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ABSTRACT

We examine how emerging market (EM) investors allocate their stock portfolios internationally. Using both country-level and institution-level data, we find that the coming wave of EM investors systematically over- and under-weight their holdings in some target countries. These abnormal foreign allocation biases of EM investors offer robust support of the information endowment hypothesis of van Nieuwerburgh and Veldkamp (2009). Specifically, past capital and trade flows from a foreign country to the home country create an information endowment (or advantage) that lead home country investments to be overweight that foreign country. At the institutional level, information advantage proxies based on relationships between EM institutional investors and the headquarters of their parent companies have strong explanatory power for international portfolio allocations. The results remain robust after controlling for other factors like geographic and other measures of economic proximity, economic and capital market development, market integration, market returns and correlation, and corporate governance. The information advantage effect is stronger for EM investors for which external portfolios exhibit a higher degree of concentration.

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1. Introduction

Emerging market economies are playing an increasingly prominent role in global finance, with outflows of financial capital from these economies rapidly gathering momentum. From 2000 to 2014, foreign exchange reserves of these economies increased by $7.5 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 their 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 investment vehicles 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.

The portfolio outflows from emerging markets are still relatively small, but growing rapidly. According to IMF data on external assets and liabilities, emerging markets' share of global external portfolio equity assets rose from 5 percent in 2000 to 11 percent in 2011. Official data on international investment positions show that emerging markets' external portfolio equity assets rose from $52 billion in 2000 to $347 billion in 2013. Inflows from emerging markets are playing an increasingly important role in external portfolio liabilities of even major developed market economies. Indeed, the share of foreign holdings of U.S. equities accounted for by emerging market investors rose from 2 percent in 2002 to 8 percent in 2013.[1]

[1] The updated Lane and Milesi-Ferretti (2008) database, referred to as "External Wealth of Nations" Dataset, 1970-2011, is available on the IMF website and that of Professor Philip R. Lane (http://www.philiplane.org/EWN.html). Data on international investment positions are from the IMF's International Financial Statistics. The source for U.S. Treasury data is the Treasury International Capital System (http://www.treasury.gov/resource-center/data-chart-center/tic/Pages/index.aspx).

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. Part of our analysis is based on bilateral investment positions between countries, obtained from the IMF's Coordinated Portfolio Investment Survey (CPIS). But, to provide an alternative perspective, we also use FactSet Ownership (formerly referred to as "Lionshares"), a database covering thousands of institutional investors' holdings in different countries. By using two different datasets, we are also able to extend previous authors' analysis of the portfolio allocations of developed markets, which has largely been based on the CPIS. In addition, our use of the latest waves of data from both sources allows us to examine the effects of the global financial crisis on the portfolio allocations of investors in both developed and emerging market economies.

We study the behavior of institutional investors in detail 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 market economies. For instance, in an earlier study that we build on, Chan, Covrig, and Ng (2005) examine 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.[2]

[2] Other theoretical and empirical studies on the determinants of foreign investments are mostly based on data for developed market economies. 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

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 portfolio. But a large body of research in international finance has documented that this benchmark is violated in two dimensions. First, home bias is a pervasive phenomenon.[3] Second, a substantial fraction of the aggregate outward portfolio investment reveals systematic over- and under-weightings across countries – the so-called "foreign allocation bias" or "foreign bias" - that tend to be driven by factors such as geographic proximity, linguistic similarity, cultural ties, and other factors that reflect a "familiarity" (or regional) bias.[4]

In this paper, we focus on the foreign bias as our objective is 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' portfolio allocations on average exhibit significantly greater overall foreign allocation biases in *absolute* magnitudes and higher country concentrations than those of developed market economies. To guide our empirical analysis, we turn to 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 which assets to acquire information about when there are multiple risky assets in the investment opportunity set. For instance, investors have a

(Karolyi, Lee, and van Dijk, 2012). Bartram, Griffin, Lim, and Ng (2013) document the effects of institutional investor ownership on correlations of asset prices across the world.

[3] 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).

[4] See, among many others, Portes and Rey (2005). Karolyi and Stulz (2003) position the literature on the home bias relative to theories on international portfolio choice. Cooper, Sercu, and Vanpeé (2013) furnish a useful up-to-date survey of the home and foreign bias literature.

comparative advantage in learning about their domestic assets. Even as information about foreign markets becomes easier to obtain, the 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 provides a rationalization for the persistence of home bias and a further prediction about where foreign allocation biases are likely to be most acute.

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 outward 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.[5] 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 endowments, as they have become dominant in gross inflows into emerging markets and are more likely to have information content for those countries' institutional investors than debt inflows.[6]

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 institutions are foreign subsidiaries of parent institutions headquartered abroad. Through corporate relationships between parent and subsidiary institutions, these subsidiaries may build up

[5] FDI as an information endowment proxy was used by Andrade and Chhaochharia (2010), drawing upon the theoretical work 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.
[6] See Prasad (2012).

information endowments on their parent institutions' home country and on "Peer" countries where their parent institutions have set up other foreign subsidiaries.

We find strong and robust evidence to support our formulation of the information endowment hypothesis. More importantly, information endowments show themselves to play an even bigger role in explaining the investment patterns of emerging market allocations relative to those of developed markets and to institutional investors domiciled in developed markets. The results remain strong when we put the hypothesis to an even more rigorous test by examining 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 (for non-indigenous institutions) 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.

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 deviates from holding a diversified portfolio. These findings are 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. Finally, we examine an ancillary implication of van Nieuwerburgh and Veldkamp's (2009) model 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 evidence to support this hypothesis.

Our paper is most closely related to the work of Andrade and Chhaochharia (2010), Chan, Covrig, and Ng (2005), and others cited above, but it contributes to the larger debate in international finance on what are the determinants of foreign portfolio choice. The work of Kang and Stulz (1997), Ahearne et al. (2004), Gelos and Wei (2005) associate the home and/or foreign biases revealed in foreign portfolio allocations to firm and country characteristics in the destination 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 the investors and of the destination countries for their investments toward understanding familiarity-driven or informational asymmetry factors, in general (and thus not necessarily in the context of information endowments or information immobility of van Niewerburgh and Veldkamp, 2009).

We must acknowledge two recent, contemporaneous papers that draw on the theory of van Niewerburgh and Veldkamp (2009). Schumacher (2015) 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 reveals superior investment performance that arises. He, like us and like Choi et al. (2014), motivates this industry-based connection as a source of information advantage in the spirit of van Nieuwerburgh and Veldkamp (2009). 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.[7]

We next outline our data and methodology in Section 2. Section 3 measures the pervasiveness of the foreign allocation bias across emerging and developed countries and Section 4 evaluates the primary determinants of that bias. We turn our attention to specific tests of the information endowment hypothesis in Section 5. A battery of robustness tests are discussed in Section 6 before we conclude the paper.

2. Data and Methodology

In this section, we provide an overview of the main data sources employed in our analysis, which covers the period 2001-2011. We then outline the basic empirical 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 market economies. This dataset has been employed in previous studies, mostly for 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

[7] Bekaert et al. (2015) further associate the intriguing finding in their study of the magnitude of foreign biases among individual investors across the U.S. based on their working for international versus domestic firms to the same phenomenon in Brown, et al. (2015) of an in-state equity bias for state pension plans in the U.S.

holdings database (similar to N-CSR mutual fund filings in the U.S.).[8] 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 Datastream, a source that provides source and destination country index returns. We also incorporate demographic, economic, and governance data from IMF and various alternative data sources.

Both investment holdings datasets have their strengths and weaknesses. The 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 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.

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)

[8] 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. Thus, we obtain the historical FactSet LionShares database that is free from survivorship bias. FactSet Ownership data is compiled from publicly available information: filings obtained in various countries supplemented by companies' annual reports. Wei (2010) analyzes the integrity of the data and finds that the U.S. and U.K. account for slightly over 70 percent of non-domestic capital.

Index Market Classification framework as of 2011. Nine other emerging market countries appear only as destination countries. Appendix A contains the list of countries in CPIS and their categorization into developed or emerging market economies.

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 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 in fact represent zero investments rather than missing observations, we add 34,510 observations (average of 3,147 per year) to yield a total of 44,480 observations (average of 4,044 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.

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 (UNCTAD). Among the 62 countries in our main sample, only 22 have profiles in the UNCTAD database. However, each of these 22 country profiles often contains data on inward FDI from a source country of interest that is not profiled. Analogously, each profile may contain data on outward FDI to a destination country of interest that is not profiled. This allows us to obtain inward and outward FDI data for a large fraction of our country list.[9]

Bilateral export and import data are available from the IMF's Direction of Trade Statistics (DOTS). 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 taken from Rose (2005) and Karolyi (2015). Appendix C contains a detailed description of all variables used in our empirical analysis, along with a fuller description of data sources.

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

[9] The data are in FDI Country Profiles on the UNCTAD website. For each country profile, we collected both inward and outward FDI data. When a country pair appears twice, once as inward and once as outward investment flows, we take whichever number is larger.

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 relative to 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.

In our empirical work, we use a large set of control variables drawing on various strands of the literature, including the so-called "gravity approach" to modeling trade and financial flows. The controls can be divided into the following categories: (1) *Gravity variables*, such as distance, common border, common colonial heritage, colonial relationship, and common language; (2) *Market depth and size*, including per capita GDP, the number of firms in the destination country, the ratio of market capitalization to GDP, market turnover, and transaction fees in the destination countries; (3) *Returns-based measures*, such as the differences in stock market returns between destination and source countries in the past year, differences in stock market returns between destination and source countries over the past five years, the variance ratio of destination country returns over the past five years divided by the variance of source country returns over the past five years, and return correlations between the source and destination countries over the past five years; (4) *Market integration variables*, which include registration restrictions on foreign investors, ownership restrictions on foreign investors, and currency convertibility limits in the destination

countries; and, (5) *Governance indicators*, including government effectiveness, regulatory burden, and rule of law in the destination countries.

All of the regressions include three sets of fixed effects—for year, source country, and destination country. We also allow for heteroscedasticity-consistent and robust standard errors with double clustering at the destination country and year levels.

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, proxied by the share of the relevant 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) affect portfolio investment in the reverse direction (from country *i* to country *j*) during a subsequent period (2000-2012). 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 $IE_{i,j,91-00}$ denotes $Trade_{i,j,91-00}$ or $FDI_{i,j,91-00}$. Our use of lagged FDI inflows 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, but it predates the period of evaluation of the foreign portfolio allocations (2000s).

Other than the aggregate-level analysis, 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 the 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 data: *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.[10] We define foreign allocation bias as the extent to which countries deviate from the world market portfolio in their foreign allocations. That is, once

[10] This part of the paper is related to the broader literature on emerging market countries' capital market liberalizations. Some papers study 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 constraints (see Prasad and Rajan, 2008, for a survey). Our paper is also related to the literature on mutual fund investments in emerging markets. For instance, Kaminsky, Lyons, and Schmukler (2004) look at strategies of mutual funds in regard to their investments in emerging markets, and the role they play during crises. Jotikasthira, Lundblad, and Ramadorai (2011) show that domestic mutual funds can dislocate emerging market returns and induce higher correlations with developed markets. Again, almost all of this prior literature is about investments *into* emerging markets.

investors in a country have decided how 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. We first evaluate 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. 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 1 shows the *absolute magnitude* of foreign allocation bias for each of the source countries covered in our sample. The extent of foreign allocation bias is generally higher for emerging markets (Panel A) relative to developed markets (Panel B). The median of this measure of foreign allocation bias is 0.11 for emerging markets and 0.08 for developed markets.[11] A value of 0.10 implies that, on average, the country's portfolio overweights 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. We do not

[11] 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.

have a well-defined metric for characterizing the extent of foreign allocation bias that we have documented as being small or large. But it is clearly quantitatively significant and is on average larger for emerging markets than for developed economies.

