressions based on propensity score-matched *Benchmark 3*. In this case, the coefficient on the trade ratios is significantly positive, confirming that this measure of the information endowment has a bigger effect on the allocation patterns of emerging markets relative to developed markets. The coefficients on the trade ratio in Model (7) and the FDI ratio in Model (8) are about the same as in the benchmark regressions in Models (1) and (2), respectively, although the coefficient on the FDI variable in Model (8) is no longer statistically significant. Moreover, the interpretation of the coefficients is not exactly the same. The regression in Model (7) indicates that a 1 percentage point increase in the past share of the home country's trade accounted for by a particular foreign country results in the average emerging market directing 0.5 percentage points more of its allocation to that country relative to the allocation of the average developed economy. These results suggest strongly that the information endowment hypothesis is of greater relevance for portfolio allocations of emerging market economies than it is for those of developed economies. The differences are not just statistically significant but also economically meaningful.

We conducted two further robustness tests for our baseline results. First, we used an alternative measure of trade that includes only imports. That is, the import share is computed as the sum of imports of emerging market i from trading partner country j during 1991-2000 divided by the sum of total imports of emerging market i from all trading partner countries during 1991-2000. The second robustness test is related to the large number of missing observations in our dataset on account of the limited availability of FDI data. It is possible that some of these missing observations in fact represent zeroes. When we substituted zeroes

for the missing observations, we confirmed the robustness of our main results regarding the effect of information endowments on portfolio allocations.

5.4 Institution-level regressions

Next, we undertake a more granular test of the information endowment hypothesis using institution-level data. To exploit the Lionshares dataset, we use characteristics of the specific institutions in our dataset. The first information endowment proxy we construct is a dummy variable called *Parent Country* that takes the value one if the destination country *j* is the country where the emerging market institution's parent is located. The second information endowment is a dummy variable called *Peer Country* that takes the value one if the destination country *j* contains a foreign subsidiary of the parent institution of emerging market institution *i*. We propose these two variables as information endowment proxies that are specific to each institution, which is potentially more relevant to their allocation patterns than aggregate trade or FDI flows. The dependent variable and the baseline benchmark for the institution-level regressions are as described above. The controls include the full set of destination country characteristics used in the baseline regressions in Table 4, as well as year, source country, and destination country fixed effects. Given how the information endowment proxies are constructed, we cannot include institution-specific fixed effects.

The results are presented in Panel B of Table 5. Using the world market portfolio weights for the benchmark ratio to compute excess allocations, Models (1) and (2) show that both information endowment variables are statistically significant and quantitatively important. Institutions in emerging markets tend to have an average excess allocation of 3.1 percentage points in the country that their parent institution is located in. For an emerging market institutional investor, the existence of a foreign subsidiary of the same parent institution is associated with a 2.8 percentage point increase in the excess investment allocation in that country relative to that country's share in the market capitalization-weighted world portfolio. Although we cannot include institution-specific fixed effects, we did try including source-destination country fixed effects in these regressions. This represents a very stringent test but the coefficient on the Parent country variable remained positive and significant but the coefficient on Peer country was no longer significant.

For developed market institutional investors, these information endowment proxies have only a modest effect on their allocation decisions. The parent country variable is not significant (Column 3), while the Peer country variable is borderline significant (Column 4) and smaller than the corresponding coefficient for emerging market institutions (Column 2). This is consistent with our aggregate-level results based on CPIS that information endowments are relevant for international portfolio allocations of emerging market investors but far less so for developed market investors.

Next, we examine whether the allocations of individual institutional investors based in emerging markets are on average more or less influenced by such information endowments than the allocations of institutional investors based in developed market economies. Since developed market institutional investors are likely to have longer investment histories and other channels of information acquisition, one would expect that the information endowments matter less for their allocation decisions. We first use *Benchmark 2* for which the excess investment allocation is calculated relative to the average investment allocations (ratios) of developed market in the same region as the home country of institution i. The results, shown in Models (5) and (6) of Panel B, indicate that the information endowment effect on allocation patterns is much greater for institutional investors in emerging markets relative to those in developed markets. We also computed the excess investment allocation relative to another benchmark, *Benchmark 3*, based on the propensity-score matched developed market economies (similar to the earlier aggregate analysis using the CPIS data). The results, presented in the last two columns of Panel B in Table 5, confirm the greater importance of information endowments in determining allocations of emerging market relative to developed market institutional investors.

One question that arises in evaluating the relevance of our institution-level information endowment variables is whether they are just proxying for the same country-level information endowment variables used in the country-level regressions based on the CPIS data. To address this issue, we re-estimated the regressions reported in Panel B of Table 5 but we replaced the institution-level information endowment

variables with country-level ones (Trade and FDI).[14] The coefficients were of similar signs as those reported

on the information endowment variables in this panel but few of the coefficients were significant. These

weaker results reinforce the need to use the greater precision of institutional-level determinants of portfolio

allocation decisions as we have done. Using country-level information endowment variables appears to

wash out these effects. We found this to be true when we ran a different experiment by aggregating up the

Lionshares institution-level data within each country and then running regressions at the country level using

country-level information endowment variables. Consistent with this view, when we included the country-

level information endowment variables along with the foreign peer subsidiaries in the regressions, the latter

variable came in with even greater statistical precision than in the results reported in Table 5 (the results

were similar but not as uniformly strong for the foreign parent variable).

Another question is whether the CPIS and Lionshares results are comparable since the country

samples underlying them are different. To check if the differences in country coverage in the two datasets

influence our findings, we lined up the two samples by restricting the (broader) CPIS sample to those

countries that appear in the Lionshares dataset. We then used a more stringent screen using only those

source countries for which the Lionshares dataset has at least five institutional investors domiciled in that

country. Both sets of results were similar to the baseline CPIS regressions reported in Panel A of Table 5.

Information endowments play an important role in explaining differences between the outward

portfolio allocation patterns of emerging relative to developed markets. The results hold up both at the

country level and for individual institutional investors. While we have not formally tested the information

endowment model against specific alternatives, the control variables in the regressions do account for the

traditional gravity variables as well as other potential channels. In studies, such as Gehrig (1993) and

Brennan and Cao (1996), learning plays an important role in determining home versus foreign allocations.

By controlling for historical returns and volatility (in potential destination markets and as differentials

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[14] In these regressions, we clustered the standard errors appropriately to account for the fact that the country-level explanatory variables are the same for all institutions in a given source country.

relative to the home country), we capture learning effects into our empirical framework, implying that information endowments have additional explanatory power for foreign allocations.

6. Extensions

6.1 Portfolio Concentration and the Role of Information Endowments

One issue worth exploring is whether there is a relationship between information endowments and the degree of portfolio concentration. The model of van Nieuwerburgh and Veldkamp (2010) proposes two types of learning strategies: deepening knowledge and broadening knowledge. According to them, investors who deepen their knowledge would hold more assets initially familiar to them, while investors who broaden their knowledge would learn about unfamiliar assets, undo initial advantages and reduce portfolio bias imparted by differences in initial information. We test this implication by showing when the portfolio allocation of a country or institutional investor is less diversified, information endowments could play a more decisive role in determining allocations. We do not take a stand on whether information endowments generate or reduce concentration in a causal sense. Rather, we ask whether information endowments influence allocations more so given different levels of portfolio concentration.

For each country, we compute a Herfindahl index of the country-level external allocations. We construct a dummy variable that takes the value one if the index is above the median level of the index among all source countries in that year. We then interact the concentration dummy with the information endowment variables. If the excess allocations of countries with more-than-average concentrated portfolios were more influenced by information endowments, then the coefficients on the interaction terms would be positive. This is exactly what we find, as shown in the first two columns of Table 6, Panel A, where the excess allocations are measured relative to the world portfolio benchmark, the market capitalization weighted world portfolio. The interaction coefficients remain positive and statistically significant when we use a regional developed market benchmark, which examines emerging market allocations relative to the allocations of developed markets that are in the same region as the home country, as in Models (3) and (4).

< INSERT TABLE 6 HERE>

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A similar experiment evaluates the effects of information endowments on the allocations of institutional investors with different degrees of portfolio concentration. The concentration dummy takes the value one if the Herfindahl index of the country-level allocation of the source institution portfolio in a given year is above the median among all source institutions (based in emerging markets) in that year. This dummy variable interacts with the parent country and peer country dummies that we used as information endowment proxies in the previous exercise. The only significant interaction coefficient in Panel B of Table 6 is that on the *Peer Country × Concentration* interaction variable in Model (2). Among emerging market institutional investors with more concentrated external portfolios, there is a stronger positive effect on allocations towards countries where a foreign subsidiary of the investor's parent company is located.

To check if countries or institutional investors with more concentrated portfolios indeed rely more on the information endowment proxies than on other control variables included in the regressions, we re-estimated both the CPIS and Lionshares regressions reported in Table 6 including interactions of the respective concentration variables with other control variables as well. The results (not reported here) indicate that those coefficients on the interaction variables between concentration ratios and information endowments that are significant in Table 6 remained significant when we include these additional interactions. By contrast, the coefficients on the interaction variables between concentration ratios and other variables were not significant.

6.2 Parsing Information Endowments by Size of Destination Market

An under-explored implication of van Nieuwerburgh and Veldkamp's (2009) model is that the potential benefits of acquiring information about an investment destination increases with the relative size of the destination country (with the size measured relative to that of the source country). We now examine whether the relative size of investment destinations affects allocation decisions. We use two measures of size—GDP and equity market capitalization. To focus on substantive size differences relative to the home country, we express each of these variables as a ratio of the corresponding variable in the home country. We then construct dummy variables that equal one if this ratio is above the median ratio among all source-

destination country pairs in a given year. In the regressions, we interact these dummies with the information endowment variables and, of course, also include levels of information endowment variables and size dummies. Using a similar approach, we also examine whether return volatility in the destination country relative to the home country affects how information endowments influence allocation decisions, in turn.

These results, using the CPIS dataset, are reported in Table 7. The coefficient on the interaction term between the information endowment proxy based on trade and relative GDP (Column 2) is significantly negative. This result indicates that the larger the destination country is relative to the home country, the less the information endowment influences excess allocations. By contrast, in the case of the FDI information endowment proxy, relative market capitalization has a positive association with excess allocations. The former result is not consistent with the implications of van Nieuwerburgh and Veldkamp's (2009) model while the latter is. Our overall reading of the results from this table is that information endowments do not have systematic differential effects on emerging market portfolio allocations to large versus small destination countries or across different levels of destination market relative to home country return volatility. We find similar results when we examine the allocation patterns of emerging market institutional investors using the FactSet Lionshares dataset.

< INSERT TABLE 7 HERE>

6.3 Results Using Raw Foreign Portfolio Allocations

To this point, we have used different benchmarks against which we measure excess allocations in each potential destination country. We now examine if information endowments matter for explaining raw allocations that are not measured with reference to any of these benchmarks. So for each emerging market source country we just regress the external portfolio shares of each potential destination country on the destination country characteristics, information endowment variables, and full set of fixed effects.

The results are presented in Table 8. Panel A, which contains the CPIS results, shows that past trade relationships have a significant positive effect on raw allocations. The coefficient on the FDI variable (Column 2) is positive but not quite significant at the 10 percent level. Panel B, which contains the

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Lionshares results, shows that the parent country and peer country information endowment proxies have strong positive effects on raw allocations of emerging market institutional investors. Thus, the raw investment ratios mostly confirm the earlier results that information endowments do have a positive effect on portfolio allocation patterns.

