

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

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Abstract

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

I. Introduction

Emerging markets play an increasingly prominent role in global finance, with outflows of financial capital from them rapidly gathering momentum. From 2000 to 2016, foreign exchange reserves of these economies increased by \$5.5 trillion, with about half of this buildup accounted for by China. These economies are now increasingly liberalizing private outflows rather than accumulating more low-yielding assets on central bank balance sheets. Rising domestic incomes have increased private-sector demand for foreign investments, both for diversification

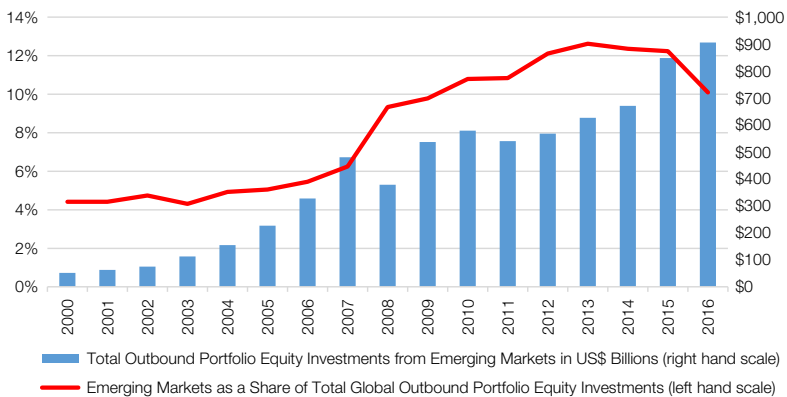
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24 purposes and for the acquisition of higher-quality assets. Institutional investors
 25 such as mutual funds, pension funds, and insurance companies are creating ever
 26 more avenues for portfolio diversification through outward investments. These
 27 factors, along with continued capital account liberalization and domestic finan-
 28 cial market development, are likely to lead to further increases in private capital
 29 outflows from emerging markets, something we will call the “coming wave.”

30 Portfolio outflows from emerging markets are still relatively small but growing
 31 rapidly. Using official data on international investment positions, Figure 1
 32 shows that emerging markets’ external portfolio equity increased from less than
 33 \$100 billion in the early 2000s to \$905 billion in 2016. The share of foreign hold-
 34 ings of U.S. equities accounted for by emerging market investors rose sharply,
 35 from 5% in 2005 to 13% in 2013, before dropping back to 10% by 2016. Our goal
 36 in this article is to characterize comprehensively (to the best of our knowledge
 37 for the first time) the global allocation of foreign portfolio equity assets of emerg-
 38 ing market investors. We conduct our analysis using country-level investment po-
 39 sitions based on the International Monetary Fund’s (IMF) Coordinated Portfolio
 40 Investment Survey (CPIS) and using institution-level holdings data based on Fact-
 41 Set Ownership (formerly known as “LionShares”).

FIGURE 1
 External Portfolio Equity Investments of Emerging Market Economies

Figure 1 shows the evolution of the aggregate external portfolio equity investments of the emerging markets listed in Appendix A. The bars show the aggregate external portfolio equity assets of emerging markets based on the International Monetary Fund’s (IMF) Coordinated Portfolio Investment Survey database. The solid line shows the share (as a percentage) of total inward portfolio investments in the United States accounted for by emerging markets. For instance, in 2016, 10% of all foreign portfolio investments in U.S. equity markets are accounted for by investments originating in emerging market economies. These data are taken from the Treasury International Capital (TIC) System database of the U.S. Treasury.



42 We study the behavior of institutional investors given their importance in in-
 43 termediating portfolio flows. Prior research on cross-border equity investment pat-
 44 terns of institutional investors has almost entirely focused on investments among
 45 developed markets or from developed to emerging markets. For instance, an ear-
 46 lier study by Chan, Covrig, and Ng (2005) examine the extent of foreign bias in
 47 mutual fund equity allocations of 26 source countries that include only a cou-
 48 ple of emerging markets. In another related article, Ferreira and Matos (2008)

examine which firms attract institutional investors from around the world using a data set of mostly developed and three emerging market source countries. We use the existing body of research as a point of departure but emphasize the novelty of our analysis as one of the first attempts to examine investments *from* emerging markets.¹

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

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

Our empirical work is anchored in the concept of information immobility proposed by van Nieuwerburgh and Veldkamp (2009). Rather than relying on information asymmetries, which should in principle decline over time, their theoretical model recognizes that investors face a choice in deciding about which assets to acquire information when there are multiple risky assets in the investment opportunity set. For instance, investors have a comparative advantage in learning about their domestic assets. Even as information about foreign markets becomes easier to obtain, an initial information endowment leads investors to exert more effort in acquiring additional information about domestic assets, magnifying their comparative advantage. Similarly, investors would prefer to invest in foreign countries where they had initial information endowment. This helps to rationalize the persistence of home bias and a further prediction about where foreign biases

¹Other studies on the determinants of foreign investments are mostly based on data for developed markets. Insider holding and corporate governance have been found to limit investments by foreign investors (Dahlquist, Pinkowitz, Stulz, and Williamson (2003)). Information asymmetry leads to lower foreign investment (Brennan and Cao (1996)). Investors’ behavioral biases make them view foreign assets mainly as vehicles for placing risky bets, often resulting in poor portfolio performance (Bailey, Kumar, and Ng (2008)). Investors avoid investing in countries with less-liquid financial markets (Karolyi, Lee, and van Dijk (2012)). Bartram, Griffin, Lim, and Ng (2013) show the effects of institutional ownership on correlations of asset prices across the world.

²See, for example, French and Poterba (1991), Bohn and Tesar (1996), Baxter, Jermann, and King (1998), Coval and Moskowitz (1999), and Ahearne, Grier, and Warnock (2004). For a survey of the home bias literature, see Lewis (1999).

³See, among others, Portes and Rey (2005). Karolyi and Stulz (2003) position the literature on the home bias relative to theories on international portfolio choice. See Cooper, Sercu, and Vanpée (2013) for a more recent survey of home/foreign bias papers.

84 are most acute. Given that investors in developed markets presumably have better
85 channels for information processing, our analysis of emerging markets' outward
86 investments and the comparison of emerging versus developed market investors
87 together offers a more powerful test of the information endowment hypothesis
88 than the literature to date.

89 While the information endowment hypothesis provides a useful lens for ana-
90 lyzing international portfolio allocations, other theoretical models have been used
91 to study alternative types of international investments. For instance, Mariassunta
92 and Laeven (2012) show that cross-border flows in the market for syndicated loans
93 are affected by an increase in the home bias of lenders when their home countries
94 experience financial distress. Caballero and Simsek (2019) examine how reach-
95 for-safety and reach-for-yield interact in influencing flows between developed and
96 emerging markets. It is not feasible to nest such models in such a way that we can
97 test them against one another, especially since they mostly capture home versus
98 foreign allocations rather than foreign allocation bias. We use the information en-
99 dowment hypothesis as our interpretive framework mainly because it is relevant
100 to portfolio equity flows and generates some clear predictions to distinguish be-
101 tween the foreign allocation patterns of emerging market and developed market
102 investors. Moreover, it has specific testable implications, not just at the macro but
103 also at the micro levels, allowing us to construct tests of this theory using our
104 institution-level data.

105 We propose empirical proxies on a country level and on an institutional in-
106 vestor level to detect possible emerging market investors' information endow-
107 ments for a particular destination country for their outbound investments. On a
108 country level, the proxies are historical foreign direct investment (FDI) and trade
109 flows between the home and destination country for outward portfolio invest-
110 ments.⁴ Such historical FDI and trade flows typically result in business contacts
111 and investment relationships that could serve as a source of the initial information
112 endowment. We focus on trade as the main source of information endowment and
113 complement that with FDI flows, which have become dominant in gross inflows
114 into emerging markets and which are more likely to have information content
115 for those countries' institutional investors (see Prasad (2012)). The prospect of
116 endogeneity problems and omitted variable bias contaminating our results in a
117 systematic way is alleviated in part by our use of historical trade and FDI flows
118 (in the decade before the beginning of our sample) as measures of information
119 endowment.

120 On an institutional investor level, we propose new empirical proxies for
121 information endowments by exploiting the granularity of the FactSet Lion-
122 Shares data. Many emerging market-based investment institutions are foreign
123 subsidiaries of parent institutions headquartered abroad. Through corporate re-
124 lationships between parent and subsidiary units, these subsidiaries may build
125 up information endowments on their parent institutions' home country and on

⁴FDI as an information endowment proxy was used by Andrade and Chhaochharia (2010), drawing on theories of Razin, Sadka, and Yuen (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.

“peer” countries where their parent institutions have set up other foreign subsidiaries. Many developed market institutions have similar corporate relationships of course, but these institutions presumably rely less on information endowments for their investment decisions since they are typically more mature than emerging market institutions and have better access to other sources of information.

We find reliable evidence in support of the information endowment hypothesis. More importantly, information endowments show themselves to play a bigger role in explaining the investment patterns of emerging market allocations relative to those of developed markets and to institutional investors domiciled in developed markets. The results generally remain significant when we use additional tests to examine the investment patterns of specific institutional investors using information endowment proxies based on the location of the parent company of emerging market institutional investors that are foreign subsidiaries and the location of other foreign subsidiaries of the parent company. Both of these proxies turn out to be important determinants of the allocation patterns of emerging market institutional investors. By contrast, similar proxies have less influence on the allocations of developed market institutional investors.

We also find that the information endowment proxies are more important in explaining emerging market portfolio allocations when those portfolios are more concentrated. This finding is consistent with van Nieuwerburgh and Veldkamp (2009), (2010) concept of information advantage, in which investors who can first collect information systematically deviate from holding a diversified portfolio. These findings are also consistent with those of Choi, Fedenia, Skiba, and Sokolyk (2017), who find that, as suggested by the information-advantage model, institutional investors with higher industry and country concentration in their investment allocations exhibit better portfolio performance. We find that emerging market countries that have sustained restrictions on portfolio equity outflows, and which therefore have continued to maintain weaker connections to global financial markets, rely more on information endowments for their portfolio allocation decisions. Finally, we examine another ancillary implication of van Nieuwerburgh and Veldkamp’s (2009) model, which is that the information endowment effect is more important when the investment destination country is larger. In principle, the channels for securing an information advantage should become more important in affecting portfolio allocations when the incentive to use this information, as measured by the size of the destination market, is larger. However, we do not find conclusive evidence to support this hypothesis.

Our article is most closely related to the work of Andrade and Chhaochharia (2010) and Chan et al. (2005), but it contributes to the larger debate on determinants of foreign portfolio choice. Brennan and Cao (1997) discuss how information endowments help explain the sensitivity of U.S. investors’ portfolio allocations to return differentials between U.S. and foreign markets. Chitu, Eichengreen, and Mehl (2014) find that U.S. investors’ holdings of foreign bonds reflect a “history effect,” with investors’ holdings 7 decades earlier influencing their current holdings. One key distinguishing feature that separates our work from these is our signature focus on emerging markets as *source* countries for portfolio investments which, in turn, also allows us to construct and implement new ancillary tests of the information endowment hypothesis. Kang and Stulz (1997),

173 Ahearne et al. (2004), and Gelos and Wei (2005) associate the home/foreign bi-
 174 ases revealed in foreign allocations to firm and country characteristics in the target
 175 market. Grinblatt and Keloharju (2001), Hau (2001), Choe, Kho, and Stulz (2005),
 176 Dvorak (2005), Massa and Simonov (2006), and Ke, Ng, and Wang (2010) em-
 177 phasize the role of common firm/country attributes of the source countries of in-
 178 vestors and of destination countries for their investments toward understanding
 179 familiarity-driven or informational asymmetry factors, in general (and thus not
 180 necessarily in the context of theories of information endowments or information
 181 immobility).

182 We acknowledge two contemporaneous studies that also draw on van
 183 Nieuwerburgh and Veldkamp's (2009) theory. Schumacher (2018) uncovers how
 184 mutual funds in their foreign investment choices overweight industries that are
 185 comparatively large in the domestic markets with which they are familiar, and he
 186 reveals the superior investment performance that arises for them. Like us and like
 187 Choi et al. (2017), he motivates this industry-based link as a source of information
 188 advantage. Bekaert, Hoyem, Hu, and Ravina (2017) study international equity al-
 189 locations of 3.8 million individuals in 401(k) plans in the United States, showing
 190 enormous cross-individual variation, strong cohort effects by age and geographic
 191 location within the United States, and the critical influence of financial advisors.
 192 The authors associate the individual investor's heterogeneity in preferences or
 193 background to familiarity and information asymmetry effects.⁵

194 This article is organized as follows: Section II presents our data and method-
 195 ology. Section III explores the patterns in foreign allocation bias. Section IV de-
 196 scribes the factors affecting emerging market countries' external portfolio allo-
 197 cations while Section V examines the information endowment hypothesis in that
 198 context. Section VI discusses extensions and Section VII concludes.

199 II. Data and Methodology

200 A. Data

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

206 Our second and relatively more novel source is FactSet LionShares, which
 207 covers tens of thousands of security-level domestic and international holdings of
 208 institutional investors (mostly mutual funds and investment companies) around
 209 the world. LionShares contains two main databases: aggregate institutional filings
 210 (similar to 13F in the United States), and a mutual fund holdings database (similar
 211 to N-CSR mutual fund filings in the United States).⁶ LionShares provides the

⁵Bekaert et al. (2017) compare the magnitude of foreign biases among individual investors across the United States based on their working for international versus domestic firms to those in Brown et al. (2015) of an in-state equity bias for state pension plans in the United States.