A complementary approach to that above is to compute concentration ratios for international portfolios (Choi et al., 2014, Schumacher, 2015). This provides 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 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 exercise confirms the earlier result 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 underweight or overweight (relative to the world market portfolio benchmark described above) in the international portfolio allocation decisions of the countries in our sample. Figure 2 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.[12]

Among developed market economies (Panel 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 China, Japan, and the U.S., and also of the major emerging markets. Emerging markets (Panel 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 3 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, both 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 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. While developed market investors have consistently overweighted Germany, in recent years emerging market investors have alternated between being slightly overweight and slightly underweight.

[12] The unweighted results are similar, although the degree of over- or under-weighting of specific destination countries was in general larger in absolute terms.

Table 1 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, $1.65 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, -12.10%, for developed markets). Many European markets, such as the U.K., Germany, Switzerland, Netherlands, find themselves among the ranks of the top destination markets for both sets of investors. But there are also important distinctions between the two groups. The emerging market investors feature Bahrain, Singapore, UAE, Russia, and Turkey, for example, none of which make the top 20 markets for developed investors. Furthermore, there are destination countries, like Switzerland, which feature as an overweight (-0.29%) for emerging market investors and an overweight (0.72%) for developed market investors. The country holdings are concentrated among the top 20 destination countries for both sets of investor countries: the top 20 destination markets represent 94.7% of the $159 billion for emerging markets and 94.3% of the $9.04 trillion for developed markets.

One interesting question is whether the global financial crisis led to a substantial reordering of investment destinations in foreign portfolios. Appendix Table A1 lists the absolute amounts of international portfolio equity allocations (based on the CPIS dataset) in 2008-09. The table is constructed in a parallel way to Table 1. For emerging market investors, the U.S and the U.K. remained by far the top destinations in terms of equity holdings. Relative to market capitalization

of these two markets, however, investments in the U.S. were underweight about 4 percent while those in the U.K. were overweight about 8 percent. Developed market investors were 9 percent underweight the U.S. market and 4 percent overweight the U.K. markets during this turbulent period. Investors from both groups of countries remained substantially overweight in Luxembourg during this period. A number of emerging markets appear among the list of top 20 destination countries for emerging market portfolio holdings. By contrast, only three emerging markets (China, Brazil, and India) appear in the list of top 20 destinations for developed economy equity holdings. China is not a major destination for equity holdings of other emerging markets, possibly because of restrictions on foreign investors' access to its stock markets.[13]

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. We find that this bias is even greater for emerging markets. But we also uncover that there is significant cross-country variation by destination country and over time that may be distinctly different for emerging and developed market investors. Therefore, in the analysis that follows, our intended contribution is not just to characterize the determinants of emerging markets' portfolio allocations but also to examine if there are systematic differences in the determinants of those allocations relative to those for developed economies and if those differences are meaningfully related to what existing theory predicts.

[13] As noted earlier, while China does not report data to the CPIS, meaning that it does not appear in the dataset as a source country, other countries do report their holdings in China. Foreign equity investment in China is largely controlled through the Qualified Foreign Institutional Investor (QFII) program. Sharma (2015) provides a detailed analysis of the QFII program and shows that most QFIIs are based in developed markets.

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 2 presents summary statistics for the variables used in our regression analysis.[14] 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 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.] Among the control variables, those that are the most constraining for our analysis will be those related to market size and market integration, but they will not be as binding as the dependent variable of interest. The sample size for the institution-country-years in the FactSet Lionshares dataset is much larger averaging well over 40,000 observations.

Table 3 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.[15]

[14] Summary statistics for the developed country sample of home countries are not presented, but are available from the authors.
[15] 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.

Model (1) shows that, consistent with the results of other authors (e.g., Portes and Rey (2005)), gravity variables that have been found to be strongly correlated with bilateral trade volumes are also 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 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 2.5% 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, in turn. The adjusted R^2 in this first specification reaches as high as 25.7% with the fixed effects in tow.[16]

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. Variables that reflect the level of development and size of the destination country—per capita GDP, the ratio of market capitalization to GDP, and market turnover—do not affect excess allocations. Overall, the explanatory power from the market size proxies is lower with an adjusted R^2 of 19.9%.

[16] We will discuss the explanatory power that comes from the source country, destination country, and year fixed effects later in the paper. An appendix table describes the relative importance of each of them by type.

Model (3) controls for a set of financial market variables: differences between destination and source countries in returns; variance ratios; and return correlations. Return differentials between the destination and source countries do not seem to influence portfolio allocations.[17] 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. Contrary to the notion of improving diversification by investing in foreign markets whose returns are less correlated with domestic returns, higher correlations with destination country returns are in fact associated with larger 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 18.7%).

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, the odd positive effect of return correlations on excess allocations disappears, and the governance variables

[17] We also looked at one-year rather than five-year return differentials but that made little difference.

lose their significance. We replicated Models (1) to (5) using the common sample of 4,439 observations for which we had data on all control variables. There were few major differences between those results and the results shown in Table 3.

The remaining columns of Table 3 in Models (6) to (12) replicate the benchmark CPIS regressions but 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. 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.] The results in these columns were also largely preserved when we replicated them using the common sample of 6,907 observations for which we had data on all of the explanatory variables.

Panel B of Table 3 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 that includes all independent variables. Comparing the full composite specifications for emerging market allocations using CPIS and LionShares in Model (6) in Panels A and B shows considerable similarity in the results, although there are a few important differences

as well. Some of the gravity variables seem to 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 Appendix Table A3.[18]

[18] We only summarize the key conclusions here. For emerging market allocations, the year fixed effects have little explanatory power. In the CPIS data, the source country fixed effects account for about 25% of the adjusted R2 of the composite regression while the destination country fixed effects account for about 44%. When we switch to the FactSet LionShares data, the year and source country fixed effects become unimportant explanatory factors while the destination country fixed effects account for about two-thirds of the overall explanatory power of the composite regression. Our interpretation of these results is that, while destination country fixed effects are clearly very important in the overall adjusted R2 of the composite specifications, the other control variables in our regressions together still add considerable explanatory power. When we repeat this exercise for developed markets, the year and source country fixed effects turn out to be unimportant. The destination country fixed effects account for about 75% of the adjusted R2 of the composite specification using CPIS data and 83% using the FactSet LionShares data. Thus, the residual explanatory power of the variables other than the fixed effects in explaining international portfolio allocations is slightly greater for emerging markets than for developed markets.

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.[19] 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.

5. Testing the Information Endowment Hypothesis

The results in the previous section suggest a limited explanatory role for certain economic determinants of portfolio allocations that, based on theoretical priors, should be important. Gravity variables matter strongly, despite the potential benefits from optimal portfolio diversification. Moreover, there appear to be only a few differences in the determinants of the allocation patterns of developed market and emerging market investors. These latter results, in particular, are surprising given that 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 and their nascent information processing abilities, it is plausible that emerging market investors rely to a greater

[19] We also directly confirmed this by running regressions for emerging market portfolio allocations using as the benchmark the portfolio allocations of developed markets within the same region as the relevant emerging market source country. These results are not reported here but are available from the authors.

extent on information endowments accumulated through earlier trade and financial relationships. This is the central hypothesis that guides us through this study. To explore this further, we now turn to an empirical implementation of the information endowment hypothesis of van Nieuwerburgh and Veldkamp (2009). Given that investors in developed markets presumably have better channels for information gathering and processing, our analysis of emerging market economies' outward investments and the comparison of emerging versus developed economy investors together offer a more powerful test of the information endowment hypothesis than the existing literature to date.

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 4 reports the results from CPIS regressions that include the full set of controls used in Table 3 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 nearly 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).

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 (0.028 versus 0.006, see 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?

One question is whether the results are driven by our use of a benchmark based on the market-capitalization weighted world market portfolio. A large body of work has documented that country characteristics such as investability, market liquidity, quality of corporate and public governance, political stability, and stability of macroeconomic policies affect both the volume and composition of a country's external liability portfolio. It is possible that both emerging market and developed market portfolio allocations are driven by these factors in a way that we have failed to control for in our various specifications, so our use of the world market portfolio weights as the benchmark for the foreign allocation bias might throw a veil over interesting differences in the portfolio allocation patterns of emerging market and developed market investors. 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.[20]

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, by contrast, 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

[20] Depending on whether the regressions are based on CPIS or LionShares data, the benchmark is based on CPIS data or LionShares data aggregated up to the country level.

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 coefficients on both the trade and FDI ratios are significantly positive, confirming that the information endowments have 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 interpretation of the coefficients is not exactly the same. The regression in Model (8) indicates that a 1 percentage point increase in the past share of FDI inflows from a particular foreign country results in the average emerging market directing 0.03 percentage points more of its allocation to that country relative to the allocation of the average developed economy.

Although we do not report the coefficients on other controls here, it is worth pointing out that relatively few of the other coefficients were significant in Models (5) to (8) in this table. This means that, other than the information endowment variables, the remaining explanatory variables do not have markedly differential effects on emerging market versus developed economy foreign portfolio allocations. When we include both information endowment variables simultaneously, the trade share variable tends to dominate and the coefficient on the FDI ratio often turns insignificant. 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. We checked our main results by substituting zeroes for the missing observations. These tests, whose results we do not report here, confirmed the robustness of our main results regarding the effect of information endowments on portfolio allocations and we do not pursue them further.[21]

5.4 Institution-level regressions

Next, we undertake a more rigorous test of the information endowment hypothesis using institution-level data. To exploit the granularity of 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*.[22] 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

[21] These results are available from the authors.

[22] Creating these information endowment variables involved a matching exercise based on hand-collected information from websites. For each of the emerging market institutional investors in FactSet Lionshares, we started by using institution names, complemented by website reviews, to uncover evidence of subsidiary-parent relationships. These classifications are available from the authors upon request. Once we determine that a particular emerging market institution is the foreign subsidiary of a parent institution, we identify the country where its parent institution is domiciled. We then use the same procedure of a name-based search and a website search of parent company information to identify other emerging market countries where the parent institution has foreign subsidiaries.

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 3, as well as year, source country, and destination country fixed effects. Given how the information endowment proxies are constructed, we can not include institution-specific fixed effects.

The results are presented in Panel B of Table 4. 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. Institutions in emerging markets tend to have an average excess allocation of 3.2 percentage points in the country that their parent institution is located in. Interestingly, the peer effect is quantitatively larger than this parent institution effect. For an emerging market institutional investor, the existence of a foreign subsidiary of the same parent institution is associated with a 5.3 percentage point increase in the excess investment allocation in that country relative to that country's share in the market capitalization-weighted world portfolio.

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 (3) and (4) 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 4, confirm the greater importance of information endowments in determining allocations of emerging market relative to developed market institutional investors.

The main conclusion from this section is that information endowments play an important role in driving differences between the outward portfolio allocation patterns of emerging markets relative to developed economies. The results hold up both at the country level and for individual institutional investors.

6. Extensions and Robustness Tests

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. Van Nieuwerburgh and Veldkamp (2010) propose there are 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 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 5, Panel A, where the excess allocations are measured relative to world portfolio benchmark, the market capitalization weighted world portfolio. The interaction coefficients remain positive and statistically significant when we use 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).