< INSERT TABLE 8 HERE>

6.4 The Effects of the Global Financial Crisis

The global financial crisis is likely to have caused a reassessment of perceived risk of different markets and, therefore, it could have affected international portfolio allocations. Our main interest is in whether information endowments played an equally important role in emerging market portfolio allocations before and after the crisis. Table 9 presents results of regressions for emerging market portfolio allocations estimated separately over the periods 2001-07 (what we call "pre-crisis") and 2010-11 ("post-crisis").[15] The regressions based on the CPIS data, shown in Panel A, suggest that information endowments played a less influential role in determining foreign portfolio allocations compared to the pre-crisis period. For instance, the coefficient on the trade proxy for information endowments drops by nearly half, from 0.599 in the pre-crisis period (Model 1) to 0.353 in the post-crisis period (Model 2). The coefficient on the FDI variable (Models 2 and 4) falls even more sharply.

< INSERT TABLE 9 HERE>

Similar results using the Lionshares data are shown in Panel B of Table 9. The parent country information endowment proxy remains stable across the two periods but, unlike in the full sample regressions of Table 5, the coefficient is no longer statistically significant in either period. The peer country information endowment proxy becomes larger and statistically significant in the post-crisis period. This probably reflects the fact that parent institutions are disproportionately located in developed markets while the peer country proxy covers more emerging markets. Thus, it could reflect a portfolio shift away from developed equity markets, which were hit particularly hard during the financial crisis.

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[15] In an internet appendix to this paper (Table A4), we show that the conclusions discussed here are robust to defining 2001-08 as the pre-crisis period and 2009-11 as the post-crisis period.

One of the most prominent, hard-hit equity markets was of course in the U.S., arguably the epicenter of the global financial crisis. In Table 10, we dig deeper to examine if emerging market portfolio allocations to U.S. stocks were affected in a differential manner than developed markets' allocations. Panel A shows results using CPIS data. The first three models include all source and destination countries in our sample. The coefficients on the U.S. destination variable are negative, consistent with the earlier descriptive evidence about both groups of countries underweighting the U.S. in their allocations. The 'Post-Crisis × U.S. destination' interaction term in Model (3) is positive. This implies that, on average, countries underweighted the U.S. market less so after the crisis. At this aggregate level, emerging markets look no different than other countries. This can be seen from the triple interaction term we include in the regression (Emerging × Post-Crisis × U.S. destination), which is not significant. In Models (4) and (5) we re-estimate these regressions using data for just the U.S. as a destination country. The results are similar.

< INSERT TABLE 10 HERE>

Panel B of Table 10 repeats these regressions using the Lionshares data. These regressions show an interesting pattern. The triple interaction term in Model (3) and the interaction term in Model (5) based on data using just the U.S. as destination country are both significantly negative. In other words, individual institutions in all source countries reduced their underweighting of the U.S. market in the post-crisis period; we observe positive U.S. destination coefficients in Models (1) to (3) and positive post-crisis coefficients in Models (4) and (5). But emerging markets seem to have left their level of underweighting of the U.S. market mostly unchanged in the aftermath of the crisis.

6.5 Other Dynamic Aspects

To examine how the results evolve over time, we re-estimated the baseline regressions over rolling six-year windows (i.e., over the periods 2001-2006, 2002-2007, … , and 2006-2011). We find that some of the information endowment effects are, in fact, reliably significant (and, in some cases, also with larger economic magnitudes) in the later periods of the sample. We next ran the regressions separately for each year. Consistent with the results from the pre- and post-crisis sub-samples and the rolling window

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regressions, we find statistically reliable effects of the information endowment variables towards the end of the sample. In the regressions using Lionshares, the sample size rises over time increasing the precision of the estimates. But the sizes of the coefficients for regressions in the later part of the sample period are similar to those in the full sample regressions reported in the paper.

An important theme that emerges from these three sets of results is that the results using the CPIS dataset hold up over the full sample while those with the Lionshares data are stronger in the later years of the sample. There are two forces potentially at work. One force is that the sample size in the Lionshares dataset increases in the later years, which could be driving the more precise coefficient estimates. Another force which ought to work against the more precisely estimated effects we find in later years is that, in principle, the results in the later years might be expected to be weaker because of the dissipative value of the initial information endowment over time. This is clearly not the case using either dataset.

Nevertheless, to examine this possibility further, we tried yet a different experiment. Rather than using levels of FDI and trade as information endowment proxies, we used *changes* (from the differences in levels from 1991 and 2000) in these variables. That is, we looked at whether the actual acquisition of information over the decade preceding our main sample period influences international portfolio allocation decisions. These results were not as compelling, which we interpret as evidence that levels of information endowments rather than changes in those levels are more salient for portfolio allocation decisions. Another interpretation of these results is that, for countries that had substantial changes in their trade and inward FDI patterns in the decade preceding our sample, those variables do not serve as durable information endowments that affect portfolio allocation decisions.

6.6 Value of Information Endowments in the Presence of Capital Flow Restrictions

The value of information endowments could be affected by capital account restrictions in either or both source and destination countries. Our idea here is that restrictions on outflows in source countries might increase the value of information endowments in making portfolio allocation decisions—source countries with such restrictions presumably have weaker connections to global financial markets and

therefore rely more on information endowments. On the flip side, destination countries with significant inflow restrictions might not be able to take advantage (in attracting inflows) of the information endowments they have created through their own direct investments in (or trade with) source countries.

To test these ideas, we estimate the following regression using the CPIS data:

$$I_{ijt} = \alpha + \beta'Z_{ijt} + \gamma_0 IE_{ij,91-00} + \gamma_1 IE_{ij,91-00} \times Outflow\ Restrict_{i,1991\ to\ t} + \gamma_2 IE_{ij,91-00} \times$$

$$Inflow\ Restrict_{j,1991\ to\ t} + \gamma_3 Outflow\ Restrict_{i,1991\ to\ t} + \gamma_4 Inflow\ Restrict_{j,1991\ to\ t} + \varepsilon_{ijt}.$$

Inflow and *Outflow Restrict* are indexes that measure the outflow restrictions for source country *i* and the inflow restrictions for destination country *j*, respectively. We obtain *de jure* measures of capital controls from Fernández et al. (2016), a database which computes an additive index of total outflow restrictions (KAO is their preferred acronym, which we use in our own table) and one of inflow restrictions (KAI) for our sample source and destination countries.

These results are reported in Table 11. Consistent with our intuition above, we find that the coefficients on the interactions between the information endowment variables (FDI in Panel A, Trade in Panel B) and the indexes of source country outflow restrictions are positive for emerging markets, though only significantly for the Benchmark 1 and 3 excess allocation specifications. The coefficients on the interactions between the information endowment variables and the index of destination country inflow restrictions are negative for emerging markets, though again only statistically significantly for the Benchmark 1 and 3 excess allocation specifications. None of the interaction coefficients are statistically significant for developed market source countries.

< INSERT TABLE 11 HERE>

6.7 Additional Tests and Extensions

The regressions we have presented thus far show average results across a large and varied group of emerging market economies. We also ran regressions separately for each country to look for patterns in the estimated coefficients on the information endowment variables that were systematically related to specific country characteristics. The small sample sizes for some countries meant that the coefficients were less

precisely estimated. The coefficients on the information endowment variables were in general positive using either the CPIS or Lionshares data. However, we did not find consistent evidence across all countries to support the secondary proposition of the information endowment hypothesis—that the information endowment should have stronger explanatory power when the relative size of a destination country is larger.

We re-estimated the key regressions in Table 5 eliminating the four largest destination countries— U.S., U.K, Japan, and France for developed market source countries and the U.S., U.K., Bahrain, and Singapore for emerging market source countries. With the smaller sample sizes, a couple of the coefficients were no longer statistically significant although some of the FDI coefficients became statistically significant. We also re-estimated the main regressions separately for three groups of emerging market economies: (i) Asia and the Middle East, (ii) Latin America, and (iii) Emerging Europe. The smaller sample sizes reduce the precision of the estimates using both the CPIS and Lionshares datasets but there were still some interesting patterns. For instance, the coefficients on the information endowment variables were in general more statistically significant and economically larger for emerging market source countries in Latin America and Emerging Europe compared to those in Asia and the Middle East. In the case of Emerging Europe, for instance, the results appear to be influenced by domestic investors relying heavily on their historical trade and FDI relationships with advanced European countries when determining their international portfolio allocations.

Finally, we examined if our information endowment proxies could simply be reflecting other elements of differences in economic structures across potential source and destination countries. As one way of testing this proposition, we created country-specific measures of industrial composition based on the Datastream industry index data.[16] Then, for a given country pair, we computed a weighted average of the absolute differences in sector weights for a given year and included that as an additional control variable. Including this variable in our baseline regressions did not perturb the key findings for the information

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[16] To construct this variable, we collected sector market capitalization weights from the Datastream industry index (at the one-digit level). We then computed a weighted average of the absolute difference in respective sector weights in each year. We also experimented with using value-weighted average differences, but this made little difference to the results noted above.

endowment variables. One interesting finding is that, for developed market institutional investors, larger differences in industrial composition between source and destination countries result in *smaller* portfolio allocations to those destination countries. Emerging market institutional investor foreign portfolio allocations are not swayed by deviations in industrial composition across country pairs.[17]

7. Concluding Remarks

Our objective in this paper was to characterize external portfolio equity allocations of emerging markets and analyze their determinants. This subject has received little attention in the existing literature, most of which has been focused on portfolio investments among developed markets or *in* emerging markets. The topic of our paper is important given the rapidly rising prominence of emerging markets in global financial flows and rising foreign portfolio asset holdings of these economies.

Our main result is that emerging market's foreign investment patterns are consistent with the information endowment hypothesis. External equity investments from specific emerging markets tend to be disproportionately allocated towards countries that in the past had served as major trading partners or were important sources of FDI inflows. The results are robust to a variety of controls that measure financial market development, economic size, macroeconomic factors, and institutional quality. We also exploited a detailed database on institution-level data to test a stricter version of the information endowment hypothesis. We found that institutional investors based in emerging markets tend to have larger excess allocations of their foreign investment portfolios in countries where the institution's parent is located or if the destination country contains a foreign subsidiary of the institution's parent. These effects are largely absent in the case of institutional investors based in developed markets.

Information endowments thus seem to be more important for determining the external portfolio allocations of emerging markets (or emerging market institutional investors) relative to developed markets

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[17] We also investigated if *changes in* industrial composition matter. If a destination country for outward investments flows were to experience a major shift in industrial composition over time, then the information endowment accumulated in the past may be specific to some old industry and may be less relevant for current portfolio allocation decisions. We included measures of changes in industrial composition and its interaction with the information endowment variables. The coefficients on these interaction terms were negative but generally not statistically significant.

(or developed market institutional investors). Information endowments also seem to play a larger role in explaining the allocations of countries that have more concentrated external portfolios. However, when we push the theory further to examine if information endowments matter more for allocations to large versus small countries, our results are inconclusive. There are a number of possible reasons for a lack of perfect validation of the theory—it may be too early in the wave of portfolio outflows from emerging markets for these effects to be detected or the theory may need to be modified in the case of emerging markets.