⁶We follow the procedures outlined in Ferreira and Matos (2008) and Bartram, Griffin, Lim, and Ng (2015) for cleaning this data set and augment that with other standard checks for 13F filings. We obtain the historical FactSet LionShares database, which is free from survivorship bias. FactSet Ownership compiles publicly available information, including filings obtained in various countries supplemented by companies' annual reports.

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. 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 3 quarters. We complement this with Thomson Reuters' Datastream for source and destination country index returns.

Both of our investment holdings data sets have unique strengths and weaknesses. CPIS is based on reporting by country authorities and does not contain data for a few important countries, such as China as a source country. However, China does appear in the data set 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 part of the sample. By analyzing both sets of data, which no other authors have done, we aim to provide a more comprehensive and reliable picture of patterns of international equity allocations of emerging markets. Some authors have used the EPFR data set (www.epfrglobal.com) to examine institutional investor allocations, but that data set does not include institutions based in emerging markets.

We start with a sample of 53 source countries from CPIS, classified into 26 developed markets and 27 emerging markets based on the Morgan Stanley Capital International (MSCI) Market Classification framework as of 2011. Nine other emerging market countries appear only as destination countries. We drop Luxembourg from our data set since, as a small but prominent financial center, it is an obvious outlier in our sample. Appendix A lists the countries in CPIS and reports how we classify them. Panel A of Appendix B reports the availability of CPIS data on source country–destination country pairs, where the source countries are limited to the group of emerging markets. We also drop countries with no data or spotty, missing data in certain years. The total number of country-pair-year observations after applying these screens is 9,717, resulting in an average of 883 observations per year (a source country–destination country pair with data available for a given year counts as 1 observation). About two-thirds of the observations (6,335) indicate positive holdings. The CPIS distinguishes between zeroes and missing observations, so the remainder (3,382 observations) constitutes true 0 holdings.

Panel B of Appendix B reports 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 nonreported institution–destination country observations represent 0 investments rather than missing observations, we add 34,510 observations (an average of 3,137 per year) to yield a total of 44,480 observations (average of 4,044 per year). While it

259 is plausible that missing observations are in fact zeroes, in the empirical work we
 260 will examine the sensitivity of the results to this assumption.

261 In Table 1, we examine the representativeness of the institution-level data.
 262 The first column reports, for the last 5 years of the sample (2007–2011), the tot-
 263 tal foreign investments of all institutions located in a source country in the Li-
 264 onShares data set as a fraction of the total foreign investments of that country
 265 reported in the CPIS data set. The mean ratio is 0.29 and the median is 0.11 for
 266 the emerging market source countries in our sample. The corresponding mean
 267 and median for developed market source countries are 0.28 and 0.20, respec-
 268 tively. The coverage of emerging markets' investments in just the United States
 269 is lower (mean of 0.16 and median of 0.04), both relative to emerging markets'
 270 investments worldwide and relative to developed countries' investments in the
 271 United States (mean of 0.32 and median of 0.23). One implication of these num-
 272 bers for emerging markets is that, despite the small number of institutions that
 273 LionShares covers in these countries, the coverage of this database is similar to
 274 that for developed markets (assuming that the CPIS data are a good measure of
 275 actual total external portfolio allocations). Another implication is that using Li-
 276 onShares and similar data sets and focusing only on the United States as a destination

TABLE 1
 Representativeness of the LionShares Data

Table 1 reports the representativeness of the LionShares institution-level data, using the Coordinated Portfolio Investment Survey (CPIS) data as a benchmark. The first column reports the total foreign investments of all institutions located in an emerging market source country in the LionShares data set as a ratio of the total foreign investments of that country in the CPIS data set for the last 5 years of the sample (2007–2011). The second column reports a similar ratio, limited to investments in the United States. The sample for the first column is limited to countries that appear in both data sets and the sample in the second column is limited to countries that appear in both data sets and have nonzero investments in the United States. The last two columns show similar ratios for developed market source countries. The rows at the bottom show the cross-sectional medians and unweighted means of the respective columns.

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

country for emerging market (EM) portfolio investment would provide at best a more limited picture.

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

We also hand-collected information from Web sites to create information endowment variables based on subsidiary–parent relationships. For each of the emerging market and industrial country institutional investors in FactSet LionShares, we started by using institution names to uncover evidence of subsidiary–parent relationships. Based on the names, we use two information sources, Hoover (for U.S.-based institutions) and Bloomberg (for institutions in all other countries), along with Google searches on the Web sites on the specific institutions. Using these sources, we were able to determine whether a fund management institution is a foreign subsidiary of a parent institution in another country. If it is a foreign subsidiary of a parent institution, then we identify the name of and location where the parent institution is domiciled. Based on the search results, we identify other countries where the parent institutions have other foreign subsidiaries. These classifications are available from the authors.

There are 3,481 unique institutions in the LionShares data set. Of these, 486 have parents and 331 have peers that are also foreign subsidiaries. There are about 236 unique parent institutions in the data set, so on average each of these has about 2 institutions in the data set that consider them to be their parent institution. Among institutions with peers, the average number of peer institutions in the data set is 4.57. Of the institutions with peer subsidiaries, the 10 largest institutions have an average of six peer institutions each. Not surprisingly, larger institutions tend to have subsidiaries in more countries.

B. Methodology

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

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

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

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

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

We use a set of control variables that draws on various literatures, including the so-called “gravity approach” to modeling trade and financial flows. These can be divided into the following categories: gravity variables, such as distance, common border, and common language; market depth, including the ratio of market capitalization to gross domestic product (GDP), market turnover, and transaction fees in the destination countries; returns-based measures, such as the differences in stock market returns between destination and source countries in the past year, and return correlations between the source and destination countries over the past 5 years; market integration variables, which include ownership restrictions on foreign investors, and currency convertibility limits in the destination countries; and governance indicators, including regulatory burden, and rule of law in the destination countries. All of the regressions include year, source country, and destination country fixed effects. We also allow for robust standard errors with double clustering by destination country and year. Variable definitions are in Appendix C.

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

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

where IE stands for information endowment and $\text{IE}_{i,j,91-00}$ denotes $\text{TRADE}_{i,j,91-00}$ or $\text{FDI}_{i,j,91-00}$. Our use of lagged FDI inflow and trade shares as information endowment proxies partly obviates potential concerns about endogeneity. The choice of a reference period of the 1990s is an arbitrary one based on data availability. The key is that it predates the period of evaluation of foreign portfolio allocations (2000s).

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

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

where the dependent variable now represents portfolio investments from an emerging market institution i into destination country j at time t . It is defined as follows: Excess investment equals the portfolio investment from emerging market institution i into destination country j divided by the portfolio investment from

emerging market institution i to all countries, minus a benchmark ratio. The dependent variable thus measures whether a particular emerging market institution's external portfolio equity investments are *disproportionately* weighted toward a specific foreign country. The baseline benchmark remains the same as for the regressions using the aggregate CPIS data: the *world market portfolio* is now equal to 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.

III. 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.⁷ We define foreign allocation bias as the extent to which countries deviate from the world market portfolio in their foreign allocations. That is, once investors in a country have decided how much of their total portfolio will be allocated to foreign investments, our aim is to examine how much that cross-country allocation deviates from the market-capitalization-weighted world portfolio.

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

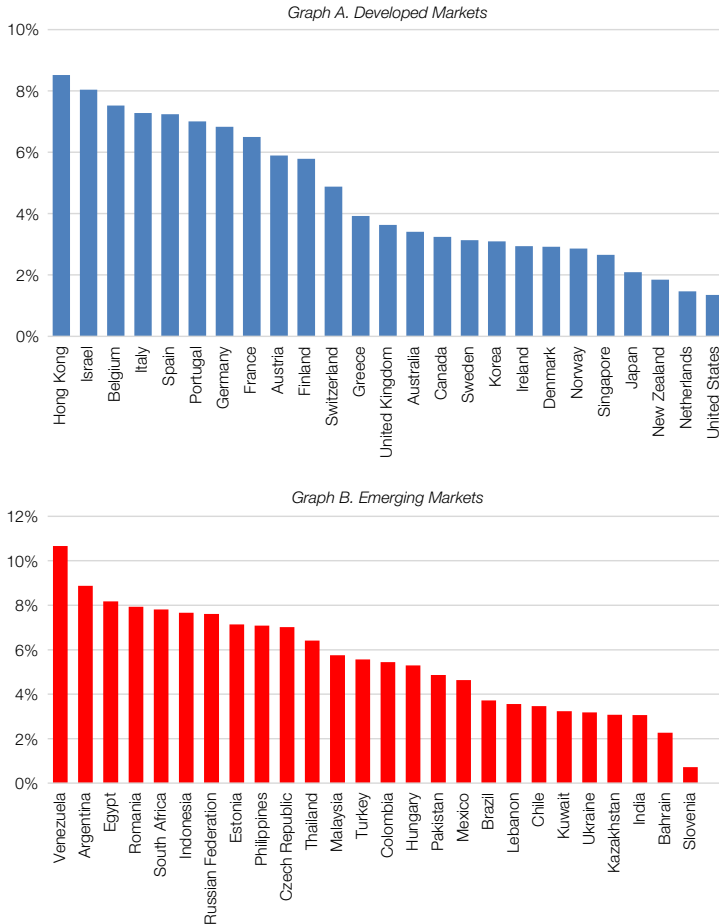
Figure 2 shows the *absolute magnitude* of foreign allocation bias for each of the source countries in our sample. The extent of foreign allocation bias is generally higher for emerging markets (Graph A) relative to developed markets (Graph B). The median of this measure of foreign allocation bias is 0.11 for emerging markets and 0.08 for developed markets.⁸ A value of 0.10 implies that, on average, the country's portfolio over- or underweights investments in potential

⁷This part of the article is related to studies of the asset pricing effects of market integration and segmentation (Errunza and Losq (1985)) and the scope of international pricing (Harvey (1991), Bekaert and Harvey (1997), (2002), (2003)), and Bekaert, Harvey, Lundblad, and Siegel (2007)). Others examine the macroeconomic consequences of relaxation of capital controls (see Prasad and Rajan (2008) for a survey). Our paper is also related to studies on mutual fund investments in emerging markets (e.g., Kaminsky, Lyons, and Schmukler (2004), Jotikasthira, Lundblad, and Ramadorai (2012)). Almost all of this prior literature is about investments *into* emerging markets.

⁸This 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 is 0.04 for emerging market economies and 0.02 for developed market economies.

FIGURE 2
Foreign Allocation Bias in External Portfolio Equity Investments, by Source Country

Figure 2 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 Morgan Stanley Capital International (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 in which 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 U.S. dollars as a common currency and excluding the source country). Graph A shows the results of these calculations for developed market source countries. Graph B shows these calculations for emerging market source countries. These calculations are based on Coordinated Portfolio Investment Survey (CPIIS) data.



402 destination markets by 10%, with the weights of each of the potential destina-
 403 tion markets in that formula determined by their respective market capitalization.
 404 Among emerging markets, foreign allocation bias ranges from 0.21 for Venezuela
 405 to 0.02 for Slovenia. Among developed markets, this measure ranges from 0.17
 406 for Hong Kong to 0.03 for the United States.

407 A complementary approach is to compute concentration ratios for interna-
 408 tional portfolios (Choi et al. (2017), Schumacher (2018)). This is a summary

measure of how much a country's portfolio allocation is concentrated among destination countries relative to the benchmark of the market-capitalization-weighted world market portfolio (results not shown here). For emerging markets, the average concentration ratio was 0.90 in 2001, compared to 0.75 for developed economies, a statistically significant difference. The averages for the two groups of countries rise to 1.08 and 0.86, respectively, by 2011 and the average is significantly higher for emerging markets in every year of the sample. This confirms that emerging markets' international portfolios reveal higher *absolute* foreign allocation bias than those of developed markets.

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

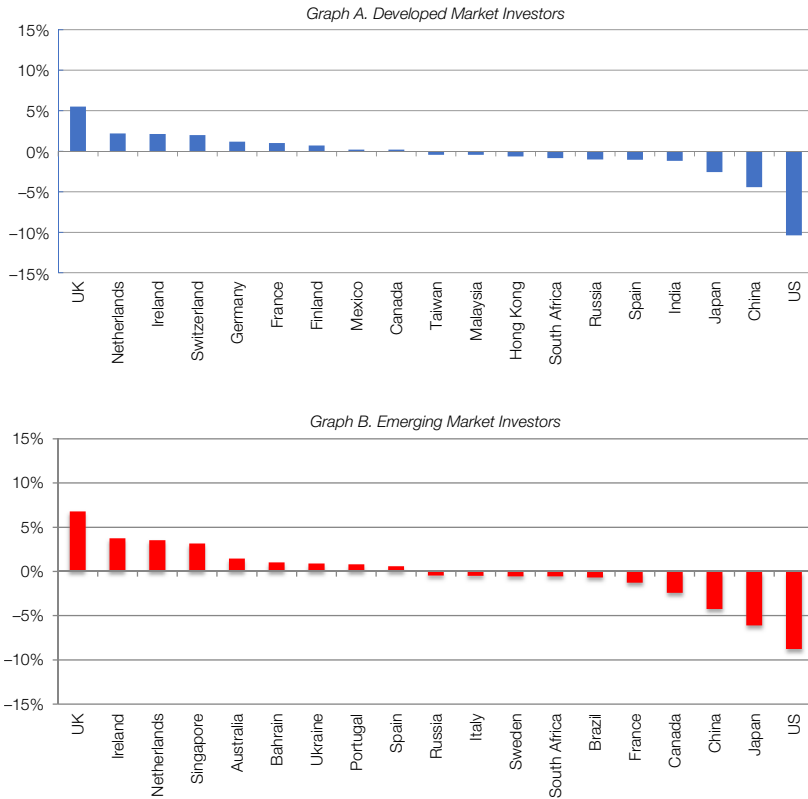
Among developed market economies (Graph A), there seems to be a systematic overweighting of many European countries in international portfolios. This could be the result of a regional bias among these countries, which tend to invest heavily in one another's markets. There is significant underweighting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

Figure 4 shows how the allocations of emerging market and developed market investors to four major destination countries (U.S., U.K., Japan, and Germany) have evolved over time. In 2001, the two groups of source countries underweighted the United States in their international portfolios (relative to U.S. market capitalization) by 15% and 35%, respectively. Among 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; in 2010–2011, investors from these countries actually overweighted 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 United Kingdom and underweighted Japan in their foreign investment portfolios. In both cases, the extent of the bias is larger in absolute terms for developed market investors.