We conducted a similar experiment to evaluate the effects of information endowments on the allocations of institutional investors with different degrees of portfolio concentration. In this case, 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. We allow this dummy variable to interact with the parent country and peer country dummies that were used as information endowment proxies in the previous exercise. The only significant interaction coefficient in Panel B of Table 5 is that on the *Peer Country* × *Concentration* interaction variable in Model (2). That is, among emerging market institutional investors with more-than-average 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.

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 compared to the source country 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 dummy variable 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 6. In none of the cases do we find significant coefficients on the interaction terms. In other words, information endowments do not have 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.[23]

6.3 Results Using Raw 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. That is, 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 7. Panel A, which contains the CPIS results, shows that past trade and FDI relationships have a significant positive effect on raw allocations. Panel B, which contains the 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 confirm the earlier results that information endowments do have a positive effect on portfolio allocation patterns.

6.4 Additional Tests and Extensions

We conducted a variety of additional tests to check the robustness of our main results and to consider extensions. Since these results in general confirmed our main results, we only briefly summarize them here.

[23] We found similar results, though they are not reported here, when we examined the allocation patterns of emerging market institutional investors using the FactSet LionShares dataset.

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 the destination country is larger.

The global financial crisis is likely to have caused a reassessment of perceived risk and return characteristics of different markets and, therefore, could have affected international portfolio allocations. We re-estimated the main regressions using data for the period 2009-11. The coefficients on the information endowment variables mostly remained statistically significant for emerging market allocations (see Appendix Table A4). In the post-crisis period, the coefficients estimated using the CPIS data were smaller than those for the pre-crisis period or the corresponding ones from the full sample regressions. In other words, the effects of information endowments on external portfolio allocations became attenuated after the crisis. By contrast, in the LionShares regressions, the coefficient on the FDI relationship information endowment proxy was higher in the post-crisis period relative to the pre-crisis period.

There were some interesting results related to other control variables when we used the two alternative benchmarks, which allow for a direct comparison between the determinants of the allocation patterns of emerging market versus developed market allocations (results not shown here). Market liquidity entered with a significant positive coefficient, indicating that in the post-

crisis period this variable played a larger role in emerging markets' allocations relative to those of developed markets. The coefficient on the control of corruption variable turned significantly negative in both CPIS and LionShares regressions. This could reflect emerging market investors pulling back on their allocations to developed markets, which were undergoing macroeconomic and equity market collapses in the aftermath of the crisis.

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.

Information endowments seem to be more important for determining the external portfolio allocations of emerging markets (or emerging market institutional investors) relative to developed markets (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. While we use a large array of control variables based on alternative theories, we do not use a nested model that formally tests the information endowment hypothesis against alternatives. Nevertheless, we believe the results are interesting enough to warrant further theoretical and empirical analysis.

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Table 1. 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.)	Class	Region	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation	Destination Market	Average Investment (US $ million)	Class	Region	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation
United States	43,248	DM	NA	0.3205	0.3902	-0.0698	United States	1,647,065	DM	NA	0.2751	0.3961	-0.1210
United Kingdom	42,290	DM	Europe	0.1238	0.0686	0.0552	United Kingdom	1,086,932	DM	Europe	0.1102	0.0713	0.0389
Luxembourg	29,195	DM	Europe	0.1606	0.0016	0.1590	Luxembourg	1,026,556	DM	Europe	0.1763	0.0016	0.1747
Ireland	9,143	DM	Europe	0.0381	0.0023	0.0358	Japan	699,650	DM	AP	0.0489	0.0909	-0.0420
Bahrain	4,045	EM	EEMEA	0.0361	0.0004	0.0357	France	601,939	DM	Europe	0.0610	0.0433	0.0177
Singapore	2,584	DM	AP	0.0395	0.0061	0.0334	Germany	527,861	DM	Europe	0.0535	0.0323	0.0212
Brazil	2,386	EM	LA	0.0087	0.0158	-0.0071	Switzerland	420,145	DM	Europe	0.0308	0.0236	0.0072
Austria	2,278	DM	Europe	0.0464	0.0021	0.0444	Netherlands	321,193	DM	Europe	0.0301	0.0148	0.0153
France	2,023	DM	Europe	0.0514	0.0416	0.0098	Canada	301,405	DM	NA	0.0122	0.0341	-0.0218
Germany	1,805	DM	Europe	0.0435	0.0311	0.0124	Ireland	266,204	DM	Europe	0.0307	0.0024	0.0283
Netherlands	1,770	DM	Europe	0.0432	0.0142	0.0289	Italy	208,200	DM	Europe	0.0196	0.0164	0.0031
Belgium	1,503	DM	Europe	0.0208	0.0060	0.0148	China	206,921	EM	AP	0.0280	0.0560	-0.0280
Australia	1,431	DM	AP	0.0263	0.0210	0.0053	Spain	193,389	DM	Europe	0.0228	0.0248	-0.0020
UAE	1,429	EM	EEMEA	0.0221	0.0015	0.0206	Australia	188,819	DM	AP	0.0248	0.0218	0.0030
Hong Kong	1,387	DM	AP	0.0232	0.0204	0.0028	Hong Kong	169,619	DM	AP	0.0160	0.0212	-0.0052
Spain	1,344	DM	Europe	0.0126	0.0238	-0.0113	Korea	164,259	DM	AP	0.0111	0.0157	-0.0046
Russia	902	EM	AP	0.0368	0.0133	0.0235	Brazil	161,816	EM	LA	0.0095	0.0164	-0.0069
Switzerland	893	DM	Europe	0.0198	0.0227	-0.0029	Sweden	121,485	DM	Europe	0.0182	0.0098	0.0084
Japan	847	DM	AP	0.0119	0.0876	-0.0757	Finland	110,772	DM	Europe	0.0104	0.0048	0.0056
Turkey	665	EM	EEMEA	0.0062	0.0035	0.0027	Taiwan	106,187	EM	AP	0.0072	0.0126	-0.0054
Top 20 Markets	151,167			0.0546	0.0387	0.0159	Top 20 Markets	8,530,417			0.0498	0.0455	0.0043
Total Investments	159,568						Total Investments	9,039,573					

Table 2. 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)	9,717	0.006	0.090	-0.011	-0.002	-0.000
Excess allocation (Benchmark 2, regional)	9,734	0.006	0.094	-0.012	-0.002	-0.000
Excess allocation (Benchmark 3, matched)	9,442	0.012	0.118	-0.004	-0.000	0.003
Trade	17,820	0.017	0.047	0.001	0.003	0.013
FDI	15,763	0.027	0.269	0.000	0.000	0.000
Distance	17,633	8.146	0.861	7.608	8.399	8.787
Border	17,633	0.033	0.179	0.000	0.000	0.000
Common Colonizer	17,633	0.038	0.191	0.000	0.000	0.000
Colony Relationship	17,633	0.012	0.111	0.000	0.000	0.000
Common Language	17,633	0.130	0.337	0.000	0.000	0.000
GDP per capita	18,013	9.272	1.325	8.428	9.610	10.446
Number of firms	12,500	2.600	1.329	1.482	2.708	3.592
Market capitalization/GDP	17,932	0.774	0.766	0.288	0.539	1.026
Market turnover	13,723	0.817	0.686	0.348	0.644	1.112
Transaction Fees	12,253	0.230	0.114	0.155	0.202	0.275
Difference in returns	13,233	-0.061	0.472	-0.303	-0.048	0.190
Variance ratio	14,701	1.027	0.602	0.645	0.893	1.244
Correlation	14,871	0.378	0.338	0.154	0.419	0.646
Registration restrictions	13,464	1.555	1.154	0.000	2.000	2.000
Ownership Restrictions	12,573	0.995	0.890	0.000	1.000	1.000
Currency convertibility limits	14,641	0.258	0.482	0.000	0.000	0.000
Government Effectiveness	14,641	0.966	0.819	0.170	1.040	1.740
Regulatory burden	14,641	0.889	0.752	0.310	1.050	1.560
Rule of law	14,641	0.821	0.876	0.070	0.960	1.650
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	0.079	0.000	0.000	0.000
Parent country	44,480	0.005	0.074	0.000	0.000	0.000
Peer country	44,480	0.008	0.091	0.000	0.000	0.000

Table 3. 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. 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 a similar set of regressions for developed market source countries.

Panel A. CPIS Holdings Data Sample.

		Emerging Markets						Developed Markets					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gravity Variables	Distance	-0.029***					-0.028***	-0.011***					-0.011***
		(-5.84)					(-5.10)	(-4.93)					(-4.44)
	Border	-0.027**					-0.028	0.035***					0.039***
		(-2.12)					(-1.42)	(3.17)					(2.90)
	Common colonizer	0.037***					0.019	-0.005					-0.011
		(2.67)					(1.24)	(-0.63)					(-0.86)
	Colonial relationship	0.118***					0.152**	-0.005					-0.018
		(3.34)					(2.55)	(-0.63)					(-1.46)
	Language	-0.014*					-0.017	0.013***					0.019***
		(-1.68)					(-1.50)	(2.89)					(2.62)
Market Size Measures	GDP per capita		0.001				-0.023		-0.033***				-0.025***
			(0.03)				(-0.89)		(-4.33)				(-3.28)
	Number of firms		-0.013**				-0.013*		-0.009***				-0.006***
			(-1.97)				(-1.92)		(-4.27)				(-3.30)
	Market cap/GDP		-0.001				-0.004		0.003				0.002
			(-0.26)				(-0.65)		(1.11)				(0.83)
	Market turnover		0.005				0.005		0.001				0.002
			(0.90)				(0.75)		(0.82)				(1.30)
	Transaction fee		0.058*				0.066*		0.034***				0.028***
			(1.79)				(1.72)		(3.84)				(3.03)
Returns Based Measures	Difference in returns			0.001			0.001			-0.001***			-0.002**
				(0.83)			(0.32)			(-3.16)			(-2.24)
	Variance ratio			-0.004***			-0.007***			-0.001			-0.002**
				(-2.93)			(-2.71)			(-1.36)			(-1.98)
	Correlation			0.008**			0.002			0.008***			0.007*
				(1.97)			(0.27)			(2.80)			(1.87)

Table 3. Determinants of excess investment allocations across countries and institutions. (continued)

		Emerging Markets					Developed Markets					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Market Integration Measures	Registration Rules				-0.006***		0.001				-0.002		0.011**
					(-2.81)		(0.08)				(-0.89)		(2.04)
	Ownership Rules				-0.008***		-0.027*				-0.004*		-0.010***
					(-5.64)		(-1.72)				(-1.83)		(-2.65)
	FX Convertibility				-0.026***		-0.092***				-0.014**		-0.069***
					(-8.60)		(-2.67)				(-2.00)		(-4.59)
Governance Measures	Govt Effectiveness					-0.015*	0.011					-0.013***	-0.008**
						(-1.88)	(0.76)					(-4.69)	(-2.31)
	Regulatory Burden					-0.020**	-0.010					-0.005**	-0.004
						(-2.19)	(-0.74)					(-2.31)	(-1.44)
	Rule of Law					0.012	-0.006					0.009***	0.005**
						(1.15)	(-0.34)					(3.64)	(2.06)
	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	9521	6140	7747	7074	8316	4439	14448	9029	12000	10528	12353	6907
	F-stats	12.25***	1.41	3.83***	68.94***	2.60**	19.37***	12.15***	8.92***	7.28***	4.03***	7.33***	5.85***
	Adj-R^2	0.257	0.199	0.260	0.187	0.210	0.300	0.425	0.375	0.347	0.376	0.362	0.433

Panel B. FactSet Lionshares Holdings Data Sample.