Our findings on the "coming wave" of emerging market investors have important implications for developed market investors and for corporations that may be seeking financing from those emerging market investors. For the former, who are competing for investment opportunities with EM investors in target countries, it is important to be aware of what is driving EM foreign allocation biases, which seem to be affected by historical trading and FDI-related links and other considerations that go beyond a traditional Markowitzian return and diversification approach. For the corporations – and especially their Investor Relations Officers (IROs) - whose shares are held by EM investors, our results suggest that there is an opportunity for firms domiciled in key countries to exploit the advantages conveyed by past information endowments in attracting investments from emerging market investors. For firms in countries without past trading or FDI-related connections with a particular emerging market source country, IROs targeting investors may need to strive harder to overcome their comparative disadvantage relative to firms in countries that have stronger past connections with that emerging market.

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Table 1. Representativeness of the Lionshares data

This table shows the representativeness of the Lionshares institutional-level data, using the CPIS data as a benchmark. The first column of the table shows, for the last five years of the sample (2007-11), the total foreign investments of all institutions located in an emerging market source country in the Lionshares dataset as a ratio of the total foreign investments of that country in the CPIS dataset. The second column shows a similar ratio but limited to investments in the U.S. The sample for the first column is limited to countries that appear in both datasets and the sample in the second column is limited to countries that appear in both datasets and have nonzero investments in the U.S. The last two columns of the table show similar ratios for developed market source countries. The rows at the bottom show the cross-sectional medians and unweighted means of the respective columns.

	Emerging Market Investors			Developed Market Investors	
	Allocation % to destination markets:			Allocation % to destination markets:	
Source country:	All countries	U.S. only	Source country:	All countries	U.S. only
Brazil	0.19	0.00	Australia	0.06	0.05
Czech Republic	0.11	0.16	Austria	0.13	0.21
Estonia	0.77	0.04	Belgium	0.15	0.46
Hungary	0.06	0.03	Canada	0.34	0.27
India	0.70	0.31	Switzerland	0.37	0.80
Malaysia	0.03	0.01	Germany	0.19	0.34
Poland	0.58	0.68	Denmark	0.50	0.56
Romania	0.03	0.00	Spain	0.14	0.22
Russia	0.00	0.00	Finland	0.21	0.10
Slovenia	0.68	0.50	France	0.34	0.61
South Africa	0.06	0.06	United Kingdom	0.84	0.90
			Greece	0.03	0.04
			Hong Kong	0.46	0.14
			Ireland	0.11	0.11
			Italy	0.05	0.23
			Japan	0.01	0.01
			Korea	0.01	0.00
			Netherlands	0.37	0.34
			Norway	0.94	0.93
			New Zealand	0.14	0.16
			Portugal	0.08	0.13
			Singapore	0.24	0.02
			Sweden	0.42	0.52
			United States	0.64	--
Mean	**0.29**	**0.16**		**0.28**	**0.31**
Median	**0.11**	**0.04**		**0.20**	**0.22**

Table 2. External equity investment positions, by emerging and developed market investors.

Table 1 shows the top investment destinations for external portfolio equity investments from emerging market (EM, left panel) and developed market (DM, right panel) economies. Each destination country is classified as an EM or DM economy, and the regions of the destination countries are broadly classified as North America (NA), Asia Pacific (AP), Eastern Europe, Middle East & Africa (EEMEA), and Latin America (LA). For each destination market, we compute average total equity investments across the years 2000-2011 in US dollar millions from emerging markets Panel A and from developed markets in Panel B. Destination markets are ranked by average total equity investment across years and the top twenty destination countries are displayed. The average investment ratio is calculated as follows. In each year, we calculate the investment ratio from a particular source country to a destination country as the ratio of total investment from the source country to that destination country, divided by the total investment from the source country to all destination countries. For each destination country, we take the equal-weighted average of the investment ratio across all source countries from each group (EMs in the left panel, DMs in the right panel) to compute the average investment ratio. In the left panel, the average benchmark for a destination country is calculated as follows. For each destination country in each year, we first compute the ratio of its market capitalization relative to world market capitalization minus a particular EM source country's market capitalization. This calculation is repeated for each EM source country relevant to that destination country in that same year. For each destination country, we then take the equal-weighted average of the investment ratios across all EM source countries. Then we take the average of the benchmark ratios over the years 2000 to 2011. The difference between the average investment ratio and average benchmark gives the average excess allocation (or under allocation) for each destination country. In the right panel, we repeat the same calculations using DM source countries. In both panels, we use CPIS data to compute country-pair investment data.

	Panel A. Emerging Markets (2000-2011)					Panel B. Developed Markets (2000-2011)			
Destination Market	Average Investment (US $ mills)	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation	Destination Market	Average Investment (US $ mills)	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation
U.S.	43,248	0.3205	0.3902	-0.0698	U.S.	1,489,234	0.2774	0.3964	-0.1189
U.K.	42,290	0.1238	0.0686	0.0552	U.K.	1,015,851	0.1108	0.0714	0.0394
Ireland	9,143	0.0381	0.0023	0.0358	Japan	654,201	0.0484	0.0911	-0.0427
Bahrain	4,045	0.0361	0.0004	0.0357	France	535,494	0.0599	0.0433	0.0165
Singapore	2,584	0.0395	0.0061	0.0334	Germany	442,500	0.0512	0.0324	0.0188
Brazil	2,386	0.0087	0.0158	-0.0071	Switzerland	387,568	0.0302	0.0236	0.0065
Austria	2,278	0.0464	0.0021	0.0444	Netherlands	297,250	0.0299	0.0148	0.0151
France	2,023	0.0514	0.0416	0.0098	Canada	293,160	0.0122	0.0341	-0.0219
Germany	1,805	0.0435	0.0311	0.0124	Ireland	244,425	0.0309	0.0024	0.0284
Netherlands	1,770	0.0432	0.0142	0.0289	Italy	188,816	0.0285	0.0561	-0.0279
Belgium	1,503	0.0208	0.0060	0.0148	China	181,442	0.0188	0.0165	0.0023
Australia	1,431	0.0263	0.0210	0.0053	Spain	180,323	0.0254	0.0218	0.0036
UAE	1,429	0.0221	0.0015	0.0206	Australia	177,643	0.0228	0.0248	-0.0020
Hong Kong	1,387	0.0232	0.0204	0.0028	Hong Kong	153,727	0.0158	0.0212	-0.0054
Spain	1,344	0.0126	0.0238	-0.0113	Korea	149,144	0.0108	0.0157	-0.0050
Russia	902	0.0368	0.0133	0.0235	Brazil	140,739	0.0088	0.0164	-0.0076
Switzerland	893	0.0198	0.0227	-0.0029	Sweden	110,668	0.0184	0.0098	0.0085
Japan	847	0.0119	0.0876	-0.0757	Finland	103,690	0.0104	0.0048	0.0056
Turkey	665	0.0062	0.0035	0.0027	Taiwan	95,540	0.0069	0.0126	-0.0057
Jordan	508	0.0132	0.0006	0.0126	India	78,315	0.0072	0.0173	-0.0102
Top 20 Markets	122,480	0.0472	0.0386	0.0085	Top 20 Markets	6,919,703	0.0412	0.0463	-0.0051
Total Investments	130,373				Total Investments	7,605,533			

Table 3. Summary statistics on excess portfolio allocations.

Panel A shows the summary statistics for the variables based on a data sample from the International Monetary Fund's Coordinated Portfolio Investment Survey (CPIS). CPIS provides data on cross-border holdings of portfolio investment securities (equities, long- and short-term debt) annually from 2001. See Panel A of Appendix B for details. For each source market each year, we compute a ratio of a target market aggregate equity security holding in US dollars millions relative to all cross-border holdings for that source market and subtract one of three benchmark ratios: (1) the relative market capitalization of the target market in that year in the Morgan Stanley Capital International (MSCI) all-capital world market index (Benchmark 1); (2) a value-weighted average of cross-border allocations to a given target market from developed market source countries in the region of the source country (excluding potentially the developed market source country itself) (Benchmark 2); and, (3) a matched developed market source country's allocations to a given target market with as similar as possible geographic distance to target, common border, common language, common colonial heritage, prior colonial relationship, and participation in a regional trade agreement (Benchmark 3). Panel B shows the equivalent summary statistics based on the FactSet LionShares data sample. FactSet Lionshares includes security level domestic and international holdings of more than 3,000 mutual funds, investment companies and other institutional investors domiciled in more than 80 countries with holdings in 23 target markets. See Panel B of Appendix B for details. For each variable, we report the number of country-pair-year observations (N), equal-weighted mean (mean), standard deviation (Std Dev), 25th percentile, median, and 75th percentile. Detailed variable definitions are in Appendix C.

Panel A CPIS sample						
Variable	N	Mean	Std. Dev	25th	Median	75th
Excess allocation (Benchmark 1, world)	9,491	0.002	0.083	-0.012	-0.002	-0.001
Excess allocation (Benchmark 2, regional)	9,508	0.004	0.089	-0.011	-0.002	-0.001
Excess allocation (Benchmark 3, matched)	9,225	0.009	0.113	-0.004	-0.001	0.003
Trade	17,523	0.016	0.047	0.001	0.004	0.013
FDI	15,466	0.018	0.259	0.000	0.000	0.000
Distance	17,347	8.150	0.859	7.617	8.404	8.786
Border	17,347	0.033	0.180	0	0	0
Common Colonizer	17,347	0.038	0.192	0	0	0
Colony Relationship	17,347	0.012	0.111	0	0	0
Common Language	17,347	0.132	0.339	0	0	0
GDP per capita	17,716	9.238	1.310	8.405	9.568	10.431
Number of firms	12,230	2.559	1.314	1.481	2.674	3.577
Market capitalization/GDP	17,635	0.757	0.752	0.284	0.531	1.009
Market turnover	13,426	0.833	0.684	0.363	0.675	1.124
Transaction Fees	11,956	0.232	0.113	0.159	0.204	0.278
Difference in returns	12,989	-0.061	0.472	-0.303	-0.048	0.189
Variance ratio	14,441	1.033	0.604	0.650	0.899	1.250
Correlation	14,609	0.378	0.338	0.154	0.419	0.645
Registration restrictions	13,167	1.522	1.146	0	2	2
Ownership Restrictions	12,276	1.018	0.887	0	1	1
Currency convertibility limits	14,344	0.263	0.485	0	0	0
Government Effectiveness	14,344	0.947	0.817	0.170	1.010	1.730
Regulatory burden	14,344	0.871	0.749	0.310	1.040	1.550
Rule of law	14,344	0.800	0.872	0.060	0.930	1.630
Panel B. FactSet LionShares sample						
Excess allocation (Benchmark 1, world)	44,480	0.000	0.074	-0.010	-0.003	-0.001
Excess allocation (Benchmark 2, regional)	44,480	0.000	0.069	-0.010	-0.002	-0.000
Excess allocation (Benchmark 3, matched)	38,713	0.011	0.080	0.000	0.000	0.000
Parent country	44,480	0.006	0.074	0.000	0.000	0.000
Peer country	44,480	0.019	0.135	0.000	0.000	0.000

Table 4. Determinants of excess investment allocations across countries and institutions.