Table 2 reports the external equity investment positions by emerging and developed market investors according to the top 20 destination markets, averaged across the 2000–2011 period (for the CPIS data set only). In addition to the average investment (in millions of current U.S. dollars), 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 United States is the destination market

FIGURE 3
Excess Foreign Allocations in Specific Destination Countries Comparing Developed and Emerging Market Investors

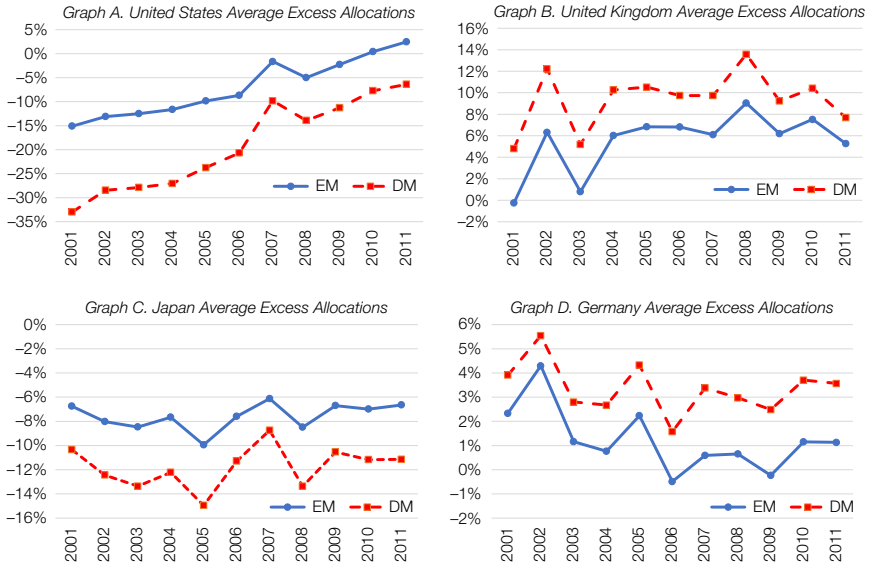
Figure 3 analyzes which destination countries are overweighted (or underweighted) by developed market (DM) versus emerging market (EM) source countries, separately. For each destination country, we calculate the excess (positive or negative) investment allocation for each source country (among DM or EM, separately) in each year. Excess investment ratios are computed relative to the relative market-capitalization weight in the Morgan Stanley Capital International (MSCI) all-capital world market index (excluding the source country of interest). We compute a weighted average across the group of source countries in DM or EM each year by the relative market capitalization of the source country in that group and average equally across all years in the sample. Graph A shows the results for the top 10 excess overweight destination markets and for the top 10 excess underweight destination markets among DM source countries (destination countries can be either DM or EM). Graph B shows the equivalent results among EM source countries.



456 with the largest average investment (\$43 billion among emerging, \$1.49 trillion
 457 among developed) and the highest average investment ratio, but also strikingly the
 458 largest *negative* excess allocations relative to the benchmark (−6.98% for emerg-
 459 ing markets, −11.89% for developed markets). Many European markets, such
 460 as the United Kingdom, Germany, Switzerland, Netherlands, are among the top
 461 destination markets for both sets of investors. But there are also important distinc-
 462 tions between the two groups. The list of top 20 destinations for emerging mar-
 463 ket investors includes Bahrain, Singapore, the United Arab Emirates, Russia, and
 464 Turkey, for example, none of which make the top 20 list for developed investors.
 465 Further, some destination countries, such as Switzerland, are underweighted
 466 (−0.29%) by emerging market investors and overweighted (0.65%) by developed
 467 market investors.

FIGURE 4
Average Excess Allocations over Time in Four Major Destination Countries

Figure 4 exhibits how much a given destination country is overweighted (or underweighted) by developed market (DM) versus emerging market (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 Morgan Stanley Capital International (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.



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

IV. Determinants of Emerging Markets’ External Portfolio Allocations

We now carry both the CPIS and FactSet LionShares data sets forward to conduct a formal analysis of the determinants of the portfolio allocation patterns of emerging market investors. Table 3 presents summary statistics for the variables used in our regression analysis.⁹ The analysis that follows draws on various strands of existing literature documenting the importance of several country attributes in influencing allocation decisions. Some important aspects of the data

⁹Summary statistics for the developed country sample of home countries are not presented but are available from the authors. The excess allocation variables are raw allocations expressed as differences from the relevant benchmarks rather than the absolute differences used to construct the measures of foreign allocation bias in the previous section.

TABLE 2
External Equity Investment Positions by Emerging and Developed Market Investors

Table 2 reports 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, and Africa (EEMEA), and Latin America (LA). For each destination market, we compute average total equity investments across the years 2000–2011 in millions of U.S. dollars from emerging markets (Panel A) and from developed markets (Panel B). Destination markets are ranked by average total equity investment across years, and the top 20 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 2000–2011. 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 Coordinated Portfolio Investment Survey (CPIIS) data to compute country-pair investment data.

Destination Market	Average Investment (U.S. \$millions)	Average Investment Ratio	Average Benchmark Ratio	Average Excess Allocation
<i>Panel A. Emerging Markets (2000–2011)</i>				
U.S.	43,248	0.3205	0.3902	–0.0698
U.K.	42,290	0.1238	0.0686	0.0552
Ireland	9,143	0.0381	0.0023	0.0358
Bahrain	4,045	0.0361	0.0004	0.0357
Singapore	2,584	0.0395	0.0061	0.0334
Brazil	2,386	0.0087	0.0158	–0.0071
Austria	2,278	0.0464	0.0021	0.0444
France	2,023	0.0514	0.0416	0.0098
Germany	1,805	0.0435	0.0311	0.0124
Netherlands	1,770	0.0432	0.0142	0.0289
Belgium	1,503	0.0208	0.006	0.0148
Australia	1,431	0.0263	0.021	0.0053
United Arab Emirates	1,429	0.0221	0.0015	0.0206
Hong Kong	1,387	0.0232	0.0204	0.0028
Spain	1,344	0.0126	0.0238	–0.0113
Russia	902	0.0368	0.0133	0.0235
Switzerland	893	0.0198	0.0227	–0.0029
Japan	847	0.0119	0.0876	–0.0757
Turkey	665	0.0062	0.0035	0.0027
Jordan	508	0.0132	0.0006	0.0126
Top 20 markets	122,480	0.0472	0.0386	0.0085
Total investments	130,373			
<i>Panel B. Developed Markets (2000–2011)</i>				
U.S.	1,489,234	0.2774	0.3964	–0.1189
U.K.	1,015,851	0.1108	0.0714	0.0394
Japan	654,201	0.0484	0.0911	–0.0427
France	535,494	0.0599	0.0433	0.0165
Germany	442,500	0.0512	0.0324	0.0188
Switzerland	387,568	0.0302	0.0236	0.0065
Netherlands	297,250	0.0299	0.0148	0.0151
Canada	293,160	0.0122	0.0341	–0.0219
Ireland	244,425	0.0309	0.0024	0.0284
Italy	188,816	0.0285	0.0561	–0.0279
China	181,442	0.0188	0.0165	0.0023
Spain	180,323	0.0254	0.0218	0.0036
Australia	177,643	0.0228	0.0248	–0.002
Hong Kong	153,727	0.0158	0.0212	–0.0054
Korea	149,144	0.0108	0.0157	–0.005
Brazil	140,739	0.0088	0.0164	–0.0076
Sweden	110,668	0.0184	0.0098	0.0085
Finland	103,690	0.0104	0.0048	0.0056
Taiwan	95,540	0.0069	0.0126	–0.0057
India	78,315	0.0072	0.0173	–0.0102
Top 20 markets	6,919,703	0.0412	0.0463	–0.0051
Total investments	7,605,533			

TABLE 3
Summary Statistics on Excess Portfolio Allocations

Panel A of Table 3 reports the summary statistics for the variables based on a data sample from the International Monetary Fund's (IMF) 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 in each year, we compute a ratio of a target market aggregate equity security holding in millions of U.S. dollars relative to all cross-border holdings for that source market and subtract one of three benchmark ratios: i) 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); ii) 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, iii) 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, and prior colonial relationship, (BENCHMARK_3). Panel B reports 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 (P25), median, and 75th percentile (P75). Detailed variable definitions are in Appendix C.

Variable	<i>N</i>	Mean	Std. Dev.	P25	Median	P75
<i>Panel A. CPIS Sample</i>						
EXCESS_ALLOCATION (BENCHMARK_1, world)	9,491	0.002	0.083	-0.012	-0.002	-0.001
EXCESS_ALLOCATION (BENCHMARK_2, regional)	9,508	0.004	0.089	-0.011	-0.002	-0.001
EXCESS_ALLOCATION (BENCHMARK_3, matched)	9,225	0.009	0.113	-0.004	-0.001	0.003
TRADE	17,523	0.016	0.047	0.001	0.004	0.013
FDI	15,466	0.018	0.259	0.000	0.000	0.000
DISTANCE	17,347	8.150	0.859	7.617	8.404	8.786
BORDER	17,347	0.033	0.180	0	0	0
COMMON_COLONIZER	17,347	0.038	0.192	0	0	0
COLONY_RELATIONSHIP	17,347	0.012	0.111	0	0	0
COMMON_LANGUAGE	17,347	0.132	0.339	0	0	0
GDP_PER_CAPITA	17,716	9.238	1.310	8.405	9.568	10.431
NUMBER_OF_FIRMS	12,230	2.559	1.314	1.481	2.674	3.577
MARKET_CAPITALIZATION/GDP	17,635	0.757	0.752	0.284	0.531	1.009
MARKET_TURNOVER	13,426	0.833	0.684	0.363	0.675	1.124
TRANSACTION_FEES	11,956	0.232	0.113	0.159	0.204	0.278
DIFFERENCE_IN_RETURNS	12,989	-0.061	0.472	-0.303	-0.048	0.189
VARIANCE_RATIO	14,441	1.033	0.604	0.650	0.899	1.250
CORRELATION	14,609	0.378	0.338	0.154	0.419	0.645
REGISTRATION_RESTRICTIONS	13,167	1.522	1.146	0	2	2
OWNERSHIP_RESTRICTIONS	12,276	1.018	0.887	0	1	1
CURRENCY_CONVERTIBILITY_LIMITS	14,344	0.263	0.485	0	0	0
GOT_EFFECTIVENESS	14,344	0.947	0.817	0.170	1.010	1.730
REGULATORY_BURDEN	14,344	0.871	0.749	0.310	1.040	1.550
RULE_OF_LAW	14,344	0.800	0.872	0.060	0.930	1.630
<i>Panel B. FactSet LionShares Sample</i>						
EXCESS_ALLOCATION (BENCHMARK_1, world)	44,480	0.000	0.074	-0.010	-0.003	-0.001
EXCESS_ALLOCATION (BENCHMARK_2, regional)	44,480	0.000	0.069	-0.010	-0.002	-0.000
EXCESS_ALLOCATION (BENCHMARK_3, matched)	38,713	0.011	0.080	0.000	0.000	0.000
PARENT_COUNTRY	44,480	0.006	0.074	0.000	0.000	0.000
PEER_COUNTRY	44,480	0.019	0.135	0.000	0.000	0.000

are worthy of note. First, the number of country-pair-years for which we could conduct our analysis with the CPIS data (Panel A) ranges between about 12,000 and 18,000 depending on the control variable of choice. But the sample declines based on the availability of the main dependent variable of interest based on the excess allocations.¹⁰ The sample size for the institution-country-years in the FactSet LionShares data set is much larger, averaging well over 40,000 observations.

¹⁰Note that there are summary statistics on two additional benchmarks for these excess allocations shown in Table 3 that will be introduced later in the article.