		Emerging Markets					Developed Markets						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gravity Variables	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 Measures	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 Based 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)

Table 3. Determinants of excess investment allocations across countries and institutions. (continued)

		Emerging Markets						Developed Markets					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Market Integration Measures	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 Measures	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	0.283	0.262	0.304	0.266	0.402	0.205	0.195	0.180	0.195	0.183	0.238

Table 4. 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 3, 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 3. 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*. 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 allocation (Benchmark 1, world)				Excess allocation (Benchmark 2, regional)		Excess allocation (Benchmark 3, matched)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Emerging Markets		Developed Markets		Emerging Markets		Emerging Markets	
Trade	0.492***		0.462***		0.620***		0.496***	
	(6.05)		(4.15)		(5.27)		(5.57)	
FDI		0.033**		0.061**		0.017		0.029*
		(1.98)		(2.14)		(1.45)		(1.69)
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	4439	4295	6907	6683	4439	4295	4423	4279
Adj-R^2	0.349	0.308	0.494	0.455	0.236	0.164	0.391	0.369

Panel B: Excess Portfolio Allocations (FactSet Lionshares Data)

	Excess allocation (Benchmark 1, world)		Excess allocation (Benchmark 2, regional)		Excess allocation (Benchmark 3, matched)	
	(1)	(2)	(3)	(4)	(5)	(6)
	Emerging Markets		Emerging Markets		Emerging Markets	
Parent country	0.032*		0.035*		0.037**	
	(1.80)		(1.91)		(2.07)	
Peer country		0.053**		0.066***		0.052**
		(2.11)		(3.62)		(2.01)
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	18606	18606	18606	18606	18606	18606
Adj-R^2	0.403	0.405	0.215	0.219	0.177	0.179

Table 5. 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 3, 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. 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 allocation (Benchmark 1, world)		Excess allocation (Benchmark 2, regional)	
	(1)	(2)	(3)	(4)
Trade	0.227***		0.226**	
	(3.11)		(2.20)	
Trade × Concentration	0.397***		0.592***	
	(4.17)		(4.53)	
FDI		0.024***		0.008
		(2.99)		(0.81)
FDI × Concentration		0.248***		0.240**
		(2.66)		(2.13)
Concentration	-0.007	-0.005	-0.013**	-0.005
	(-1.61)	(-1.11)	(-2.33)	(-0.86)
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	4439	4295	4439	4295
Adj-R^2	0.366	0.347	0.272	0.198

Panel B: Excess Portfolio Allocations (FactSet Lionshares Data)

	Excess allocation (Benchmark 1, world)		Excess allocation (Benchmark 2, regional)	
	(1)	(2)	(3)	(4)
Parent country	0.034		0.031	
	(1.11)		(1.63)	
Parent country × Concentration	-0.005		0.008	
	(-0.10)		(0.25)	
Peer country		-0.013		0.066***
		(-0.45)		(3.53)
Peer country × Concentration		0.117***		0.001
		(2.86)		(0.03)
Concentration	-0.000	-0.001	-0.000	-0.000
	(-0.17)	(-0.84)	(-0.42)	(-0.40)
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-R^2	0.403	0.409	0.215	0.219

Table 6. 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 3, 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 4. *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. 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.

	Excess allocation (Benchmark 1, world)					
	(1)	(2)	(3)	(4)	(5)	(6)
Trade	0.388***	0.697***	0.499***			
	(3.05)	(3.94)	(4.74)			
Trade × Market cap ratio	0.103					
	(0.92)					
Trade× GDP ratio		-0.203				
		(-1.24)				
Trade × Volatility ratio			-0.016			
			(-0.18)			
FDI				-0.021	0.065	0.039
				(-0.27)	(0.71)	(1.64)
FDI × Market cap ratio				0.056		
				(0.72)		
FDI × GDP ratio					-0.034	
					(-0.37)	
FDI × Volatility ratio						-0.009
						(-0.55)
Market cap ratio	0.001			0.002		
	(0.15)			(0.25)		
GDP ratio		-0.005			-0.005	
		(-0.80)			(-0.60)	
Volatility ratio			0.003			0.002
			(0.72)			(0.58)
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	4439	4439	4439	4295	4295	4295
Adj-R^2	0.349	0.350	0.349	0.309	0.308	0.308

Table 7. Robustness 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 3, 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 4. 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. 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: CPIS	Raw Portfolio Allocations	
	(1)	(2)
Trade	0.489***	
	(6.04)	
FDI		0.028*
		(1.69)
Controls	Yes	Yes
Year FE?	Yes	Yes
Source Country FE?	Yes	Yes
Destination Country FE?	Yes	Yes
N	4439	4295
Adj-R^2	0.498	0.462

Panel B: FactSet LionShares	Raw Portfolio Allocations	
	(1)	(2)
Parent country	0.036**	
	(1.99)	
Peer country		0.053**
		(2.11)
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	0.219

Figure 1. 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). Panel A shows the results of these calculations for developed market source countries. Panel B shows these calculations for emerging market source countries. These calculations are based on CPIS data.

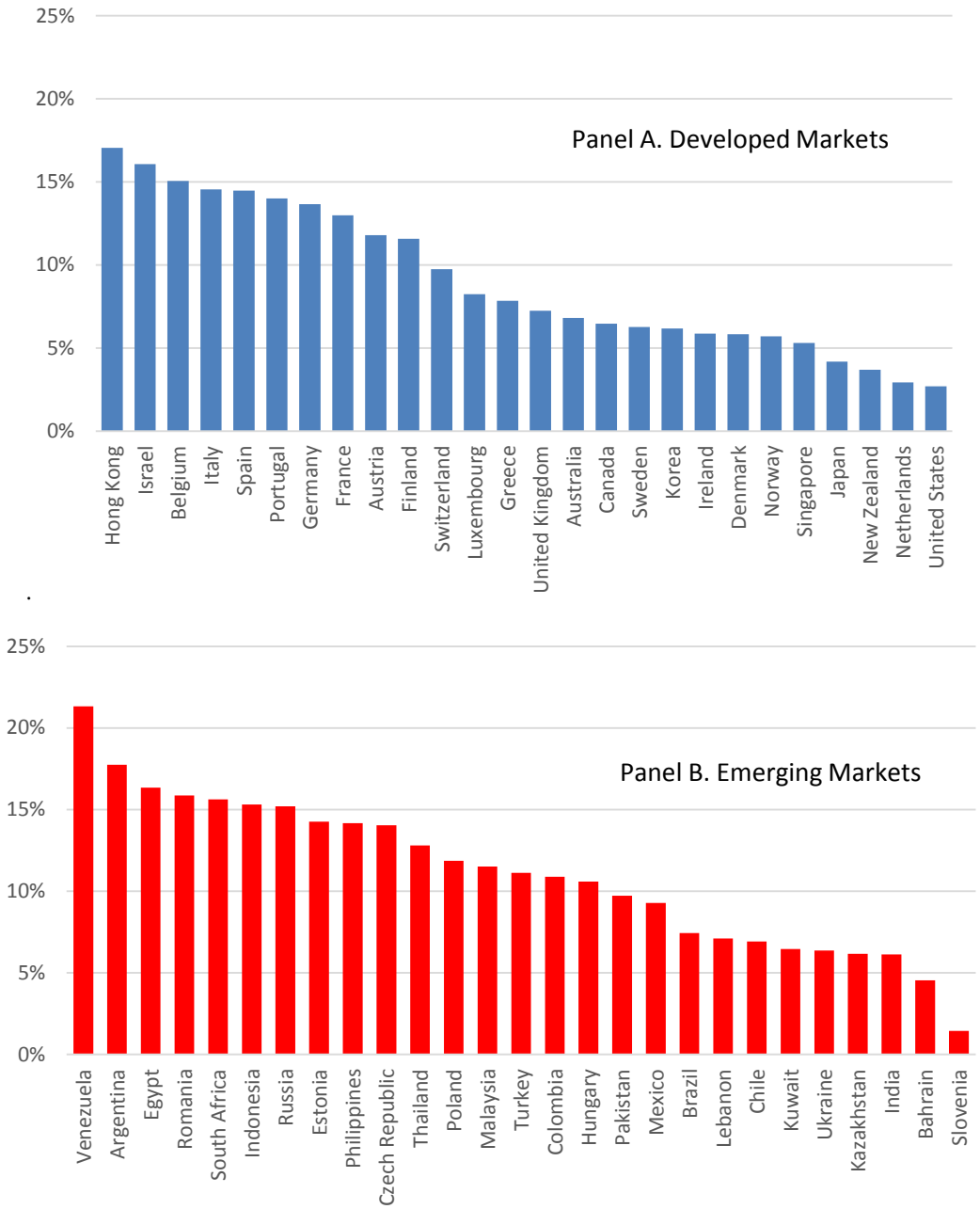
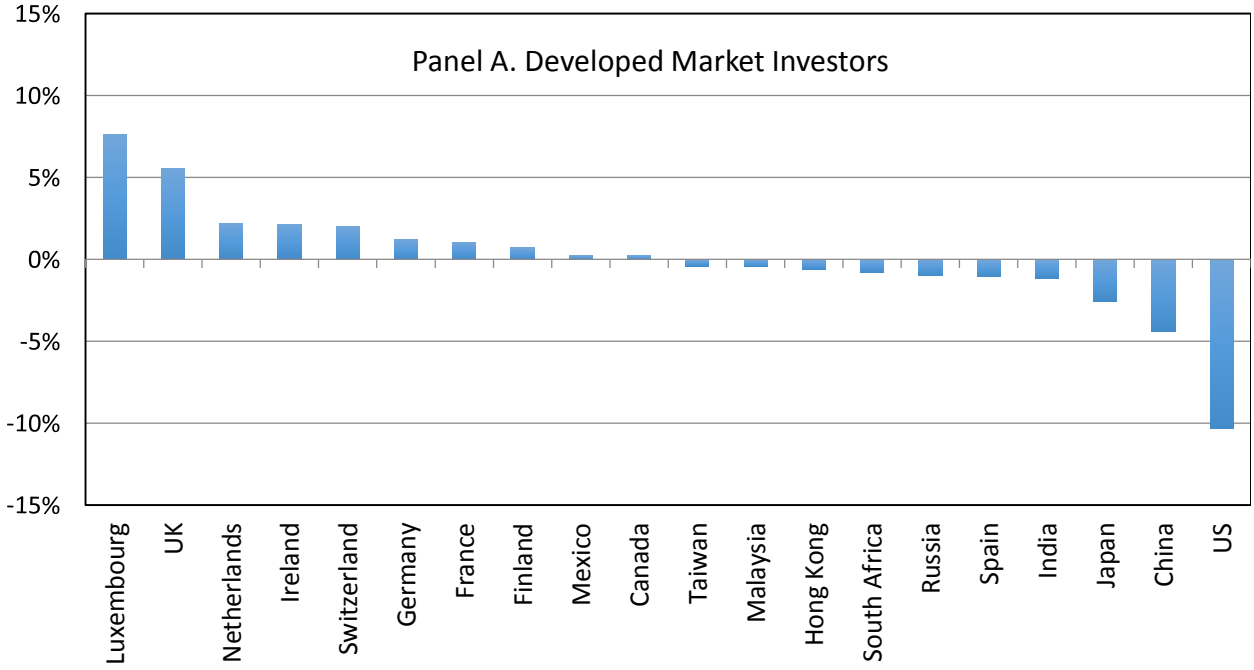


Figure 2. Excess foreign allocations in specific destination countries comparing developed and emerging market investors.