This table shows the results from regressions where the excess investment allocation from a source country i to a destination country j based on world portfolio benchmark is regressed upon five different groups of variables. In each year, we calculate the excess allocation from one emerging market to a destination country as the investment ratio, or the ratio of total investment from an emerging market country to a given destination country divided by the total investment from the emerging market country to all countries, less one of three benchmark investment ratios. We show results for Benchmark 1 (world) for each destination country each year is the ratio of the market capitalization of the destination country divided by the world market capitalization (excluding the source country market capitalization). The five groups of explanatory variables include: (1) "gravity" variables that measure affinity between a source and destination country, including geographic distance, common contiguous border, common colonial heritage, colonial relationship, and common language; (2) destination country market size variables, including per capita GDP, the number of listed firms per capita, the ratio of market capitalization to GDP, market turnover, and a measure of transaction fees; (3) returns-based measures, including the differences in stock market returns between destination and source countries in the past year, the variance ratios, or the variance of the destination country monthly returns over the past five years divided by that of source country, and correlations of monthly stock market returns in the source, destination countries over the past five years; (4) market integration variables, including Registration Restrictions, Ownership Restrictions, and Currency Convertibility Limits; and, (5) country-level governance variables, including Government Effectiveness, extent of Regulatory Burden, and a measure of the Rule of Law. All control variables are described in detail, including their sources, in Appendix C. Columns 1-5 report results from regressions that contain each of these groups of explanatory variables for emerging market source countries. Column 6 contains an omnibus regression with all of the control variables. All regressions include year, source country, and destination country fixed effects. Standard errors are clustered at the destination country-year level. Robust t-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent level, respectively. Columns 7-12 report similar sets of regressions for developed markets.

Panel A. CPIS Holdings Data Sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gravity												
Distance	-0.027***					-0.025***	-0.008***					-0.007***
	(-5.45)					(-4.72)	(-4.65)					(-5.31)
Border	-0.023*					-0.022	0.031***					0.033***
	(-1.85)					(-1.13)	(3.20)					(3.00)
Common colonizer	0.037***					0.021	-0.004					-0.009
	(2.67)					(1.47)	(-0.51)					(-0.67)
Colonial relationship	0.116***					0.143**	-0.001					-0.008
	(3.34)					(2.52)	(-0.13)					(-0.72)
Language	-0.015*					-0.019*	0.011***					0.015**
	(-1.87)					(-1.75)	(2.61)					(2.32)
Market Size												
GDP per capita		0.006				-0.020		-0.027***				-0.024***
		(0.21)				(-0.91)		(-5.05)				(-4.36)
Number of firms		-0.013**				-0.013*		-0.005***				-0.003***
		(-2.08)				(-1.89)		(-3.46)				(-2.72)
Market cap/GDP		-0.000				-0.001		-0.002**				-0.002**
		(-0.15)				(-0.47)		(-2.09)				(-2.43)
Market turnover		0.005				0.005		0.002				0.003**
		(0.97)				(0.74)		(1.63)				(2.52)
Transaction fee		0.064**				0.071**		0.017**				0.012*
		(2.15)				(2.19)		(2.31)				(1.76)
Returns Measures												
Difference in returns			0.001			0.000			-0.001***			-0.001**
			(0.75)			(0.12)			(-2.99)			(-2.18)
Variance ratio			-0.004***			-0.006**			-0.000			-0.001
			(-2.86)			(-2.52)			(-0.81)			(-1.43)
Correlation			0.006			-0.002			0.007**			0.005
			(1.44)			(-0.41)			(2.55)			(1.51)
Market Integration												
Registration Rules				-0.006***		0.003				-0.002		0.008**
				(-2.93)		(0.24)				(-0.86)		(2.45)
Ownership Rules				-0.009***		-0.022*				-0.004*		-0.011***
				(-6.03)		(-1.66)				(-1.78)		(-3.41)
FX Convertibility				-0.026***		-0.091***				-0.013*		-0.058***
				(-8.61)		(-2.84)				(-1.91)		(-5.01)
Governance												
Govt Effectiveness					-0.016**	0.008					-0.010***	-0.003
					(-2.06)	(0.59)					(-3.97)	(-1.12)
Regulatory Burden					-0.019**	-0.007					-0.001	-0.001
					(-2.05)	(-0.54)					(-0.68)	(-0.26)
Rule of Law					0.012	-0.007					0.007***	0.004*
					(1.12)	(-0.39)					(2.67)	(1.67)
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	9304	5938	7550	6848	8090	4274	13537	8408	11178	9813	11550	6381
F-stats	11.12***	2.43***	3.22***	73.83***	2.75***	21.22***	10.73***	8.13***	7.69***	3.24***	5.50***	6.53***
Adj. R^2	0.224	0.153	0.219	0.117	0.166	0.237	0.336	0.287	0.242	0.270	0.265	0.333

Table 4. Determinants of excess investment allocations across countries and institutions. (continued)

Panel B. FactSet Lionshares Holdings Data Sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gravity												
Distance	-0.020***					-0.023***	-0.002					-0.001
	(-5.63)					(-5.77)	(-1.25)					(-0.67)
Border	0.009					0.020	0.049***					0.054***
	(0.57)					(0.93)	(5.33)					(5.28)
Common colonizer	0.022*					0.047**	0.020*					0.048**
	(1.90)					(2.23)	(1.75)					(2.39)
Colonial relationship	0.137					-0.049***	-0.005					-0.014**
	(1.49)					(-4.01)	(-1.22)					(-2.09)
Language	0.022***					0.017**	0.010***					0.013***
	(2.75)					(2.04)	(2.99)					(2.76)
Market Size												
GDP per capita		0.096***				0.032		-0.044***				-0.052***
		(3.03)				(1.11)		(-3.97)				(-3.51)
Number of firms		0.001				-0.007		0.001				0.004*
		(0.15)				(-1.30)		(0.54)				(1.79)
Market cap/GDP		0.003				0.000		-0.001				-0.000
		(0.72)				(0.16)		(-0.91)				(-0.20)
Market turnover		-0.001				0.000		0.006***				0.005***
		(-0.13)				(0.04)		(3.62)				(2.70)
Transaction fee		0.070*				0.072**		0.015**				0.020**
		(1.90)				(2.34)		(2.09)				(2.30)
Returns Measures												
Difference in returns			0.001			0.002			-0.001			0.000
			(0.97)			(1.11)			(-1.10)			(0.57)
Variance ratio			-0.001			-0.000			-0.001			-0.001
			(-0.68)			(-0.12)			(-1.13)			(-1.49)
Correlation			-0.002			-0.002			0.005***			0.005**
			(-0.66)			(-0.53)			(2.61)			(2.43)
Market Integration												
Registration Rules				-0.002		-0.039				-0.013**		0.036***
				(-0.39)		(-1.58)				(-2.06)		(4.07)
Ownership Rules				-0.003		-0.004				-0.016***		-0.017**
				(-0.64)		(-0.42)				(-3.92)		(-2.16)
FX Convertibility				-0.009		0.024				-0.016**		-0.101***
				-(0.74)		(0.59)				(-2.33)		(-5.89)
Governance												
Govt Effectiveness					0.021***	0.022***					-0.015***	-0.001
					(2.95)	(2.81)					(-3.19)	(-0.08)
Regulatory Burden					-0.017	-0.023*					0.003	0.010*
					(-1.60)	(-1.88)					(0.77)	(1.72)
Rule of Law					0.010	0.013					0.006	-0.003
					(1.10)	(1.43)					(1.20)	(-0.51)
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	38722	24730	40910	31581	37415	18606	1809820	1041458	1560746	1249614	1495872	836248
F-stats	12.83***	2.11**	0.48	0.21	3.97***	4.63***	11.08***	7.44***	2.44*	39.91***	5.14***	21.19***
Adj. R^2	0.334	0.284	0.262	0.304	0.266	0.402	0.205	0.195	0.180	0.195	0.183	0.238

Table 5. Effects of information endowments on external investment allocations.

This table reports results from regressions of excess country allocations of emerging markets on the full set of controls used in both panels of Table 4, Column 6 as well as each of two new information endowment proxies. The excess portfolio allocations are calculated using CPIS data in Panel A. Columns 1 and 2 show the results for emerging market source countries when excess investment allocations are computed relative to Benchmark 1 (world portfolio benchmark), as explained in Table 4. Columns 3 and 4 repeat this exercise for developed market source countries. Columns 5 and 6 show the results from regressions for *only for* emerging market source countries but when excess investment is computed relative to the allocations of developed markets (within the same region as the source country) in that destination country, Benchmark 2 (regional) as described in the text. Columns 7 and 8 show the results from regressions *only for* emerging market source countries when excess investment is computed relative to the propensity-score matched benchmark developed market countries, Benchmark 3 (matched) as described in the text. We use two information endowment proxies for the CPIS results in Panel A: (1) information endowment proxy *Trade* is defined as sum of all trade flows between source emerging market i and destination country j during 1991-2000 divided by the sum of emerging market i's total external trade during 1991-2000; and, (2) information endowment proxy *FDI* is defined as the sum of FDI flows from country j into emerging market i during 1991-2000 divided by the sum of all FDI inflows into emerging market country i during 1991-2000. The excess portfolio allocations are calculated using FactSet Lionshares data in Panel B. Only excess allocations specifications are reported. In Panel B, we use two new information endowment proxies for the FactSet Lionshares results: (1) information endowment proxy *Parent* is defined as a dummy variable that equals one if the destination country j is the country where the parent institution of the emerging market institution i is located, and zero otherwise; and, (2) information endowment proxy *Peer* is defined as a dummy variable that equals one if the destination country j contains a foreign subsidiary of the parent institution of emerging market institution i. Standardized coefficients are shown in square brackets. These coefficients are based on regressions where dependent and independent variables (except time and source/destination country dummies) are first standardized by removing relevant means and dividing by standard deviations. Standard errors are clustered at the destination country-year level. Robust t-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: Excess Portfolio Allocations (CPIS Data)

	Excess allocations (Benchmark 1, world)				Excess allocations (Benchmark 2, regional)		Excess allocations (Benchmark 3, matched)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Emerging Markets		Developed Markets		Emerging Markets		Emerging Markets	
Trade	0.503***		0.569***		0.616***		0.509***	
	(6.30)		(4.52)		(5.22)		(5.81)	
	[0.284***]		[0.625***]		[0.323***]		[0.211***]	
FDI		0.034*		0.072**		0.024		0.03
		(1.89)		(2.17)		(1.56)		(1.63)
		[0.106*]		[0.191**]		[0.068]		[0.07]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4117	3973	5904	5692	4117	3973	4101	3956
Adj-R^2	0.307	0.247	0.501	0.365	0.271	0.188	0.404	0.377

Panel B: Excess Portfolio Allocations (FactSet Lionshares Data)

	Excess allocations (Benchmark 1, world)				Excess allocations (Benchmark 2, regional)		Excess allocations (Benchmark 3, matched)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Emerging Markets		Developed Markets		Emerging Markets		Emerging Markets	
Parent country	0.031*		0.007		0.032*		0.034**	
	(1.79)		(0.67)		(1.68)		(1.98)	
	[0.031*]		[0.005]		[0.034*]		[0.032**]	
Peer country		0.028**		0.007		0.026**		0.031**
		(2.14)		(1.40)		(2.43)		(2.26)
		[0.052**]		[0.006]		[0.052**]		[0.052**]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18050	18050	806271	806271	18050	18050	18050	18050
Adj-R^2	0.403	0.404	0.247	0.247	0.215	0.216	0.18	0.181

Table 6. Portfolio concentration and information endowment effects.