488 Table 4 reports the baseline specifications using CPIS data. Columns 1–6
 489 of Panel A report a set of regressions for emerging markets. As noted earlier,
 490 all of the regressions include year fixed effects as well as source country and
 491 destination country fixed effects. For each specification, we use the maximum
 492 available number of observations, which results in variations in sample size across
 493 specifications since not all variables are available for all countries.¹¹

494 Model 1 shows that, consistent with the results of other authors such as Portes
 495 and Rey (2005), gravity variables are important for portfolio allocations. The level
 496 of excess allocations in specific destination countries is negatively related to their
 497 distance from the source country, the existence of a common border, and a com-
 498 mon language. The latter two coefficients suggest that the notion of a “familiarity”
 499 bias is not fully supported by the data. A colonial relationship increases the excess
 500 allocation of emerging market investors to a former colonial power. A common
 501 colonial heritage also drives up excess allocations. These are economically large
 502 effects: A 1-standard-deviation increase in geographic distance (0.861) is asso-
 503 ciated with a 2.4% lower excess allocation, or about 28% of its unconditional
 504 variation. Similar economic magnitudes obtain for the other familiarity variables
 505 but they are, of course, correlated with one another. The adjusted R^2 in this spec-
 506 ification including fixed effect reaches 22.4%.

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

513 Model 3 controls for a set of financial market variables. Return differentials
 514 between the destination and source countries do not seem to influence portfolio
 515 allocations. A higher variance ratio, defined as the 5-year volatility of stock re-
 516 turns in the destination country relative to the 5-year volatility of stock returns
 517 in the source country, is associated with a lower excess allocation. Belying the
 518 notion of improving diversification by investing in foreign markets whose returns
 519 are less correlated with domestic returns, correlations with destination country re-
 520 turns do not seem to matter for excess allocations. Model 4 controls for market
 521 integration variables, all of which have statistically significant coefficients that
 522 look reasonable. Registration and ownership restrictions as well as limits on cur-
 523 rency convertibility are associated with smaller excess allocations. This group of
 524 variables has the weakest overall explanatory power (adjusted R^2 of only 11.7%).

525 Model 5 controls for country-level governance variables. A higher regulatory
 526 burden has a negative effect on excess allocations, but low government effective-
 527 ness in the destination countries does not seem to deter emerging market investors.
 528 In fact, a higher level of government effectiveness has a slightly negative effect on
 529 excess allocations. F -tests for the variables examined in models 1–5 indicate that

¹¹Summary statistics for the restricted sample that has data for all variables are reported in Table IA2 of the Supplementary Material. To ensure that differences in sample size do not affect the results, we also re-estimate 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.

TABLE 4
Determinants of Excess Investment Allocations across Countries and Institutions

Table 4 reports 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 on five 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 BENCH-MARK_1 (world) for each destination country each year as the ratio of the market capitalization of the destination country divided by the world market capitalization (excluding the source country market capitalization). All control variables are described in detail, including their sources, in Appendix C. The five groups of explanatory variables include i) gravity variables, which measure the affinity between source and destination countries, including geographic distance, common contiguous border, common colonial heritage, colonial relationship, and common language; ii) destination country market size variables, including per capita gross domestic product (GDP), the number of listed firms per capita, the ratio of market capitalization to GDP, market turnover, and a measure of transaction fees; iii) 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 5 years divided by that of source country, and correlations of monthly stock market returns in the source, destination countries over the past 5 years; iv) market integration variables, including registration restrictions, ownership restrictions, and currency convertibility limits; and v) country-level governance variables, including government effectiveness, extent of regulatory burden, and a measure of the rule of law. Columns 1–5 report results from regressions that contain each of these groups of explanatory variables for emerging market source countries. Column 6 contains an omnibus regression with all of the control variables. All regressions include year, source country, and destination country fixed effects. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. FE denotes fixed effects. Columns 7–12 report similar sets of regressions for developed markets.

Panel A. Coordinated Portfolio Investment Survey (CPIIS) Holdings Data Sample

	1	2	3	4	5	6	7	8	9	10	11	12
<i>Gravity</i>												
DISTANCE	-0.027*** (-5.45)					-0.025*** (-4.72)	-0.008*** (-4.65)					-0.007*** (-5.31)
BORDER	-0.023* (-1.85)					-0.022 (-1.13)	0.031*** (3.20)					0.033*** (3.00)
COMMON_COLONIZER	0.037*** (2.67)					0.021 (1.47)	-0.004 (-0.51)					-0.009 (-0.67)
COLONY_RELATIONSHIP	0.116*** (3.34)					0.143** (2.52)	-0.001 (-0.13)					-0.008 (-0.72)
COMMON_LANGUAGE	-0.015* (-1.87)					-0.019* (-1.75)	0.011*** (2.61)					0.015** (2.32)
<i>Market Size</i>												
GDP_PER_CAPITA	0.006 (0.21)					-0.020 (-0.91)		-0.027*** (-5.05)				-0.024*** (-4.36)
NUMBER_OF_FIRMS	-0.013** (-2.08)					-0.013* (-1.89)		-0.005*** (-3.46)				-0.003*** (-2.72)
MARKET_CAP/GDP	-0.000 (-0.15)					-0.001 (-0.47)		-0.002** (-2.09)				-0.002** (-2.43)
MARKET_TURNOVER	0.005 (0.97)					0.005 (0.74)		0.002 (1.63)				0.003** (2.52)
TRANSACTION_FEES	0.064** (2.15)					0.071** (2.19)		0.017** (2.31)				0.012* (1.76)
<i>Returns Measures</i>												
DIFFERENCE_IN_RETURNS			0.001 (0.75)			0.000 (0.12)			-0.001*** (-2.99)			-0.001** (-2.18)
VARIANCE_RATIO			-0.004*** (-2.86)			-0.006** (-2.52)			-0.000 (-0.81)			-0.001 (-1.43)
CORRELATION			0.006 (1.44)			-0.002 (-0.41)			0.007** (2.55)			0.005 (1.51)
<i>Market Integration</i>												
REGISTRATION_RULES				-0.006*** (-2.93)		0.003 (0.24)				-0.002 (-0.86)		0.008** (2.45)
OWNERSHIP_RULES				-0.009*** (-6.03)		-0.022* (-1.66)				-0.004* (-1.78)		-0.011*** (-3.41)
FX_CONVERTIBILITY_LIMITS				-0.026*** (-8.61)		-0.091*** (-2.84)				-0.013* (-1.91)		-0.058*** (-5.01)
<i>Governance</i>												
GOVT_EFFECTIVENESS					-0.016** (-2.06)	0.008 (0.59)					-0.010*** (-3.97)	-0.003 (-1.12)
REGULATORY_BURDEN					-0.019** (-2.05)	-0.007 (-0.54)					-0.001 (-0.68)	-0.001 (-0.26)
RULE_OF_LAW					0.012 (1.12)	-0.007 (-0.39)					0.007*** (2.67)	0.004* (1.67)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	9,304	5,938	7,550	6,848	8,090	4,274	1,3537	8,408	11,178	9,813	11,550	6,381
F-stat	11.12***	2.43***	3.22***	73.83***	2.75***	21.22***	10.73***	8.13***	7.69***	3.24***	5.50***	6.53***
Adj. R ²	0.224	0.153	0.219	0.117	0.166	0.237	0.336	0.287	0.242	0.270	0.265	0.333

(continued on next page)

TABLE 4 (continued)
 Determinants of Excess Investment Allocations across Countries and Institutions

	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Panel B. FactSet LionShares Holdings Data Sample</i>													
<i>Gravity</i>													
DISTANCE	-0.020*** (-5.63)				-0.023*** (-5.77)	-0.002 (-1.25)						-0.001 (-0.67)	
BORDER	0.009 (0.57)				0.020 (0.93)	0.049*** (5.33)						0.054*** (5.28)	
COMMON_COLONIZER	0.022* (1.90)				0.047** (2.23)	0.020* (1.75)						0.048** (2.39)	
COLONY_RELATIONSHIP	0.137 (1.49)				-0.049*** (-4.01)	-0.005 (-1.22)						-0.014** (-2.09)	
COMMON_LANGUAGE	0.022*** (2.75)				0.017** (2.04)	0.010*** (2.99)						0.013** (2.76)	
<i>Market Size</i>													
GDP_PER_CAPITA		0.096*** (3.03)				0.032 (1.11)		-0.044*** (-3.97)				-0.052*** (-3.51)	
NUMBER_OF_FIRMS		0.001 (0.15)				-0.007 (-1.30)		0.001 (0.54)				0.004* (1.79)	
MARKET_CAP/GDP		0.003 (0.72)				0.000 (0.16)		-0.001 (-0.91)				-0.000 (-0.20)	
MARKET_TURNOVER		-0.001 (-0.13)				0.000 (0.04)		0.006*** (3.62)				0.005*** (2.70)	
TRANSACTION_FEES		0.070* (1.90)				0.072** (2.34)		0.015** (2.09)				0.020** (2.30)	
<i>Returns Measures</i>													
DIFFERENCE_IN_RETURNS			0.001 (0.97)			0.002 (1.11)			-0.001 (-1.10)			0.000 (0.57)	
VARIANCE_RATIO			-0.001 (-0.68)			-0.000 (-0.12)			-0.001 (-1.13)			-0.001 (-1.49)	
CORRELATION			-0.002 (-0.66)			-0.002 (-0.53)			0.005*** (2.61)			0.005** (2.43)	
<i>Market Integration</i>													
REGISTRATION_RULES				-0.002 (-0.39)		-0.039 (-1.58)				-0.013** (-2.06)		0.036*** (4.07)	
OWNERSHIP_RULES				-0.003 (-0.64)		-0.004 (-0.42)				-0.016*** (-3.82)		-0.017** (-2.16)	
FX_CONVERTIBILITY_LIMITS				-0.009 (-0.74)		0.024 (0.59)				-0.016** (-2.33)		-0.101*** (-5.89)	
<i>Governance</i>													
GOVT_EFFECTIVENESS					0.021*** (2.95)	0.022*** (2.81)						-0.015*** (-3.19)	-0.001 (-0.08)
REGULATORY_BURDEN					-0.017 (-1.60)	-0.023* (-1.88)						0.003 (0.77)	0.010* (1.72)
RULE_OF_LAW					0.010 (1.10)	0.013 (1.43)						0.006 (1.20)	-0.003 (-0.51)
Year FE	Yes	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	Yes
Destination country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	38,722	24,730	40,910	31,581	37,415	18,606	1,809,820	1,041,458	1,560,746	1,249,614	1,495,872	836,248	
F-stat	12.83***	2.11**	0.48	0.21	3.97***	4.63***	11.08***	7.44***	2.44*	39.91***	5.14***	21.19***	
Adj. R ²	0.334	0.284	0.282	0.304	0.266	0.402	0.205	0.195	0.180	0.195	0.183	0.238	

530 each set of variables is jointly statistically significant at the 1% level. Model 6
 531 is a composite model that includes all the variables considered in models 1–5.
 532 The statistical significance of the key coefficients from the previous regressions
 533 is mostly preserved, although not all the gravity variables remain significant and
 534 the governance variables lose their significance. We re-estimate models 1–5 using
 535 the common sample of 4,274 observations for which we have data on all control
 536 variables. There are few major differences between those results and the results
 537 shown in Table 4.

538 The remaining columns of Table 4 (models 6–12) replicate the benchmark
 539 CPIS regressions, but only for developed markets. The determinants of devel-
 540 oped markets' international portfolio allocations differ in some important ways
 541 from those of emerging markets. The gravity variables as a group are strongly
 542 significant but, unlike in the case of emerging markets, a common border and
 543 common language have positive effects on excess allocations. More developed
 544 countries, as proxied by their per capita GDP, seem to receive reliably negative

excess allocations from developed market investors. Destination countries with larger stock market capitalization relative to their GDPs receive negative excess allocations while those with higher market turnover receive larger excess allocations. A larger difference in stock returns reduces allocations while, as in the case of emerging market allocations, positive return correlations are associated with higher excess allocations, contrary to one criterion that ought to drive portfolio diversification. The statistical significance of most of these coefficients is preserved in the composite specification reported in model 12. Again, *F*-tests for the variables examined in models 7–11 indicate that each set of variables is jointly statistically significant at the 1% level.

Panel B of Table 4 contains estimates of the same 12 regressions as in Panel A but now using the FactSet LionShares data rather than CPIS data. The individual coefficient estimates are broadly consistent with the results using CPIS but there are some differences. To investigate further, we also run a composite specification with all independent variables. Comparing this specification for emerging market allocations using CPIS and LionShares in model 6 of Panels A and B shows considerable similarity but also a few important differences. Some gravity variables have greater influence on the allocation decisions of institutional investors than on aggregate country allocations. For institutional investors, a common colonial heritage and common language have positive effects on excess allocations, but a past colonial relationship has a negative effect. Consistent with the results based on aggregate allocations, higher transaction fees in the destination country are associated with larger excess allocations by institutional investors, but other market integration and market openness variables do not affect their allocations. As expected, greater government effectiveness and a lower regulatory burden are associated with larger excess allocations.

The remaining columns present results for institutional investors in developed markets. For these investors as well, the gravity variables seem to have strong effects on portfolio allocation. In addition, measures of destination market size and depth have a positive effect on excess allocations, while market restrictions have a negative effect. In other words, developed market institutional investors seem to be more responsive to market factors than their emerging market counterparts. One question at this juncture is whether, notwithstanding some statistically significant coefficients, most of the explanatory power in our regressions comes from the various fixed effects. To address this concern, we run regressions just on each set of fixed effects. The results are reported in the Supplementary Material (Table IA3).¹²

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

582 Our main conclusion from the baseline regressions based on the CPIS and
583 LionShares data sets is that country attributes previously documented in other pa-
584 pers based on developed economy data (e.g., Chan et al. (2005)) are important for
585 emerging market portfolio allocations as well. Interestingly, there seem to be few
586 destination country characteristics that robustly influence EM international port-
587 folio allocation decisions in a manner different from those of developed market
588 (DM) allocations. Variables that capture i) market size and depth and ii) market
589 integration of destination countries seem to have differential effects, although few
590 of these results are fully robust across data sets and regression specifications.