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. Panel 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). Panel B shows the equivalent results among EM source countries.



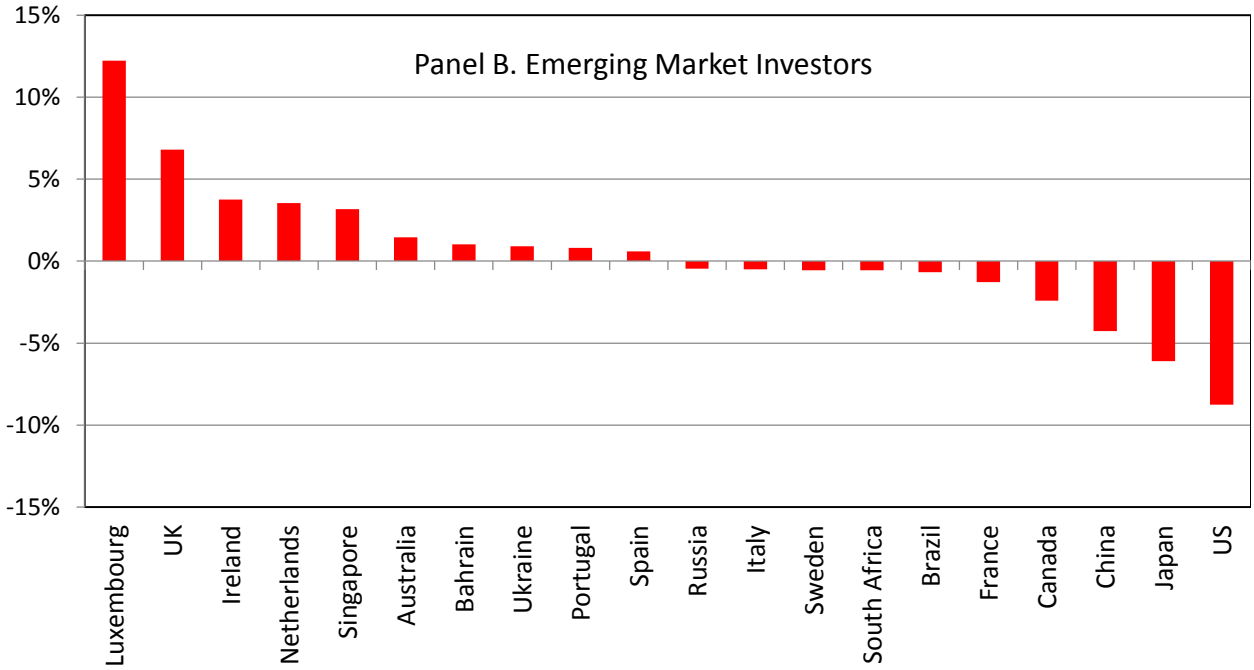
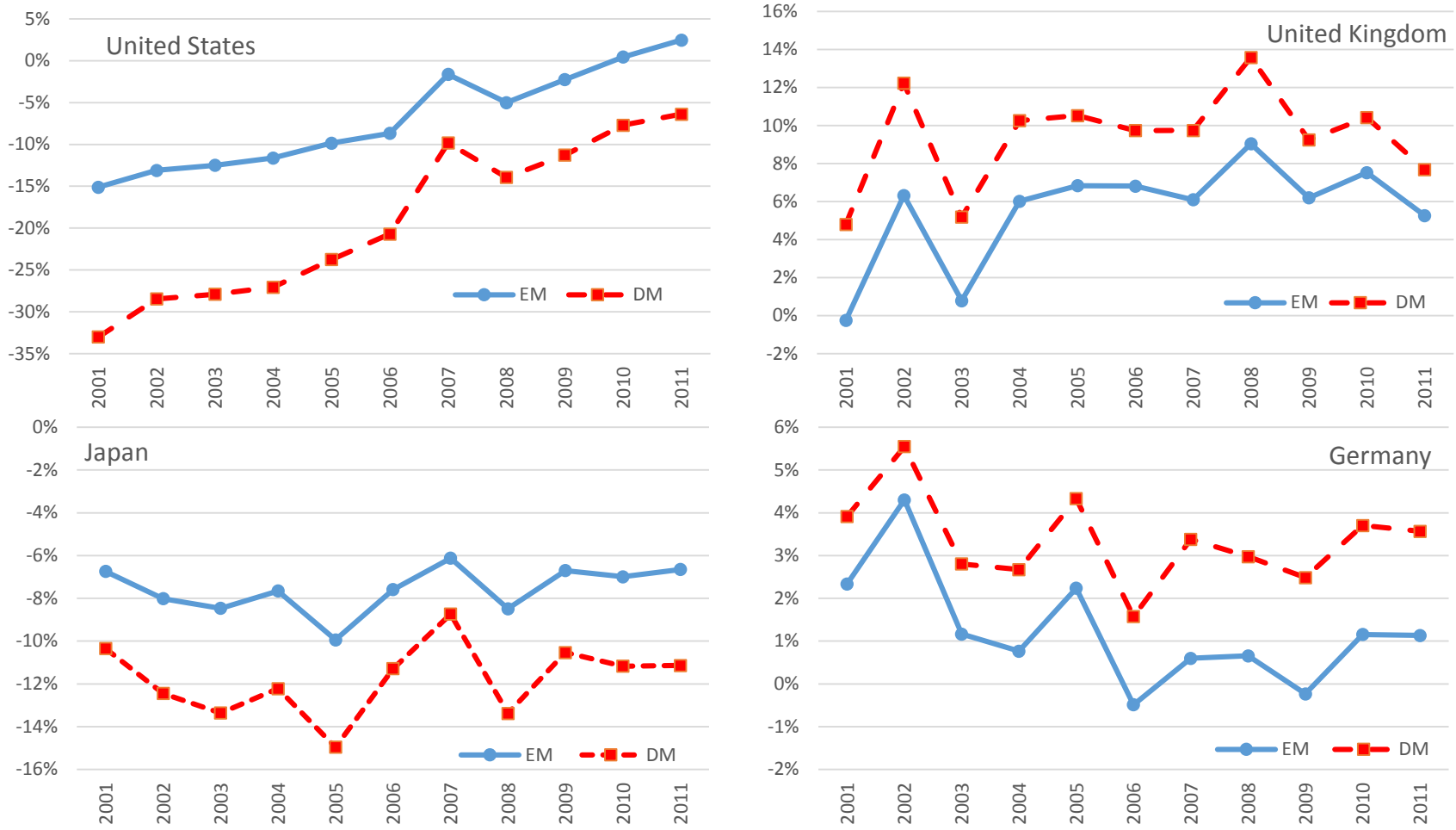


Figure 3. Average excess allocations over time in four major destination countries.

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.



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 observations	346	271	272	350	278	209	298	229	392	389	348	3382	307
Total number of positive observations	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
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

Variable Name	Description	Source
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

Appendix D. Total equity investments by key institutional investors domiciled in MSCI source countries by year.

This table presents summary statistics on total equity investments by institutional investors ("Total AUM") for each MSCI source country by year and total number of institutions ("Number") in each source country by year. We report the Top 5 institutions in 2011 by market capitalization (in US dollars millions).

Panel A. Emerging Markets

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
Argentina	Total AUM:	-	-	-	-	24	32	93	15	36	106	44	1: INVESTIS ASSET MANAGEMENT SA SGFCI	$44m
(AR)	Number:	0	0	0	0	2	1	1	1	2	2	1		
Bahrain	Total AUM	-	-	-	-	-	-	-	120	1	-	102	1: SECURITIES & INVESTMENT COMPANY BSC	$102m
(BH)	Number	0	0	0	0	0	0	0	1	1	0	1		
Brazil	Total AUM	327	250	390	870	1,424	2,701	6,962	1,806	16,147	39,930	10,205	1: BB GESTAO DE RECURSOS DTVM SA	$5,611m
(BR)	Number	5	5	5	7	6	6	11	11	51	189	13	2: HSBC GESTAO DE RECURSOS LTDA	$1,230m
													3: GOLDMAN SACHS ASSET MANAGEMENT	$1,130m
													4: BNP PARIBAS ASSET MANAGEMENT BRASIL	$781m
													5: BANCO JPMORGAN SA	$468m
Chile	Total AUM	-	52	51	73	91	286	594	186	476	2,038	308	1: PINEBRIDGE INVESTMENTS LATIN AMERICA	$308m
(CL)	Number	0	2	1	1	1	2	2	2	3	5	1		
China	Total AUM	-	-	-	-	37	-	-	125,731	208,878	215,982	161,787	1: CHINA ASSET MANAGEMENT CO LTD	$15,874m
(CN)	Number	0	0	0	0	1	0	0	52	55	59	60	2: E FUND MANAGEMENT CO LTD	$12,227m
													3: HARVEST FUND MANAGEMENT CO LTD	$10,201m
													4: BOSERA ASSET MANAGEMENT CO LTD	$8,864m
													5: GF FUND MANAGEMENT CO LTD	$7,140m
Colombia	Total AUM	-	-	-	-	-	-	-	-	-	-	102	1: SEGURIDAD CIA ADMINISTRADORA DE	$102m
(CO)	Number	0	0	0	0	0	0	0	0	0	0	1		
Croatia	Total AUM	-	-	-	-	-	24	712	185	200	349	126	1: NFD AUREUS INVEST DD	$35m
(HR)	Number	0	0	0	0	0	2	5	6	6	11	8	2: HPB INVEST DOO	$35m
													3: ERSTE INVEST DOO	$19m
													4: ZB INVEST DOO	$17m
													5: ILIRIKA INVESTMENTS DOO	$10m
Czech Republic	Total AUM	65	88	132	520	816	1,329	2,146	920	1,372	1,594	1,159	1: ING INVESTMENT MANAGEMENT CR AS	$366m
(CZ)	Number	2	2	3	7	7	7	9	9	8	7	7	2: INVESTICNI SPOLECNOST CESKE SPORITELNY	$272m
													3: GENERALI PPF ASSET MANAGEMENT AS	$204m
													4: CSOB ASSET MANAGEMENT AS	$190m
													5: CONSEQ INVESTMENT MANAGEMENT AS	$48m
Egypt	Total AUM	-	-	-	-	-	-	-	38	50	70	35	1: EFG HERMES ASSET MANAGEMENT SAE	$35m
(EG)	Number	0	0	0	0	0	0	0	1	1	1	1		
Estonia	Total AUM	52	86	237	510	967	1,619	2,473	588	1,423	1,998	1,263	1: SEB VARAHALDUS AS	$1,065m
(EE)	Number	1	3	4	4	4	5	7	8	8	8	7	2: SWEDBANK INVESTMENT FUNDS AS	$97m
													3: TRIGON FUNDS AS	$49m
													4: AVARON ASSET MANAGEMENT AS	$21m
													5: DANSKE CAPITAL AS ESTONIA	$18m
Hungary	Total AUM	-	-	-	243	377	734	1,161	991	758	867	374	1: ING INVESTMENT MANAGEMENT HUNGARY RT	$159m
(HU)	Number	0	0	0	8	8	7	8	7	7	7	7	2: OTP FUND MANAGEMENT LTD	$124m
													3: PIONEER INVESTMENT FUND MANAGEMENT	$26m
													4: CONCORDE ASSET MANAGEMENT LTD	$24m
													5: BUDAPEST FUND MANAGEMENT CO LTD	$21m