This table reports regression results when excess country allocations of emerging markets are regressed upon the full set of controls as in column 6 of Table 4, as well as each of the two information endowment proxies. Panel A shows the country-level results based on CPIS data. The excess country allocations are calculated from CPIS data relative to world portfolio benchmark and regional DM benchmark described in Table 4. The country-level information endowment proxies, Trade and FDI, are described in Table 4. *Concentration* is a dummy variable that equals one if the Herfindahl index of the country-level allocation in the emerging market source country's external investment portfolio in a given year is above the median value of that index among all emerging market source countries in that year. *Trade × Concentration* is the interaction term between *Trade* and the portfolio concentration dummy. *FDI × Concentration* is the interaction term between *FDI* and the portfolio concentration dummy. Panel B shows the results based on institution-level regressions using the LionShares data. The excess allocations for each source institution-destination country pair are calculated relative to benchmarks 1 and 2 described in Table 5. The two information endowment proxies, *Parent* and *Peer*, are defined in Table 5. Concentration is a dummy variable that equals one if the Herfindahl index of the country-level allocation of the emerging market source institution portfolio is above the median among all emerging market source institutions in that year. *Parent × Concentration* is the interaction term between the Parent information endowment variable and the portfolio concentration dummy. *Peer × Concentration* is the interaction term between the Peer information endowment variable and the portfolio concentration dummy. All other explanatory variables are defined in Appendix C. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent level, respectively.

Panel A: Excess Portfolio Allocations (CPIS Data)

	Excess allocations (Benchmark 1, world)		Excess allocations (Benchmark 2, regional)	
	(1)	(2)	(3)	(4)
Trade	0.254***		0.232**	
	(3.56)		(2.36)	
Trade × Concentration	0.356***		0.549***	
	(4.21)		(4.46)	
FDI		0.026***		0.016**
		(4.72)		(2.52)
FDI × Concentration		0.402***		0.374**
		(3.61)		(2.12)
Concentration	-0.014***	-0.011***	-0.019***	-0.010***
	(-3.63)	(-3.21)	(-3.97)	(-2.71)
Controls	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	4274	4130	4274	4130
Adj-R²	0.329	0.333	0.310	0.253

Panel B: Excess Portfolio Allocations (FactSet Lionshares Data)

	Excess allocations (Benchmark 1, world)		Excess allocations (Benchmark 2, regional)	
	(1)	(2)	(3)	(4)
Parent country	0.043		0.043*	
	(1.36)		(1.86)	
Parent country × Concentration	-0.019		-0.019	
	(-0.49)		(-0.43)	
Peer country		-0.003		0.026**
		(-0.20)		(2.12)
Peer country × Concentration		0.053**		-0.003
		(2.15)		(-0.18)
Concentration	-0.000	-0.002	0.000	0.000
	(-0.18)	(-0.88)	(0.43)	(0.38)
Controls	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	18606	18606	18606	18606
Adj-R²	0.403	0.405	0.215	0.216

Table 7. Relative country size, volatility, and information endowment effects

This table reports results from regressions of emerging market excess allocations on the full set of controls in column 6 of Table 4, each of the two information endowment proxies, and interactions of those proxies with the market capitalization, size, and volatility ratios of destination relative to parent countries. The regressions in this table are based on CPIS data. The two information endowment proxies, *Trade* and *FDI*, are defined in Table 5. *Market cap ratio* is a dummy variable that equals one if the stock market capitalization of the destination country in a given year divided by the stock market capitalization of the source country in that year is above the median value of that ratio among all source-destination country pairs in that year. *GDP ratio* is defined as a dummy variable that equals one if the GDP of the destination country in a given year divided by the GDP of the source country in that year (with both GDP values measured in current U.S. dollars) is above the median value of that ratio among all source-destination country pairs in that year. *Volatility ratio* is defined as a dummy variable that equals one if the volatility of stock returns in the destination country over a trailing five-year period divided by the volatility of stock returns in the source country over the same trailing five-year period is above the median value of that ratio among all source-destination country pairs. *Trade × Market cap ratio* is the interaction term between the *Trade* information endowment proxy and the market capitalization ratio. The other interaction terms shown in the table, *Trade × GDP ratio*, *Trade × Volatility ratio*, *FDI × Market cap ratio*, *FDI × GDP ratio*, and *FDI × Volatility ratio*, are defined in a similar manner. Standard errors are clustered at the destination country-year level. Robust t-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

	Excess allocations (Benchmark 1, world)					
	(1)	(2)	(3)	(4)	(5)	(6)
Trade	0.631**	0.727***	0.517***			
	(2.56)	(2.70)	(5.22)			
Trade × Market cap ratio	-0.123					
	(-0.54)					
Trade × GDP ratio		-0.219				
		(-0.85)				
Trade × Volatility ratio			-0.025			
			(-0.31)			
FDI				-0.926*	-0.329	0.031**
				(-1.76)	(-0.70)	(1.99)
FDI × Market cap ratio				0.961*		
				(1.82)		
FDI × GDP ratio					0.364	
					(0.77)	
FDI × Volatility ratio						0.009
						(0.86)
Market cap ratio	-0.001			-0.003		
	(-0.33)			(-0.56)		
GDP ratio		0.004			0.003	
		(0.72)			(0.30)	
Volatility ratio			0.000			0.000
			(0.14)			(0.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes	Yes	Yes
N	4274	4274	4274	4130	4130	4130
Adj-R^{2}	0.306	0.307	0.306	0.248	0.247	0.247

Table 8. Robustness tests using raw country allocations.

This table reports regression results when raw country allocations of emerging markets are regressed upon the full set of controls as in column 6 of Table 4, as well as each of the two information endowment proxies. Panel A shows the country-level results for raw country allocations (not measured relative to any benchmarks) based on CPIS data. The country-level information endowment proxies, *Trade* and *FDI*, are described in Table 5. Panel B shows the results from regressions for emerging market institution-level country allocations based on LionShares data. The two information endowment proxies, *Parent* and *Peer*, are defined in Table 5. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: CPIS	Raw Portfolio Allocations	
	(1)	(2)
Trade	0.504^{***}	
	(6.35)	
FDI		0.029
		(1.64)
Controls	Yes	Yes
Year FE?	Yes	Yes
Source Country FE?	Yes	Yes
Destination Country FE?	Yes	Yes
N	4274	4130
Adj-R^2	0.521	0.477

Panel B: FactSet LionShares	Raw Portfolio Allocations	
	(1)	(2)
Parent country	0.035^{**}	
	(2.00)	
Peer country		0.028^{**}
		(2.23)
Controls	Yes	Yes
Year FE?	Yes	Yes
Source Country FE?	Yes	Yes
Destination Country FE?	Yes	Yes
N	18606	18606
Adj-R^2	0.216	0.217

Table 9. Effects of information endowments on external investment allocations: Pre- and post-global financial crisis periods (excluding 2008 and 2009)

This table replicates the results of the basic regressions using information endowment proxies that are reported in Table 5. Panel A contains the equivalent of the regressions reported in columns 1 and 2 of panel A of Table 5, with the CPIS sample of emerging market source countries split into the pre-crisis (2001-07) and post-crisis (2010-11) periods. Panel B contains the equivalent of the regressions reported in columns 1 and 2 of panel B of Table 5, with the LionShares sample of emerging market institutions split into the pre-crisis (2001-07) and post-crisis (2010-11) periods. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: Excess Portfolio Allocations (CPIS Data)

	Excess allocation (Benchmark 1, world)			
	(1)	(2)	(3)	(4)
	Pre-crisis		Post-Crisis	
Trade	0.592^{***}		0.351^{***}	
	(6.77)		(3.62)	
FDI		0.470^{***}		0.016
		(3.49)		(1.64)
Controls	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	2169	2107	701	669
Adj-R^2	0.354	0.355	0.328	0.279

Panel B: Excess Portfolio Allocations (FactSet LionShares)

	Excess allocation (Benchmark 1, world)			
	(1)	(2)	(3)	(4)
	Pre-crisis		Post-Crisis	
Parent country	0.029		0.031	
	(1.36)		(0.98)	
Peer country		0.020		0.035^{**}
		(1.63)		(2.09)
Controls	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	7031	7031	4304	4304
Adj-R^2	0.406	0.406	0.372	0.374

Table 10. Excess investment allocations from emerging markets to the U.S.: Pre- and post-global financial crisis periods (excluding 2008 and 2009)

This table reports regression results which show how excess investment allocation to the U.S. is different from excess investment allocation to the other countries before and after financial crisis (column 1, 2, and 3) and how excess investment allocation to the U.S. changes before and after financial crisis and type of its source countries (column 4 and 5). In Panel A (in panel B), Emerging is a dummy variable that is equal to one if a source country (or an institution of a source country) i is an emerging market country (is in an emerging market country). Post-Crisis is equal to one for post-crisis (2010-11) periods and zero for pre-crisis (2001-07) periods. US destination is a dummy variable defined as one if a destination country is the U.S. and zero for the other destination countries. Standard errors are clustered at the destination country-year level. Robust t-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: Excess Portfolio Allocations (CPIS Data)

	Excess allocation (Benchmark 1, world)				
	(1)	(2)	(3)	(4)	(5)
	All Destinations			US Only	
Emerging	0.066	0.064	0.064	-0.068***	-0.075***
	(1.22)	(1.15)	(1.14)	(-12.14)	(-23.64)
Post-Crisis	-0.002	0.000	-0.001	0.089***	0.055***
	(-1.58)	(0.45)	(-1.12)	(3.52)	(3.85)
US Destination	-0.112***	-0.132***	-0.145***		
	(-3.78)	(-3.92)	(-4.15)		
Emerging × Post-Crisis		-0.005*	-0.007***		0.068
		(-1.83)	(-3.01)		(1.35)
Emerging × US Destination		0.042	0.024		
		(0.71)	(0.37)		
Post-Crisis × US Destination			0.056***		
			(4.21)		
Emerging × Post-Crisis × US Destination			0.070		
			(1.54)		
Source Country FE?	Y	Y	Y	Y	Y
N	19716	19716	19716	438	438
Adj-R^2	0.104	0.106	0.114	0.784	0.787

Panel B: Excess Portfolio Allocations (FactSet LionShares)

	Excess allocation (Benchmark 1, world)				
	(1)	(2)	(3)	(4)	(5)
	All Destinations			US Only	
Emerging	0.004	0.003	0.004	-0.408***	-0.404***
	(0.00)	(0.00)	(0.00)	(-43.86)	(-43.63)
Post-Crisis	-0.000	-0.000	-0.001	0.085***	0.089***
	(-0.06)	(-0.04)	(-0.74)	(9.13)	(9.56)
US Destination	-0.197***	-0.195***	-0.221***		
	(-10.84)	(-10.15)	(-10.92)		
Emerging × Post-Crisis		-0.001	-0.000		-0.066**
		(-0.38)	(-0.17)		(-2.51)
Emerging × US Destination		-0.038	-0.018		
		(-1.56)	(-0.74)		
Post-Crisis × US Destination			0.095***		
			(11.64)		
Emerging × Post-Crisis × US Destination			-0.082***		
			(-4.09)		
Source Country FE?	Y	Y	Y	Y	Y
N	1490794	1490794	1490794	10198	10198
Adj-R^2	0.065	0.065	0.068	0.193	0.194

Table 11. Interactions of information endowment variables and capital account restrictions.