591 V. Testing the Information Endowment Hypothesis

592 We now turn to an empirical implementation of van Nieuwerburgh and
593 Veldkamp's (2009) information endowment hypothesis. Portfolio outflows from
594 emerging market economies are a relatively recent phenomenon, with many of
595 these economies freeing up capital outflows only in the last decade or two, and
596 also because investors in these economies are presumably less sophisticated than
597 those in developed economies. In view of their limited exposure to international
598 financial markets, it is plausible that emerging market investors rely to an even
599 greater extent on information endowments accumulated through earlier trade and
600 financial relationships. Analyzing emerging market economies' outward invest-
601 ments and comparing the portfolio allocation decisions of emerging versus devel-
602 oped economy investors together therefore offers a powerful test of the informa-
603 tion endowment hypothesis.

604 A. Measuring Information Endowments

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

617 We construct two proxy measures to capture the notion of an information
618 endowment: i) TRADE, which is equal to the sum of all trade flows between
619 emerging market i and country j during the 1991–2000 period divided by the sum
620 of emerging market i 's total external trade over that same period, and, ii) FDI,
621 which is equal to the sum of FDI flows from country j into emerging market i
622 during 1991–2000 divided by the sum of all FDI inflows into emerging market
623 i during 1991–2000. Since we use data on trade and FDI shares from the prior
624 decade to explain portfolio holdings during the 2000s, our regressions are unlikely
625 to be affected by endogeneity (or reverse causality) problems.

B. Country-Level Regressions

Table 5 reports the results from CPIS regressions that include the full set of controls used in Table 4 as well as each of the information endowment proxies. The coefficient on the information endowment variable in model 1 is statistically significant and large. The coefficient indicates that a 1-percentage-point increase

TABLE 5
Effects of Information Endowments on External Investment Allocations

Table 5 reports results from regressions of excess country allocations of emerging markets on the full set of controls used in column 6 of both panels in Table 4 as well as each of two new information endowment proxies. The excess portfolio allocations are calculated using Coordinated Portfolio Investment Survey (CPIS) data in Panel A. Columns 1 and 2 report the results for emerging market source countries when excess investment allocations are computed relative to BENCHMARK_1 (world portfolio benchmark), as explained in Table 4. Columns 3 and 4 repeat this exercise for developed market source countries. Columns 5 and 6 report the results from regressions for *only* 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 report the results from regressions for *only* 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: i) information endowment proxy TRADE is defined as sum of all trade flows between source emerging market *i* and destination country *j* during 1999–2000 divided by the sum of emerging market *i*'s total external trade during 1999–2000; and ii) information endowment proxy FDI is defined as the sum of foreign direct investment (FDI) flows from country *j* into emerging market *i* during 1999–2000 divided by the sum of all FDI inflows into emerging market country *i* during 1999–2000. 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: i) information endowment proxy PARENT_COUNTRY is defined as a dummy variable that equals 1 if the destination country *j* is the country where the parent institution of the emerging market institution *i* is located, and 0 otherwise; and ii) information endowment proxy PEER_COUNTRY is defined as a dummy variable that equals 1 if the destination country *j* contains a foreign subsidiary of the parent institution of emerging market institution *i*, and 0 otherwise. Standardized coefficients are shown in square brackets. These coefficients are based on regressions in which dependent and independent variables (except time and source/destination country dummies) are first standardized by removing relevant means and dividing by standard deviations. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Excess Allocations (BENCHMARK_1, World)				Excess Allocations (BENCHMARK_2, Regional)		Excess Allocations (BENCHMARK_3, Matched)	
	Emerging Markets		Developed Markets		Emerging Markets		Emerging Markets	
	1	2	3	4	5	6	7	8
<i>Panel A. Excess Portfolio Allocations (CPIS Data)</i>								
TRADE	0.503*** (6.30) [0.284***]		0.569*** (4.52) [0.625***]		0.616*** (5.22) [0.323***]		0.509*** (5.81) [0.211***]	
FDI		0.034* (1.89) [0.106*]		0.072** (2.17) [0.191**]		0.024 (1.56) [0.068]		0.03 (1.63) [0.07]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,117	3,973	5,904	5,692	4,117	3,973	4,101	3,956
Adj. <i>R</i> ²	0.307	0.247	0.501	0.365	0.271	0.188	0.404	0.377
<i>Panel B. Excess Portfolio Allocations (FactSet LionShares Data)</i>								
PARENT_COUNTRY	0.031* (1.79) [0.031*]		0.007 (0.67) [0.005]		0.032* (1.68) [0.034*]		0.034** (1.98) [0.032**]	
PEER_COUNTRY		0.028** (2.14) [0.052**]		0.007 (1.40) [0.006]		0.026** (2.43) [0.052**]		0.031** (2.26) [0.052**]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	18,050	18,050	806,271	806,271	18,050	18,050	18,050	18,050
Adj. <i>R</i> ²	0.403	0.404	0.247	0.247	0.215	0.216	0.18	0.181

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in the past level of the home country's trade (exports plus imports) accounted for by a particular trading partner is associated with an increase of 0.5 percentage points in the excess allocation of the source emerging market's international portfolio to that destination country (relative to the destination country's market-capitalization-weighted share in the world portfolio).¹³

Model 2 reports the coefficient on the other information variable, which is captured by past FDI and is also significantly positive, although smaller. A 1-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 4 times that of the trade share variable (0.27 vs. 0.07, see the Supplementary Material, Table IA2), so the quantitative significance of these two information endowment variables is in fact somewhat closer than suggested by the previous, simple calculations. 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 among reasonably sophisticated investors.

C. 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. 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 compute this regional, developed market benchmark, `BENCHMARK_2`, as the sum of portfolio investments 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.

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

Models 5 and 6 show the results from regressions using BENCHMARK_2. The coefficient on the trade variable is positive and significant. The estimate indicates that a 1-percentage-point increase in the home country's share of past trade accounted for by a particular trading partner country has a 0.6 percentage point higher effect on average emerging market portfolio allocations to that trading partner country relative to average developed economy allocations to that country. The FDI ratio, however, does not have differential effects on the allocation patterns of emerging versus developed market investors.

Next, instead of using developed markets in the same regions, we create an alternative benchmark, 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 and dummies for a common border, common language, common colonial heritage, and previous colonial relationship. The allocations of the propensity-score-matched developed market i are then used as the benchmark against which the concerned emerging market's allocations are evaluated. Specifically, the propensity-score-matched benchmark is equal to the portfolio investment from propensity-score-matched developed market i to destination country j divided by the portfolio investment from propensity-score-matched developed market i to all countries.

Models 7 and 8 show the results from regressions based on propensity-score-matched BENCHMARK_3. In this case, the coefficient on the trade ratios is significantly positive, confirming that this measure of information endowment has a bigger effect on the allocation patterns of emerging markets relative to developed markets. The coefficients on the trade ratio in model 7 and the FDI ratio in model 8 are about the same as those in the benchmark regressions in models 1 and 2, respectively, although the coefficient on the FDI variable in model 8 is no longer statistically significant. Moreover, the interpretation of the coefficients is not exactly the same. The regression in model 7 indicates that a 1-percentage-point increase in the past share of the home country's trade accounted for by a particular foreign country results in the average emerging market directing 0.5 percentage points more of its allocation to that country relative to the allocation of the average developed economy. These results suggest strongly that the information endowment hypothesis is of greater relevance for portfolio allocations of emerging market economies than it is for those of developed economies. The differences are not just statistically significant but also economically meaningful.

We conduct two further robustness tests for our baseline results. First, we use an alternative measure of trade that includes only imports. That is, we compute the import share 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 the same period. The second robustness test is related to the large number of missing observations in our data set on account of the limited availability of FDI data. It is possible that some of these missing observations in fact represent zeroes. When we substitute zeroes for the missing observations, we confirm the robustness of our main results regarding the effect of information endowments on portfolio allocations.

D. Institution-Level Regressions

Next, we undertake a more granular test of the information endowment hypothesis using institution-level data. To exploit the LionShares data set, we use characteristics of the specific institutions in our data set. The first information endowment proxy we construct is a dummy variable called `PARENT_COUNTRY`, which takes the value of 1 if the destination country j is the country in which the emerging market institution's parent is located, and 0 otherwise. The second information endowment is a dummy variable called `PEER_COUNTRY`, which takes the value of 1 if the destination country j contains a foreign subsidiary of the parent institution of emerging market institution i , and 0 otherwise. We propose these two variables as information endowment proxies specific to each institution, which is potentially more relevant to their allocation patterns than aggregate trade or FDI flows. The dependent variable and the baseline benchmark for the institution-level regressions are as described previously. The controls include the full set of destination country characteristics used in the baseline regressions in Table 4, as well as year, source country, and destination country fixed effects. Given how the information endowment proxies are constructed, we cannot include institution-specific fixed effects.

The results are presented in Panel B of Table 5. Using the world market portfolio weights for the benchmark ratio to compute excess allocations, models 1 and 2 show that both information endowment variables are statistically significant and quantitatively important. Institutions in emerging markets tend to have an average excess allocation of 3.1 percentage points in the country that their parent institution is located in. For an emerging market institutional investor, the existence of a foreign subsidiary of the same parent institution is associated with a 2.8-percentage-point increase in the excess investment allocation in that country relative to that country's share in the market-capitalization-weighted world portfolio. Although we cannot include institution-specific fixed effects, we did try including source–destination country fixed effects in these regressions. This represents a very stringent test, but the coefficient on the `PARENT_COUNTRY` variable remained positive and significant; the coefficient on `PEER_COUNTRY` is no longer significant. For developed market institutional investors, these information endowment proxies have only a modest effect on their allocation decisions. The `PARENT_COUNTRY` variable is not significant (column 3), while the `PEER_COUNTRY` variable is borderline significant (column 4) and smaller than the corresponding coefficient for emerging market institutions (column 2). This is consistent with our aggregate-level results based on CPIS that information endowments are relevant for international portfolio allocations of emerging market investors but far less so for developed market investors.

Next, we examine whether the allocations of individual institutional investors based in emerging markets are on average more or less influenced by such information endowments than the allocations of institutional investors based in developed market economies. Since developed market institutional investors are likely to have longer investment histories and other channels of information acquisition, one would expect that the information endowments matter less for their allocation decisions. We first use `BENCHMARK_2`, for which the excess investment

allocation is calculated relative to the average investment allocations (ratios) of developed market in the same region as the home country of institution i . The results, shown in models 5 and 6 in Panel B of Table 5, 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, BENCH-MARK_3, based on the propensity-score-matched developed market economies (similar to the earlier aggregate analysis using the CPIS data). The results, presented in columns 7–8 of Panel B, confirm the greater importance of information endowments in determining allocations of emerging market relative to developed market institutional investors.

One question that arises in evaluating the relevance of our institution-level information endowment variables is whether they are just proxying for the same country-level information endowment variables used in the country-level regressions based on the CPIS data. To address this issue, we re-estimate the regressions reported in Panel B of Table 5, replacing the institution-level information endowment variables with country-level variables (TRADE and FDI).¹⁴ The coefficients are of similar signs as those reported on the information endowment variables in this panel, but few of the coefficients are significant. These weaker results reinforce the need to use the greater precision of institution-level determinants of portfolio allocation decisions, as we have done. Using country-level information endowment variables appears to wash out these effects. We find this to be true when we aggregate the LionShares institution-level data within each country and then run country-level regressions using country-level information endowment variables. Consistent with this view, when we include the country-level information endowment variables along with the foreign peer subsidiaries in the regressions, the latter variable has even greater statistical precision than in the results reported in Table 5 (the results are similar but not as uniformly strong for the foreign parent variable).

Another question is whether the CPIS and LionShares results are comparable since the country samples underlying them are different. To check whether the differences in country coverage in the two data sets influence our findings, we line up the two samples by restricting the (broader) CPIS sample to those countries that appear in the LionShares data set. We then use a more stringent screen using only those source countries for which the LionShares data set has at least five institutional investors domiciled in that country. Both sets of results are similar to the baseline CPIS regressions reported in Panel A of Table 5.

Information endowments play an important role in explaining differences between the outward portfolio allocation patterns of emerging relative to developed markets. The results hold up both at the country level and for individual institutional investors. While we have not formally tested the information endowment model against specific alternatives, the control variables in the regressions do account for the traditional gravity variables as well as other potential channels. In studies such as Gehrig (1993) and Brennan and Cao (1996), learning plays an

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

806 important role in determining home versus foreign allocations. By controlling for
807 historical returns and volatility (in potential destination markets and as differentials
808 relative to the home country), we capture learning effects in our empirical
809 framework, implying that information endowments have additional explanatory
810 power for foreign allocations.

811 VI. Extensions

812 A. Portfolio Concentration and the Role of Information Endowments

813 One issue worth exploring is whether there is a relationship between infor-
814 mation endowments and the degree of portfolio concentration. Van Nieuwerburgh
815 and Veldkamp's (2010) model proposes two types of learning strategies: deep-
816 ening knowledge and broadening knowledge. According to them, investors who
817 deepen their knowledge would hold more assets initially familiar to them, while
818 investors who broaden their knowledge would learn about unfamiliar assets, undo
819 initial advantages, and reduce portfolio bias imparted by differences in initial in-
820 formation. We test this implication by showing when the portfolio allocation of
821 a country or institutional investor is less diversified, information endowments
822 could play a more decisive role in determining allocations. We do not take a
823 stand on whether information endowments generate or reduce concentration in
824 a causal sense. Rather, we ask whether information endowments influence alloca-
825 tions given different levels of portfolio concentration.

826 For each country, we compute a Herfindahl index of country-level external
827 allocations. We define a dummy variable that takes the value of 1 if the index
828 is above the median level of the index among all source countries in that year,
829 and 0 otherwise. We then interact the CONCENTRATION dummy with the infor-
830 mation endowment variables. If the excess allocations of countries with more-
831 than-average concentrated portfolios were more influenced by information en-
832 dowments, then the coefficients on the interaction terms would be positive. This
833 is exactly what we find, as shown in columns 1–2 of Panel A of Table 6, where
834 the excess allocations are measured relative to the world portfolio benchmark,
835 the market-capitalization-weighted world portfolio. The interaction coefficients
836 remain positive and statistically significant when we use a regional developed
837 market benchmark, which examines emerging market allocations relative to the
838 allocations of developed markets that are in the same region as the home country,
839 as in models 3 and 4.

840 A similar experiment evaluates the effects of information endowments on the
841 allocations of institutional investors with different degrees of portfolio concen-
842 tration. The CONCENTRATION dummy takes the value of 1 if the Herfindahl
843 index of the country-level allocation of the source institution portfolio in a given
844 year is above the median among all source institutions (based in emerging mar-
845 kets) in that year. This dummy variable interacts with the PARENT_COUNTRY
846 and PEER_COUNTRY dummies that we used as information endowment prox-
847 ies in the previous exercise. The only significant interaction coefficient in Panel
848 B of Table 6 is that on the PEER_COUNTRY \times CONCENTRATION interaction
849 variable in model 2. Among emerging market institutional investors with more
850 concentrated external portfolios, there is a stronger positive effect on allocations

TABLE 6
Portfolio Concentration and Information Endowment Effects

Table 6 reports regression results when excess country allocations of emerging markets are regressed upon the full set of controls, as in column 6 of Table 4, as well as each of the two information endowment proxies. Panel A reports the country-level results based on Coordinated Portfolio Investment Survey (CPIS) data. The excess country allocations are calculated from CPIS data relative to the world portfolio benchmark and the regional developed market (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 1 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, and 0 otherwise. TRADE \times CONCENTRATION is the interaction term between TRADE and the portfolio concentration dummy. FDI \times CONCENTRATION is the interaction term between FDI and the portfolio concentration dummy. Panel B reports 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 BENCHMARK_1 and BENCHMARK_2, described in Table 5. The two information endowment proxies, PARENT_COUNTRY and PEER_COUNTRY, are defined in Table 5. CONCENTRATION is a dummy variable that equals 1 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, and 0 otherwise. PARENT_COUNTRY \times CONCENTRATION is the interaction term between the parent information endowment variable and the portfolio concentration dummy. PEER_COUNTRY \times 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. "No. of obs" denotes number of observations. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Excess Portfolio Allocations (CPIS Data)

	Excess Allocations (BENCHMARK_1, World)		Excess Allocations (BENCHMARK_2, Regional)	
	1	2	3	4
TRADE	0.254*** (3.56)		0.232** (2.36)	
TRADE \times CONCENTRATION	0.356*** (4.21)		0.549*** (4.46)	
FDI		0.026*** (4.72)		0.016** (2.52)
FDI \times CONCENTRATION		0.402*** (3.61)		0.374** (2.12)
CONCENTRATION	-0.014*** (-3.63)	-0.011*** (-3.21)	-0.019*** (-3.97)	-0.010*** (-2.71)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	4,274	4,130	4,274	4,130
Adj. <i>R</i> ²	0.329	0.333	0.310	0.253

Panel B. Excess Portfolio Allocations (FactSet LionShares Data)

	Excess Allocations (BENCHMARK_1, World)		Excess Allocations (BENCHMARK_2, Regional)	
	1	2	3	4
PARENT_COUNTRY	0.043 (1.36)		0.043* (1.86)	
PARENT_COUNTRY \times CONCENTRATION	-0.019 (-0.49)		-0.019 (-0.43)	
PEER_COUNTRY		-0.003 (-0.20)		0.026** (2.12)
PEER_COUNTRY \times CONCENTRATION		0.053** (2.15)		-0.003 (-0.18)
CONCENTRATION	-0.000 (-0.18)	-0.002 (-0.88)	0.000 (0.43)	0.000 (0.38)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	18,606	18,606	18,606	18,606
Adj. <i>R</i> ²	0.403	0.405	0.215	0.216

851 toward countries where a foreign subsidiary of the investor's parent company is
852 located.

853 To check whether countries or institutional investors with more concentrated
854 portfolios indeed rely more on the information endowment proxies than on other
855 control variables included in the regressions, we re-estimate both the CPIS and
856 LionShares regressions reported in Table 6, including interactions of the respec-
857 tive concentration variables with other control variables as well. The results (not
858 reported here) indicate that those coefficients on the interaction variables between
859 concentration ratios and information endowments that are significant in Table 6
860 remain significant when we include these additional interactions. By contrast, the
861 coefficients on the interaction variables between concentration ratios and other
862 variables are not significant.

863 B. Parsing Information Endowments by Size of Destination Market

864 An under-explored implication of van Nieuwerburgh and Veldkamp's (2009)
865 model is that the potential benefits of acquiring information about an investment
866 destination increase with the relative size of the destination country (with size
867 measured relative to that of the source country). We now examine whether the
868 relative size of investment destinations affects allocation decisions. We use two
869 measures of size: GDP and equity market capitalization. To focus on substantive
870 size differences relative to the home country, we express each of these variables
871 as a ratio of the corresponding variable in the home country. We then construct
872 dummy variables that equal 1 if this ratio is above the median ratio among all
873 source–destination country pairs in a given year. In the regressions, we interact
874 these dummies with the information endowment variables and, of course, also in-
875 clude levels of information endowment variables and size dummies. Using a simi-
876 lar approach, we also examine whether return volatility in the destination country
877 relative to the home country affects how information endowments influence allo-
878 cation decisions.

879 Table 7 reports these results, which use the CPIS data set. The coefficient
880 on the interaction term between the information endowment proxy based on trade
881 and relative GDP (column 2) is significantly negative. This result indicates that
882 the larger the destination country is relative to the home country, the less the in-
883 formation endowment influences excess allocations. By contrast, in the case of
884 the FDI information endowment proxy, relative market capitalization has a posi-
885 tive association with excess allocations. The first result is not consistent with the
886 implications of van Nieuwerburgh and Veldkamp's (2009) model, while the sec-
887 ond is. Our overall reading of these results is that information endowments do
888 not have systematic differential effects on emerging market portfolio allocations
889 to large versus small destination countries or across different levels of destina-
890 tion market relative to home country return volatility. In unreported tables, we
891 find similar results when we examine the allocation patterns of emerging market
892 institutional investors using the FactSet LionShares data set.

893 C. Results Using Raw Foreign Portfolio Allocations

894 To this point, we have measured excess allocations in each potential destina-
895 tion country against different benchmarks. We now examine whether information

TABLE 7
Relative Country Size, Volatility, and Information Endowment Effects

Table 7 reports results from regressions of emerging market excess allocations on the full set of controls in column 6 of Table 4, each of the two information endowment proxies, and interactions of those proxies with the market capitalization, size, and volatility ratios of destination relative to parent countries. The regressions in this table are based on Coordinated Portfolio Investment Survey (CPIS) data. The two information endowment proxies, TRADE and FDI, are defined in Table 5. MARKET_CAP_RATIO is a dummy variable that equals 1 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, and 0 otherwise. GDP_RATIO is defined as a dummy variable that equals 1 if the gross domestic product (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, and 0 otherwise. VOLATILITY_RATIO is defined as a dummy variable that equals 1 if the volatility of stock returns in the destination country over a trailing 5-year period divided by the volatility of stock returns in the source country over the same trailing 5-year period is above the median value of that ratio among all source–destination country pairs, and 0 otherwise. TRADE × MARKET_CAP_RATIO is the interaction term between the TRADE information endowment proxy and the market capitalization ratio. The other interaction terms shown in the table, TRADE × GDP_RATIO, TRADE × VOLATILITY_RATIO, FDI × MARKET_CAP_RATIO, FDI × GDP_RATIO, and FDI × VOLATILITY_RATIO, are defined in a similar manner. Standard errors are clustered at the destination-country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Excess Allocations (BENCHMARK_1, World)					
	1	2	3	4	5	6
TRADE	0.631** (2.56)	0.727*** (2.70)	0.517*** (5.22)			
TRADE × MARKET_CAP_RATIO	-0.123 (-0.54)					
TRADE × GDP_RATIO		-0.219 (-0.85)				
TRADE × VOLATILITY_RATIO			-0.025 (-0.31)			
FDI				-0.926* (-1.76)	-0.329 (-0.70)	0.031** (1.99)
FDI × MARKET_CAP_RATIO				0.961* (1.82)		
FDI × GDP_RATIO					0.364 (0.77)	
FDI × VOLATILITY_RATIO						0.009 (0.86)
MARKET_CAP_RATIO	-0.001 (-0.33)			-0.003 (-0.56)		
GDP_RATIO		0.004 (0.72)			0.003 (0.30)	
VOLATILITY_RATIO			0.000 (0.14)			0.000 (0.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,274	4,274	4,274	4,130	4,130	4,130
Adj. <i>R</i> ²	0.306	0.307	0.306	0.248	0.247	0.247

endowments matter for explaining raw allocations that are not measured with reference to any of these benchmarks. For each emerging market source country, we regress the external portfolio shares of each potential destination country on the destination country characteristics, information endowment variables, and full set of fixed effects.

The results are presented in Table 8. Panel A, which contains the CPIS results, reports that past trade relationships have a significant positive effect on raw allocations. The coefficient on the FDI variable (column 2) is positive but not quite significant at the 10% level. Panel B, which contains the LionShares results, reports that the parent country and peer country information endowment proxies

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TABLE 8
Robustness Tests Using Raw Country Allocations

Table 8 reports regression results when raw country allocations of emerging markets are regressed upon the full set of controls, as in column 6 of Table 4, as well as each of the two information endowment proxies. Panel A reports the country-level results for raw country allocations (not measured relative to any benchmarks) based on Coordinated Portfolio Investment Survey (CPIIS) data. The country-level information endowment proxies, TRADE and FDI, are described in Table 5. Panel B reports the results from regressions for emerging market institution-level country allocations based on LionShares data. The two information endowment proxies, PARENT_COUNTRY and PEER_COUNTRY, are defined in Table 5. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Raw Portfolio Allocations	
	1	2
<i>Panel A. CPIIS</i>		
TRADE	0.504*** (6.35)	
FDI		0.029 (1.64)
Controls	Yes	Yes
Year FE	Yes	Yes
Source country FE	Yes	Yes
Destination country FE	Yes	Yes
No. of obs.	4,274	4,130
Adj. <i>R</i> ²	0.521	0.477
<i>Panel B. FactSet LionShares</i>		
PARENT_COUNTRY	0.035** (2.00)	
PEER_COUNTRY		0.028** (2.23)
Controls	Yes	Yes
Year FE	Yes	Yes
Source country FE	Yes	Yes
Destination country FE	Yes	Yes
No. of obs.	18,606	18,606
Adj. <i>R</i> ²	0.216	0.217

906 have strong positive effects on raw allocations of emerging market institutional
907 investors. Thus, the raw investment ratios mostly confirm the earlier results that
908 information endowments have a positive effect on portfolio allocation patterns.

909 D. Effects of the Global Financial Crisis

910 The global financial crisis is likely to have caused a reassessment of per-
911 ceived risk of different markets and, therefore, could have affected international
912 portfolio allocations. Our main interest is in whether information endowments
913 played an equally important role in emerging market portfolio allocations before
914 and after the crisis. Table 9 presents results of regressions for emerging market
915 portfolio allocations estimated separately over the periods 2001–2007 (what we
916 call “pre-crisis”) and 2010–2011 (“post-crisis”).¹⁵ The regressions based on the
917 CPIIS data, shown in Panel A, suggest that information endowments played a
918 less influential role in determining foreign portfolio allocations compared to the
919 pre-crisis period. For instance, the coefficient on the trade proxy for information
920 endowments drops by nearly half, from 0.599 in the pre-crisis period (model 1)
921 to 0.353 in the post-crisis period (model 2). The coefficient on the FDI variable
922 (models 2 and 4) falls even more sharply.

¹⁵In the Supplementary Material to this paper (Table IA4), we show that the conclusions discussed here are robust to defining 2001–2008 as the pre-crisis period and 2009–2011 as the post-crisis period.

TABLE 9
Effects of Information Endowments on External Investment Allocations: Pre- and Post-Global Financial Crisis Periods (excluding 2008 and 2009)

Table 9 replicates the results of the basic regressions reported in Table 5 using information endowment proxies. Panel A contains the equivalent of the regressions reported in columns 1 and 2 in Panel A of Table 5, with the Coordinated Portfolio Investment Survey (CPIS) sample of emerging market source countries split into the pre-crisis (2001–2007) and post-crisis (2010–2011) periods. Panel B contains the equivalent of the regressions reported in columns 1 and 2 in Panel B of Table 5, with the LionShares sample of emerging market institutions split into the pre-crisis (2001–2007) and post-crisis (2010–2011) periods. Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Excess Portfolio Allocations (CPIS Data)

	Excess Allocation (BENCHMARK_1, World)			
	Pre-Crisis		Post-Crisis	
	1	2	3	4
TRADE	0.592*** (6.77)		0.351*** (3.62)	
FDI		0.470*** (3.49)		0.016 (1.64)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	2,169	2,107	701	669
Adj. <i>R</i> ²	0.354	0.355	0.328	0.279

Panel B. Excess Portfolio Allocations (FactSet LionShares)

	Excess Allocation (BENCHMARK_1, World)			
	Pre-Crisis		Post-Crisis	
	1	2	3	4
PARENT_COUNTRY	0.029 (1.36)		0.031 (0.98)	
PEER_COUNTRY		0.020 (1.63)		0.035** (2.09)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	7,031	7,031	4,304	4,304
Adj. <i>R</i> ²	0.406	0.406	0.372	0.374

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

One of the most prominent, hard-hit equity markets was of course in the United States, arguably the epicenter of the global financial crisis. In Table 10, we examine whether emerging market portfolio allocations to U.S. stocks were affected in a differential manner than developed markets' allocations. Panel A reports results using CPIS data. Models 1–3 include all source and destination

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TABLE 10
 Excess Investment Allocations from Emerging Markets to the United States: Pre- and Post-Global Financial Crisis Periods (excluding 2008 and 2009)

Table 10 reports regression results that show how excess investment allocation to the United States is different from excess investment allocation to the other countries before and after the financial crisis (columns 1–3) and how excess investment allocation to the United States changes before and after financial crisis and type of its source countries (columns 4 and 5). In Panel A (Panel B), EMERGING is a dummy variable that is equal to 1 if a source country (or an institution of a source country) i is an emerging market country (is in an emerging market country), and 0 otherwise. POST_CRISIS is equal to 1 for post-crisis (2010–2011) periods and 0 for pre-crisis (2001–2007) periods. US_DESTINATION is a dummy variable defined as 1 if a destination country is the United States, and 0 otherwise. CPIS denotes Coordinated Portfolio Investment Survey data. Standard errors are clustered at the destination country-year level. Robust t -statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Excess Portfolio Allocations (CPIS Data)

	Excess Allocation (BENCHMARK_1, World)				
	All Destinations			U.S. Only	
	1	2	3	4	5
EMERGING	0.066 (1.22)	0.064 (1.15)	0.064 (1.14)	-0.068*** (-12.14)	-0.075*** (-23.64)
POST_CRISIS	-0.002 (-1.58)	0.000 (0.45)	-0.001 (-1.12)	0.089*** (3.52)	0.055*** (3.85)
US_DESTINATION	-0.112*** (-3.78)	-0.132*** (-3.92)	-0.145*** (-4.15)		
EMERGING × POST_CRISIS		-0.005* (-1.83)	-0.007*** (-3.01)		0.068 (1.35)
EMERGING × US_DESTINATION		0.042 (0.71)	0.024 (0.37)		
POST_CRISIS × US_DESTINATION			0.056*** (4.21)		
EMERGING × POST_CRISIS × US_DESTINATION			0.070 (1.54)		
Source country FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	19,716	19,716	19,716	438	438
Adj. R^2	0.104	0.106	0.114	0.784	0.787

Panel B. Excess Portfolio Allocations (FactSet LionShares)

	Excess Allocation (BENCHMARK_1, World)				
	All Destinations			U.S. Only	
	1	2	3	4	5
EMERGING	0.004 (0.00)	0.003 (0.00)	0.004 (0.00)	-0.408*** (-43.86)	-0.404*** (-43.63)
POST_CRISIS	-0.000 (-0.06)	-0.000 (-0.04)	-0.001 (-0.74)	0.085*** (9.13)	0.089*** (9.56)
US_DESTINATION	-0.197*** (-10.84)	-0.195*** (-10.15)	-0.221*** (-10.92)		
EMERGING × POST_CRISIS		-0.001 (-0.38)	-0.000 (-0.17)		-0.066** (-2.51)
EMERGING × US_DESTINATION		-0.038 (-1.56)	-0.018 (-0.74)		
POST_CRISIS × US_DESTINATION			0.095*** (11.64)		
EMERGING × POST_CRISIS × US_DESTINATION			-0.082*** (-4.09)		
Source country FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,490,794	1,490,794	1,490,794	10,198	10,198
Adj. R^2	0.065	0.065	0.068	0.193	0.194

countries in our sample. The coefficients on the U.S. destination variable are negative, consistent with the earlier descriptive evidence about both groups of countries underweighting the United States in their allocations. The $POST_CRISIS \times US_DESTINATION$ interaction term in model 3 is positive, which implies that, on average, countries underweighted the U.S. market less after the crisis. At this aggregate level, emerging markets look no different than other countries. This can be seen from the triple interaction term we include in the regression ($EMERGING \times POST_CRISIS \times US_DESTINATION$), which is not significant. In models 4 and 5, we re-estimate these regressions using data for just the United States as a destination country. The results are similar.

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

E. Other Dynamic Aspects

To examine how these results evolve over time, we re-estimate the baseline regressions over rolling 6-year windows (i.e., over the periods 2001–2006, 2002–2007, ..., and 2006–2011). We find that some of the information endowment effects are reliably significant (and, in some cases, also have larger economic magnitudes) in the later periods of the sample. We next run the regressions separately for each year. Consistent with the results from the pre- and post-crisis subsamples and the rolling window regressions, we find statistically reliable effects of the information endowment variables toward the end of the sample. In the regressions using LionShares, the sample size rises over time increasing the precision of the estimates. But the sizes of the coefficients for regressions in the later part of the sample period are similar to those in the full sample regressions reported previously.

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

Nevertheless, to examine this possibility further, we try yet a different experiment. Rather than using levels of FDI and trade as information endowment proxies, we use *changes* (from the differences in levels from 1991–2000) in these variables. That is, we look at whether the actual acquisition of information over the decade preceding our main sample period influences international portfolio allocation decisions. These results are not as compelling, which we

interpret as evidence that levels of information endowments rather than changes in those levels are more salient for portfolio allocation decisions. Another interpretation of these results is that, for countries with substantial changes in their trade and inward FDI patterns in the decade preceding our sample, those variables do not serve as durable information endowments that affect portfolio allocation decisions.

F. Value of Information Endowments in the Presence of Capital Flow Restrictions

The value of information endowments could be affected by capital account restrictions in either or both source and destination countries. Our idea here is that restrictions on outflows in source countries might increase the value of information endowments in making portfolio allocation decisions: Source countries with such restrictions presumably have weaker connections to global financial markets and therefore rely more on information endowments. On the flip side, destination countries with significant inflow restrictions might not be able to take advantage (in attracting inflows) of the information endowments they have created through their own direct investments in (or trade with) source countries.

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

$$I_{ijt} = \alpha + \beta' Z_{ijt} + \gamma_0 \text{IE}_{ij,91-00} + \gamma_1 \text{IE}_{ij,91-00} \times \text{OUTFLOW_RESTRICT}_{i,1991tot} + \gamma_2 \text{IE}_{ij,91-00} \times \text{INFLOW_RESTRICT}_{j,1991tot} + \gamma_3 \text{OUTFLOW_RESTRICT}_{i,1991tot} + \gamma_4 \text{INFLOW_RESTRICT}_{j,1991tot} + \varepsilon_{ijt}.$$

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

Table 11 reports these results. Consistent with our previous intuition, we find that the coefficients on the interactions between the information endowment variables (FDI in Panel A, TRADE in Panel B) and the indexes of source country outflow restrictions are positive for emerging markets, though only significantly for the BENCHMARK_1 and BENCHMARK_3 excess allocation specifications. The coefficients on the interactions between the information endowment variables and the index of destination country inflow restrictions are negative for emerging markets, though again only statistically significantly for the BENCHMARK_1 and BENCHMARK_3 excess allocation specifications. None of the interaction coefficients are statistically significant for developed market source countries.

G. Additional Tests and Extensions

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

TABLE 11
Interactions of Information Endowment Variables and Capital Account Restrictions

Table 11 extends the regressions reported in Panel A of Table 5 (Coordinated Portfolio Investment Survey (CPIS) data) and including measures of de jure capital controls taken from Fernández et al. (2016). The two variables used here (in levels and interacted with the information endowment variables) are index of outflow restrictions in source countries (KAO) and index of inflow restrictions in destination countries (KAI). Standard errors are clustered at the destination country-year level. Robust *t*-statistics are shown in parentheses below the coefficient estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Excess Allocation			
	(BENCHMARK_1, World) Emerging Markets	(BENCHMARK_1, World) Developed Markets	(BENCHMARK_2, Regional) Emerging Markets	(BENCHMARK_3, Matched) Emerging Markets
<i>Panel A. Foreign Direct Investment (FDI)</i>				
FDI	0.412* (1.90)	0.037 (0.87)	0.492** (2.23)	0.280 (1.12)
FDI × KAO	0.343*** (2.62)	0.169 (0.63)	0.040 (0.25)	0.350*** (2.66)
FDI × KAI	-5.429*** (-2.66)	0.250 (1.06)	-4.903** (-2.41)	-4.193* (-1.75)
KAO	-0.011 (-1.03)	-0.010 (-1.14)	-0.008 (-0.79)	-0.012 (-1.09)
KAI	-0.014 (-1.39)	-0.006* (-1.79)	-0.009 (-0.88)	0.013 (1.00)
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	3,846	5,692	3,846	3,831
Adj. <i>R</i> ²	0.26	0.369	0.198	0.398
<i>Panel B. Trade</i>				
Trade	0.482*** (5.82)	0.547*** (4.70)	0.628*** (5.06)	0.471*** (5.17)
Trade × KAO	0.304*** (2.64)	0.229 (1.08)	-0.017 (-0.12)	0.295** (2.45)
Trade × KAI	-1.131** (-2.10)	0.333 (1.53)	0.282 (0.41)	-1.135** (-2.05)
KAO	-0.011 (-1.12)	-0.011* (-1.70)	-0.008 (-0.86)	-0.012 (-1.12)
KAI	-0.015 (-1.41)	-0.006* (-1.72)	-0.009 (-0.84)	0.015 (1.09)
Year FE	Yes	Yes	Yes	Yes
Source country FE	Yes	Yes	Yes	Yes
Destination country FE	Yes	Yes	Yes	Yes
No. of obs.	3,846	5,692	3,846	3,831
Adj. <i>R</i> ²	0.316	0.527	0.277	0.427

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

We re-estimate the key regressions in Table 5, eliminating the four largest destination countries: the United States, the United Kingdom, Japan, and France for developed market source countries and the United States, the United Kingdom, Bahrain, and Singapore for emerging market source countries. With the smaller sample sizes, a couple of the coefficients are no longer statistically significant, although some of the FDI coefficients became statistically significant. We also

1039 re-estimate the main regressions separately for three groups of emerging market
1040 economies: i) Asia and the Middle East, ii) Latin America, and iii) emerging Eu-
1041 rope. The smaller sample sizes reduce the precision of the estimates using both the
1042 CPIS and LionShares data sets, but there are still some interesting patterns. For
1043 instance, the coefficients on the information endowment variables are in general
1044 more statistically significant and economically larger for emerging market source
1045 countries in Latin America and emerging Europe compared to those in Asia and
1046 the Middle East. In the case of emerging Europe, for instance, the results appear
1047 to be influenced by domestic investors relying heavily on their historical trade
1048 and FDI relationships with developed European countries when determining their
1049 international portfolio allocations.

1050 Finally, we examine whether our information endowment proxies could simply
1051 reflect other elements of differences in economic structures across poten-
1052 tial source and destination countries. To test this proposition, we create country-
1053 specific measures of industrial composition based on the Datastream industry in-
1054 dex data.¹⁶ Then, for a given country pair, we compute a weighted average of the
1055 absolute differences in sector weights for a given year and include that as an addi-
1056 tional control variable. Including this variable in our baseline regressions does not
1057 perturb the key findings for the information endowment variables. One interesting
1058 finding is that, for developed market institutional investors, larger differences in
1059 industrial composition between source and destination countries result in *smaller*
1060 portfolio allocations to those destination countries. Emerging market institutional
1061 investor foreign portfolio allocations are not swayed by deviations in industrial
1062 composition across country pairs.¹⁷

1063 VII. Concluding Remarks

1064 Our objective in this article is to characterize external portfolio equity al-
1065 locations of emerging markets and analyze their determinants. This subject has
1066 received little attention in the existing literature, most of which has focused on
1067 portfolio investments among developed markets or *in* emerging markets. The
1068 topic of our article is important given the rapidly rising prominence of emerging
1069 markets in global financial flows and rising foreign portfolio asset holdings of
1070 these economies.

1071 Our main result is that emerging markets' foreign investment patterns are
1072 consistent with the information endowment hypothesis. External equity invest-
1073 ments from specific emerging markets tend to be disproportionately allocated
1074 toward countries that in the past had served as major trading partners or were

¹⁶To construct this variable, we collect sector market-capitalization weights from the Datastream industry index (at the 1-digit level). We then compute a weighted average of the absolute difference in respective sector weights in each year. We also experiment with using value-weighted average differences, but this made little difference to the results noted previously.

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

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 exploit a detailed database on institution-level data to test a stricter version of the information endowment hypothesis. We find that institutional investors based in emerging markets tend to have larger excess allocations of their foreign investment portfolios in countries in which the institution's parent is located or if the destination country contains a foreign subsidiary of the institution's parent. These effects are largely absent in the case of institutional investors based in developed markets.

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

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

Appendix A. Country Classifications into Emerging or Developed Markets

Appendix A lists the countries that enter our analysis as source or destination countries for outward portfolio equity investments in Coordinated Portfolio Investment Survey (CPIS) and classifies them as emerging market or developed market economies. Countries that appear only 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			

1116 Appendix B. Summary Statistics for the Two Samples of Data 1117 on Cross-Border Investor Holdings

1118 Panel A describes the process by which we derive our baseline sample for country-
1119 level analysis using the Coordinated Portfolio Investment Survey (CPIS) data set. Our
1120 sample starts with potential country pairs of Morgan Stanley Capital International (MSCI)
1121 Emerging Markets source countries matched with MSCI destination countries, which could
1122 be emerging markets or developed markets. We exclude source countries for which there
1123 are no investment data for the years 2001–2011. In addition, we exclude potential country-
1124 pair observations with some missing investment data for some years. We further exclude
1125 missing benchmarks (Vietnam in 2001 and 2002). Panel B describes the process by which
1126 we derive our baseline sample for institution-level analysis using the LionShares data set.
1127 Our sample starts with equity and American Depositary Receipt (ADR) holdings of MSCI
1128 institutional investors from 2001–2011 extracted from the LionShares database, limited to
1129 investments from institutions in MSCI emerging market (EM) countries to destination
1130 countries (both emerging market and developed market) that are in the MSCI. For each
1131 year, we consider only destination countries that received positive investment from at least
1132 one EM institution. For pairs of EM institutions and destination countries without any
1133 investment observations, we fill in 0 investment. We further exclude observations with
1134 missing benchmarks. See Appendix A for a full list of countries and their classifications.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total	Average
<i>Panel A. CPIS Sample of Country-Pair Observations by Year</i>													
Total potential MSCI EM source to MSCI destination country pairs (36 × 62 – 36)	2,196	2,196	2,196	2,196	2,196	2,196	2,196	2,196	2,196	2,196	2,196	24,156	2,196
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	6,039	549
Country pairs for which the source countries have missing observations on the destination countries	893	1,001	946	796	826	843	726	759	535	508	550	8,383	762
Missing benchmarks	9	8	0	0	0	0	0	0	0	0	0	17	2
No. of nonmissing country pairs with EM source country (including zeros), of which:	745	638	701	851	821	804	921	888	1,112	1,139	1,097	9,717	883
No. of EM source countries	22	22	24	26	26	26	26	26	27	27	27	279	25
No. of destination countries	61	61	62	62	62	62	62	62	62	62	62	680	62
Total no. of 0 obs.	346	271	272	350	278	209	298	229	392	389	348	3,382	307
Total no. of positive obs.	399	367	429	501	543	595	623	659	720	750	749	6,335	576
<i>Panel B. FactSet LionShares Sample of Country-Pair Observations by Year</i>													
Number of MSCI source country institutions that invest in nondomestic MSCI countries	2,001	2,078	2,417	2,678	2,800	3,056	3,294	3,198	3,395	3,564	3,481	31,962	2,906
From developed markets	2,000	2,071	2,397	2,643	2,759	2,984	3,199	3,104	3,261	3,416	3,330	31,164	2,833
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	1,575	1,968	3,528	5,510	5,358	7,906	8,732	8,758	44,480	4,044
With positive investments	4	97	182	400	460	819	1,133	1,236	1,760	1,958	1,921	9,970	906
With 0 investments	19	183	660	1,175	1,508	2,709	4,377	4,122	6,146	6,774	6,837	34,510	3,137

Appendix C. Variable Definitions

- This list briefly defines the main variables used in the paper.
- BENCHMARK_1** (world) investment ratio: Market capitalization of destination country *j* scaled by world market capitalization excluding source country *i*. *Source*: 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* divided by portfolio investment from all countries to country *j*. *Source*: Coordinated Portfolio Investment Survey (CPIS) or LionShares; own calculation.
- BENCHMARK_3** (matched) investment ratio: Portfolio investment from propensity-score-matched developed country *i* to country *j* divided by portfolio investment from propensity-score-matched developed market country *i* to all countries. *Source*: CPIS or LionShares; own calculation.
- CPIS_EXCESS_ALLOCATION (BENCHMARK_1)**: Portfolio investment from emerging market *i* to country *j* divided by portfolio investment from emerging market *i* to all countries, less BENCHMARK_1. *Source*: CPIS; see also BENCHMARK_1 description.
- CPIS_EXCESS_ALLOCATION (BENCHMARK_2)**: Portfolio investment from emerging market *i* to country *j* divided by portfolio investment from emerging market *i* to all countries, less BENCHMARK_2. *Source*: CPIS; see also BENCHMARK_2 description.

- 1156 CPIS_EXCESS_ALLOCATION (BENCHMARK_3): Portfolio investment from emerg-
 1157 ing market i to country j divided by portfolio investment from emerging market i
 1158 to all countries, less BENCHMARK_3. *Source:* CPIS; see also BENCHMARK_3
 1159 description.
- 1160 LIONSHARES_EXCESS_ALLOCATION (BENCHMARK_1): Portfolio investment
 1161 from emerging market institution i to country j divided by portfolio investment from
 1162 emerging market institution i to all countries, less BENCHMARK_1. *Source:* Fact-
 1163 Set LionShares; see also BENCHMARK_1 (global) description.
- 1164 LIONSHARES_EXCESS_ALLOCATION (BENCHMARK_2): Portfolio investment
 1165 from emerging market institution i to country j divided by portfolio investment from
 1166 emerging market institution i to all countries, less BENCHMARK_2. *Source:* Fact-
 1167 Set LionShares; see also BENCHMARK_2 (regional) description.
- 1168 LIONSHARES_EXCESS_ALLOCATION (BENCHMARK_3): Portfolio investment
 1169 from emerging market institution i to country j divided by portfolio investment from
 1170 emerging market institution i to all countries, BENCHMARK_3. *Source:* FactSet
 1171 LionShares; see also BENCHMARK_3 (matched) description.
- 1172 TRADE: Sum of export and import between emerging market i and country j from 1991
 1173 to 2000 divided by sum of export and import of county j from 1991 to 2000. *Source:*
 1174 United Nations Conference on Trade and Development (UNCTAD).
- 1175 FDI: Foreign direct investment (FDI) from country j into emerging market i from 1991
 1176 to 2000 divided by FDI from all countries into emerging market i between 1991
 1177 to 2000; 0 if it is missing. *Source:* Web site of Andrew Rose at the University of
 1178 California, Berkeley (<http://faculty.haas.berkeley.edu/arose>).
- 1179 PARENT_COUNTRY: Dummy variable equal to 1 if the destination country j is the coun-
 1180 try in which the parent institution of the emerging market institution i is located,
 1181 and 0 otherwise. *Source:* Classified by hand.
- 1182 PEER_COUNTRY: Dummy variable equal to 1 if the destination country j contains a for-
 1183 eign subsidiary of the parent institution of emerging market institution i , and 0 oth-
 1184 erwise. *Source:* Classified by hand.
- 1185 DISTANCE: Log of miles between country i and country j . *Source:* Web site of Andrew
 1186 Rose at the University of California, Berkeley ([http://faculty.haas.berkeley.edu/](http://faculty.haas.berkeley.edu/arose)
 1187 [arose](http://faculty.haas.berkeley.edu/arose)).
- 1188 BORDER: Dummy variable equal to 1 if country i and country j share a common, land-
 1189 based border, and 0 otherwise. *Source:* Web site of Andrew Rose at the University
 1190 of California, Berkeley (<http://faculty.haas.berkeley.edu/arose>).
- 1191 COMMON_LANGUAGE: Dummy variable equal to 1 if country i and country j share
 1192 common language, and 0 otherwise. *Source:* Web site of Andrew Rose at the Uni-
 1193 versity of California, Berkeley (<http://faculty.haas.berkeley.edu/arose>).
- 1194 COMMON_COLONIZER: Dummy variable equal to 1 if country i and country j share
 1195 common colonizer post 1945, and 0 otherwise. *Source:* Web site of Andrew Rose at
 1196 the University of California, Berkeley (<http://faculty.haas.berkeley.edu/arose>).
- 1197 COLONY_RELATIONSHIP: Dummy variable equal to 1 if country i and country j have
 1198 ever shared a colonial relationship with a common colonizer, and 0 otherwise.
 1199 *Source:* Web site of Andrew Rose at the University of California, Berkeley ([http://](http://faculty.haas.berkeley.edu/arose)
 1200 faculty.haas.berkeley.edu/arose).
- 1201 GDP_PER_CAPITA: Log of gross domestic product (GDP) per capita. *Source:* Interna-
 1202 tional Monetary Fund's (IMF).

NUMBER_OF_FIRMS: Log of number of listed firms per population. <i>Source:</i> World Federation of Exchanges.	1203 1204
MARKET_CAP/GDP: Equity market capitalization divided by GDP. <i>Source:</i> IMF.	1205
MARKET_TURNOVER: Annual equity market trading volume over end-of-year market capitalization. <i>Source:</i> World Development Indicator.	1206 1207
TRANSACTION_FEES: Sum of brokerage commission, transfer fees, and market impact cost. <i>Source:</i> Elkins/McSherry, LLC.	1208 1209
DIFFERENCE_IN_RETURNS: Country j 's last year return-country i 's last year return. <i>Source:</i> Datastream.	1210 1211
VARIANCE_RATIO: Country j 's return volatility divided by country i 's return volatility. Return volatility is calculated using Morgan Stanley Capital International (MSCI) country index returns over the past 5 years. <i>Source:</i> Datastream.	1212 1213 1214
CORRELATION: Correlation of stock returns between country i and country j , based on monthly MSCI country index returns over the past 5 years. <i>Source:</i> Datastream.	1215 1216
MARKET_CAP_RATIO: Dummy variable equal to 1 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, and 0 otherwise. <i>Source:</i> IMF.	1217 1218 1219 1220
GDP_RATIO: Dummy variable equal to 1 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, and 0 otherwise. <i>Source:</i> IMF.	1221 1222 1223 1224
VOLATILITY_RATIO: Dummy variable equal to 1 if the volatility of stock returns in the destination country over a trailing 5-year period divided by the volatility of stock returns in the source country over the same trailing 5-year period is above the median value of that ratio among all source–destination country pairs, and 0 otherwise. <i>Source:</i> Datastream.	1225 1226 1227 1228 1229
CONCENTRATION: Dummy variable equal to 1 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. <i>Source:</i> Authors' calculations from FactSet LionShares database.	1230 1231 1232 1233 1234
REGISTRATION_RULES: Sum of points. 1 point if registration required; 1 point if annual review of performance; 1 point if compliance requirements are mandated. <i>Source:</i> Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other Web-based resources (see Karolyi (2015), chap. 6, for details on construction).	1235 1236 1237 1238
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. <i>Source:</i> Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other Web-based resources (see Karolyi (2015), chap. 6, for details on construction).	1239 1240 1241 1242 1243
FX_CONVERTIBILITY_LIMITS: Sum of points. 1 point if only partially or nonconvertible currency; 2 points if exchange rate is not freely floating. <i>Source:</i> Salomon Smith Barney, Deutsche Custody Services Fact Book 2005, and other Web-based resources (see Karolyi (2015), chap. 6, for details on construction).	1244 1245 1246 1247

- 1248 GOVT_EFFECTIVENESS: Measures the quality of public service provision, the quality
1249 of the bureaucracy, the competence of civil servants, the independence of the civil
1250 service from political pressures, and the credibility of the government's commitment
1251 to policies. The main focus of this index is on "inputs" required for the government
1252 to be able to produce and implement good policies and deliver public goods. This
1253 variable ranges from -2.5 to 2.5 , where higher values equal higher government ef-
1254 fectiveness. *Source*: Kauffmann–Kraay Governance Indicators; see World Bank's
1255 World Governance Indicators ([http://databank.worldbank.org/data/reports.aspx?](http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators)
1256 [source=Worldwide-Governance-Indicators](http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators)).
- 1257 REGULATORY_BURDEN: Measures the incidence of market-unfriendly policies. The
1258 indicators are based on 352 underlying variables measuring perceptions of a wide
1259 range of governance issues drawn from 32 data sources constructed by 30 organi-
1260 zations worldwide. Each measure is constructed on a scale of -2.5 to 2.5 with a
1261 standard deviation of 1.0 using standard unobserved components models. *Source*:
1262 Kauffmann–Kraay Governance Indicators; see World Bank's World Governance
1263 Indicators ([http://databank.worldbank.org/data/reports.aspx?](http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators)
1264 [source=Worldwide-Governance-Indicators](http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators)).
- 1265 RULE_OF_LAW: Measures the extent to which agents have confidence in and abide by
1266 the rules of society. These include perceptions of the incidence of both violent and
1267 nonviolent crime, the effectiveness and predictability of the judiciary, and the en-
1268 forceability of contracts. The indicators are based on 352 underlying variables mea-
1269 suring perceptions of a wide range of governance issues drawn from 32 data sources
1270 constructed by 30 organizations worldwide. Each measure is constructed on a scale
1271 of -2.5 to 2.5 with a standard deviation of 1.0 using standard unobserved compo-
1272 nents models. *Source*: Kauffmann–Kraay Governance Indicators; see World Bank's
1273 World Governance Indicators ([http://databank.worldbank.org/data/reports.aspx?](http://databank.worldbank.org/data/reports.aspx?source=Worldwide-Governance-Indicators)
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