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
India	Total AUM	76	89	3,684	5,871	13,507	21,368	29,159	20,408	42,309	60,207	46,872	1: HDFC ASSET MANAGEMENT CO LTD	$7,232m
(IN)	Number	3	3	22	23	28	25	27	38	39	49	48	2: ICICI PRUDENTIAL LIFE INSURANCE CO LTD	$7,145m
													3: RELIANCE CAPITAL ASSET MANAGEMENT LTD	$5,645m
													4: UTI ASSET MANAGEMENT CO LTD	$4,752m
													5: ICICI PRUDENTIAL ASSET MANAGEMENT CO	$3,067m
Indonesia	Total AUM	-	-	-	-	-	-	-	-	-	204	1,073	1: PT SCHRODER INVESTMENT MANAGEMENT	$997m
(ID)	Number	0	0	0	0	0	0	0	0	0	2	2	2: PT BATAVIA PROSPERINDO ASET MANAJEMEN	$77m
Israel	Total AUM	-	-	-	-	-	-	-	-	3,141	655	726	1: MENORA MIVTACHIM LIFE INSURANCE	$726m
(IL)	Number	0	0	0	0	0	0	0	0	30	1	1		
Jordan	Total AUM	-	-	-	-	-	-	-	15	12	13	12	1: AL ARABI INVESTMENT GROUP CO /INVT	$12m
(JO)	Number	0	0	0	0	0	0	0	1	1	1	1		
Kazakhstan	Total AUM	-	-	-	-	-	-	240	-	-	-	-		
(KZ)	Number	0	0	0	0	0	0	1	0	0	0	0		
Kenya	Total AUM	-	-	-	-	-	-	-	3	2	5	-		
(KE)	Number	0	0	0	0	0	0	0	1	1	1	0		
Kuwait	Total AUM	-	-	-	-	-	14	8	23	37	543	598	1: GLOBAL INVESTMENT HOUSE ASSET	$598m
(KW)	Number	0	0	0	0	0	1	1	1	1	1	1		
Lebanon	Total AUM	-	-	-	-	-	-	13	-	18	12	7	1: FEDERAL BANK OF LEBANON SAL	$7m
(LB)	Number	0	0	0	0	0	0	1	0	1	1	1		
Malaysia	Total AUM	-	-	419	966	1,071	1,210	2,153	1,628	2,909	3,558	3,607	1: CIMB PRINCIPAL ASSET MANAGEMENT BHD	$1,332m
(MY)	Number	0	0	8	9	12	13	19	20	21	20	19	2: PERMODALAN NASIONAL BHD	$740m
													3: PACIFIC MUTUAL FUND BHD	$285m
													4: HONG LEONG ASSET MANAGEMENT BHD	$234m
													5: OSK UOB INVESTMENT MANAGEMENT BHD	$231m
Mexico	Total AUM	781	327	291	379	645	852	1,306	366	388	7,578	7,867	1: IMPULSORA Y PROMOTORA BLACKROCK	$6,656m
(MX)	Number	2	4	4	4	4	4	4	3	3	4	4	2: BBVA BANCOMER GESTION SA DE CV	$834m
													3: IMPULSORA DEL FONDO MEXICO SC	$306m
													4: PICHARDO ASSET MANAGEMENT SA DE CV	$70m
Morocco	Total AUM	-	-	-	-	-	-	-	-	-	-	-		
(MA)	Number	0	0	0	0	0	0	0	0	0	0	0		
Oman	Total AUM	-	-	-	-	-	-	-	18	35	43	47	1: BANKMUSCAT SAOG /INVT MGMT	$39m
(OM)	Number	0	0	0	0	0	0	0	1	1	2	2	2: INVESTMENT MANAGEMENT GROUP /OMAN	$8m
Pakistan	Total AUM	-	-	-	-	-	-	497	344	1,472	1,258	838	1: NATIONAL INVESTMENT TRUST LTD	$604m
(PK)	Number	0	0	0	0	0	0	6	14	16	18	15	2: AL MEEZAN INVESTMENT MANAGEMENT LTD	$71m
													3: JS INVESTMENTS LTD /INVT MGMT	$65m
													4: ARIF HABIB INVESTMENTS LTD /INVT MGMT	$26m
													5: UBL FUND MANAGERS LTD	$16m
Philippines	Total AUM	-	2	3	4	10	44	217	68	202	251	336	1: SUN LIFE ASSET MANAGEMENT CO INC	$219m
(PH)	Number	0	1	1	1	1	1	1	1	2	1	3	2: BDO TRUST & INVESTMENTS GROUP	$102m
													3: ATR KIMENG ASSET MANAGEMENT INC	$15m
Poland	Total AUM	-	-	1,067	2,832	4,993	23,358	45,892	17,181	30,768	40,197	27,513	1: ING PTE SA	$4,981m
(PL)	Number	0	0	14	15	16	30	33	34	34	35	37	2: AVIVA PTE AVIVA BZ WBK SA	$4,567m
													3: POLSKIE TOWARZYSTWO EMERYTALNE PZU	$2,817m
													4: ING INVESTMENT MANAGEMENT POLSKA SA	$1,682m
													5: AMPLICO PTE SA	$1,558m

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
Portugal	Total AUM	512	1,257	2,396	2,894	4,021	4,957	6,280	2,834	4,089	4,298	2,346	1: BPI GESTAO DE ACTIVOS SGFIM SA	$736m
(PT)	Number	2	18	33	32	24	26	28	29	30	26	24	2: ESAF ESPIRITO SANTO FUNDOS DE	$412m
													3: BES VIDA COMPANHIA DE SEGUROS SA	$349m
													4: CAIXAGEST TECNICAS DE GESTAO DE FUNDOS	$216m
													5: ESPIRITO SANTO ACTIVOS FINANCEIROS SGPS	$216m
Romania	Total AUM	-	-	-	2	9	19	1,387	316	619	599	623	1: SOCIETATEA DE INVESTITII FINANCIARE	$255m
(RO)	Number	0	0	0	4	5	4	10	17	17	17	16	2: SOCIETATEA DE INVESTITII FINANCIARE	$251m
													3: ING INVESTMENT MANAGEMENT ROMANIA	$72m
													4: BT ASSET MANAGEMENT SAI SA	$12m
													5: KD INVESTMENTS ROMANIA SAI SA	$6m
Russian Federation	Total AUM	1	5	7	222	14	144	116	125	64	263	245	1: TKB BNP PARIBAS INVESTMENT PARTNERS	$126m
(RU)	Number	1	1	1	2	1	1	1	1	1	2	3	2: PROSPERITY CAPITAL MANAGEMENT RF LTD	$108m
													3: ALLIANZ ROSNO ASSET MANAGEMENT OJSC	$11m
Slovenia	Total AUM	-	-	205	617	1,071	1,745	3,580	1,423	1,910	2,017	1,503	1: TRIGLAV SKLADI DOO	$445m
(SI)	Number	0	0	5	5	9	9	9	9	9	9	9	2: KD FUNDS MANAGEMENT CO LLC	$320m
													3: NLB SKLADI ASSET MANAGEMENT LTD	$275m
													4: KBM INFOND INVESTMENT FUND	$254m
													5: ALTA FUNDS DZU DD	$106m
South Africa	Total AUM	76	4,556	7,658	15,099	16,282	24,366	29,771	17,818	27,961	36,499	30,796	1: ALLAN GRAY UNIT TRUST MANAGEMENT LTD	$5,949m
(ZA)	Number	3	24	21	23	24	44	48	61	69	68	70	2: INVESTEC ASSET MANAGEMENT PTY LTD	$5,333m
													3: SANLAM INVESTMENT MANAGEMENT PTY LTD	$3,993m
													4: CORONATION ASSET MANAGEMENT PTY LTD	$3,066m
													5: STANLIB ASSET MANAGEMENT LTD	$2,526m
Taiwan	Total AUM	-	-	-	1,416	103	93	61	668	21,816	20,423	14,341	1: JPMORGAN ASSET MANAGEMENT TAIWAN LTD	$1,806m
(TW)	Number	0	0	0	2	1	1	1	3	37	36	36	2: ALLIANZ GLOBAL INVESTORS TAIWAN LTD	$1,431m
													3: YUANTA SECURITIES INVESTMENT TRUST CO	$1,339m
													4: CAPITAL INVESTMENT TRUST CORP	$984m
													5: CATHAY SECURITIES INVESTMENT TRUST CO	$920m
Thailand	Total AUM	9	13	995	946	727	204	3,395	2,908	3,392	4,360	40	1: SCB ASSET MANAGEMENT CO LTD	$35m
(TH)	Number	1	1	9	8	6	6	20	20	19	19	2	2: SENHOUSE ASIA LTD	$5m
Turkey	Total AUM	-	25	139	143	277	137	190	56	106	271	237	1: HSBC PORTFOY YONETIMI AS	$121m
(TR)	Number	0	2	2	2	4	5	5	6	6	5	6	2: AK ASSET MANAGEMENT AS	$44m
													3: IS ASSET MANAGEMENT	$42m
													4: FINANS PORTFOY YONETIMI AS	$11m
													5: TICARET SECURITIES	$11m
Ukraine	Total AUM	-	-	-	-	-	-	-	-	-	-	-		
(UA)	Number	0	0	0	0	0	0	0	0	0	0	0		
United Arab	Total AUM	-	-	-	12	51	39	107	629	372	355	210	1: ABU DHABI COMMERCIAL BANK /INVT MGMT	$84m
(AE)	Number	0	0	0	1	1	1	2	6	8	8	6	2: EFG HERMES UAE LTD	$38m
													3: INVEST AD ASSET MANAGEMENT PJSC	$37m
													4: ING INVESTMENT MANAGEMENT MIDDLE EAST	$32m
													5: MASHREQ ASSET MANAGEMENT	$14m
Venezuela	Total AUM	-	-	-	-	-	-	-	-	-	-	-		
(VE)	Number	0	0	0	0	0	0	0	0	0	0	0		
Vietnam	Total AUM	-	-	-	-	-	-	83	347	463	506	481	1: DRAGON CAPITAL MANAGEMENT CO LTD	$481m
(VN)	Number	0	0	0	0	0	0	1	1	1	3	1		

Panel B. Developed Markets.

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
Australia	Total AUM	3,448	2,606	4,306	12,315	17,442	31,322	46,095	41,169	50,695	63,018	77,129	1: COLONIAL FIRST STATE GLOBAL ASSET	$11,082m
(AU)	Number	9	14	16	35	42	57	75	74	79	74	73	2: BT INVESTMENT MANAGEMENT LTD	$7,241m
													3: AMP CAPITAL INVESTORS LTD	$6,449m
													4: PLATINUM ASSET MANAGEMENT LTD /INVT	$5,771m
													5: MACQUARIE INVESTMENT MANAGEMENT LTD	$5,527m
Austria	Total AUM	3,436	3,643	5,303	6,745	9,060	12,240	15,290	7,769	9,883	12,231	10,263	1: RAIFFEISEN KAPITALANLAGE GMBH	$2,648m
(AT)	Number	29	33	39	38	39	40	46	51	55	62	57	2: ERSTE SPARINVEST	$2,054m
													3: PIONEER INVESTMENTS AUSTRIA GMBH	$1,544m
													4: MACQUARIE INVESTMENT MANAGEMENT	$471m
													5: VOLKSBANK INVEST	$388m
Belgium	Total AUM	22,356	19,414	30,390	36,423	42,120	53,802	58,218	27,638	38,573	39,357	28,179	1: KBC ASSET MANAGEMENT NV	$8,006m
(BE)	Number	17	22	26	29	28	27	28	27	24	24	27	2: BELFIUS BANK & INSURANCE SA	$5,784m
													3: BNP PARIBAS INVESTMENT PARTNERS	$3,804m
													4: PETERCAM SA/NV /INVT MGMT	$2,692m
													5: CAPFI DELEN ASSET MANAGEMENT SA	$2,611m
Canada	Total AUM	213,249	232,479	351,570	437,488	569,311	678,269	841,931	508,398	693,001	891,505	823,049	1: RBC GLOBAL ASSET MANAGEMENT INC	$64,090m
(CA)	Number	158	164	173	180	170	179	187	196	189	204	207	2: TDAM USA INC	$52,187m
													3: CAISSE DE DEPOT ET PLACEMENT DU QUEBEC	$48,022m
													4: BC INVESTMENT MANAGEMENT CORP	$37,513m
													5: CANADA PENSION PLAN INVESTMENT BOARD	$36,276m
Denmark	Total AUM	9,333	21,150	38,715	48,593	70,517	99,629	115,013	47,679	73,029	72,422	57,695	1: NORDEA INVESTMENT MANAGEMENT AB	$16,683m
(DK)	Number	10	17	19	24	26	28	31	28	29	27	26	2: DANSKE BANK AS /INVT MGMT	$8,323m
													3: PENSIONDANMARK AS	$3,971m
													4: ID SPARINVEST AS	$3,570m
													5: LAEGERNES PENSIONSKASSE	$3,502m
Finland	Total AUM	4,097	9,663	21,762	28,834	27,885	34,160	44,555	23,287	36,958	46,901	31,247	1: ILMARINEN KESKINAINEN	$7,218m
(FI)	Number	12	21	31	30	32	34	33	33	36	32	28	2: VARMA MUTUAL PENSION INSURANCE CO	$6,133m
													3: KEVA	$3,332m
													4: POHJOLA ASSET MANAGEMENT LTD	$2,644m
													5: VALTION ELAKERAHASTO - THE STATE	$2,124m
France	Total AUM	43,436	99,731	208,680	240,006	275,845	380,005	482,915	300,586	370,003	315,420	284,654	1: AMUNDI SA /INVT MGMT	$38,099m
(FR)	Number	47	91	126	143	146	149	163	170	142	127	114	2: LYXOR INTERNATIONAL ASSET MANAGEMENT	$32,213m
													3: CARMIGNAC GESTION SA	$26,166m
													4: NATIXIS ASSET MANAGEMENT SA	$24,653m
													5: BNP PARIBAS ASSET MANAGEMENT SAS	$19,129m
Germany	Total AUM	165,275	214,307	232,760	284,782	331,864	390,105	398,136	181,073	177,821	165,251	149,620	1: BLACKROCK ASSET MANAGEMENT	$26,730m
(DE)	Number	101	120	129	141	141	151	167	198	234	251	219	2: UNION INVESTMENT PRIVATFONDS GMBH	$25,128m
													3: ALLIANZ GLOBAL INVESTORS EUROPE GMBH	$21,879m
													4: DEKA INVESTMENT GMBH	$21,504m
													5: COMMERZBANK AG /BROKER	$10,667m
Greece	Total AUM		328	1,063	2,193	129	1,960	2,119	893	1,085	822	554	1: EUROBANK EFG ASSET MANAGEMENT MFMC	$241m
(GR)	Number	0	16	18	21	3	17	17	17	12	14	11	2: ALPHA ASSET MANAGEMENT AEDAK	$152m
													3: NBG ASSET MANAGEMENT MFMC	$111m
													4: ATE MUTUAL FUND MANAGEMENT CO	$12m
													5: MILLENNIUM MUTUAL FUND MANAGEMENT	$11m
Hong Kong	Total AUM	16,140	18,090	35,183	49,393	76,304	124,623	208,219	91,901	168,290	210,975	169,325	1: TEMPLETON ASSET MANAGEMENT LTD /HONG	$34,533m
(HK)	Number	38	39	42	41	47	49	52	57	68	75	81	2: FIL INVESTMENT MANAGEMENT HONG KONG	$20,254m
													3: JF ASSET MANAGEMENT LTD	$13,391m
													4: FIRST STATE INVESTMENTS HONG KONG LTD	$9,112m
													5: HSBC GLOBAL ASSET MANAGEMENT HONG	$8,622m

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
Ireland	Total AUM	37,313	36,888	51,447	69,686	75,822	85,717	96,427	56,999	65,829	62,792	43,778	1: MEDIOLANUM ASSET MANAGEMENT LTD	$9,251m
(IE)	Number	11	12	16	18	16	14	15	18	17	17	14	2: PIONEER INVESTMENT MANAGEMENT LTD	$8,018m
													3: IRISH LIFE INVESTMENT MANAGERS LTD	$5,984m
													4: FIDEURAM ASSET MANAGEMENT IRELAND LTD	$4,381m
													5: MERCER GLOBAL INVESTMENTS EUROPE LTD	$3,640m
Italy	Total AUM	5,160	11,883	24,760	47,376	37,428	19,412	29,360	32,827	34,352	33,603	18,008	1: ANIMA SGR SPA	$7,017m
(IT)	Number	15	35	37	36	41	37	37	56	50	58	49	2: AZIMUT CAPITAL MANAGEMENT SGR SPA	$1,986m
													3: FIDEURAM INVESTIMENTI SGR SPA	$1,399m
													4: ALETTI GESTIELLE SGR SPA	$1,163m
													5: PIONEER INVESTMENT MANAGEMENT SGR PA	$1,068m
Japan	Total AUM	35,825	37,659	49,299	73,667	91,168	103,857	83,491	45,855	153,144	203,748	248,695	1: NIKKO ASSET MANAGEMENT CO LTD	$53,384m
(JP)	Number	37	43	44	51	52	55	54	56	58	63	61	2: MITSUBISHI UFJ TRUST & BANKING CORP /INVT	$32,430m
													3: NOMURA ASSET MANAGEMENT CO LTD	$25,549m
													4: BLACKROCK JAPAN CO LTD	$24,558m
													5: MIZUHO TRUST & BANKING CO LTD /INVT	$22,166m
Netherlands	Total AUM	47,888	60,832	87,574	110,091	118,040	211,417	287,606	173,285	250,770	252,409	226,935	1: APG ASSET MANAGEMENT	$100,153m
(NL)	Number	14	27	32	35	33	34	36	32	34	33	32	2: PGGM VERMOGENSBEHEER BV	$45,731m
													3: ING INVESTMENT MANAGEMENT ADVISORS BV	$29,166m
													4: ROBECO INSTITUTIONAL ASSET MANAGEMENT	$17,987m
													5: BNP PARIBAS INVESTMENT PARTNERS	$8,594m
New Zealand	Total AUM	-	24	38	177	3,692	3,800	5,561	5,550	4,188	4,930	6,592	1: GUARDIANS OF NEW ZEALAND	$5,296m
(NZ)	Number	0	1	1	2	4	4	1	3	6	7	6	2: AMP CAPITAL INVESTORS NEW ZEALAND LTD	$544m
													3: SMARTSHARES LTD	$267m
													4: FISHER FUNDS MANAGEMENT LTD	$183m
													5: GARETH MORGAN INVESTMENTS LIMITED	$181m
Norway	Total AUM	33,636	42,469	74,808	93,677	123,521	162,517	248,388	185,720	337,209	401,354	390,647	1: NORGES BANK INVESTMENT MANAGEMENT	$330,745m
(NO)	Number	15	20	22	23	22	23	23	20	24	24	25	2: FOLKETRYGDFONDET	$13,126m
													3: STOREBRAND KAPITALFORVALTNING AS	$13,029m
													4: SKAGEN AS	$11,090m
													5: DNB ASSET MANAGEMENT AS	$7,157m
Singapore	Total AUM	7,509	10,073	17,554	26,114	31,952	45,875	82,280	37,683	59,213	76,253	62,390	1: ABERDEEN ASSET MANAGEMENT ASIA LTD	$21,611m
(SG)	Number	34	37	37	41	40	39	42	42	47	48	49	2: EASTSPRING INVESTMENTS SINGAPORE LTD	$5,916m
													3: JPMORGAN ASSET MANAGEMENT SINGAPORE	$4,765m
													4: FIL INVESTMENT MANAGEMENT SINGAPORE	$4,656m
													5: SCHRODER INVESTMENT MANAGEMENT	$4,231m
South Korea	Total AUM	176	244	306	326	545	585	1,453	2,265	4,829	7,679	7,838	1: KOREA INVESTMENT CORP /INVT MGMT	$5,899m
(KR)	Number	2	3	4	4	5	3	4	5	4	5	5	2: MIRAE ASSET GLOBAL INVESTMENTS CO LTD	$1,015m
													3: FIL ASSET MANAGEMENT KOREA LTD	$729m
													4: SHINHAN BNP PARIBAS ASSET MANAGEMENT	$103m
													5: NHCA ASSET MANAGEMENT CO LTD	$92m
Spain	Total AUM	20,100	20,108	31,398	38,729	41,902	54,280	54,389	20,063	26,493	24,413	19,720	1: BESTINVER GESTION SGIIC SA	$2,858m
ES	Number	93	107	107	109	107	108	110	113	111	106	103	2: SANTANDER ASSET MANAGEMENT SA SGIIC	$2,558m
													3: BBVA ASSET MANAGEMENT SA SGIIC	$1,410m
													4: BBVA PATRIMONIOS GESTORA SGIIC SA	$873m
													5: INVERCAIXA GESTION SA SGIIC	$850m
Sweden	Total AUM	50,906	61,979	107,935	153,629	186,924	254,834	248,612	131,417	198,538	260,519	232,001	1: SWEDBANK ROBUR FONDER AB	$39,959m
(SE)	Number	23	33	49	52	61	71	74	74	74	75	78	2: ALECTA PENSION INSURANCE MUTUAL	$24,648m
													3: AMF PENSIONSFORSAKRING AB	$14,950m
													4: SEB INVESTMENT MANAGEMENT AB	$14,748m
													5: HANDELSBANKEN FONDER AB	$14,400m

Country		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Top Five Institutions (2011)	
Switzerland	Total AUM	57,726	56,792	75,780	91,772	125,857	182,064	213,495	123,447	152,744	192,158	182,066	1: UBS AG /INVT MGMT	$43,440m
(CH)	Number	58	94	125	150	156	167	179	206	234	248	249	2: CREDIT SUISSE AG	$40,863m
													3: PICTET ASSET MANAGEMENT SA	$33,641m
													4: SWISSCANTO ASSET MANAGEMENT AG	$12,134m
													5: SWISS & GLOBAL ASSET MANAGEMENT AG	$5,253m
United Kingdom	Total AUM	375,115	370,850	539,904	713,087	904,773	1,260,969	1,529,091	858,358	1,208,834	1,499,830	1,371,590	1: BLACKROCK ADVISORS UK LTD	$109,088m
(GB)	Number	177	223	248	272	283	309	325	329	324	351	366	2: BLACKROCK INVESTMENT MANAGEMENT UK	$99,725m
													3: ABERDEEN ASSET MANAGERS LTD	$65,772m
													4: JPMORGAN ASSET MANAGEMENT UK LTD	$65,592m
													5: SCHRODER INVESTMENT MANAGEMENT GROUP	$63,291m
United States	Total AUM	8,748,444	7,008,373	9,662,638	11,532,524	12,620,247	14,664,556	14,934,200	8,473,832	11,040,347	12,712,908	12,149,378	1: VANGUARD GROUP INC	$778,590m
(US)	Number	2073	2050	2186	2383	2540	2748	2941	2871	2782	2944	3051	2: BLACKROCK FUND ADVISORS	$694,624m
													3: SSGA FUNDS MANAGEMENT INC	$576,990m
													4: FIDELITY MANAGEMENT & RESEARCH CO	$513,068m
													5: CAPITAL RESEARCH & MANAGEMENT CO	$415,511m

INTERNET APPENDIX

To accompany

What Determines Portfolio Allocation Decisions of Emerging Market Investors?

by

G. Andrew Karolyi, David T. Ng, and Eswar S. Prasad

Table A1. External equity investment positions, by emerging & developed market investors, during the global financial crisis (2008-2009).

Like Table 1, this shows the top investment destinations for external portfolio equity investments from emerging market (EM, left panel) and developed market (DM, right panel) economies, but only for 2008-2009. 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 (2008-2009 only)							Panel B. Developed Markets (2008-2009 only)						
Destination Market	Average Investment (US $ mills.)	Class	Region	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation	Destination Market	Average Investment (US $ million)	Class	Region	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation
United States	51,845	DM	NA	0.2983	0.3346	-0.0363	United States	1,637,966	DM	NA	0.2494	0.3391	-0.0897
United Kingdom	49,714	DM	Europe	0.1336	0.0573	0.0762	Luxembourg	1,223,770	DM	Europe	0.1978	0.0022	0.1956
Luxembourg	32,043	DM	Europe	0.1666	0.0021	0.1645	United Kingdom	1,030,254	DM	Europe	0.0971	0.0591	0.0379
Ireland	8,996	DM	Europe	0.0369	0.0014	0.0355	Japan	661,902	DM	AP	0.0427	0.0862	-0.0436
Bahrain	6,906	EM	MEA	0.0467	0.0005	0.0462	France	650,401	DM	Europe	0.0605	0.0445	0.0161
Brazil	4,662	EM	LA	0.0113	0.0212	-0.0099	Germany	583,441	DM	Europe	0.0565	0.0313	0.0252
UAE	3,559	EM	MEA	0.0373	0.0019	0.0354	Switzerland	486,163	DM	Europe	0.0319	0.0250	0.0069
Austria	3,073	DM	Europe	0.0455	0.0016	0.0439	Canada	315,301	DM	NA	0.0134	0.0338	-0.0205
Hong Kong	2,789	DM	AP	0.0157	0.0294	-0.0137	China	303,632	EM	AP	0.0467	0.0980	-0.0513
Singapore	2,670	DM	AP	0.0179	0.0060	0.0119	Ireland	280,248	DM	Europe	0.0359	0.0014	0.0345
Germany	2,620	DM	Europe	0.0325	0.0303	0.0021	Netherlands	245,561	DM	Europe	0.0200	0.0119	0.0081
Netherlands	2,548	DM	Europe	0.0450	0.0116	0.0335	Spain	223,927	DM	Europe	0.0249	0.0288	-0.0039
France	2,493	DM	Europe	0.0306	0.0431	-0.0125	Brazil	213,346	EM	LA	0.0136	0.0219	-0.0084
Australia	2,359	DM	AP	0.0445	0.0235	0.0210	Australia	213,155	DM	AP	0.0297	0.0243	0.0055
Belgium	2,083	DM	Europe	0.0166	0.0053	0.0113	Italy	198,650	DM	Europe	0.0170	0.0114	0.0056
Russia	1,964	EM	AP	0.0175	0.0151	0.0024	Hong Kong	185,810	DM	AP	0.0180	0.0304	-0.0124
Spain	1,374	DM	Europe	0.0086	0.0279	-0.0193	Korea	149,386	DM	AP	0.0113	0.0168	-0.0056
India	1,328	EM	AP	0.0559	0.0222	0.0337	Taiwan	115,463	EM	AP	0.0077	0.0127	-0.0050
Turkey	1,233	EM	MEA	0.0106	0.0042	0.0065	India	109,970	EM	AP	0.0110	0.0229	-0.0119
Korea	1,156	DM	Europe	0.0061	0.0163	-0.0102	Sweden	106,669	DM	Europe	0.0151	0.0086	0.0065
Top 20 Markets	185,416			0.0539	0.0328	0.0211	Top 20 Markets	8,935,014			0.0500	0.0455	0.0045
Total	200,721						Total	9,868,517	Total				

Appendix Table A2. Summary statistics for restricted sample

Panel A of this table shows the summary statistics for the CPIS dataset when we restrict the sample to the observations for which we have data on all the variables used as controls in the composite regression (Table 3, panel A, column 6). We show summary statistics only for emerging market source countries. Panel B shows the summary statistics based on the LionShares dataset using similar restrictions. For each variable, we report the number of observations (N), equal-weighted mean (mean), standard deviation ("Std. Dev."), 25th percentile, median, and 75th percentiles. The variables' definitions are listed in Appendix C.

Panel A. CPIS sample						
Variable	N	Mean	Std.Dev	25th	Median	75th
Excess allocation (Benchmark 1, world)	4,439	0.002	0.095	-0.015	-0.004	-0.001
Excess allocation (Benchmark 2, regional)	4,439	0.004	0.098	-0.016	-0.004	-0.000
Excess allocation (Benchmark 3, matched)	4,423	0.019	0.123	-0.002	0.000	0.006
Trade	4,439	0.031	0.069	0.003	0.008	0.028
FDI	4,295	0.046	0.284	0.000	0.000	0.002
Distance	4,439	8.188	0.880	7.666	8.538	8.820
Border	4,439	0.036	0.186	0.000	0.000	0.000
Common Colonizer	4,439	0.015	0.120	0.000	0.000	0.000
Colony Relationship	4,439	0.009	0.093	0.000	0.000	0.000
Common Language	4,439	0.131	0.337	0.000	0.000	0.000
GDP per capita	4,439	9.716	1.217	8.818	10.323	10.574
Number of firms	4,439	2.612	1.248	1.569	2.695	3.526
Market capitalization/GDP	4,439	0.974	0.925	0.422	0.723	1.147
Market turnover	4,439	91.915	62.767	45.700	82.300	127.100
Transaction Fees	4,439	2.971	0.444	2.699	2.941	3.247
Difference in returns	4,439	-0.036	0.426	-0.259	-0.032	0.180
Variance ratio	4,439	0.965	0.506	0.621	0.862	1.186
Correlation	4,439	0.449	0.319	0.240	0.502	0.701
Registration Rules	4,439	1.777	1.138	1.000	2.000	3.000
Ownership Rules	4,439	0.877	0.891	0.000	1.000	1.000
FX Convertibility Limits	4,439	0.174	0.414	0.000	0.000	0.000
Govt Effectiveness	4,439	1.134	0.779	0.430	1.390	1.790
Regulatory Burden	4,439	1.043	0.705	0.460	1.240	1.620
Rule of Law	4,439	0.971	0.859	0.160	1.330	1.710
Panel B. LionShares sample						
Excess allocation (Benchmark 1, world)	18,606	-0.004	0.082	-0.015	-0.005	-0.001
Excess allocation (Benchmark 2, regional)	18,606	-0.003	0.075	-0.016	-0.006	-0.001
Excess allocation (Benchmark 3, matched)	18,606	0.015	0.077	0.000	0.000	0.000
Parent country	18,606	0.007	0.085	0.000	0.000	0.000
Peer country	18,606	0.008	0.091	0.000	0.000	0.000

Appendix Table A3. How important are fixed effects in our baseline regressions?

In this table, we evaluate the explanatory power of the fixed effects relative to other controls that are used in the composite specifications in Table 3. Panel A is based on country-level CPIS regressions and Panel B is based on LionShares institution-level regressions. The first five columns of Panel A are regressions for the CPIS sample of emerging market source countries. Columns 1-5 show the R^2 contributions of the control variables (excluding the fixed effects); the year fixed effects; the source country fixed effects; destination country fixed effects; and, finally, all of these right hand side variables (control variables and all three sets of fixed effects). The fifth column is the same composite specification as Column 6 in Table 3 Panel A. The next five columns in Panel A repeat this exercise using regressions for the CPIS sample of developed market source countries. The tenth column is the same composite specification as Column 12 in Table 3 Panel A. Panel B conducts a similar exercise using LionShares data. The fifth column is the same composite specification as Column 6 in Table 3 Panel B. The tenth column is the same composite specification as Column 12 in Table 3 Panel B.

Panel A. CPIS Sample.

Dependent variable: Excess allocation (Benchmark 1, world)										
	Emerging					Developed				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Controls	Yes	No	No	No	Yes	Yes	No	No	No	Yes
Year FE?	No	Yes	No	No	Yes	No	Yes	No	No	Yes
Source Country FE?	No	No	Yes	No	Yes	No	No	Yes	No	Yes
Destination Country FE?	No	No	No	Yes	Yes	No	No	No	Yes	Yes
N	9717	9717	9717	9717	4439	14706	14706	14706	14706	6907
Adj-R^2	0.134	-0.001	0.073	0.133	0.300	0.241	-0.001	-0.000	0.360	0.433

Panel B. FactSet Lionshares Sample.

Dependent variable: Excess allocation (Benchmark 1, world)										
	Emerging					Developed				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Controls	Yes	No	No	No	Yes	Yes	No	No	No	Yes
Year FE?	No	Yes	No	No	Yes	No	Yes	No	No	Yes
Source Country FE?	No	No	Yes	No	Yes	No	No	Yes	No	Yes
Destination Country FE?	No	No	No	Yes	Yes	No	No	No	Yes	Yes
N	44480	44480	44480	44480	18606	1841478	1841478	1841478	1841478	836248
Adj-R^2	0.213	-0.000	-0.000	0.258	0.402	0.083	-0.000	-0.000	0.181	0.238

Appendix Table A4: Effects of information endowments on external investment allocations: Pre- and post-global financial crisis periods

This table replicates the results of the basic regressions using information endowment proxies that are reported in Tables 4 and 5. Panel A contains the equivalent of the regressions reported in columns 1 and 2 of Table 4, with the CPIS sample of emerging market source countries split into the pre-crisis (2001-07) and post-crisis (2009-11) periods. Panel B contains the equivalent of the regressions reported in columns 1 and 2 of Table 5, with the LionShares sample of emerging market institutions split into the pre-crisis (2001-07) and post-crisis (2009-11) periods. 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.

	Excess allocation (Benchmark 1, world)			
	(1)	(2)	(3)	(4)
	Pre-crisis		Post-crisis	
Trade	0.555***		0.331***	
	(6.47)		(3.40)	
FDI		0.049*		0.018*
		(1.72)		(1.87)
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	2963	2882	1476	1413
Adj-R^2	0.362	0.312	0.345	0.323
	Excess allocation (Benchmark 1, world)			
	(1)	(2)	(3)	(4)
	Pre-crisis		Post-crisis	
Trade	0.030		0.037	
	(1.57)		(1.36)	
FDI		0.045*		0.063**
		(1.87)		(1.98)
Year FE?	Yes	Yes	Yes	Yes
Source Country FE?	Yes	Yes	Yes	Yes
Destination Country FE?	Yes	Yes	Yes	Yes
N	10432	10432	8174	8174
Adj-R^2	0.419	0.420	0.391	0.395