This table extends the regressions reported in Panel A of Table 5 (CPIS data) and including measures of *de jure* capital controls taken from Fernandez et al. (2016). The two variables used here (in levels and interacted with the information endowment variables) are: index of outflow restrictions in source countries (KAO) and index of inflow restrictions in destination countries (KAI). Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. The superscripts *, **, and *** indicate that a coefficient is statistically significant at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: Foreign Direct Investment (FDI)

	Emerging Markets	Developed Markets	Emerging Markets	Emerging Markets
	Excess allocation (Benchmark 1, world)	Excess allocation (Benchmark 1, world)	Excess allocations (Benchmark 2, regional)	Excess allocations (Benchmark 3, matched)
FDI	0.412*	0.037	0.492**	0.280
	(1.90)	(0.87)	(2.23)	(1.12)
FDI × KAO	0.343***	0.169	0.040	0.350***
	(2.62)	(0.63)	(0.25)	(2.66)
FDI × KAI	-5.429***	0.250	-4.903**	-4.193*
	(-2.66)	(1.06)	(-2.41)	(-1.75)
KAO	-0.011	-0.010	-0.008	-0.012
	(-1.03)	(-1.14)	(-0.79)	(-1.09)
KAI	-0.014	-0.006*	-0.009	0.013
	(-1.39)	(-1.79)	(-0.88)	(1.00)
Year FE?	Y	Y	Y	Y
Source Country FE?	Y	Y	Y	Y
Destination Country FE?	Y	Y	Y	Y
N	3846	5692	3846	3831
Adj-R²	0.26	0.369	0.198	0.398

Panel B: Trade

	Emerging Markets	Developed Markets	Emerging Markets	Emerging Markets
	Excess allocation (Benchmark 1, world)	Excess allocation (Benchmark 1, world)	Excess allocations (Benchmark 2, regional)	Excess allocations (Benchmark 3, matched)
Trade	0.482***	0.547***	0.628***	0.471***
	(5.82)	(4.70)	(5.06)	(5.17)
Trade × KAO	0.304***	0.229	-0.017	0.295**
	(2.64)	(1.08)	(-0.12)	(2.45)
Trade × KAI	-1.131**	0.333	0.282	-1.135**
	(-2.10)	(1.53)	(0.41)	(-2.05)
KAO	-0.011	-0.011*	-0.008	-0.012
	(-1.12)	(-1.70)	(-0.86)	(-1.12)
KAI	-0.015	-0.006*	-0.009	0.015
	(-1.41)	(-1.72)	(-0.84)	(1.09)
Year FE?	Y	Y	Y	Y
Source Country FE?	Y	Y	Y	Y
Destination Country FE?	Y	Y	Y	Y
N	3846	5692	3846	3831
Adj-R²	0.316	0.527	0.277	0.427

Figure 1. External portfolio equity investments of emerging market economies

This figure shows the evolution of the aggregate external portfolio equity investments of the emerging markets listed in Appendix A. The bars show the aggregate external portfolio equity assets of emerging markets based on the IMF's Coordinated Portfolio Investment Survey database. The solid line shows the share (in percent) of total inward portfolio investments in the U.S. accounted for by emerging markets. For instance, in 2016, 10 percent of all foreign portfolio investments in U.S. equity markets are accounted for by investments originating in emerging market economies. These data are taken from the Treasury International Capital (TIC) System database of the U.S. Treasury.
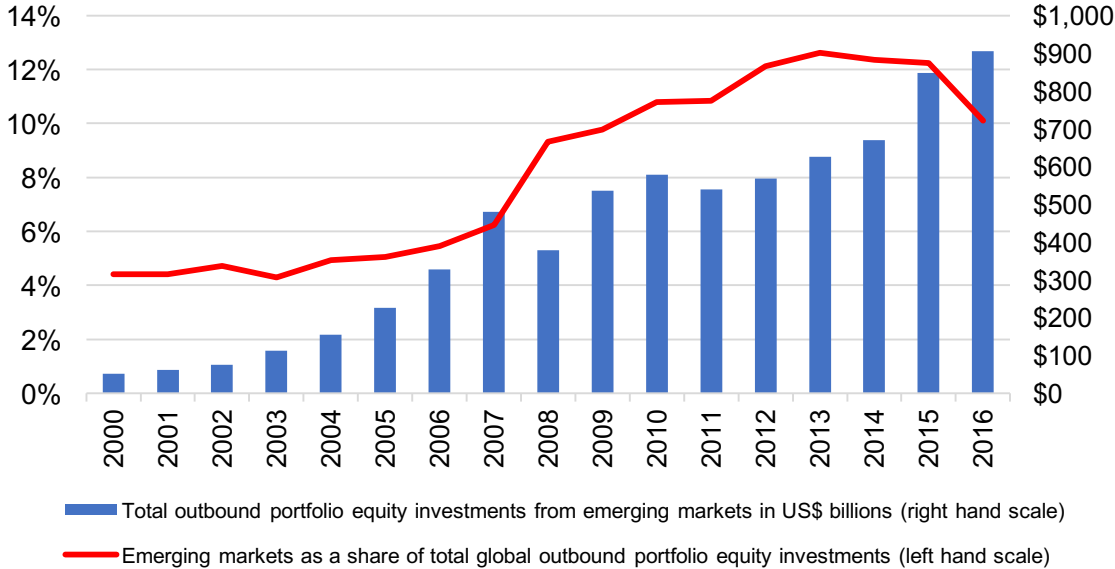

Total outbound portfolio equity investments from emerging markets in US$ billions (right hand scale)

Emerging markets as a share of total global outbound portfolio equity investments (left hand scale)

Figure 2. Foreign allocation bias in external portfolio equity investments, by source country.

This figure shows the foreign allocation bias for each source country. We first evaluate the deviation between the share of a country's portfolio allocated to a particular destination country and that destination country's market capitalization weight in the MSCI all-capital world market index. We then sum up the absolute values of that deviation for the source country relative to all of the potential destination countries (including those countries where the source country might not have any investment at all). To account for market size, this sum is adjusted so that each destination country's weight is given by its relative market capitalization (measured relative to the global total market capitalization, expressed in US dollars as a common currency and excluding the source country). Graph A shows the results of these calculations for developed market source countries. Graph B shows these calculations for emerging market source countries. These calculations are based on CPIS data.
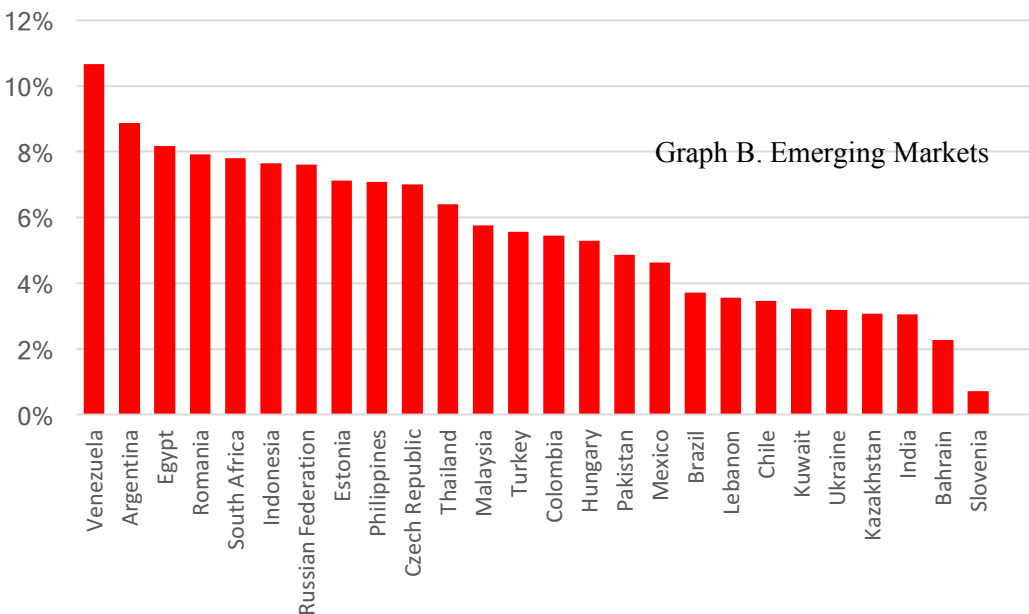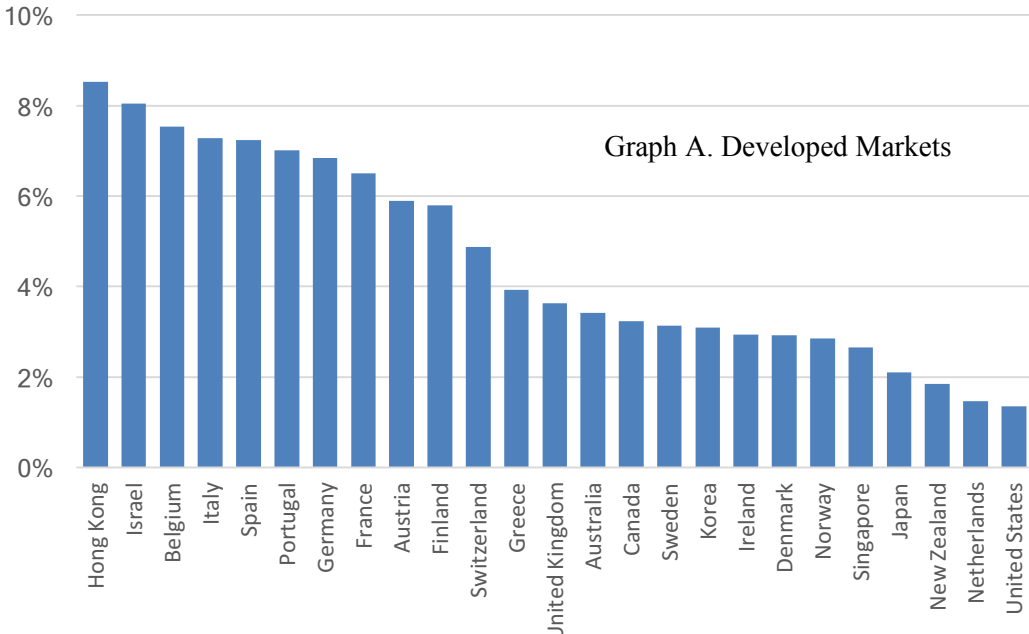

Graph A. Developed Markets

Graph B. Emerging Markets

Figure 3. Excess foreign allocations in specific destination countries comparing developed and emerging market investors.

This figure analyzes which destination countries are over-weighted (or underweighted) by DM versus EM source countries, separately. For each destination country, we calculate the excess (positive or negative) investment allocation for each source country (among DM or EM separately) in each year. Excess investment ratios are computed relative to the relative market capitalization weight in the MSCI all-capital world market index (excluding the source country of interest). We compute a weighted average across the group of source countries in DM or EM each year by the relative market capitalization of the source country in that group and average equally across all years in the sample. Graph A shows the results for the top 10 excess overweight destination markets and for the top 10 excess underweight destination markets among DM source countries (destination countries can be either DM or EM). Graph B shows the equivalent results among EM source countries.
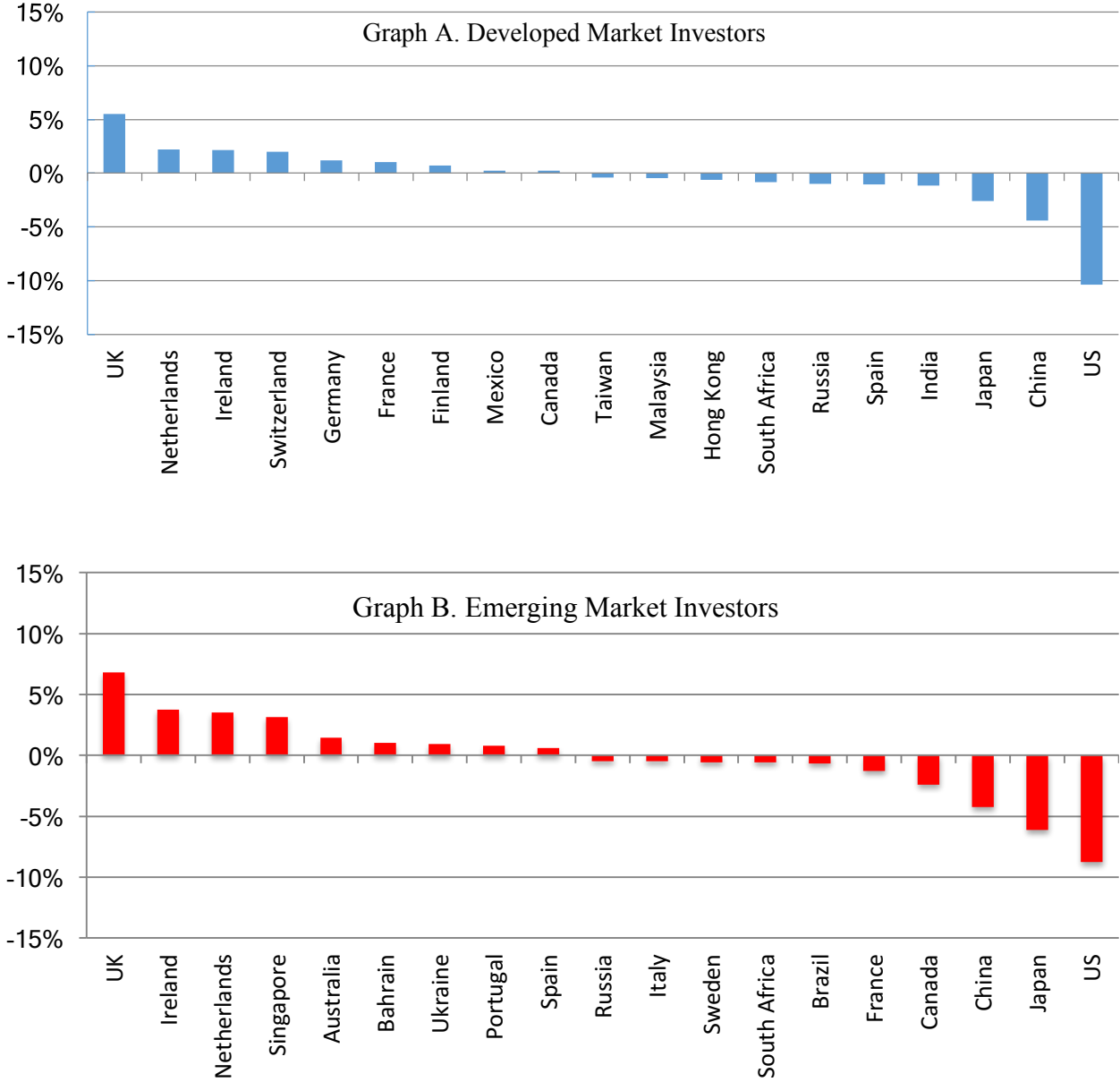
Figure 4. Average excess allocations over time in four major destination countries.

This figure exhibits how much a given destination country is over-weighted (or underweighted) by DM versus EM source countries, separately. For each destination country, we calculate the excess (positive or negative) investment allocation ratio for each source country from a given group of source countries (DM or EM) in each year. The excess allocation ratio is computed net of the relative market capitalization of that target country in the MSCI all-capital world market index (excluding the market capitalization of the source country of interest). We then take a weighted average across that group of source countries for each year. Each source country is weighted by its share of the total market capitalization in its respective group of source countries.
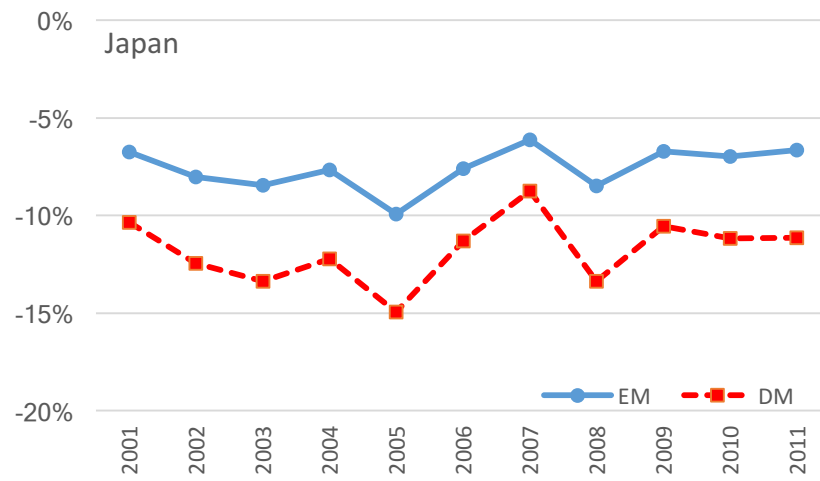
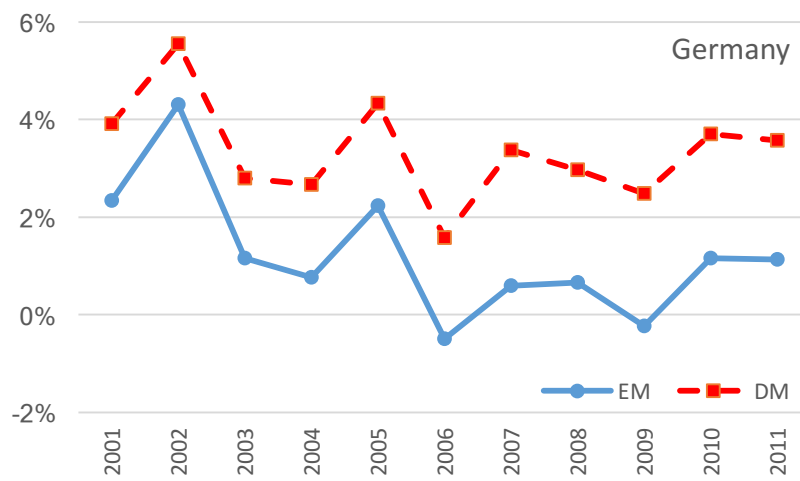Graph A. United States Average Excess Allocations
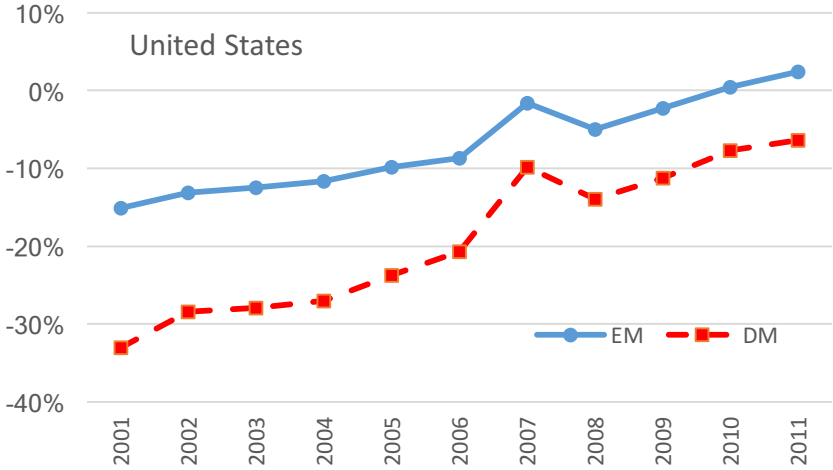
Graph B. United Kingdom Average Excess Allocations
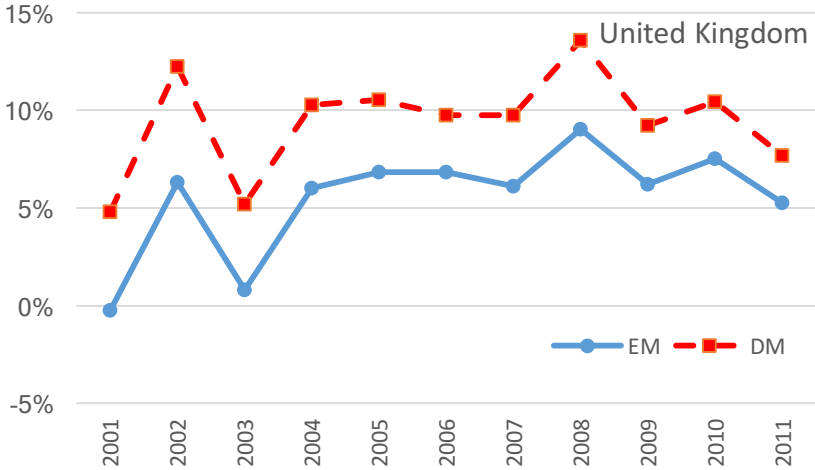
Graph C. Japan Average Excess Allocations

Graph D. Germany Average Excess Allocations

Appendix A. Country classifications into emerging or developed markets.

This appendix lists the countries that enter our analysis as source or destination countries for outward portfolio equity investments in CPIS, and classifies them as emerging market or developed market economies. The countries that only appear as destination countries are italicized.

AR	Argentina	Emerging	MX	Mexico	Emerging
AU	Australia	Developed	*MA*	*Morocco*	*Emerging*
AT	Austria	Developed	NL	Netherlands	Developed
BH	Bahrain	Emerging	NZ	New Zealand	Developed
BE	Belgium	Developed	NG	Nigeria	Emerging
BR	Brazil	Emerging	NO	Norway	Developed
CA	Canada	Developed	*OM*	*Oman*	*Emerging*
CL	Chile	Emerging	PK	Pakistan	Emerging
CN	*China*	*Emerging*	PE	Peru	Emerging
CO	Colombia	Emerging	PH	Philippines	Emerging
HR	*Croatia*	*Emerging*	PL	Poland	Emerging
CZ	Czech Republic	Emerging	PT	Portugal	Emerging
DK	Denmark	Developed	QA	Qatar	Emerging
EG	Egypt	Emerging	RO	Romania	Emerging
EE	Estonia	Emerging	RU	Russia	Emerging
FI	Finland	Developed	SL	Serbia	Emerging
FR	France	Developed	SG	Singapore	Developed
DE	Germany	Developed	SI	Slovenia	Emerging
GR	Greece	Emerging	ZA	South Africa	Emerging
HK	Hong Kong	Developed	ES	Spain	Developed
HU	Hungary	Emerging	LK	Sri Lanka	Emerging
IN	India	Emerging	SE	Sweden	Developed
ID	Indonesia	Emerging	CH	Switzerland	Developed
IE	Ireland	Developed	*TW*	*Taiwan*	*Emerging*
IL	Israel	Emerging	TH	Thailand	Emerging
IT	Italy	Developed	TN	Tunisia	Emerging
JP	Japan	Developed	TR	Turkey	Emerging
JO	*Jordan*	*Emerging*	UA	Ukraine	Emerging
KZ	Kazakhstan	Emerging	*AE*	*United Arab Emirates*	*Emerging*
KE	*Kenya*	*Emerging*	GB	United Kingdom	Developed
KR	Korea	Developed	US	United States	Developed
KW	Kuwait	Emerging	VE	Venezuela	Emerging
LB	Lebanon	Emerging	*VN*	*Vietnam*	*Emerging*
MY	Malaysia	Emerging			
MU	Mauritius	Emerging			

Appendix B. Summary statistics for the two samples of data on cross-border investor holdings.

This panel describes the process by which we derived our baseline sample for country-level analysis using the CPIS dataset. Our sample starts with potential country pairs of MSCI Emerging Markets source countries to MSCI destination countries, which could be emerging markets or developed markets (refer to Appendix A for a full listing of countries and their classification into EMs and DMs). We excluded source countries for which there does not exist any investment data for the years 2001-2011. In addition, we excluded potential country-pair observations for which there did not exist investment data in some years. We further excluded missing benchmarks (Vietnam in 2001 and 2002).

Panel A: CPIS sample of country-pair observations by year.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total	Average
Total Potential MSCI EM Source to MSCI Destination Country Pairs (36 × 62 – 36)	2196	2196	2196	2196	2196	2196	2196	2196	2196	2196	2196	24156	2196
Country Pairs for which the Source Countries do not report investment data in the year (9 × 62 – 9)	549	549	549	549	549	549	549	549	549	549	549	6039	549
Country pairs for which the source countries have missing observations on the destination countries	893	1001	946	796	826	843	726	759	535	508	550	8383	762
Missing Benchmarks	9	8	0	0	0	0	0	0	0	0	0	17	2
No of non-missing country pairs with EM source country (including zeros) of which:	745	638	701	851	821	804	921	888	1112	1139	1097	9717	883
Number of EM source countries	22	22	24	26	26	26	26	26	27	27	27	279	25
Number of destination countries	61	61	62	62	62	62	62	62	62	62	62	680	62
Total number of zero	346	271	272	350	278	209	298	229	392	389	348	3382	307
Total number of positive	399	367	429	501	543	595	623	659	720	750	749	6335	576

Panel B: FactSet Lionshares sample of country-pair observations by year.

This panel describes the process by which we derived our baseline sample for institution-level analysis using the LionShares dataset. Our sample starts with equity and ADR holdings of MSCI institutional investors from 2001-2011 extracted from the LionShares database, limited to investments from institutions in MSCI emerging market countries to destination countries (both emerging market and developed market) that are in the MSCI (see Appendix A for a full list of these countries). For each year, we only consider destination countries that received positive investment from at least one EM institution. For pairs of EM institutions and destination countries that do not have any investment observations, we fill in zero investment. We further exclude observations with missing benchmarks.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total	Average
Number of MSCI source country institutions that invest in non-domestic MSCI countries	2001	2078	2417	2678	2800	3056	3294	3198	3395	3564	3481	31962	2906
From developed markets	2000	2071	2397	2643	2759	2984	3199	3104	3261	3416	3330	31164	2833
From emerging markets	1	7	20	35	41	72	95	94	134	148	151	798	73
Total number of EM institution-destination country observations of which:	23	280	842	1575	1968	3528	5510	5358	7906	8732	8758	44480	4044
With positive investments	4	97	182	400	460	819	1133	1236	1760	1958	1921	9970	906
With zero investments	19	183	660	1175	1508	2709	4377	4122	6146	6774	6837	34510	3137

Appendix C. Variable definitions.

This table briefly defines the main variables used in the paper.

Variable Name	Description	Source
Benchmark 1 (world) investment ratio	Market capitalization of country j scaled by world market capitalization excluding country i. As described in the paper, country I is the source country and country j is the destination country.	World Federation of Exchanges and World Bank
Benchmark 2 (regional) investment ratio	[Portfolio investment from all developed countries within the region of country I to country j] /[Portfolio investment from all countries to country j]	CPIS or Lionshares; own calculation
Benchmark 3 (matched) investment ratio	[Portfolio investment from propensity-score-matched developed country i to country j] / [Portfolio investment from propensity score matched developed market country i to all countries]	CPIS or Lionshares; own calculation
CPIS Excess allocation (Benchmark 1)	[Portfolio investment from emerging market i to country j] / [Portfolio investment from emerging market i to all countries]–- Benchmark 1	CPIS; see also benchmark 1 description
CPIS Excess allocation (Benchmark 2)	[Portfolio investment from emerging market i to country j] / [Portfolio investment from emerging market i to all countries]–- Benchmark 2	CPIS; see also benchmark 2 description
CPIS Excess allocation (Benchmark 3)	[Portfolio investment from emerging market i to country j] / [Portfolio investment from emerging market i to all countries]–- Benchmark 3	CPIS; see also benchmark 3 description
Lionshares Excess allocation (Benchmark 1)	[Portfolio investment from emerging market institution i to country j] / [Portfolio investment from emerging market institution i to all countries]–- Benchmark 1	FactSet Lionshares; see also Benchmark 1 (global) description
Lionshares Excess allocation (Benchmark 2)	[Portfolio investment from emerging market institution i to country j] / [Portfolio investment from emerging market institution i to all countries]–- Benchmark 2	FactSet Lionshares; see also Benchmark 2 (regional) description
Lionshares Excess allocation (Benchmark 3)	[Portfolio investment from emerging market institution i to country j] / [Portfolio investment from emerging market institution i to all countries]–- Benchmark 3	FactSet Lionshares; see also Benchmark 3 (matched) description
External Trade (Trade)	[Sum of export and import between emerging market i and country j from 1991 to 2000] / [Sum of export and import of county j from 1991 to 2000]	United Nations Conference on Trade and Development (UNCTAD)
Foreign Direct Investment (FDI)	[FDI from country j into emerging market i from 1991 to 2000] / [FDI from all countries into emerging market i between 1991 to 2000], zero if it is missing	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
Parent Country	Dummy equals 1 if the destination country j is the country where the parent institution of the emerging market institution i is located	Classified by hand
Peer Country	Dummy equals 1 if the destination country j contains a foreign subsidiary of the parent institution of emerging market institution i.	Classified by hand

Variable Name	Description	Source
Distance	Log of miles between country i and country j	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
Contiguous Land Border Dummy (Border)	Dummy equals 1 if country i and country j share a common land-based border	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
Common Language	Dummy equals 1 if country i and country j share common language	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
Common Colonizer	Dummy equals 1 if country i and country j share common colonizer post 1945	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
Colony Relationship (Colony)	Dummy equals 1 if country i and country j are ever in colonial relationship with a common colonizer	Website of Professor Andrew Rose at Berkeley http://faculty.haas.berkeley.edu/arose
GDP Per Capita	Log of GDP Per Capita	IMF
Number of Firms	Log of number of listed firms per population	World Federation of Exchanges
Market cap/GDP	Equity market capitalization / GDP	IMF
Equity Market Turnover (Market turnover)	Annul equity market trading volume over end-of-year market capitalization	World Development Indicator
Transaction Fees	Sum of brokerage commission, transfer fees and market impact cost.	Elkins/McSherry LLC
Difference in returns	Country j's last year return-country i's last year return	Datastream
Variance ratio	Country j's return volatility divided by country i's return volatility. Return volatility is calculated using MSCI country index returns over the past 5 years.	Datastream
Correlation	Correlation of stock returns between country i and country j, based on monthly MSCI country index returns over the past 5 years.	Datastream
Market cap ratio	Market cap ratio is a dummy variable that equals one if the stock market capitalization of the destination country in a given year divided by the stock market capitalization of the source country in that year is above the median value of that ratio among all source-destination country pairs in that year.	IMF
GDP ratio	GDP ratio is defined as a dummy variable that equals one if the GDP of the destination country in a given year divided by the GDP of the source country in that year (with both GDPs measured in current U.S. dollars) is above the median value of that ratio among all source-destination country pairs in that year.	IMF

Variable Name	Description	Source
Volatility ratio	Volatility ratio is defined as a dummy variable that equals one if the volatility of stock returns in the destination country over a trailing five-year period divided by the volatility of stock returns in the source country over the same trailing five-year period is above the median value of that ratio among all source-destination country pairs.	Datastream
Concentration	Concentration is a dummy variable that equals one if the Herfindahl index of the country-level allocation in the emerging market source country's external investment portfolio in a given year is above the median value of that index among all emerging market source countries in that year.	Authors' calculations from FactSet Lionshares database.
Registration Rules	Sum of points. 1 point if registration required; 1 point if annual review of performance; 1 point if compliance requirements are mandated	Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other web based resources; see Karolyi (2015, Chapter 6) for details on construction.
Ownership Rules	Sum of points. 1 point if only some sectors restricted from foreign investors; 1 point if broad-based restrictions with cap limits; 1 point if other market restrictions.	Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other web based resources; see Karolyi (2015, Chapter 6) for details on construction.
FX Convertibility Limits	Sum of points. 1 point if only partially or non-convertible currency; 2 points if exchange rate is not freely floating.	Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other web based resources see Karolyi (2015, Chapter 6) for details on construction.
Govt Effectiveness	This variable measures the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. The main focus of this index is on "inputs" required for the government to be able to produce and implement good policies and deliver public goods. This variable ranges from -2.5 to 2.5 where higher values equal higher government effectiveness.	Kauffmann-Kraay Governance Indicators; see World Bank's World Governance Indicators http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators
Regulatory Burden	Measures the incidence of market-unfriendly policies. The indicators are based on 352 different underlying variables measuring perceptions of a wide-range of governance issues drawn from 32 separate data sources constructed by 30 different organizations worldwide. Each measure is constructed on a scale of -2.5 to 2.5 with a standard deviation of 1.0 using standard unobserved components models.	Kauffmann-Kraay Governance Indicators; see World Bank's World Governance Indicators http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators
Rule of Law	Rule of law measures the extent to which agents have confidence in and abide by the rules of society. These include perceptions of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. The indicators are based on 352 different underlying variables measuring perceptions of a wide-range of governance issues drawn from 32 separate data sources constructed by 30 different organizations worldwide. Each measure is constructed on a scale of -2.5 to 2.5 with a standard deviation of 1.0 using standard unobserved components models.	Kauffmann-Kraay Governance Indicators; see World Bank's World Governance Indicators http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators