Catering through Globalization: Cross-border Expansion and Misallocation in the Global Mutual Fund Industry

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Abstract

Efficient financial globalization should reward high-skilled financial institutions and punish low-skilled institutions. We show that the globalization of the mutual fund industry in the beginning of the century has exhibited the opposite pattern: low-skilled companies can benefit from globalization by catering to the demand of unsophisticated investors for foreign investment. This catering strategy attracts capital for fund companies but fails to deliver performance or diversification benefits to investors. Moreover, its associated cross-border capital flows reduce price efficiency and liquidity in the target country. Our results highlight the potential existence of a short-term behavioral component of financial globalization in distorting efficiency.

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Introduction

Financial liberalization and its associated cross-border capital flows are at the heart of international finance (Karolyi and Stulz, 2003). Opinions and evidence, however, are widely divided over its policy implications. For instance, the former chairman of the U.S. Federal Reserve, Alan Greenspan, stated that the "globalization of finance" has patently contributed "to ever higher standards of living around the world."[1] By contrast, Nobel laureate Joseph Stiglitz (2013) argued that "the instability in cross-border capital flows has been particularly troublesome" for—although not limited to—emerging markets.[2] Indeed, although vast evidence shows that a market's opening to foreign investors can be beneficial to the local economy by reducing the cost of capital (Bekaert and Harvey, 2000), increasing real investment (Henry, 2000), spurring growth (Bekaert, Harvey, and Lundblad, 2005, 2009), and providing a better process of global information (Bae, Ozoguz, Tan, and Wirjanto, 2012), cross-border capital flows may also be harmful to the global market in certain scenarios (e.g., Jotikasthira, Lundblad, and Ramadorai, 2012; Hau and Lai, 2017; Caballero and Simsek, 2018). It is puzzling to see that the same cross-border capital flows can trigger such drastically different interpretations.

This paper proposes and empirically tests a novel economic perspective that may shed light on this issue: the controversy of cross-border capital flows may arise when, among the financial institutions managing such flows, financial globalization fails to reward high-skilled institutions and punish low-skilled institutions, creating a misallocation of capital vis-à-vis skills. Our intuition can be most clearly demonstrated in the mutual fund industry, which manages trillion-dollar cross-border capital flows and thus presents one of the best testing grounds to examine this issue. Although the globalization of this industry may incentivize more skilled mutual fund companies (or interchangeably, mutual fund families) to manage more capital globally, the same process may also encourage low-skilled fund companies to exploit market frictions related to investor behavior in order to survive in the global market. While the folk theorem suggests that globalization should promote more skillful companies due to enhanced competition, three strands of studies suggest that it is also possible for the opposite scenario to prevail in the short run.

The first strand of literature recognizes that mutual funds, similar to non-financial companies, have incentives to compete for investors' capital flows.[3] The second notes that, since investors often invest according to style strategies (e.g., Mullainathan, 2002; Barberis and Shleifer, 2003; Barberis, Shleifer, and Wurgler, 2005), index-linked style investment plays an especially important role in the domestic mutual fund industry (Boyer, 2011; Wurgler, 2011). Note that index-linked style investment is not

[1] Remarks by Chairman Alan Greenspan at the 15th Annual Monetary Conference of the Cato Institute, Washington, D.C. October 14, 1997 (https://www.federalreserve.gov/boarddocs/speeches/1997/19971014.htm).
[2] The details of this article can be found at the following link: http://www.emergingmarkets.org/Article/3266187/JOSEPH-STIGLITZ-Government-intervention-is-desirable.html.
[3] Existing studies show that mutual funds compete via prices (e.g., reduced mutual fund fees in Wahal and Wang, 2011) or product differentiation (e.g., in terms of the degree of active management in Cremers, Ferreira, Matos, and Starks, 2016).

equivalent to index fund investment. Rather, more capital is actively managed by funds loosely tracing indices than by passive index funds in practice. In the former case, which is the focus of our paper, style investors are attracted by the common characteristics of the assets embedded in the index. Finally, it is well known that mutual fund investors lack the expertise to properly allocate capital in general and withdraw from bad investments in particular.[4] This incapability can only be magnified for the foreign investments of these investors due to the additional complexity that characterizes foreign markets.

Jointly, these features suggest that globalization may provide a unique opportunity for at least some low-skilled companies to avoid domestic competition by exploiting investors' style demand for global assets. Instead of competing in terms of performance in the domestic market, these companies can achieve product differentiation by launching new products (funds) that trace newfangled foreign indices, either when new indices emerge in a foreign country as a result of financial development or when existing indices become investable to global investors due to financial liberalization. As long as these companies can manage to launch such products faster than anyone else, they enjoy a first-mover advantage to attract style investors, who will not easily withdraw in the future (even when these products deliver low returns). Since this globalization strategy aims to attract capital by exploiting investors' demand for foreign style investment and their weakness in properly adjusting existing investments (as opposed to creating value for investors due to the lack of skills and incentives), it can be regarded as a *catering strategy* in the spirit of Baker and Wurgler (2004a and 2004b).

Of course, how successful and prevailing the catering strategy is will be subject to the competition vis-à-vis high-skilled companies, which may also launch new funds to seek alphas in foreign markets. The traditional wisdom on competition suggests that high-skilled companies may dominate low-skilled companies in overseas expansions due to their superior performance, which we refer to as the *skill-propagation hypothesis* of mutual fund globalization.[5] However, when the launch of performance-seeking foreign funds takes greater effort and a longer period of time (e.g., to analyze data and to train managers), low-skilled companies may indeed be able to move faster in catering to investors' foreign-style demand and thrive based on their first-mover advantage. This latter scenario, which we refer to as the *catering expansion hypothesis*, depicts how low-skilled fund companies may potentially benefit from globalization in attracting and managing a large scale of cross-border capital.

The recognition of catering as a mechanism for low-skill companies to thrive paves the way for us to better understand the potential controversy of foreign capital flows. Consider the case of capital allocation. If the globalization of the mutual fund industry follows the *catering expansion hypothesis*, a

[4] Investors are unable to properly withdraw capital from poor-performing funds (Brown, Harlow, and Starks, 1996; Chevalier and Ellison, 1997) or high-cost index funds (Elton, Gruber, and Busse, 2004; Hortaçsu and Syverson, 2004; and Choi, Laibson, and Madrian, 2010). Such adverse behavior of investors can be related to their capability and financial literacy (e.g., Grinblatt, Ikäheimo, Keloharju, and Knüpfer, 2016) or search-related frictions (e.g., Choi, Laibson, and Madrian, 2010). For both reasons, foreign investments are likely to amplify the weakness of investors.

[5] The model of Melitz (2003) on global trade and heterogeneous firms, for instance, rationalizes such predictions.

misallocation issue arises when vast cross-border capital could be matched to companies with low managerial skills and, subsequently, low performance. If we interpret performance as the "productivity" measure of mutual funds, then capital is allocated to companies with low productivity, which differs drastically from the enhanced efficient resource allocation that we observe in trade-related globalization process (e.g., Pavcnik, 2002; Melitz, 2003; Lileeva and Trefler, 2010; and Bustos, 2011). In contrast to trade liberalization, financial globalization may give rise to misallocation because it magnifies investors' incapability to properly invest across funds, which gives low-skilled companies an opportunity and a higher incentive to exploit such a weakness.

However, performance is not the only concern of misallocation. Indeed, investor welfare and market efficiency may also be negatively influenced in the *catering expansion hypothesis*. Investor welfare is unlikely to increase because of the catering incentives (i.e., to exploit rather than create value for investors) and the low skills of the companies conducting catering expansions.[6] Even more notably, the market efficiency of the investing country is likely to be negatively influenced when a substantial amount of capital is channeled to foreign markets by less-skilled fund companies, particularly in terms of informational efficiency (because corresponding fund companies have relatively low information-processing skills) and liquidity (because these companies lack the incentive or skills to trade). In these cases, catering incentives may provide a micro foundation to explain the controversial effects associated with the process of financial globalization.

We test the above hypotheses as well as their implications by focusing on the complete sample of *actively* managed global open-end mutual funds over the period from 2001 to 2012. Before we conduct any tests, the provoking role of index-related strategies can be visualized in Figure 1. In this figure, we first notice that the *number* of major global stock market indices traced by the mutual fund industry has increased drastically from 130 in 2000 to 440 in 2009, continuing its exponential growth path as observed in the domestic market in the last century (e.g., Wurgler, 2011). Second, striking as the index growth path is, it has actually been accompanied by a similar growth in both the number of global mutual funds and the value of assets under management. This pattern strongly suggests that many mutual fund companies have benefited from the process of financial globalization in catering to the demand of investors who are interested in foreign-style investments.

Of course, Figure 1 does not tell us which type of companies benefit more from financial globalization. To provide an answer to this important question, we conduct four steps of formal empirical analysis. The first step aims to measure catering incentives and to assess the extent to which such incentives prevail in cross-border expansions. We measure the *catering incentive* of investing in a target country (i.e., to launch a fund tracing the country's equity indices) by the *number of unexplored indices* therein—i.e., the total number of indices in that country tracked by domestic funds that are not

[6] In the spirit of Berk and Green (2004), even when funds can generate economic rents during the process of globalization, investors will not benefit from them.

yet invested in by any foreign funds. As this number increases, the country becomes more attractive in catering because more "new products" that loosely trace those indices can be potentially launched to attract the capital of foreign investors who are interested in such indices (particularly when they cannot directly invest in domestic funds tracing these indices).

We find that the likelihood of launching a cross-border expansion in a target country is significantly positively associated with this number. Using fixed effects and observed characterizes of the investing country to control for potential supply-side considerations (e.g., a country might be too small for global investors to invest in) does not change the conclusion. Indeed, while the unconditional probability for global fund companies to launch a new fund in a foreign market in a given year is 4%, any one additional unexplored index in a particular country can help increase the probability by 3% (a relative increase of 75%). Summary statistics further show that fund companies conducting more catering expansions deliver lower returns, charge lower fees, and, most notably, achieve greater asset growth from the launch of new funds than from the flows to existing funds. In this regard, it is a common practice for fund companies to attract capital by catering to investors' demand for unexplored foreign indices.[7]

Although the above observations suggest that catering expansion is prevailing, the real economic question is whether it is associated with misallocation and can generate adverse market impacts as hypothesized. Hence, in the second step of our analysis, we explicitly investigate the performance of catering-oriented cross-border expansions. When we examine the five-year (Fama-French-Carhart four-factor adjusted) performance of the newly launched foreign funds, we find it to be negatively associated with the catering incentives of those funds (as revealed by the number or rank of unexplored indices of the target country whose indices the new funds trace). A one-standard-deviation increase in the number (rank) of unexplored indices of the target country reduces the out-of-sample five-year performance of the newly launched funds by 1.43% (0.97%) per year.

Given that mutual funds are arguably better at processing local (domestic) information, a more direct proxy for the skills of fund companies is the performance of their domestic funds. Therefore, we next link the catering incentives of fund companies (quantified as the *average* number or rank of unexplored indices for *all* its cross-border expansions made in a year; a larger average number reveals a higher catering incentives of a family) to the out-of-sample performance of their domestic funds. We find a significantly negative relationship: fund families with higher catering incentives display lower out-of-sample performance of their domestic funds. The performance difference (four-factor-adjusted) between fund families with low and high catering incentives can be as high as 2.8% per year.

As a robustness check, we apply the above test to all the U.S. domiciled fund families that engage in cross-border expansion. This subsample test is important because all unobservable characteristics of

[7] Although for fund inceptions we do not directly observe investor demand (hence, we can only infer demand in a revealed preference approach—i.e., new funds can be launched only when there are sufficient demands), our robustness checks show that fund flows, a more direct measure on investor demand, also positively respond to unexplored foreign indices.

family domicile country are automatically controlled for. Moreover, the performance of the domestic funds offered by these families (i.e., domestic U.S. mutual funds) can be more precisely measured by factor models or by style adjustment. We reach the same conclusion in this important subsample that fund families with higher catering incentives exhibit lower skills. Finally, to test whether the underperformance of domestic funds could be due to the devotion of resources to foreign funds by catering families, we examine the performance of all affiliated foreign funds except for newly launched funds. Again, we find that fund families with strong catering incentives underperform. Jointly, our performance tests suggest that financial globalization may be associated with a misallocation between capital and managerial skill for a large fraction of mutual fund companies.

Our third step of analysis examines whether the misallocation between capital and skills can be compensated for by other forms of investor welfare, such as international diversification. In theory, cross-border expansions may reduce the average correlation across funds offered by the same family, thereby allowing investors to enjoy greater international diversification benefits. The data, however, tell a different story: a one-standard-deviation increase in the catering incentive of a new fund as measured by the number (rank) of unexplored indices is associated with an *increase* in the five-year return and style-adjusted return correlation between the newly launched fund and those of existing affiliated funds by 1.35% or 2.05% (1.29% and 1.48%). Moreover, if we construct a mean-variance efficient portfolio using all funds within the same family, catering incentive is *negatively* (though not significantly) related to the optimal investment weight that a hypothetical mean-variance investor should allocate to a new fund. In this regard, catering-oriented expansions do not seem to enhance the degree of diversification that investors can enjoy within a family.[8]

Our fourth step investigates how catering expansions influence market efficiency. We focus on three dimensions that are particularly important for cross-border capital flows: informational efficiency, liquidity, and market integration. In terms of informational efficiency, although foreign investors are typically believed to have less local information, Bae, Ozoguz, Tan, and Wirjanto (2012) show that foreign capital can nonetheless benefit emerging markets by better processing global information. To test the relationship between catering and this benefit, we treat families whose catering incentives are among the top tercile as catering-oriented fund families, and we examine the relation between their ownership and price delay to global market information (the main variable of interest in Bae, Ozoguz, Tan, and Wirjanto, 2012).

We find that higher stock ownership by catering-oriented foreign funds is associated with *greater* price delay to both global market information and domestic market information. In other words, catering-oriented foreign capital flows are associated with lower informational efficiency both in terms of global information and in terms of local information. When we link price delay to the ownership of

[8] Additional tests further show that such expansions do not provide a hedge against the Global Financial Crisis either—i.e., these funds do not deliver a better performance during the crisis.

newly launched catering funds, we find a similar relationship.[9] To further alleviate potential endogeneity concerns, we follow the literature to examine fire sales (and purchases), which are plausibly exogenous to both individual funds (e.g., Coval and Stafford, 2007; Jotikasthira, Lundblad, and Ramadorai, 2012; see Dow and Han, 2018 for theoretical mechanisms of fire sales) and the price efficiency of the fund investing country. Empirically, we find that fire sale flows of catering-oriented funds also influence price delay in a similar manner.

It is striking to see that *catering flows* (i.e., cross-border capital flows managed by catering funds) have exactly the opposite influence on global information processing as reported in the literature. To reconcile our finding with the literature, we conduct additional tests and find that the impact of *non-catering* flows (i.e., cross-border capital flows managed by families whose catering incentives are among the *bottom* tercile) is indeed beneficial in processing global information. A one-standard-deviation increase in the ownership of catering-oriented foreign funds (non-catering funds) is associated with a 1.33% greater (0.84% lower) price delay with respect to global market information for all countries and a 3.63% greater (2.37% lower) price delay for emerging markets, where all numbers are scaled by the standard deviation of price delay. In this regard, catering funds can reduce price efficiency by 6% compared to beneficial capital flows in emerging markets.

If catering expansions do not improve information processing, they may help by supplying liquidity to the local market and by enhancing market integration. When we link the ownership of active catering-oriented foreign funds to the two main indicators of liquidity in international finance, Amihud *illiquidity* (Amihud, 2002) and the proportion of zero daily returns in a month (Lesmond, Ogden, and Trzcinka, 1999), we find little evidence of a beneficial role. When we follow the literature (e.g., Griffin, 2002; Hou, Karolyi, and Kho, 2011; Fama and French, 2012; Karolyi and Wu, 2018; and Massa and Schumacher, 2019) in defining market integration as either the absolute value of the intercept or the adjusted R-square of a regression of stock returns on alternative factor models, we find that catering funds do not significantly increase the degree of market integration either. By contrast, consistent with the general role of international investors as reported in Karolyi, Lee, and van Dijk (2012), catering flows increase commonality in liquidity. Hence, catering flows not only have little beneficial result on liquidity and market integration but also enhance contagion risk by boosting commonality in liquidity in the local economy.

Overall, our results suggest that financial globalization may allow low-skilled mutual fund companies to thrive by catering to the demand of unsophisticated investors in foreign-style investment. The prevalence of catering funds in managing cross-border capital flows, however, may result in controversial outcomes of capital misallocation in terms of skills, investor welfare, and market

[9] Since newly launched funds bring in positive changes to existing catering-oriented ownership, we can interpret this test as a way to quantify the incremental price delay associated with changes in catering-oriented ownership, which is essentially a Granger causality test of the family ownership result.

efficiency. These conclusions are robust to a list of alternative tests, such as excluding closet-index funds (Cremers, Ferreira, Matos, and Starks, 2016) from the sample of active funds, using different risk factors (e.g., global and domestic factors) to compute performance, replacing after-fee performance with before-fee performance in the spirit of Berk and Green (2004), and using sales country instead of domicile country to identify foreign funds.

Since globalization should in principle help improve the overall efficiency of firms by allocating more capital to better firms as witnessed in trade liberalization,[10] it is important to explain why financial globalization is subject to considerably more controversy. In this regard, our main contribution is to propose a novel behavioral and market friction-based mechanism of financial globalization to shed new light on this issue, in which the weaknesses of investors allow the catering incentives of financial intermediaries to engender economic frictions and distort market efficiency. By contrast, known explanations of firm-level misallocation rooted from the financial sector, such as financial constraints (e.g., Midrigan and Xu, 2014; Moll, 2014) and limited information (e.g., David, Hopenhayn, and Venkateswaran, 2016), may fail to explain this controversy because financial globalization and its associated financial development should mitigate information and financial constraint-related frictions, if anything, as implied by Buera, Kaboski, and Shin (2011) and Larrain and Stumpner (2017).[11]

The presence of this behavioral mechanism, however, should not be taken as evidence against globalization. To the contrary, catering-induced misallocation can be condensed only by a fully integrated global market with much less friction (e.g., in terms of the learning and searching costs of investors interested in global assets). Hence, our findings reflect more a temporary growing pain of financial globalization rather than its long-term equilibrium. Nevertheless, we should not underestimate this mechanism either because its effects on investor welfare and market efficiency may spur unnecessary anti-globalization sentiment that may worsen the issues that we have found. How to escalate the long-term benefits of financial globalization while diminishing its short-term adverse effects, therefore, becomes an important policy question. Interestingly, although our findings differ from the trade literature, one common normative implication is that the optimal policy regulating global capital should consider firm heterogeneity (in incentives) instead of relying on one-size-fits-all policies.

This study also contributes to the literature on financial liberalization (e.g., Bekaert and Harvey, 2000; Henry, 2000; Karolyi and Stulz, 2003; Bekaert, Harvey, and Lundblad, 2005, 2009; Bae, Ozoguz, Tan, and Wirjanto, 2012; Jotikasthira, Lundblad, and Ramadorai, 2012; Bartram, Griffin, Lim, and Ng, 2015; Hau and Lai, 2017) by laying out a potential economic groundwork integrating firm incentives

[10] See, among others, Pavcnik (2002), Lileeva and Trefler (2010), and Bustos (2011) for empirical evidence; Melitz (2003) for a highly influential theoretical treatment; and Melitz and Redding (2014) for a recent survey.

[11] Other market frictions, such as agency issues, may limit the benefits of financial globalization at the country level (e.g., Stulz, 2005). Firm heterogeneity, however, may allow financial globalization to enhance market efficiency even in the presence of such issues. For instance, efficiency gains can nonetheless be achieved at the firm level when more capital is allocated to firms with relatively less agency problems or when financial globalization exerts a disciplining effect (e.g., Spiegel, 2009) in curbing agency costs.

and investors' preferences. We particularly extend the evidence on investor preferences in general and style investment in particular (e.g., Merton, 1987; Coval and Moskowitz, 1999, 2001; Grinblatt and Keloharju, 2001a and 2001b; Mullainathan, 2002; Shapiro, 2002; Barberis and Shleifer, 2003; Barberis, Shleifer, and Wurgler, 2005; Boyer, 2011; Wurgler, 2011) to an international setup and show how catering incentives (e.g., Baker and Wurgler, 2004a and 2004b) arise for low-skilled families to benefit from such preferences.

We finally contribute to the literature on competition related to financial intermediations. While competition is very important, our understanding of its role in the mutual fund industry remains rather limited, focusing mostly on its influences on fees (e.g., Khorana and Servaes, 2004; Wahal and Wang, 2011), the degree of active management (Cremers, Ferreira, Matos, and Starks, 2016), and organizational structure (Massa, 2003).[12] We extend the literature by demonstrating that financial globalization alters the way global mutual fund companies compete with each other. In particular, catering becomes feasible in the era of financial globalization, which profoundly affects both the industrial organization and the economic impact of these financial intermediaries.

The remainder of this paper is organized as follows. Section II presents our variables and summary statistics. Section III examines the prevalence of catering expansions in the global mutual fund industry. Sections IV, V, and VI explore the three misallocation implications of catering expansions. Section VII provides additional analysis, followed by a short conclusion.

II. Data and Main Variables

In this section, we describe our data and how we construct the main variables used in the analysis.

A. Data Sources

Our data are drawn from different sources. The main database is the Morningstar mutual fund database, which reports monthly total returns for global mutual funds. Morningstar International has complete coverage of open-end mutual funds worldwide beginning in the early 1990s. The database is survivorship bias-free, as it includes data on both active and defunct funds. The mutual fund holdings data are from the Factset/Lionshares database. The Factset/Lionshares holdings data on international funds are sparse before 2001, so our sample is restricted to the 2001–2012 period.

We match the database to the Morningstar mutual fund database. From Morningstar, we obtain additional control variables, such as management expenses, fund total net assets (TNA), fund turnover,

[12] Researchers also debate the degree of competitiveness in the mutual fund industry. Coates and Hubbard (2007) use the number of class action lawsuits against mutual funds to argue that mutual fund advisory fees are not what a competitive market would suggest. Berk and Green (2004) argue that mutual fund managers can grasp the economic rent of performance. Gil-Bazo and Ruiz-Verdú (2009) argue against competition, showing that the fund industry has catered to performance-insensitive investors, exploiting them by charging high fees. Hortaçsu and Syverson (2004) show that a non-competitive model of investor behavior based on search costs helps to explain price (i.e., fee) setting in the mutual fund industry.

etc. We consolidate multiple share classes into portfolios both by adding share class net assets together and by value weighting share class returns, fees and turnover ratios based on share class total net assets (TNA). More specifically, to compute returns, we obtain fund total returns net of fees. When a portfolio has multiple share classes, we compute its total return as the total net asset (TNA)-weighted return of all share classes of the portfolio, where TNA values are one-month lagged. All prices have been converted to U.S. Dollars.

We focus on active funds in our study. To distinguish index funds, we use information from Morningstar (i.e., "Index Funds"). We focus on active funds for two reasons. First, given that we study market efficiency, focusing on actively managed funds is conceptually appealing because they are supposed to process information and deliver performance. Second, most foreign funds (i.e., funds that are domiciled in one country but invest in another) that manage cross-border capital flows in the global mutual fund industry are indeed active in our sample. This feature is not surprising. On one hand, being active will not hurt the attractiveness of funds when investors make foreign-style linked investments because these funds do track foreign styles to some extent. On the other hand, being active also provides funds with leeway to escape direct competition of index replication. Since the goal of product differentiation is to escape direct competition, most catering-oriented funds are sold as "actively managed." Hence, consistent with Cremers, Ferreira, Matos, and Starks' (2016) observation that active funds outnumber explicit index funds almost eight to one in the global market, we find that more than 90% of catering-oriented cross-border expansions are self-labeled "active" in our sample.[13]

We further require funds to follow one of the major global equity indices—i.e., indices that are followed by at least ten funds—as their primary benchmark.[14] Information about fund benchmarks comes from Morningstar ("Prospectus Primary Benchmark"). Moreover, because we must estimate fund factor loadings based on past fund returns, we require funds to have at least two years of reported returns.

The firm-level stock market data are drawn from Datastream for non-U.S. stocks and CRSP for U.S. stocks. The final sample includes 9,754 actively managed equity mutual funds (both active and dead funds) and 1,899 mutual fund families in 37 countries. Most funds come from developed countries. Among them, U.S. funds represent 75% of the sample in terms of TNA but only 37% of the number of funds. Interestingly, a total of 1,154 mutual fund families (or more than 60% of all fund families)

[13] In robustness checks, we also consider the inclusion of index funds and the exclusion of closet indexing funds (e.g., Cremers, Ferreira, Matos, and Starks, 2016). Index funds may affect family performance when families strategically engage in cross-subsidization between active funds and index funds. In contrast, closet indexing funds may import errors in estimating the performance of active funds, although such errors may not be decisive given that the assets of truly active funds almost triple those of closet indexing funds. We will show in the Internet Appendix that our results are robust to these alternative samples. These robustness checks also address the potential concern that our results are driven by families that specialize in launching and managing foreign index funds and foreign closet index funds.

[14] This request works against us in finding significant results, because some minor indices can be created for catering purposes. The latter effect of index creation, however, goes beyond the scope of the current paper.

launched new active funds outside their domicile countries during our sample period. This observation highlights the importance of the globalization of finance for the global mutual fund industry.

B. Main Variables Related to Catering Incentives

The identification of each country's major equity indices comes from Morningstar's "Primary Prospectus Benchmark ID." If the "Primary Prospectus Benchmark ID" is missing, we use the term "Primary Prospectus Benchmark." We assign to each index a domicile country based on the market in which the majority of the stocks included in the index are traded—i.e., the country in which its portfolio holding has the largest market value.

The main variable for capturing the catering incentives for overseas expansion into a target country is the number of indices unexplored by foreign mutual funds in that country (*Num_UIT*). More explicitly, we define this variable as the total number of indices invested in by domestic or foreign funds minus the number of indices invested in by foreign funds in the country at any given time. Effectively, this variable measures the number of indices in the country that are invested in by domestic funds but not yet invested in by any foreign funds. A higher number indicates that the *country* is more attractive in terms of product differentiation and catering incentives.

A similar but alternative measure can be constructed by normalizing the numbers of unexplored indices in each country based on cross-country ranks of these numbers. More specifically, we can first rank the number of unexplored indices across countries and then normalize these ranks to follow a [0, 1] uniform distribution. This variable, which we label the "rank of unexplored indices" (*Rank_UIT*), can help alleviate any concerns related to the skewed distribution of *Num_UIT*, our main independent variable. For instance, suppose two countries have *Num_UIT* of 10 and 30, respectively; their *Rank_UIT* will be normalized as 0.5 and 1, which reduces the skewness.

To the extent that the number and rank of unexplored indices measures the catering attractiveness of a particular country, we can also measure the catering incentive of a particular fund company based on its revealed preferences—i.e., the *average* number of unexplored indices for *all* its cross-border expansions. In particular, we define the family-average number of unexplored indices, *Fam_Num_UIT*, as the average number of unexplored indices of the target countries for all cross-border funds launched by the same family in each year. A higher average number reveals a stronger incentive for the fund company to strategically launch new funds tracking less-explored indices—i.e., the incentive to pursue catering-oriented cross-border expansions—in the given period. Similarly, we define the *family-average rank of unexplored indices*, or *Fam_Rank_UIT*, as the average rank of unexplored indices of the target countries of all cross-border funds launched by the same family.

Based on the cross-sectional distribution of the families' catering incentives, we classify a family as *catering-oriented* (*non-catering-oriented*) in any given year when its *Fam_Num_UIT* or

Fam_Rank_UIT belongs to the top (bottom) tercile of all the families in the same domicile country. This definition will be used when we examine, for instance, the influence of catering-oriented ownership on price efficiency. It is important to notice that we experiment with different thresholds to define market-oriented families and that the results are robust to these alternative thresholds.

For tests related to market influence, we also define two sets of variables to measure the aggregate active ownership of all catering-oriented families for each stock. More specifically, *CateringForOwnAll_Num* and *CateringForOwnAll_Rank* refer to the aggregate (i.e., the summation of) ownership of all foreign funds offered by catering-oriented families whereby the catering incentive is defined by *Fam_Num_UIT* and *Fam_Rank_UIT*, respectively. Likewise, we use *CateringForOwnNew_Num* and *CateringForOwnNew_Rank* to refer to the ownership of new funds created by catering-oriented cross-border expansions during the current year.

C. Variables on Fund Performance

We now describe both our measures of fund/family performance and other characteristics. For a new cross-border expansion, we measure its return, labeled *New Fund Return*, as its average monthly return over the five-year period after the inception, and we define its risk-adjusted performance, labeled *New Fund 4-Factor-adjusted Return*, as the Fama-French-Carhart four-factor-adjusted fund performance over the same period. The risk adjustment is computed as the realized fund returns minus the product between the fund's four-factor betas and the realized four-factor returns in a given month. The four Fama-French-Carhart (FFC, Fama and French, 1993; Carhart, 1997) factors (market, size, book-to-market, and momentum) are measured in the target country in which the new fund aims to invest. The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.

Next, we measure the performance of the affiliated domestic funds of a family, where by "domestic" we mean funds investing in the family's domicile country. We define *Family Domestic Return* as (one-month lagged) TNA-weighted average return of all domestic funds within the same family. We define *Family Domestic 4-Factor-adjusted Return* as TNA-weighted Fama-French-Carhart four-domestic-factor adjusted performance of each fund. The performance of all the affiliated foreign funds of a family, where by "foreign" we mean funds investing in countries that differ from the family's domicile country, is computed in a similar manner (we exclude newly launched foreign funds, whose impact is already captured by *New Fund Return*). That is, we compute *Family Foreign Return* as the fund TNA-weighted return of all foreign funds within the same family and *Family Foreign 4-Factor-adjusted Return* as TNA-weighted four international factors (market, size, book-to-market, and momentum) adjusted return. The performance of the affiliated domestic and foreign funds of a family is measured over the five-year period after the cross-border expansion, and later, we relate the performance to the catering incentives of fund companies.

In robustness checks, we also compute the *8-Factor-adjusted Return* for foreign funds (i.e., newly launched foreign funds and existing foreign funds of a fund family), including four domestic Fama-French-Carhart factors and four foreign Fama-French-Carhart factors that are the value-weighted averages of the four domestic factors in all the other countries. Thus, for newly launched foreign funds, we can construct *New Fund 8-Factor-adjusted Return*; for all foreign funds of a family, we also have *Family Foreign 8-Factor-adjusted Return*.

Although so far we have focused on the net return delivered to mutual fund investors after all fees and expenses, we also consider gross-of-fee performance. Gross-of-fee fund return is computed as the fund's total return plus one-twelfth of the annualized expense ratio, and gross-of-fee family domestic (foreign) return is computed as (one-month lagged) TNA-weighted gross-of-fee return of all its domestic (foreign) mutual funds. The gross-of-fee returns are further adjusted by a Fama-French-Carhart four-factor model. Our results are robust to these additional performance measures.

D. Control Variables and Other Variables for Fund Family Tests

For fund family tests, we control for four sets of variables that may affect the operations of fund families in general and their overseas operations in particular. The first set is related to family characteristics. These variables include *Log (Family TNA)*, defined as the logarithm of family total net assets (TNA); *Expense Ratio*, defined as the family expense ratio, computed as the fund TNA-weighted annualized expense ratio of all funds within the family; *Family Turnover*, defined as the fund TNA-weighted turnover of all funds within the family; *Log (Family Age)*, defined as the logarithm of family age, where family age is computed as the fund TNA-weighted number of operational months since inception of all funds within the family; *Family Return*, defined as the fund TNA-weighted return of all funds within the family; and *Family Flow*, defined as the percentage flow of the mutual fund family. All fund TNA values are one-month lagged.

The second set of variables involves the characteristics of the target country that are important for the operation of foreign funds. These variables include the following: *Log (Distance)*, defined as the logarithm of the geographical distance between the target and the domicile country; *Stock Market Turnover*, defined as the total value of shares traded during the year divided by the average market capitalization; *Stock Market/GDP*, defined as the stock market capitalization divided by nominal GDP; and *Private Bond Market/GDP*, defined as the domestic credit value to private sector divided by nominal GDP. The first variable proxies for the availability of information; the second variable describes the general liquidity conditions in the target market; and the third and fourth variables proxy for the degree of financial development in the target country.

The third set of control variables describes an alternative motivation for fund expansion: international diversification. Fund companies may use cross-border expansion to enhance

diversification when their existing products are correlated either with each other or with products offered by other companies. To capture the former effect, we follow Elton, Gruber, and Green (2007) and define a variable measuring the *Within Family Correlation* as $Within\ Family\ Corr_{F,t} = \frac{1}{N_t}\sum_{i\in F, j\in F} Corr(R_{i,m,t}, R_{j,m,t})$, where $R_{i,m,t}$ and $R_{j,m,t}$ refer to the monthly return of funds i and j in month m of year t, both funds are affiliated with family F, and N_t refers to the number of fund pairs included in the family. Similarly, we define the *Outside Family Correlation* as $Outside\ Family\ Corr_{F,t} = \frac{1}{N_t}\sum_{i\in F, j\notin F} Corr(R_{i,m,t}, R_{j,m,t})$, where $R_{i,m,t}$ and $R_{j,m,t}$ refer to the monthly return of funds i and j in month m of year t, with fund i affiliated with family F and fund j outside family F but in the same domicile country, and N_t refers to the total number of fund pairs, following Elton, Gruber, and Green (2007).

Note that building on the above intuition, we can also identify the *ex post* diversification benefit that new funds may help investors achieve in two closely related variables. The first variable, *New Fund Correlation Within Family*, is the return correlation or style-adjusted return correlation between the newly launched fund and those of existing affiliated funds managed by the same mutual fund family over the five-year period after its inception. The second, *New Fund Correlation Outside Family*, is defined similarly as the return correlation between a newly launched fund and all the other existing funds outside the mutual fund family but domiciled in the same country. In later sections, we will use these variables to examine whether investors can achieve diversification benefits from catering-oriented cross-border expansions.

The final set of control variables describes the competition conditions of the fund families. In particular, we compute the degree of concentration, *HHI_Dom*, as the Herfindahl-Hirschman index for all funds domiciled in country C in month m: $HHI\_Dom_{C,m} = \sum_{f\in C}\left(\frac{TNA_{f,m}}{\sum_{f\in C} TNA_{f,m}}\right)^2$, where $TNA_{f,m}$ refers to the total net assets of fund f in month m, and fund f has country C as its domicile country. A higher concentration implies a lower degree of competition among funds (using family-level asset concentration does not change our results). We also construct a proxy for the competition in the target country, *HHI_Target*, which measures the degree of concentration for all fund TNAs in the target country. In addition, we use *HHI_Family*, defined as the Herfindahl-Hirschman index of the degree of concentration of the family in its funds, to control for the potential competition conditions within a family. Finally, we consider the possibility of launching new funds in the domicile country (instead of in foreign markets) and construct a variable *Num_Index_Dom*, defined as the total number of indices in the domicile country.

E. Variables on Market Influences

Finally, we move on to stock-level variables for tests related to market influences. We first measure three types of market influences that catering-oriented cross-border capital flows can have: price efficiency, liquidity, and market integration. Price efficiency is measured by price delay with respect to global or local market information. For instance, price delay with respect to the global market is defined as follows:

$$Delay\_Global_{i,t} = 1 - \frac{R^2_{restricted,i,t}}{R^2_{unrestricted,i,t}}, \quad (1)$$

where $R^2_{restricted,i,t}$ and $R^2_{unrestricted,i,t}$ refer to the R-square from restricted and unrestricted market models estimated using weekly returns in each year t. The restricted model (RM) and the unrestricted model (UM) are defined, respectively, as follows:

$$\text{RM: } R_{i,w,t} = \alpha_{i,t} + \delta_{i,0,t} R_{g,w,t} + \sum_{k=0}^{3} \gamma_{i,k,t} R_{l,w-k,t} + e_{i,w,t}, \quad (2A)$$

$$\text{UM: } R_{i,w,t} = \alpha_{i,t} + \sum_{k=0}^{3} \delta_{i,k,t} R_{g,w-k,t} + \sum_{k=0}^{3} \gamma_{i,k,t} R_{l,w-k,t} + e_{i,w,t}, \quad (2B)$$

where $R_{i,w,t}$ refers to the accumulated return of stock i in week w of year t, and $R_{g,w-k,t}$ and $R_{l,w-k,t}$ refer to the contemporaneous and lagged returns on the value-weighted world market portfolio and the local market portfolio, following Hou and Moskowitz (2005), and Bae, Ozoguz, Tan, and Wirjanto (2012). Price delay to the domestic market, $Delay\_Local_{i,t}$, is defined in a similar manner when the coefficients of the lagged local market returns are set equal to zero in the restricted model (Equation (2A)).

We define illiquidity as the Amihud (2002) illiquidity measure and the proportion of zero daily returns (Lesmond, Ogden, and Trzcinka, 1999). We label them *Log(Amihud)* and *%Zero*, respectively. We define the commonality in liquidity for stock i in month m as follows:

$$\widehat{\omega}^{Liq}_{i,m,d} = \alpha^{Liq}_{i,m} + \sum_{j=-1}^{1} b^{Liq}_{i,m,j} \widehat{\omega}^{Liq}_{M,m,d+j} + \varepsilon^{Liq}_{i,m,d}, \quad (3)$$

where $\omega^{Liq}_{i,m,d}$ is the residual from the following time-series regressions: $Liq_{i,m,d} = \alpha^{Liq}_{i,m} Liq_{i,m,d-1} + \sum_{\tau=1}^{5} \beta^{Liq}_{i,m,\tau} D_\tau + \gamma^{Liq}_{i,m} HOLI_{m,d} + \omega^{Liq}_{i,m,d}$, $Liq_{i,m,d}$ is the Amihud liquidity proxy for stock i on day d of month m, defined as $-\log(1 + Illiq_{i,m,d})$, with $Illiq_{i,m,d} = |R_{i,m,d}|/(P_{i,m,d} \times N_{i,m,d})$, $|R_{i,m,d}|$ is the absolute value of return of stock i on day d of month m, $P_{i,m,d}$ is the daily closing price of stock i, $N_{i,m,d}$ is the number of shares of stock i traded during day d, and $HOLI_{t,d}$ is a dummy for trading days around non-weekend holidays. $\widehat{\omega}^{Liq}_{M,m,d+j}$ is the market value (at the end of previous year) weighted average of the residuals for all stocks. The R-square ($R^2_{i,m}$) from Equation (3) measures the commonality in liquidity for stock i of month m. We use the logistic transformation of the R-square measures to proxy for liquidity co-movement, i.e., $\ln\left(\frac{R^2_{i,m}}{1-R^2_{i,m}}\right)$, following Karolyi, Lee, and van Dijk (2012).

In line with the international asset pricing literature (e.g., Griffin, 2002; Hou, Karolyi, and Kho, 2011; Fama and French, 2012; Karolyi and Wu, 2018; and Massa and Schumacher, 2019), we define

market integration as the absolute value of the intercept (i.e., |*Intercept*|) and the adjusted R-square of a regression of stock returns on alternative factor models (labeled *Co-movement*). We consider integration with respect to domestic factors (market, size, book-to-market and momentum) and integration with respect to foreign factors (value-weighted four factors excluding the domestic country).

Stock-level control variables include the following: *Log(Stock Size)*, defined as the logarithm of the market value of the stock; *Turnover*, defined as the annual turnover ratio of the stock; *Log(Net Income)*, defined as the logarithm of its net income; *Log(Sales)*, defined as the logarithm of its sales; *Log(Total Assets)*, defined as the logarithm of its total assets; *Stock Return*, defined as the monthly stock return as reported in Datastream/Worldscope; *Domestic IO*, defined as the domestic mutual fund ownership; and *Foreign IO*, defined as the foreign mutual fund ownership. Among the stock variables, we consider alternative measures of market efficiency that we will define in the last section of the paper.

F. Summary Statistics

We now report the summary statistics in Table 1. Panel A reports the mean, median, standard deviation, and the quantile distribution of the number and rank of unexplored indices at the country and family levels, monthly fund and family return, and other annual family and country characteristics. The sample consists of all mutual fund families with the foreign expansion of active equity mutual funds over the 2001 ─ 2012 period. The summary statistics for the full sample, including index funds, are largely similar because of the popularity of active funds in cross-border expansions, as previously explained (we tabulate the summary statistics for the full sample in Table IA1 in the Internet Appendix). Panel B reports similar statistics for stock-level variables and characteristics.

We see that the catering attractiveness of countries varies drastically in the sample. The number of unexplored indices ranges from zero, when the market is well explored by global investors because all indices are covered by some foreign fund families, to 21 at the 90% quantile, when the market provides plenty of opportunities for foreign investors to explore. Likewise, the catering incentives of global mutual fund families also vary substantially, ranging from zero to 21 at the 90% quantile, suggesting that some families are indeed specialized in catering-oriented cross-border expansions.

Panel C reports the correlation matrix of the main dependent and independent variables. The correlation between price efficiency with respect to global information (*Delay_Global* proxies for lack of price efficiency) and ownership of active catering-oriented funds is negative. Moreover, price efficiency is also negatively correlated with the new ownership created by newly launched active catering-oriented funds. In general, these observations are consistent with the catering expansion hypotheses. Of course, it is difficult to conclude from these summary statistics that catering-oriented expansions are associated with low-skilled families. We therefore move on to multivariate regressions to formally establish this key relationship.

III. Catering-oriented Cross-border Expansions

In this section, we examine the incentives of cross-border expansions. We begin by examining the incentives of mutual fund family foreign expansion. To achieve this goal, we first relate the expansion policy of the mutual fund family to the market attractiveness of the specific country and estimate the following annual logistic or probit regression:

$$Expansion_{F,C,t} = \alpha + \beta Num\_UIT_{C,t-1} + \gamma M_{F,C,t-1} + e_{F,C,t}, \quad (4)$$

where $Expansion_{F,C,t}$ refers to a dummy variable that equals one if the mutual fund family F begins a new foreign fund in target country C in year t and zero otherwise, while $Num\_UIT_{C,t-1}$ refers to the number of indices unexplored by foreign mutual funds in target country C. The vector *M* stacks all four sets of control variables related to family characteristics (i.e., *Log(Family TNA)*, *Expense Ratio*, *Family Turnover*, *Log(Family Age)*, *Family Return*, *High Family Return*, and *Family Flow*), target country characteristics (i.e., *Log(Distance)*, *Stock Market Turnover*, *Stock Market/GDP* and *Private Bond Market/GDP*), alternative diversification motivations (i.e., *Within Family Correlation* and *Outside Family Correlation*) and competition conditions (i.e., *HHI_Dom*, *HHI_Target*, *HHI_Family*, and *Num_Index_Dom*). We focus on active fund expansions, include year-fixed effects (as well as target country-fixed effects in certain specifications) and cluster the standard errors at the family level.

We report the results in Panel A of Table 2, Models (1) to (6) for logistic specifications and Models (7) to (12) for probit specifications. To see the potential influence of the control variables, we include each set of them in a different model. Hence, Model (1) controls for family characteristics. Model (2) further controls for country characteristics. Models (3) and (4) further include other motivations of overseas expansions and competition conditions. We find that across all specifications, the foreign expansion policy of mutual fund families is positively related to the number of unexplored indices in the target country. Model (5) further examines catering incentives by interacting the number of unexplored indices with *High Family Return*, a dummy variable that takes the value of one if the (one-year lagged) return of a fund family is ranked in the top 20% in the domicile country and zero otherwise. We can see that mutual fund families with superior performance are less likely to pursue catering-oriented overseas expansions. This negative relationship between (realized) performance and (future) catering expansion suggests that financial globalization may indeed give low-skilled companies the incentives to exploit investor demand in foreign-style investment.

Although the above observations are consistent with the *catering expansion hypothesis* in depicting firm incentives, several concerns need to be further addressed. First, certain country characteristics may affect the process of financial globalization and be spuriously related to the proxy of unexplored indices. For instance, a country might be too small for global investors to invest in and at the same time have very few unexplored indices. Such supply-side considerations can be explicitly controlled for when we

include target country-fixed effects. Model (6) conducts such a test. The coefficient of Num_UIT becomes smaller than in previous models. Hence, perhaps not surprisingly, unobserved country characteristics indeed affect expansion decisions. Importantly, however, the influence of Num_UIT on catering expansion remains highly significant even after controlling for country characteristics. Similar results can also be observed from *probit* specifications.

Model (6) can also help assess both the economic magnitude of catering expansion and its cross-sectional distribution. There, an increase of one unexplored index can raise the probability of entering a particular country—among all potential foreign countries—by 3%.[15] Compared to the 4% unconditional probability of entry (i.e., 4% of family-country-year observations have a new entry in our data), any one additional unexplored index increases the unconditional probability of entry by 75%. The effect of catering expansion is therefore economically sizable. Moreover, the coefficient of the interaction term, $Num\_UIT \times High\ Family\ Return$, can largely offset the effect of catering expansion when the dummy variable $High\ Family\ Return$ takes the value of one. This interesting observation suggests that the top-quintile best performing fund families do not conduct catering expansion. Rather, the catering expansion works mostly for the rest of families with relatively lower past performance.

Second, diversification could provide an important alternative motivation for families to expand globally. If this motivation dominates family incentives, we should expect families with high within-family fund correlation (i.e., when existing funds exhibit low existing diversification) to expand more to the overseas markets in order to benefit from international diversification. The data, however, tell the opposite story: overseas expansion is negatively related *to within-family return correlation,* suggesting that international diversification is perhaps not the main goal of such expansions. Consistent with this result, our later section will confirm the lack of diversification benefit from investors' perspective.

In contrast, overseas expansion is positively related to *Outside Family Correlation*. If we interpret this variable as product similarity (e.g., investors may treat funds of highly correlated returns as close substitutes), then a positive relationship implies a motivation for overseas expansion similar to that for product differentiation.

Finally, to argue that our measures of unexplored foreign indices capture the catering incentives of fund families, we need to provide evidence that investors have high demand for such measures. Our observations thus far support this notion in a reveal-preference approach—i.e., new funds chasing unexplored foreign indices can be launched only when there are sufficient investor demands. A later section will provide more direct evidence by demonstrating that fund flows positively respond to the *number of unexplored indices* (and particularly to its relative rank), and that investors' demand for foreign-style investment is segmented between active funds and index funds. These observations not

[15] For logistic regression, the economic magnitude is computed as $e^{0.030} - 1 = 3\%$, where 0.030 is the regression coefficient in Model (6).

only depict investor preference and weakness in greater detail but also further justify the validity of our measures in capturing the incentives of fund families to exploit such preference and weakness.

Overall, Panel A demonstrates the existence of catering incentives for global mutual fund companies to initiate their overseas expansions. The next question is what kind of companies are more likely to adopt catering-oriented overseas expansions. Before we formally answer this question, some simple statistics from a portfolio-based analysis will be helpful. At the beginning of each year, we sort mutual fund families into terciles within the domicile country according to their lagged catering incentives (Low, Mid, High), proxied by the average number of unexplored indices of all funds launched by a family in the previous year (Panel B1 for *Fam_Num_UIT* and Panel B2 for *Fam_Rank_UIT*). We then tabulate in Models (1) to (4) of Panel B some of the key characteristics of funds newly launched by families within each tercile, including *Expense Ratio*, *Turnover*, *Log (TNA)*, and *Return*. For each variable within each tercile, we first compute its average value in a given year across all families in the same domicile country, then take the portfolio average across all countries, and finally report its time-series average value along with its corresponding Newey-West adjusted *t*-statistics. The line "Low-minus-High" tabulates the difference between low catering incentive families and high catering incentive families in these characteristics.

We first observe that the funds launched by families of high catering incentives are associated with lower turnover ratio and lower returns. Although these features are consistent with the notion that these funds have lower skills to trade and to generate performance, we must further examine the relationship between returns and fees before arriving at any conclusion. If lower returns are associated with higher fees, for instance, then the above features may imply a fee strategy rather than trading skills. However, we find that the Low-minus-High fee difference is positive in Panel B1, suggesting that funds launched by families of *high* catering incentives have *lower* expense ratios (than those associated with low catering incentives). Although the fee difference becomes insignificant in Panel B2 (when catering incentives are proxied by the rank of unexplored indices), its sign remains unchanged. Families with high catering incentives therefore charge lower fees for their new funds. Their poor reported returns in this case signal lower skills as opposed to a fee strategy, consistent with the catering expansion hypothesis.

Ex post poor performance, however, does not seem to significantly hurt catering-oriented fund families in raising capital for their new funds. Indeed, the Low-minus-High difference in *Log (TNA)*—where TNA indicates the amount of capital that these new funds can raise—is largely insignificant, suggesting that style investors who are interested in such new indices cannot predict fund returns. Otherwise, investors should invest more capital in funds that are likely to generate more *ex post* performance—i.e., fund families with low catering incentives. This allocation inefficiency gives rise to the opportunity for low-skilled funds to use catering-oriented overseas expansions to achieve asset growth.

To examine the growth strategies of different fund families, Model (5) presents the overall external asset growth rate (i.e., asset growth that is not attributable to performance) for mutual fund families. We can see that overall asset growth is not significantly different between families with low and high catering incentives. To reconcile this result with fund return, we examine the two mechanisms of external asset growth: the launch of new funds and the attraction of fund flows (by existing funds). More specifically, Models (6) and (7) report a new fund-implied asset growth rate and a flow-implied asset growth rate. Although catering-oriented fund families attract lower fund flows to their existing funds, consistent with their inferior performance, they manage to attract external capital by launching new funds.

Overall, these results suggest that fund families with higher catering incentives are likely to have lower skills and that high-skill and low-skill fund companies have exhibited different growth paths in the era of globalization: the growth of the former (the latter) leans more toward flows (new funds). Since these conjectures have important normative implications, in the next session we will formally examine the relationship between catering incentives and the performance associated with them.

IV. Performance Implications

We now explore the misallocation implications of the catering expansion hypothesis in terms of performance. To achieve this goal, we first examine the performance of cross-border expansions and then extend the analysis to performance of companies managing these cross-border expansions.

A. Performance of Catering-oriented Cross-border Expansions

To better assess the incentives of cross-border expansions, we next investigate the performance of new funds that have been launched for catering purposes. We therefore estimate the following specification:

$$Perf_{f,t:t+4} = \alpha + \beta \times CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t}, \quad (5)$$

where $Perf_{f,t:t+4}$ refers to the average monthly return or performance of fund f in five years (year t to $t+4$) after inception, and $CateringIncentive_{f,t-1}$ refers to the catering incentive of the management company of fund f in launching this particular fund, which is measured either by $Num\_UIT_{f,t-1}$, the number of unexplored indices in the country where fund f invests, or by the rank of the unexplored index, $Rank\_UIT_{f,t-1}$. The vector *M* stacks all other family and country control variables (the four sets of control variables as described before), including *Log(Family TNA)*, *Expense Ratio*, *Family Turnover*, *Log(Family Age)*, *Family Return*, *Log (Distance)*, *Stock Market Turnover*, *Stock Market/GDP*, *Private Bond Market/GDP*, *Within Family Correlation*, *Outside Family Correlation*, *HHI_Dom*, *HHI_Target*, *HHI_Family*, and *Num_Index_Dom*. If a fund f has been launched to invest in a target country with more unexplored indices, its higher value of $Num\_UIT_{f,t-1}$ reveals a more pronounced catering

purpose of the fund inception than, at least, the case in which the fund invests in a country with fewer unexplored indices.

We report the results in Table 3. Models (1) and (2) tabulate the results for the returns of new funds, whereas Models (3) and (4) report those for four-factor-adjusted fund performance. We find that the new funds launched for catering purposes perform poorly in the subsequent five years after inception. This finding holds across all the specifications and is not only statistically significant but also economically relevant. Indeed, a one-standard-deviation increase in the number (rank) of unexplored indices reduces annual returns and risk-adjusted performance by 0.31% and 1.43% (0.33% and 0.97%).[16]

Our results also remain valid to a list of robustness checks, notably when we use different samples of funds (e.g., to include index funds or to remove closet-index funds) and alternative ways to measure fund performance (e.g., to use different factor models or gross-of-fee returns). We will report the results of these robustness checks in later sections. In brief, the observation that catering-oriented cross-border expansions are associated with lower subsequent performance is highly robust in our sample.

B. Performance of Catering-oriented Families

The negative relationship between catering expansion and performance leads to a more general question: is it true that low-skilled families concentrate on catering incentives due to their inability to deliver performance? To answer this question, we use family performance in the domestic market as a measure of skill because mutual funds are arguably better at processing domestic information, and we relate skill to families' catering incentives. More specifically, we estimate the following specification:

$$DomPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t}, \quad (6)$$

where $DomPerf_{F,t:t+4}$ refers to the performance of the existing domestic portfolios of *fund family F* in five years (year t to $t+4$) after its foreign expansion (i.e., *Family Domestic Return* or *Family Domestic 4-Factor-adjusted Return* as defined above), and $CateringIncentive_{F,t-1}$ refers to the two measures of a family's catering incentives (i.e., *Fam_Num_UIT* or *Fam_Rank_UIT*). The vector *M* stacks all other family and domicile country control variables, including *Log(Family TNA)*, *Expense Ratio*, *Family Turnover*, *Log(Family Age)*, *Family Return*, *Within Family Correlation*, *Outside Family Correlation*, *HHI_Dom*, *HHI_Family*, and *Num_Index_Dom*.

We report the results in Table 4 for all families that have launched active funds in another country. Models (1) and (2) tabulate the results for the returns of the existing domestic funds, whereas Models

[16] The economic magnitude of the performance regression of $y = \beta \times x$ is computed as $\beta \times \sigma_x$, where y and x are the dependent and independent variables, respectively, β is the regression coefficient, and σ_x is the standard deviation of x. For instance, the standard deviation of horizontal $Rank\_UIT_{f,t-1}$ is 0.289, and the regression coefficient in Model (2) is −0.094. Since the dependent variable is monthly percentage return, we compute the annualized economic magnitude as −0.094% × 0.289 × 12 = −0.33%.

(3) and (4) report the results for four-factor-adjusted fund performance. The results show that fund families' catering incentives are typically associated with underperformance in the domestic market. A one-standard-deviation increase in fund companies' catering incentive in terms of the average number (rank) of unexplored indices reduces returns and risk-adjusted performance by 0.36% and 0.21% (0.33% and 0.21%). The negative relationship between family-level catering incentives and the subsequent lower performance of their affiliated domestic funds is again highly robust to the sample and performance measures we use, as detailed in a later section.

To further gauge the economic impact of catering incentives, we perform a portfolio-based analysis and report the results in the Internet Appendix (Table IA2, Panel A). At the beginning of each year, mutual fund families are sorted into terciles within the domicile country according to their lagged catering incentives. We then construct portfolios with Low (High) catering incentive families and calculate their holding period returns (the returns are first averaged across fund families within the same domicile country and then averaged across countries). We find that families with high catering incentives underperform those with low catering incentives in their existing domestic funds by 2.8% (2.78%) per year in FFC four-factor alpha when catering incentives are proxied by the number (rank) of unexplored indices.

Thus far, our empirical tests show robust results that higher family-level catering incentives are associated with lower subsequent performance of affiliated domestic funds. Although these observations lend strong support to a potential misallocation between capital and firm skills, we need to rule out several concerns before we can make a clear conclusion. First, the involvement of the global market in estimating the performance of "domestic funds" may be subject to a few empirical issues. For instance, the underperformance of domestic funds could be spuriously correlated with unobserved characteristics of the domestic market. To address these issues, we examine the foreign expansion of U.S. mutual fund families. This subsample test has the advantages that all unobservable characteristics of family domicile country are controlled for. An additional advantage is that the performance of the domestic funds (i.e., domestic U.S. mutual funds) can be more precisely measured—e.g., by the Fama-French-Carhart four-factor model (Fama and French, 1993; Carhart, 1997), the Fama-French six-factor model (Fama and French, 2018), as well as benchmark adjustment.

We therefore re-estimate Equation (4) for catering expansion and Equation (6) for the performance of domestic funds based on U.S. domiciled families only, and we report the results in Table 5. Models (1) and (2) report the results of catering expansion, and Models (3) to (8) tabulate the performance of domestic funds of catering families. Fund returns are adjusted by a Fama-French-Carhart four-factor model as defined in Equation (6) (Models 3 and 4); Fama-French six-factor model comprising the market, size, book-to-market, profitability, investment and momentum factors (Models 5 and 6); and value-weighted benchmark return (Models 7 and 8). We find that the previous conclusions hold for U.S. mutual fund families. In particular, a one-standard-deviation increase in fund companies' catering

incentive in terms of the average number (rank) of unexplored indices reduces four-factor-adjusted performance by 0.34% (0.2%) per year and benchmark-adjusted performance by 0.48% (0.23%) per year. Both the economic magnitudes and the statistical significance level of the U.S. subsample analysis are on par with those of the previous whole-sample analysis. In this respect, omitted characteristics of the domicile countries of fund companies are unlikely to explain the underperformance of domestic funds.

The next concern is regarding interpretation of the current results: the underperformance of domestic funds could be due to resource allocation rather than the lack of skills or resources to generate performance. More specifically, it could be the case that fund families have the resources (e.g., research capacity or managerial skills) to generate performance for their domestic funds to begin with, but upon the launch of new funds, the fund company relocates such resources from domestic funds to newly launched funds, which causes domestic funds to underperform subsequently.

Two pieces of evidence from our previous analysis, however, suggest that this view is unlikely to explain the underperformance of domestic funds. According to Table 2, it is the underperforming families that conduct catering expansions—top-quintile families, instead, do not conduct catering expansions. Hence, catering families may not have the resources to generate performance in the first place. Moreover, if the catering families relocate performance-generating resources from domestic funds to cross-border expansions, then the funds receiving such resources should show some evidence of performance. Yet we recall that newly launched funds also underperform, as reported in Table 4. Unreported tests further show that the domestic funds of families with high catering incentive underperform those with low catering incentive by 1.74% per year over a five-year window *prior to* the cross-border expansion. Jointly, therefore, the underperformance of domestic funds is unlikely the result of relocating skills/resources upon cross-border expansions.

A related and arguably more powerful alternative explanation is that catering families do not dynamically relocate resources upon the launch of new cross-border funds. Instead, to promote their reputation in managing cross-border expansions, these families may consistently devote more resources to their foreign funds at the price of domestic funds over all timescales. Moreover, they may focus on the long-term performance of foreign funds for reputation reasons.

This alternative explanation cannot be ruled out by the aforementioned underperformance of newly launched funds due to the transitory nature of the new funds. Instead, it deserves a formal examination based on the performance of foreign funds, excluding recently launched funds. To conduct such a test, we re-estimate Equation (6) using as a dependent variable the performance of the foreign funds that are managed by a family, excluding the funds that are recently launched.[17] The results are tabulated in Table

[17] In other words, we conduct a test that complements Table 4 in examining the performance of foreign funds managed by a family.

6. We can see that the foreign funds managed by catering families significantly underperform with sizable economic magnitude. A one-standard-deviation increase in fund companies' catering incentive in terms of the average number (rank) of unexplored indices reduces returns and risk-adjusted performance by 0.21% and 0.21% (0.19% and 0.14%), respectively.

The Internet Appendix (Table IA2 Panel B) again provides a portfolio analysis to further gauge the economic magnitude. We can see that families with high catering incentive underperform those with low catering incentive in their existing foreign funds by 2.09% to 2.57% per year (in FFC four-factor alpha). Unreported tests further show that the foreign funds of families with high catering incentive also underperform those with low catering incentive by 3.02% per year over a five-year window *before* the cross-border expansion. In brief, there is no evidence that catering families devote performance-generating resources to foreign funds in the long run.

From these tests, we find that in general, higher catering incentives are related to low performance for all the categories of funds that a family offers, both before and after the launch of new cross-border foreign funds. Based on such observations, we can conclude that catering-oriented families have low skills to explore the investing opportunities in their own domestic market as well as in the foreign markets. The development and prevalence of catering funds, in this regard, imply a misallocation between capital and managerial skills during the process of financial globalization.

V. Investor Welfare beyond Performance

Although our performance tests strongly suggest that catering-driven investment is likely to be conducted by low-skilled fund families, a related issue is whether catering-driven investment also creates a misallocation problem in terms of investor welfare. Note that low performance does not necessarily indicate low investor welfare. Instead, low performance can be compensated for by a higher degree of international diversification. Hence, our next step of analysis examines whether cross-border expansions may allow family investors to enjoy more diversification benefits.

To formally investigate this issue, we start with the idea that, if a family launches a new foreign fund to introduce international diversification benefit to investors, the new fund should have a low correlation with existing funds offered by the same family. Hence, we can measure the (lack of) diversification benefit by return correlation between the newly launched fund and other funds managed by the same family and relate the *ex post* diversification benefit of the new funds to our catering proxy as follows:

$$Diversification_{f,t:t+4} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t}, \quad (7)$$

where $Diversification_{f,t:t+4}$ refers to the diversification proxy of fund f in five years (year t to $t+4$) after inception and $CateringIncentive_{f,t-1}$ refers to the catering incentive of the management

company of fund f in launching this particular fund, measured by $Num\_UIT_{f,t-1}$ or $Rank\_UIT_{f,t-1}$ as defined in Equation (5). The vector *M* stacks all other family and country control variables.

We report the results in Table 7. In Models (1) to (2) and Models (3) to (4), we measure the (lack of) diversification benefit by return correlation and style-adjusted return correlation between the newly launched fund and other funds within the same family, respectively. In all these specifications, we find that expansions oriented from catering purposes do not gain diversification benefits for investors. In contrast, a one-standard-deviation increase in fund companies' catering incentive in terms of the average number (rank) of unexplored indices *increases* the correlation of the new fund with the family by 1.35% and 2.05% (1.29% and 1.48%) in the case of return and style-adjusted return. In Models (5) and (6), we examine the return correlation between the newly launched fund and other funds outside the family but within the same domicile country. Again, we do not see any benefits—the coefficients remain positive but become insignificant. Therefore, for existing investors holding mutual funds within the family or outside the family, adding the newly launched fund to their portfolio is not likely to help further diversify the investment.

Perhaps a more formal way to examine the potential diversification benefit is to conduct tests from the perspective of a rational mean-variance investor. In particular, we can construct the mean-variance efficient portfolio using all actively managed equity funds within the same family and compute the optimal investment weight on each fund by maximizing the family Sharpe ratio based on monthly fund returns. If catering-driven investment helps improve portfolio diversification, we should expect to find a positive relationship between the optimal weight on a newly launched fund and its associated catering incentives. Models (7) and (8) conduct such a test when the catering incentives are proxied by the number and rank of unexplored indices, respectively. More explicitly, we conduct the mean-variance analysis for all funds within the family, including the newly launched global fund, based on a one-year testing window after fund inception (employing alternative testing windows yields similar conclusions). We find that, if anything, catering incentive is *negatively* related to the optimal investment weight that a hypothetical mean-variance investor should allocate to a new fund. Although the negative relationship is not statistically significant, it unambiguously rejects the notion that catering-oriented expansions can enhance the degree of diversification benefit that investors can enjoy within a family.

Finally, we explore whether overseas expansions can benefit investors by offering a hedge against crisis—i.e., to deliver performance during a crisis period. Models (9) and (10) investigate the risk-adjusted performance of newly launched funds during the 2008–2009 financial crisis. We can see that these funds do not deliver performance during crisis. Unreported tests show that when we interact a crisis period dummy with catering incentives, the interaction is also insignificant. These findings do not support the view that catering-oriented funds are launched as an instrument to hedge crisis.

Overall, our tests conducted in this section suggest that investors do not benefit from their investments in catering expansions when they invest in funds within the same fund family. In addition to the misallocation between capital and managerial skills, therefore, investor welfare is also likely to be negatively influenced as depicted in the *catering expansion hypothesis*.

VI. Influences of Catering-oriented Cross-border Capital Flows

We now investigate the link between catering-driven expansion and market efficiency. We focus mainly on three dimensions that could best demonstrate the (different) market influence of cross-border capital flows: informational efficiency, liquidity, and market integration. These three dimensions of influences will allow us to understand the difference between catering-oriented cross-border capital flows and the general cross-border capital flows that are typically examined in the literature.

A. On Price Efficiency

We begin with the important finding of Bae, Ozoguz, Tan, and Wirjanto (2012) that foreign capital can improve the informational efficiency in emerging markets by better processing global information, and we examine whether catering-oriented capital flows are associated with similar benefits. To achieve this goal, we examine the relation between price delay to global market information, the main variable of informational efficiency in Bae, Ozoguz, Tan, and Wirjanto (2012), and the ownership of actively managed foreign funds offered by catering-oriented fund families. We estimate the following panel specification with year and stock fixed effects and standard errors clustered at the stock level:

$$Delay_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t}, \quad (8)$$

where $Delay_{i,t}$ refers to the price delay of stock i in year t to the global market information ($Delay\_Global_{i,t}$) or the local market information ($Delay\_Local_{i,t}$), and $CateringForOwn_{i,t-1}$ is the ownership of catering-oriented active foreign funds either by all foreign funds of catering-oriented families ($CateringForOwnAll_{i,t-1}$) or by newly launched catering-oriented funds ($CateringForOwnNew_{i,t-1}$).

Mutual fund families are sorted into terciles within the domicile country according to their lagged catering incentives and proxied by the number and the rank of unexplored index at the family level (*Fam_Num_UIT* and *Fam_Rank_UIT*). Those in the top tercile are defined as catering-oriented families, and the aggregate ownership from their existing (newly launched) affiliated foreign funds is labeled *CateringForOwnAll* (*CateringForOwnNew*) accordingly. Furthermore, *CateringForOwnAll* (*CateringForOwnNew*) refers to a set of variables—i.e., *CateringForOwnAll_Num* and *CateringForOwnAll_Rank* (*CateringForOwnNew_Num* and *CateringForOwnNew_Rank*)—when mutual fund families' catering incentives are proxied by *Fam_Num_UIT* and *Fam_Rank_UIT*. Vector *M* stacks all other stock and country control variables, including *Domestic IO*, *Foreign IO*, *Stock Return*,

Log(Stock Size), *Turnover*, *Log(Net Income)*, *Log(Sales)*, *Log(Total Assets)*, *Stock Market Turnover*, *Stock Market/GDP*, and *Private Bond Market/GDP*. We include year- and stock fixed effects and cluster the standard errors at the stock level.

We report the results in Table 8, with Models (1) to (6) focusing on delay in processing global information and Models (7) to (12) focusing on delay in processing local information. We find that the capital flows associated with catering-oriented cross-border expansions do not improve the price discovery and overall market efficiency in the target country. In contrast, a one-standard-deviation increase in the ownership of catering-oriented foreign funds identified based on the number (rank) of unexplored indices is related to 1.1% (1.13%) greater price delay (i.e., the influence of additional price delay scaled by the standard deviation of price delay) to the global market information in Model (1) (Model (4)). In addition, and perhaps not surprisingly, high ownership of catering-oriented foreign funds is associated with a more prominent price delay related to domestic market information.

Furthermore, price delay to global market information is typically enhanced after new catering-oriented cross-border expansions. A one-standard-deviation increase in the *new* ownership introduced by catering-oriented cross-border expansions is related to a 1.06% (1.18%) greater price delay in Model (2) (Model (5)). Given that $CateringForOwnNew_{i,t-1}$ is equivalent to changes in catering-oriented ownership introduced by new catering-oriented cross-border expansions, this result directly quantifies the incremental price delay that is likely to be introduced by the new ownership of catering-oriented overseas expansions.

We then examine the influence of fire sale flows of catering-oriented funds in Models (3) and (6). Following Coval and Stafford (2007), fire sale flows of each stock are defined as the net flows of fire purchases of all catering-oriented funds and fire sales of catering-oriented funds, denoted *CateringForOwnFS_Num* and *CateringForOwnFS_Rank*, when mutual fund families' catering incentives are proxied by *Fam_Num_UIT* and *Fam_Rank_UIT*. Appendix A provides more detail on how we construct this variable. Models (3) and (6) show that fire sale flows of catering-oriented funds positively affect price delay. This positive coefficient confirms that price delay increases (decreases) when the ownership of catering-oriented funds increases (decreases) after fire purchases (fire sales).

It is especially striking to see that the influence of catering-oriented foreign capital flows in processing global information is exactly the opposite of that of general foreign capital flows, as reported in the literature (e.g., Bae, Ozoguz, Tan, and Wirjanto, 2012). To reconcile our finding with the literature, we conduct additional tests (reported in Table IA3 Panels A and C in the Internet Appendix) and find that the impact of active cross-border capital flows that are the least related to catering incentives (non-catering funds or associated capital flows) is largely beneficial in processing global information. A one-standard-deviation increase in the ownership of catering-oriented foreign funds (non-catering funds) is associated with a 1.33% greater (0.84% less) price delay with respect to global

market information for all countries and a 3.63% greater (2.37% less) price delay for emerging markets. In this regard, catering-oriented foreign capital flows can reduce price efficiency by approximately 6% compared to non-catering-oriented foreign capital flows.

Interestingly, fire sale flows of the least catering-oriented funds are no longer beneficial; they become largely statistically insignificant, suggesting that even funds with the proper incentives may not benefit the investing country when these funds are under the pressure of fire sales (purchases). By contrast, the influence of fire sale flows of catering-oriented funds remains highly significant, suggesting that our test has the proper statistical power to identify the true economic influences of fire sale flows.

The above tests imply a plausibly causal influence of catering-oriented foreign capital flows on price efficiency for several reasons. First, since stock fixed effects are explicitly controlled for in these tests, time-invariant stock characteristics, including those related to price inefficiency, are unlikely to be the driving force of our results. Consider, for instance, the relationship between $CateringForOwnNew_{i,t-1}$ (i.e., ownership introduced by new funds) and subsequent price delay. This positive relationship on itself can arise when newly created catering-oriented ownership reduces price efficiency (which implies a causal influence of the former on the latter) or the reverse (in which case stocks with persistent, high market delay attract new catering-oriented funds). With stock fixed effects, however, the reverse causality is less plausible because persistent stock characteristics should be absorbed. Second, catering- and non-catering-oriented foreign funds have exactly the opposite influences on price delay, suggesting that our findings are not driven by spurious correlations between foreign ownership and price efficiency. Finally, fire sales and purchases are largely exogenous to fund managers (Coval and Stafford, 2007; Jotikasthira, Lundblad, and Ramadorai, 2012). Since there is no reason to believe that fire sales (purchases) can directly influence the price efficiency of another country (except through the investment behavior of these funds (e.g., Jotikasthira, Lundblad, and Ramadorai, 2012), this result based on fire sale flows further alleviates potential endogeneity concerns. Overall, our results capture the influences of time-varying catering incentives of fund ownership, which are difficult to explain through reverse causality or spurious correlation unrelated to the latter.

In addition to price delay, we examine whether these funds are better able to affect price informativeness by processing industry-level information. To test this channel, we construct two measures of delays in processing global industry information and local industry information by replacing the returns of the value-weighted market portfolio with the returns of the value-weighted industry portfolio for the leading industry invested by a fund. Unreported results show that catering-oriented foreign capital flows are unrelated to both delay measures, whereas non-catering-oriented foreign capital flows help process the industry-level information in both the global and the domestic markets. Therefore, catering-oriented foreign capital flows are no better at processing industry-level information than local funds. Moreover, our findings are robust to alternative measures of market

efficiency proposed by Griffin, Kelly, and Nardari (2010) (reported in Table IA3 Panel B in the Internet Appendix).

These results have important normative implications. They suggest that capital flows are heterogeneous in nature and that there is a significant difference between the impact of "bad" (catering-oriented) capital flows and that of "good" (non-catering-oriented) ones. Hence, a one-policy-for-all regulation may not achieve the intended benefit of the globalization of finance. However, above all, our results suggest that the non-beneficial impact actually comes from catering-oriented and low-skilled foreign expansions.

B. On Liquidity and Commonality in Liquidity

Next, we examine the notion that low-skilled fund companies may supply liquidity to the local market instead of processing information. If so, capital flows associated with these companies are still arguably beneficial to the local economy.

To achieve this goal, we replace price delay in Equation (8) with stock liquidity—proxied by either Amihud's (2002) illiquidity or the proportion of zero daily returns (Lesmond, Ogden, and Trzcinka, 1999)—and commonality in liquidity (Karolyi, Lee, and van Dijk, 2012). We tabulate the results in Panel A of Table 9. To save space, we only tabulate the coefficients of our main independent variable of $CateringForOwn_{i,t-1}$ in this table. The Internet Appendix provides the full specification of the regression coefficients on control variables.

We find that catering-oriented foreign capital flows do not improve liquidity conditions, either. In contrast, a one-standard-deviation increase in the ownership of (rank-based) catering-oriented foreign funds is associated with an increase in Amihud *illiquidity* of 0.29% and an increase of the proportion of zero return days of 1.27% (scaled by the standard deviation of illiquidity measures). Similarly, a one-standard-deviation increase in the new ownership of catering-oriented foreign funds is also associated with an increase in Amihud *illiquidity* of 0.39% and an increase in the proportion of zero return days of 1.25%.

To better understand this result, we revisit the turnover ratio of various types of funds as a proxy for their willingness to trade. We have already seen in Table 2 that catering-oriented foreign funds trade considerably less than non-catering-oriented foreign funds. We further verify in our data that the turnover ratio of catering-oriented foreign funds is 54% less than domestic funds, implying a significant reduction in liquidity. It is not surprising to see that catering-oriented foreign funds have less willingness to trade. On the one hand, mutual funds usually trade more to exploit profitable investment opportunities (Pástor, Stambaugh, and Taylor, 2017). Since catering-oriented foreign funds are low-skill, they trade less than more informed funds. On the other hand, if these funds' primary goal is to attract capital flows,

their trading incentives will be even lower after this catering goal is achieved. These considerations help explain the above results on market liquidity.[18]

Finally, we document that catering-driven flows are also associated with higher commonality in liquidity. A one-standard-deviation increase in ownership of all and new (rank-based) catering-oriented foreign funds is associated with increases in commonality in liquidity with respect to the local market of 1.04% and 0.93%, respectively. This result is also consistent with the finding of Karolyi, Lee, and van Dijk (2012) that the behavior of foreign investors can explain the variations in commonality in liquidity. Although this magnitude is not very large, the message is clear that catering-oriented foreign capital flows do not benefit the local market in terms of liquidity.

Overall, catering-oriented foreign capital flows not only harm the general liquidity condition but also increase commonality in liquidity. While the first influence is unambiguously costly, the latter may also enhance contagion risk by boosting the local economy's commonality in liquidity. Interestingly, the cross-border flows that are least catering-oriented do not improve liquidity conditions either, as Table IA4 in the Internet Appendix indicates. Indeed, they also seem to absorb liquidity, although the results are less robust across different specifications. Given that this type of (least-market-oriented) capital flows process global information, it is not surprising that they may occasionally require liquidation from the local market.

C. On Market Integration

Finally, we consider market integration. Similar to our tests on price efficiency, we separately examine the two cases of market integration: integration with the global market and that with the local market. Recall that market integration is defined as the absolute value of the intercept and the adjusted R-square of a regression of stock returns on global or domestic factor models. As the absolute value of the intercept decreases and the adjusted R-square increases, the degree of integration increases.

We then again conduct a regression specification similar to that in Equation (8), replacing price delay with various measures of market integration. The results are tabulated in Panel B of Table 9. To save space, we only tabulate the coefficients of our main variables. The Internet Appendix provides the full specification of the regression coefficients on control variables. We find that catering-oriented foreign ownership is not related to integration with respect to overall international market factors.

Jointly, the tests in this section fail to depict a beneficial role of catering-oriented cross-border capital flows. Indeed, these capital flows hurt price efficiency—with respect to both global information and local information—as well as liquidity conditions. Table IA5 in the Internet Appendix further

[18] Note that fire sales (purchases) are likely to mechanically dry up liquidity because funds must sell and buy a relatively large number of shares in the market. Our empirical results confirm this intuition. Since the effect is mechanical, we do not tabulate the results here.

shows that these results remain valid when we focus only on a subsample of active funds by further excluding closet indexers. In general, these pricing influences are consistent with the previous section's results that such capital flows are likely to be managed by low-skilled families.

VII. Robustness Checks and Additional Analysis

We finally provide additional analysis to assess the robustness as well as the potential economic grounds of our results. In particular, since the misallocation between capital and managerial skills (Tables 3, 4, and 6) involves the issue of measuring fund performance, which is not an easy task for international funds, we will provide a battery of robustness checks on this result. In the interest of brevity, we tabulate the results of these tests in the Internet Appendix and only discuss the main findings in this section. We then move on to explore mutual fund flows in order to better understand both the preference and the weakness of investors involved in our previous analysis.

A. Alternative Performance Measures

We first consider the performance of newly launched funds as reported in Table 3. As a robustness check, we also apply the same test to the sample of all foreign expansions (including index funds) and the smaller sample of active foreign expansions (excluding all closet-index funds) (i.e., Cremers, Ferreira, Matos, and Starks, 2016) from the sample of active funds. These two tests alleviate the potential concern that our results can be contaminated by index funds or closet-index funds (footnote 10 provides a more detailed discussion of this point). In addition, we consider alternative performance measures such as 8-factor adjusted return including four FFC domestic factors, four FFC foreign factors, and gross-of-fee performance. We report the results in the Internet Appendix (Table IA6; Panel A for all foreign expansions, Panel B for active funds excluding all closet indexers, Panel C for 8-factor adjusted return, and Panel D for gross-of-fee performance). We can see that poor performance is associated with new funds' catering incentives in all the samples of funds we have examined and across all performance measures.

As a further robustness check on the performance of domestic and foreign funds (Table 4 and Table 6), we apply a similar test to 1) the sample including families that launch only foreign index funds and 2) the sample excluding families that launch only foreign closet-index funds. For foreign funds, we further adjust their performance using an 8-factor model that includes both domestic and foreign factors. We tabulate the results in Panels A and B of Table IA7 in the Internet Appendix. Our results remain unchanged, showing that both domestic and foreign funds offered by catering-oriented families underperform.

Another related concern is that some families may charge consistently higher fees than others, leading to their funds' lower after-fee performance. Panel C of Table IA7 provides robustness checks

using gross-of-fee performance of mutual fund families. Our results are again robust, suggesting that fee strategy is not a major driving force for our performance results. This conclusion is consistent with those of previous univariate tests (Table 2 Panel B).

Finally, to address the concern that some funds are regionally or globally distributed and may be sold to investors outside the domicile country of the fund family, we verify that our results are robust when we use fund sales country as opposed to domicile country. In particular, a foreign fund to an index is defined as a fund whose sales country or countries (obtained from Morningstar 'Region of Sale' and 'Country Registered for Sale') are all different from that of the index. We also construct another set of proxies for catering incentive of mutual fund families. We report the results in Table IA7 Panel D, and our findings confirm that both domestic and foreign funds offered by catering-oriented families underperform.

Overall, our robustness checks confirm that sample selections with respect to index and closet-index funds, the methodology of risk adjustment, as well as considerations related to fees and sales countries do not alter our results related to the misallocation between capital and managerial skills.

B. Investor Preference and Weakness

While the existing literature suggests that investors often invest according to style strategies (e.g., Mullainathan, 2002; Barberis and Shleifer, 2003; Barberis, Shleifer, and Wurgler, 2005), to complete our analysis, we need to provide evidence on their preference over index-linked-style investment related to the global market, particularly vis-à-vis the measure we have used in previous analysis. Moreover, although low-skilled fund families exploit investor preferences and weaknesses in offering catering-oriented cross-border expansion, alternative options (e.g., index funds, exchange-traded funds (ETFs)) are available to investors that can cheaply deliver the same underlying index performance. For catering expansion to be a sustainable competition strategy, additional market frictions must exist to prevent the cheap index funds from wiping out investors' demand for actively managed catering funds in addition to their general weakness of lacking the expertise to properly allocate capital across active funds. Is there evidence to support the existence of such frictions?

Since mutual fund flows provide a reasonable proxy for investor demand, our remaining analysis aims to address these issues by examining the following specification:

$$Flow_{f,t} = \alpha + \beta_1 Num\_UIT_{f,t-1} + \beta_2 Perf_{f,t-1} + \beta_3 Perf_{f,t-1} \times MktShr_{f,t-1} + \beta_4 MktShr_{f,t-1} + \gamma M_{f,t-1} + e_{f,t}, \quad (9)$$

where $Flow_{f,t}$ refers to the average monthly flow of fund f in year t and $Num\_UIT_{f,t-1}$ refers to the number of unexplored indices in the country where fund f invests. For this part of the test, we want to examine whether the number of unexplored indices (as well as its rank, $Rank\_UIT_{f,t-1}$) as a country characteristic could attract investor flows or not. Next, $Perf_{f,t-1}$ refers to the average monthly

benchmark-adjusted return. We include lagged fund performance because it is one of the most important determinants of investor demand as reported in the previous literature and because it can help us understand the potential segmentation between passive and active investments from investors' perspective. To achieve the latter goal, we also include in the test a new market share variable, $MktShr_{f,t-1}$, which aims to capture the importance of the investing country of fund f from the perspective of all investors located in the domicile country of fund f (we will specify its empirical proxies shortly). Finally, vector *M* stacks all other fund, family and target country control variables including *Lag(Fund Flow), Log(Fund TNA), Fund Expense Ratio, Fund Turnover, Log(Fund Age), Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, Within Family Correlation, Outside Family Correlation, HHI_Dom, HHI_Target, HHI_Family,* and *Num_Index_Dom*. We again focus on the sample of active funds and present the results of the main independent variables in Table 10. The full specification of the tests is tabulated in the Internet Appendix.

In Models (1) and (2), we mainly examine the relationships between fund flows, fund performance, and the catering incentives of funds. We first confirm that, consistent with the literature, past performance is a strong predictor of fund flows. More related to our previous analysis, we find that fund flows are also higher when the investing country of the fund has more unexplored indices, particularly when the latter is measured by the relative ranks of unexplored indices.[19] Although fund flows (i.e., investor demand for existing funds) may not be exactly the same as investor preference for new funds, the positive relationship between flows and catering incentives nonetheless provides evidence that investors may have higher demand for foreign index-linked-style investment in a manner captured by our measures.

Models (3) to (6) interact fund performance with measures describing the relative importance of the investing country of fund f (country *I*) from the perspectives of the investors who are located in fund f's domicile country (country *D*) and who are interested in foreign investments. This importance can be captured by the fraction—or market share—of foreign funds domiciled in country *D* that invest in country *I*. Since these foreign funds can in principle invest in any foreign country (other than their domicile country *D*), a higher fraction of investment in country *I* reveals the importance of this particular country—among all foreign countries—to investors located in country *D*. In Model (3), the market share of an investing country, denoted as *%Target_Num,* is estimated as the number of all funds with the same domicile country and investment country as fund f divided by the number of all foreign funds in the same domicile country.

[19] Note that both measures of unexplored indices for the investing country of a fund can change significantly over time. The observation that investor demand responds more to the relative ranks than the absolute number of unexplored indices is consistent with the notion that mutual fund investors typically pay more attention to relative rankings of funds.

Two observations emerge. First, the coefficient of *%Target_Num* is positive, suggesting that investors in general have a higher demand for funds investing in relatively more important markets. Second, the coefficient of the interaction between performance and *%Target_Num* is positive, suggesting that investors also pay more attention to funds investing in more important foreign countries—in terms of responding more to fund performance. These two observations are reasonable. They also provide a benchmark to gauge investor demand for foreign investment.

In Models (4) and (5), we further split *%Target_Num* into two components, *%Target_ActNum* and *%Target_PasNum*, which assess the relative importance of the investing country based on, respectively, the number of active funds and that of passive funds (i.e., index funds and ETFs) that invest in it from the perspective of investors located in the same domicile country.[20] Model (6) presents a joint specification when we include both *%Target_ActNum* and *%Target_PasNum*. From these models, we can see that the two aforementioned effects concentrate in active funds. The importance of a target country in terms of passive investments, by contrast, does not affect investor demand or attention over active funds (recall that fund flows used in this table are of active funds). Such a differential effect is heuristic: it implies a segmentation between active and passive investments in forming or affecting investor demand. In particular, it suggests that passive funds are not considered substitutes of active funds by investors in foreign investments. This segmentation could arise due to heterogeneity in investor demand or some sort of mental accounting in foreign investments. Regardless of its explicit economic basis, the existence of such segmentation reveals an additional layer of market friction or investor weakness (in addition to their style preference and incapability of allocating capital), which also allows actively managed funds to pursue catering expansion even in the presence of a booming passive sector.

Conclusion

In this paper, we examine whether financial globalization may unintentionally reduce market efficiency when it allows low-skilled mutual fund companies to achieve product differentiation by launching new funds for catering purposes. Since catering expansion implies a misallocation between capital and managerial skills, cross-border capital flows channeled to foreign markets through low-skilled fund companies for catering purposes may not be able to deliver the benefits of financial liberalization in terms of investor welfare and market efficiency.

[20] The measure *%Target_Act_Num* is computed as the number of all active mutual funds with the same domicile country and investment country as fund f divided by the number of all foreign funds in the same domicile country. The measure *%Target_Pas_Num* is computed as the number of all passive funds (i.e., index funds and ETFs) with the same domicile country and investment country as fund f divided by the number of all foreign funds in the same domicile country. We obtain similar results when we replace the number of funds with the aggregate TNA of funds. We focus on the number of funds because it is more straightforward for retail investors to pay attention to the total number of funds than the total TNA of funds.

Using the complete sample of global mutual funds, we indeed find that catering-oriented fund companies are more likely to launch new funds in foreign markets that have more indices unexplored by the global mutual fund industry. In general, new funds launched in this way are associated with lower performance—as are other affiliated domestic and foreign funds managed by the same fund company. These findings suggest that the financial globalization of the mutual fund industry may be associated with a misallocation problem. Empirically, cross-border capital flows managed by catering-oriented fund companies reduce the price efficiency, with respect to both local and global information, and worsen the general liquidity conditions of a market.

Our key message is that not all flows are the same, depending on who manages them, which highlights the importance of heterogeneity among cross-border capital flows. More explicitly, our results suggest that there might exist a short-term behavior and market friction-based component of cross-border flows, whose economic ground and influences deserve close scrutiny from both researchers and regulators. Our findings have important normative implications for regulations and call for more research to understand foreign capital flows based on more solid micro-foundations.

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Appendix A: Variable Definitions

Variables	Definitions
A. Catering Incentive Measures	
Num_UIT	The number of unexplored indices in the target country refers to the total number of indices in that country tracked by domestic funds that are not yet invested in by any foreign funds. It is computed as the total number of indices tracked by mutual funds minus the number of indices invested by foreign funds in the country where a new fund is launched. The index tracked by mutual funds in each country first comes from Morningstar 'Primary Prospectus Benchmark ID', and the name 'Primary Prospectus Benchmark' is used if 'Primary Prospectus Benchmark ID' is missing. For each index, a domicile country is assigned based on the market in which the majority of the stocks included in the index are traded, and a foreign fund to an index is defined as a fund whose domicile country is different from that of the index.
Rank_UIT	Rank of the number of unexplored indices (*Num_UIT*) in the target country across all newly launched funds from the same domicile country, and the ranks are normalized to follow a [0, 1] uniform distribution.
Fam_Num_UIT	The number of unexplored indices at the family level is computed as the average number of unexplored indices in the target country across all newly launched funds within the same family.
Fam_Rank_UIT	The rank of unexplored indices at the family level is computed as the average rank of unexplored indices in the target country across all newly launched funds within the same family.
CateringForOwnAll_Num (in %)	The aggregate ownership of all existing foreign funds offered by catering-oriented families, when catering-oriented families are defined as those with *Fam_Num_UIT*, belongs to the top tercile among all families in the same domicile country. The catering-oriented foreign ownership is computed as the total number of shares held by mutual funds affiliated with catering-oriented families divided by the number of shares outstanding.
CateringForOwnNew_Num (in %)	The aggregate ownership of all newly launched foreign funds offered by catering-oriented families, when catering-oriented families are defined as those with *Fam_Num_UIT*, belongs to the top tercile among all families in the same domicile country. The variable is defined in a similar manner as *CateringForOwnAll_Num*.
CateringForOwnFS_Num (in %)	The extreme flow-motivated change in ownership of all foreign funds offered by catering-oriented families for stock i in a quarter q is computed as follows: $MktingForOwnFS\_Num_{i,q} = \sum_f \left(\max(0, \Delta IO_{f,i,q}) \left| flow_{f,q} > PCT90_q \right.\right) - \sum_f \left(\max(0, -\Delta IO_{f,i,q}) \left| flow_{f,q} < PCT10_q \right.\right)$, where $\Delta IO_{f,i,q}$ refers to the change in catering-oriented foreign ownership of stock i held by fund f in quarter q (defined as in *CateringForOwnAll_Num*), $flow_{f,q}$ refers to the fund flow in the same quarter, and $PCT90_q$ and $PCT10_q$ respectively refer to the 90th and 10th percentile of flow across all funds in quarter q, following Coval and Stafford (2007). Fund flow in a given month m is computed as follows: $Flow_{f,m} = \left[TNA_{f,m} - TNA_{f,m-1} \times \left(1 + r_{f,m}\right)\right] / TNA_{f,m-1}$, where $TNA_{f,m}$ refers to the total net asset of fund f in month m and $r_{f,m}$ refers to fund total return in the same month. Quarterly flow is computed as the sum of monthly flows over the quarter.
CateringForOwnAll_Rank (in %)	The aggregate ownership of all existing foreign funds offered by catering-oriented families, when catering-oriented families are defined as those with *Fam_Rank_UIT*, belongs to the top tercile among all families in the same domicile country. The variable is defined in a similar manner as *CateringForOwnAll_Num*.
CateringForOwnNew_Rank (in %)	The aggregate ownership of all newly launched foreign funds offered by catering-oriented families, when catering-oriented families are defined as those in which *Fam_Rank_UIT* belongs to the top tercile among all families in the same domicile country. The variable is defined in a similar manner as *CateringForOwnAll_Num*.
CateringForOwnFS_Rank (in %)	The extreme flow-motivated change in ownership of all foreign funds offered by catering-oriented families for stock i in a quarter q is computed as follows: $MktingForOwnFS\_Rank_{i,q} = \sum_f \left(\max(0, \Delta IO_{f,i,q}) \left| flow_{f,q} > PCT90_q \right.\right) - \sum_f \left(\max(0, -\Delta IO_{f,i,q}) \left| flow_{f,q} < PCT10_q \right.\right)$, where $\Delta IO_{f,i,q}$ refers to the change in catering-oriented foreign ownership of stock i held by fund f in quarter q (defined as in *CateringForOwnAll_Rank*) and all other variables are defined as in *CateringForOwnFS_Num*.
B. Performance Measures (in %)	
New Fund Return	Monthly total returns for the newly launched fund, as reported by Morningstar. When a portfolio has multiple share classes, its total return is computed as the share class total net asset (TNA)-weighted return of all share classes, where the TNA values are one-month lagged.
New Fund 4-Factor-adjusted Return	Realized fund returns minus the productions between a fund's four-factor betas multiplied by the realized four-factor returns in a given month. The four Fama-French-Carhart (FFC) factors (market, size, book-to-market, and momentum) are measured in the target country in which the new fund is launched. The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.

New Fund 8-Factor-adjusted Return	Realized fund returns minus the productions between a fund's eight-factor betas multiplied by the realized eight-factor returns in a given month. The eight factors consist of four Fama-French-Carhart (FFC) factors (market, size, book-to-market, and momentum) that are measured in the target country where the new fund is launched as well as four foreign factors that are the value-weighted average of the four factors in all other countries. The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.
Family Domestic Return	Family domestic return is computed as the fund TNA-weighted return of all domestic funds within the same family, where the TNA values are one-month lagged, and the domestic fund is defined as a fund tracking an index in the same domicile country.
Family Domestic 4-Factor-adjusted	Realized family domestic returns minus the productions between a family's four-factor betas multiplied by the realized four factor returns in a given month. The Fama-French-Carhart factors (market, size, book-to-market, and momentum) are measured in the family's domicile country. The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.
Family Foreign Return	Family foreign return is computed as the fund TNA-weighted return of all foreign funds within the same family, where the TNA values are one-month lagged, and the foreign fund is defined as a fund tracking an index outside its domicile country.
Family Foreign 4-Factor-adjusted Return	Realized family foreign returns minus the productions between a family's four-factor betas multiplied by the realized four-factor returns in a given month. The four international factors are the value-weighted average of four domestic Fama-French-Carhart factors (market, size, book-to-market, and momentum). The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.
Family Foreign 8-Factor-adjusted Return	Realized family foreign returns minus the productions between a family's eight-factor betas multiplied by the realized eight factor returns in a given month. The eight factors consist of four domestic Fama-French-Carhart (FFC) factors (market, size, book-to-market, and momentum) as well as four foreign factors that are the value-weighted average of four domestic factors in all other countries. The betas of the fund are estimated as the exposures of the fund to the relevant risk factors with a five-year estimation period.
C. Diversification Measures (in %)	
Within Family Correlation	Within-family correlation for mutual fund family F in year t is computed as follows: $Within\ Family\ Corr_{F,t} = \frac{1}{N_t}\sum_{i\in F, j\in F} Corr(R_{i,m,t}, R_{j,m,t})$, where $R_{i,m,t}$ and $R_{j,m,t}$ refer to the monthly return of fund i and j, respectively, in month m of year t, with both funds affiliated with family F, and N_t refers to the number of fund pairs included in the family, following Elton, Gruber, and Green (2007).
Outside Family Correlation	Outside family correlation for mutual fund family F in year t is computed as follows: $Outside\ Family\ Corr_{F,t} = \frac{1}{N_t}\sum_{i\in F, j\notin F} Corr(R_{i,m,t}, R_{j,m,t})$, where $R_{i,m,t}$ and $R_{j,m,t}$ refer to the monthly return of fund i and j, respectively, in month m of year t, with fund i affiliated with family F and fund j outside family F but in the same domicile country, and N_t refers to the total number of fund pairs, following Elton, Gruber, and Green (2007).
New Fund Correlation Within Family	New fund correlation within the family is computed as the return correlation between a newly launched fund and all other existing funds affiliated with the same mutual fund family, defined as the within-family correlation above.
New Fund Correlation Outside Family	New fund correlation outside the family is computed as the return correlation between a newly launched fund and all other existing funds outside the mutual fund family but in the same domicile country, defined as the outside family correlation above.
New Fund Optimal Investment Weight	The optimal investment weight of the newly launched fund is computed by maximizing the family Sharpe ratio based on monthly fund returns one year after inception, including all actively managed equity funds within the family. We exclude fund families with fewer than five funds before launching new funds.
D. Market Delay Measures	
Delay_Global	The price delay to the global market information for stock i in year t is computed as follows: $Delay\_Global_{i,t} = 1 - \frac{R^2_{restricted,i,t}}{R^2_{unrestricted,i,t}}$, where $R^2_{restricted,i,t}$ and $R^2_{unrestricted,i,t}$ refer to the R-square from restricted and unrestricted market models, respectively, estimated using weekly returns in each year t. Restricted model: $R_{i,w,t} = \alpha_{i,t} + \delta_{i,0,t}R_{g,w,t} + \sum_{k=0}^{3}\gamma_{i,k,t}R_{l,w-k,t} + e_{i,w,t}$; Unrestricted model : $R_{i,w,t} = \alpha_{i,t} + \sum_{k=0}^{3}\delta_{i,k,t}R_{g,w-k,t} + \sum_{k=0}^{3}\gamma_{i,k,t}R_{l,w-k,t} + e_{i,w,t}$, where $R_{i,w,t}$ refers to the accumulated return of stock i in week w of year t and $R_{g,w-k,t}$ and $R_{l,w-k,t}$ refer to the contemporaneous and lagged returns on the value-weighted world market portfolio and the local market portfolio, following Hou and Moskowitz (2005), and Bae, Ozoguz, Tan, and Wirjanto (2012).
Delay_Local	The price delay to the local market information for stock i in year t is computed as follows: $Delay\_Local_{i,t} = 1 - \frac{R^2_{restricted,i,t}}{R^2_{unrestricted,i,t}}$, where $R^2_{restricted,i,t}$ and $R^2_{unrestricted,i,t}$ refer to the R-square from restricted and unrestricted market models estimated using weekly returns in each year t.

	Restricted model: $R_{i,w,t} = \alpha_{i,t} + \sum_{k=0}^{3} \delta_{i,k,t} R_{g,w-k,t} + \gamma_{i,0,t} R_{l,w,t} + e_{i,w,t}$; Unrestricted model : $R_{i,w,t} = \alpha_{i,t} + \sum_{k=0}^{3} \delta_{i,k,t} R_{g,w-k,t} + \sum_{k=0}^{3} \gamma_{i,k,t} R_{l,w-k,t} + e_{i,w,t}$, where all variables are defined as in *Delay_Global*.
E. Stock Liquidity and Liquidity Commonality Measures	
Log (Amihud)	The Amihud illiquidity for stock i in month m is computed as follows: $Illiq_{i,m} = \left[\sum_{d=1}^{n} \left|R_{i,m,d}\right| / \left(P_{i,m,d} \times N_{i,m,d}\right)\right]/n$, where n is the number of trading days in each month m, $\left|R_{i,m,d}\right|$ is the absolute value of return of stock i on day d of month m, $P_{i,m,d}$ is the daily closing price of stock i, and $N_{i,m,d}$ is the number of shares of stock i traded during day d, following Amihud (2002). *Log(Amihud)* refers to the logarithm of Amihud illiquidity.
%Zero	The proportion of zero daily returns in a month, following Lesmond, Ogden, and Trzcinka (1999).
Liquidity Co-movement	The commonality in liquidity for stock i in month m is computed as follows: $\widehat{\omega}_{i,m,d}^{Liq} = \alpha_{i,m}^{Liq} + \sum_{j=-1}^{1} b_{i,m,j}^{Liq} \widehat{\omega}_{M,m,d+j}^{Liq} + \varepsilon_{i,m,d}^{Liq}$, where $\omega_{i,m,d}^{Liq}$ is the residual from the following time-series regressions: $Liq_{i,m,d} = \alpha_{i,m}^{Liq} Liq_{i,m,d-1} + \sum_{\tau=1}^{5} \beta_{i,m,\tau}^{Liq} D_{\tau} + \gamma_{i,m}^{Liq} HOLI_{m,d} + \omega_{i,m,d}^{Liq}$, where $Liq_{i,m,d}$ is the Amihud liquidity proxy for stock i on day d of month m, defined as $-\log(1 + Illiq_{i,m,d})$, with $Illiq_{i,m,d} = \left|R_{i,m,d}\right| / \left(P_{i,m,d} \times N_{i,m,d}\right)$, and all variables are defined as in *Log(Amihud)*. D_{τ} $(\tau = 1, \ldots, 5)$ refers to a list of day-of-the-week dummy variables, and $HOLI_{t,d}$ is a dummy for trading days around non-weekend holidays. $\widehat{\omega}_{M,m,d+j}^{Liq}$ is the market value (at the end of previous year) weighted average of the residuals for all stocks. The R-square $(R_{i,m}^2)$ from the regression measures the commonality in liquidity for stock i of month m. We use the logistic transformation of the R-square measures, i.e., $\ln\left(\frac{R_{i,m}^2}{1-R_{i,m}^2}\right)$, following Karolyi, Lee, and van Dijk (2012).
F. Market Integration Measures	
|Intercept_8Fac|	For every stock in each month, we regress daily excess returns on the four domestic factors (market, size, book-to-market and momentum) as well as four foreign factors, defined as the value-weighted average of four domestic factors in all remaining countries. |*Intercept_8Fac*| is defined as the absolute value of the intercept from this regression for each stock month.
Co-movement_8Fac	The return co-movement with the global market is defined as the adjusted R-square from the same monthly stock-level regressions as in |*Intercept_8Fac*|.
G. Other Family Characteristics	
HHI_Family	The Herfindahl-Hirschman index for mutual fund family F in month m is computed as follows: $HHI_{F,m} = \sum_{f \in F} \left(\frac{TNA_{f,m}}{\sum_{f \in F} TNA_{f,m}}\right)^2$, where $TNA_{f,m}$ refers to the total net assets of fund f in month m and fund f is affiliated with mutual fund family F.
Log (Family TNA)	The logarithm of family total net assets (TNA), where the family TNA is computed as the summation of all fund-level TNA (reported in Morningstar) within the family.
Expense Ratio (in %)	The family expense ratio is computed as the fund TNA-weighted annualized expense ratio of all funds within the family, where the TNA values are one-month lagged, and the fund-level expense ratio is reported in Morningstar.
Family Turnover	The family turnover is computed as the fund TNA-weighted turnover of all funds within the family, where the TNA values are one-month lagged, and fund-level turnover is reported in Morningstar.
Log (Family Age)	The logarithm of family age, where family age is computed as the fund TNA-weighted number of operational months since inception of all funds within the family, and the fund inception date is reported in Morningstar.
Family Return (in %)	Family return is computed as the fund TNA-weighted return of all funds within the family, where the TNA values are one-month lagged.
Family Flow (in %)	The flow for mutual fund family F in month m is computed as follows: $Flow_{F,m} = \frac{\sum_{f \in F}\left[TNA_{f,m} - TNA_{f,m-1} \times (1 + R_{f,m})\right]}{\sum_{f \in F} TNA_{f,m-1}}$, where $TNA_{f,m}$ refers to the total net asset of fund f in month m, $R_{f,m}$ refers to the fund total return in the same month, and fund f is affiliated with mutual fund family F.
Family External Asset Growth (in %)	The external asset growth for mutual fund family F in year t is computed as follows: $EAG_{F,t} = \frac{\sum_{f \in F}\left[TNA_{f,t} - TNA_{f,t-1} \times (1 + R_{f,t})\right]}{\sum_{f \in F} TNA_{f,t-1}}$, where $TNA_{f,t}$ refers to the total net asset of fund f in year t, $R_{f,t}$ refers to the cumulative fund total return in the same year, and fund f is affiliated with mutual fund family F.
New Fund-Implied Asset Growth (in %)	The new fund-implied asset growth for mutual fund family F in year t is computed as follows: $EAG\_New_{F,t} = \frac{\sum_{f \in F} TNA_{f,t} \times I\{Inception_{f,t}\}}{\sum_{f \in F} TNA_{f,t-1}}$, where $I\{Inception_{f,t}\}$ refers to an indicator function that equals one if fund f is launched in year t and zero otherwise and all other variables are defined as in *EAG*.
Flow-Implied Asset Growth (in %)	The family external asset growth minus new fund-implied asset growth; both are defined above.
H. Country Characteristics	
Log (Distance)	The logarithm of the geographical distance between the target and domicile countries.

Stock Market Turnover	The total value of shares traded during the year divided by the average market capitalization, as reported by the World Bank. Average market capitalization is calculated as the average of the year-end values for this year and the previous year.
Stock Market/GDP	The end-of-year stock market capitalization divided by nominal GDP, as reported by the World Bank.
Private Bond Market/GDP	The end-of-year domestic credit value to the private sector divided by nominal GDP, as reported by the World Bank. Domestic credit to the private sector refers to financial resources provided to the private sector by financial corporations.
HHI_Dom	The Herfindahl-Hirschman index for all funds in the domicile country C in month m is computed as follows: $HHI\_Dom_{C,m} = \sum_{f \in C} \left(\frac{TNA_{f,m}}{\sum_{f \in C} TNA_{f,m}} \right)^2$, where $TNA_{f,m}$ refers to the total net asset of fund f in month m and fund f has country C as its domicile country.
HHI_Target	The Herfindahl-Hirschman index for all funds in the target country, computed similarly to the *HHI_Dom* above.
Num_Index_Dom	The total number of indices in the domicile country.
I. Other Stock Characteristics	
Domestic IO (in %)	The domestic mutual fund ownership, computed as the number of shares held by domestic mutual funds divided by the number of shares outstanding.
Foreign IO (in %)	The foreign mutual fund ownership, computed as the number of shares held by foreign mutual funds divided by the number of shares outstanding.
Stock Return (in %)	The monthly stock return, as reported in Datastream Worldscope.
Log (Stock Size)	The logarithm of market capitalization of stocks, in millions, as reported in Datastream Worldscope.
Turnover	The monthly stock trading volume scaled by shares outstanding, as reported in Datastream
Log (Net Income)	The logarithm of absolute net income, in millions, as reported in Datastream Worldscope, times 1 (–1) if net income is positive (negative).
Log (Sales)	The logarithm of sales, in millions, as reported in Datastream Worldscope.
Log (Total Assets)	The logarithm of total assets, in millions, as reported in Datastream Worldscope.

Table 1: Summary Statistics

This table presents the summary statistics for the data used in the paper. Panel A reports the mean, median, standard deviation, and quantile distribution of the number and rank of unexplored indices at the country level and the family level; monthly fund and family returns; and other annual family and country characteristics. The sample consists of all mutual fund families with the foreign expansion of active equity mutual funds over the 2001−2012 period. Panel B reports similar statistics for annual market delay, illiquidity, market integration and other stock characteristics. Panel C reports the correlation matrix of the main stock-level dependent and independent variables. Appendix A provides detailed definitions of each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Panel A: Quantile Distribution of Family and Country Characteristics

	Mean	Std.Dev.	Quantile Distribution				
			10%	25%	Median	75%	90%
Num_UIT	8.659	8.522	0	0	6	16	21
Rank_UIT	0.745	0.289	0.310	0.400	0.905	1.000	1.000
Fam_Num_UIT	12.271	5.949	3.500	7.500	13.000	16.000	21.000
Fam_Rank_UIT	0.846	0.165	0.606	0.725	0.889	1.000	1.000
New Fund Return	0.429	0.746	-0.401	-0.044	0.350	0.858	1.443
New Fund 4-Factor-adjusted Return	0.029	0.596	-0.608	-0.290	-0.019	0.309	0.734
New Fund 8-Factor-adjusted Return	0.066	2.112	-0.608	-0.280	-0.021	0.319	0.717
New Fund Correlation Within Family	79.223	13.876	62.343	73.621	82.286	88.291	93.126
New Fund Correlation Outside Family	70.261	12.235	55.996	64.578	72.999	78.604	82.079
New Fund Optimal Investment Weight	3.948	13.586	0.000	0.000	0.000	0.011	7.496
Family Domestic Return	0.535	1.120	-0.327	0.066	0.463	1.050	1.497
Family Domestic 4-Factor-adjusted Return	-0.114	0.483	-0.654	-0.328	-0.092	0.153	0.374
Family Foreign Return	0.509	0.872	-0.249	0.023	0.428	0.971	1.506
Family Foreign 4-Factor-adjusted Return	-0.174	0.481	-0.626	-0.370	-0.166	0.036	0.296
Family Foreign 8-Factor-adjusted Return	0.055	0.529	-0.434	-0.181	0.024	0.272	0.541
Log (Family TNA)	21.009	2.416	17.682	19.448	21.264	22.850	23.859
Expense Ratio	1.043	0.621	0.121	0.563	1.118	1.456	1.773
Family Turnover	57.948	70.291	2.174	10.071	42.083	77.601	134.153
Log (Family Age)	4.552	0.797	3.550	4.206	4.686	5.054	5.411
Family Return	0.617	2.050	-1.981	-0.348	0.944	1.847	2.729
Family Flow	-0.718	7.782	-3.252	-1.124	-0.065	1.201	2.914
Log (Distance)	1.572	0.822	0.306	0.577	1.960	2.274	2.363
Stock Market Turnover	142.223	75.298	63.136	89.112	126.544	182.806	216.458
Stock Market/GDP	126.893	80.786	53.750	79.964	123.923	140.179	172.532
Private Bond Market/GDP	147.068	46.095	87.902	114.819	161.649	184.291	197.678
Within Family Correlation	0.694	0.176	0.477	0.604	0.705	0.826	0.900
Outside Family Correlation	0.574	0.144	0.404	0.510	0.595	0.656	0.740
HHI_Dom	0.085	0.112	0.008	0.016	0.038	0.119	0.209
HHI_Target	0.105	0.204	0.004	0.005	0.008	0.079	0.316
HHI_Family	0.603	0.283	0.193	0.379	0.601	0.839	1.000
Num_Index_Dom	48.427	55.109	2	6	23	64	157

Table 1—Continued

Panel B: Quantile Distribution of Stock Characteristics							
	Mean	Std.Dev.	Quantile Distribution				
			10%	25%	Median	75%	90%
Delay_Global	16.718	16.087	1.946	4.773	11.264	23.529	40.283
Delay_Local	17.091	16.389	1.986	4.880	11.561	24.095	41.215
Log (Amihud)	2.611	3.378	-1.909	0.117	2.615	5.074	7.021
%Zero	22.380	25.999	1.558	5.693	12.201	27.199	63.613
Liquidity Co-movement	-1.463	0.475	-2.008	-1.767	-1.495	-1.195	-0.876
|Intercept_8Fac|	63.764	47.351	21.851	33.953	51.716	78.683	119.469
Co-movement_8Fac	27.720	21.558	2.604	11.939	25.040	40.155	55.925
|Intercept_Domestic|	48.422	35.081	16.847	26.076	39.425	60.020	90.602
Co-movement_Domestic	26.687	20.484	3.113	11.139	23.674	38.501	53.755
|Intercept_Foreign|	58.325	39.104	21.214	32.501	48.869	73.292	106.385
Co-movement_Foreign	12.658	14.934	-1.126	3.214	9.167	17.414	30.077
CateringForOwnAll_Num	0.702	4.762	0.000	0.000	0.065	0.408	1.285
CateringForOwnNew_Num	0.415	4.246	0.000	0.000	0.000	0.111	0.551
CateringForOwnFS_Num	-0.011	6.414	0.000	0.000	0.000	0.000	0.000
CateringForOwnAll_Rank	0.751	4.925	0.000	0.000	0.069	0.437	1.384
CateringForOwnNew_Rank	0.449	4.397	0.000	0.000	0.000	0.124	0.607
CateringForOwnFS_Rank	-0.011	6.415	0.000	0.000	0.000	0.000	0.000
Stock Return	1.121	5.658	-5.422	-1.651	1.152	3.896	7.497
Domestic IO	4.393	8.506	0.000	0.000	0.102	4.425	16.248
Foreign IO	3.087	8.271	0.000	0.071	0.663	2.954	8.036
Log (Stock Size)	5.449	1.942	3.074	4.138	5.365	6.701	8.020
Turnover	0.127	0.226	0.005	0.017	0.049	0.135	0.321
Log (Net Income)	2.033	2.806	-2.455	0.602	2.714	3.843	4.826
Log (Sales)	5.730	1.880	3.336	4.602	5.984	6.893	7.723
Log (Total Assets)	6.256	1.848	3.801	4.994	6.505	7.332	8.257

Panel C: Correlation among Stock Characteristics				
	CateringForOwn All_Num	CateringForOwn New_Num	CateringForOwn All_Rank	CateringForOwn New_Rank
Delay_Global	0.132***	0.099***	0.133***	0.101***
Delay_Local	0.139***	0.099***	0.141***	0.100***
Log (Amihud)	0.186***	0.138***	0.184***	0.136***
%Zero	0.188***	0.083***	0.188***	0.081***
Liquidity Co-movement	0.052***	0.015***	0.052***	0.014***
|Intercept_8Fac|	-0.063***	0.064***	-0.066***	0.060***
Co-movement_8Fac	0.084***	0.006	0.079***	-0.001
|Intercept_Domestic|	-0.065***	0.057***	-0.066***	0.056***
Co-movement_Domestic	0.087***	0.006	0.082***	-0.000
|Intercept_Foreign|	-0.052***	0.072***	-0.054***	0.069***
Co-movement_Foreign	0.091***	0.018***	0.086***	0.011***

Table 2: The Decision of Mutual Fund Family Cross-Border Expansion

Panel A presents the results of the following annual logistic or probit regressions with year and target country fixed effects and their corresponding t-statistics with standard errors clustered at the family level:

$$Expansion_{F,C,t} = \alpha + \beta Num\_UIT_{C,t-1} + \gamma M_{F,C,t-1} + e_{F,C,t},$$

where $Expansion_{F,C,t}$ refers to a dummy variable that equals one if the mutual fund family F starts a new foreign fund in target country C in year t and zero otherwise and $Num\_UIT_{C,t-1}$ refers to the number of indices unexplored by foreign mutual funds in target country C. Vector M stacks all other family and target country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, High Family Return (a dummy variable that equals one if mutual fund family return is in the top quintile in the domicile country and zero otherwise), Family Flow, Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside the family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in domicile country. Models 1 to 6 present the results of logistic regressions, while Models 7 to 12 present the results of probit regressions. For Panel B, at the beginning of each year, mutual fund families are sorted into terciles according to their lagged catering incentives, proxied by the number and the rank of unexplored indices at the family level ($Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$). We report the holding period (year t) annual expense ratio and turnover, the logarithm of total net assets, and monthly returns for newly launched funds as well as the annual overall external asset growth rate, new fund-implied asset growth rate and flow-implied asset growth rate. All fund (or family) characteristics are first averaged across funds (families) within the same domicile country and then averaged across countries. The "Low-minus-High" rows report the difference in profits between Low and High catering incentive portfolios. Newey-West adjusted t-statistics are shown in parentheses. Our sample includes all active fund expansions. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 2—Continued

Panel A: Out-of-sample Mutual Fund Family Cross-Border Expansion Regressed on Catering Incentives												
	Logistic						Probit					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Num_UIT	0.153***	0.096***	0.100***	0.182***	0.187***	0.030***	0.062***	0.041***	0.043***	0.081***	0.084***	0.013**
	(35.82)	(22.24)	(21.07)	(26.06)	(25.68)	(2.85)	(33.33)	(21.82)	(20.72)	(26.06)	(25.78)	(2.50)
Num_UIT × High Family Return					-0.029***	-0.028***					-0.014***	-0.014***
					(-2.73)	(-2.74)					(-2.97)	(-3.15)
Log (Family TNA)	0.295***	0.296***	0.316***	0.397***	0.398***	0.408***	0.113***	0.117***	0.127***	0.163***	0.164***	0.178***
	(11.64)	(11.76)	(10.72)	(14.38)	(14.55)	(13.80)	(11.28)	(11.39)	(10.27)	(13.70)	(13.85)	(13.55)
Expense Ratio	-0.208***	-0.198***	-0.126**	-0.075	-0.075	-0.025	-0.085***	-0.085***	-0.052**	-0.038	-0.038	-0.018
	(-3.82)	(-3.75)	(-2.04)	(-1.22)	(-1.22)	(-0.39)	(-4.06)	(-4.07)	(-2.06)	(-1.51)	(-1.49)	(-0.65)
Family Turnover	-0.002***	-0.002**	-0.002**	0.001	0.001*	0.001	-0.001***	-0.001**	-0.001**	0.000	0.000	0.000
	(-2.81)	(-2.42)	(-2.21)	(1.57)	(1.65)	(1.35)	(-2.90)	(-2.57)	(-2.41)	(1.36)	(1.43)	(1.56)
Log (Family Age)	-0.031	-0.026	-0.061	-0.002	-0.007	-0.040	-0.011	-0.008	-0.029	-0.002	-0.003	-0.012
	(-0.60)	(-0.51)	(-0.89)	(-0.03)	(-0.10)	(-0.57)	(-0.52)	(-0.39)	(-1.02)	(-0.07)	(-0.12)	(-0.38)
Family Return	0.079***	0.069***	0.068**	-0.024			0.037***	0.035***	0.035***	-0.004		
	(3.46)	(3.15)	(2.44)	(-0.87)			(4.06)	(3.79)	(2.93)	(-0.36)		
Family Flow	-0.002	-0.001	0.002	0.006	0.006	0.005	-0.001	-0.001	-0.000	0.003	0.003	0.003
	(-0.42)	(-0.23)	(0.25)	(0.97)	(0.96)	(0.81)	(-0.62)	(-0.56)	(-0.09)	(0.95)	(0.91)	(0.85)
Log (Distance)		-0.194***	-0.188***	-0.328***	-0.329***	-0.679***		-0.068***	-0.067***	-0.144***	-0.145***	-0.365***
		(-4.19)	(-3.66)	(-6.39)	(-6.41)	(-10.06)		(-3.60)	(-3.13)	(-6.19)	(-6.23)	(-11.42)
Stock Market Turnover		0.005***	0.005***	0.002***	0.002***	-0.001		0.002***	0.002***	0.001***	0.001***	-0.001***
		(17.64)	(15.76)	(5.23)	(5.23)	(-1.40)		(15.72)	(14.28)	(4.55)	(4.52)	(-3.21)
Stock Market/GDP		0.003***	0.003***	0.005***	0.005***	0.003*		0.001***	0.001***	0.002***	0.002***	0.000
		(10.17)	(9.80)	(11.84)	(11.81)	(1.66)		(9.64)	(9.30)	(11.05)	(11.00)	(0.81)
Private Bond Market/GDP		0.009***	0.009***	0.003***	0.003***	-0.009***		0.003***	0.003***	0.001***	0.001***	-0.005***
		(11.28)	(10.04)	(3.00)	(2.99)	(-2.91)		(10.78)	(9.86)	(3.02)	(3.02)	(-4.03)
Within Family Correlation			-1.769***	-1.093***	-1.087***	-1.062***			-0.747***	-0.440***	-0.439***	-0.479***
			(-6.57)	(-3.83)	(-3.82)	(-3.68)			(-6.60)	(-3.69)	(-3.69)	(-3.69)
Outside Family Correlation			1.583***	1.061*	1.061*	0.921			0.637***	0.407*	0.412*	0.433*
			(2.93)	(1.86)	(1.86)	(1.58)			(2.93)	(1.72)	(1.73)	(1.66)
HHI_Dom				3.145***	3.166***	3.716***				1.515***	1.521***	1.805***
				(4.23)	(4.25)	(4.80)				(4.54)	(4.56)	(4.93)
HHI_Target				1.271***	1.275***	0.409				0.641***	0.641***	-0.047
				(5.87)	(5.88)	(0.99)				(7.47)	(7.47)	(-0.29)
HHI_Family				0.436**	0.448**	0.453**				0.205***	0.208***	0.216***
				(2.48)	(2.57)	(2.51)				(2.79)	(2.85)	(2.74)
Num_Index_Dom				-0.011***	-0.011***	-0.007***				-0.004***	-0.004***	-0.003***
				(-11.58)	(-11.57)	(-6.62)				(-11.82)	(-11.84)	(-6.56)
High Family Return					0.209	0.198					0.102*	0.108*
					(1.50)	(1.37)					(1.82)	(1.88)
Constant	-13.232***	-15.191***	-15.042***	-16.963***	-17.067***	-13.215***	-5.614***	-6.369***	-6.366***	-7.364***	-7.410***	-5.542***
	(-29.68)	(-32.72)	(-22.80)	(-23.04)	(-23.57)	(-12.45)	(-30.94)	(-32.60)	(-22.90)	(-23.37)	(-23.81)	(-12.53)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	N	N	N	N	N	Y	N	N	N	N	N	Y
Obs	283,403	269,624	185,888	130,996	130,996	127,741	283,403	269,624	185,888	130,996	130,996	127,741

Table 2—Continued

Panel B: Portfolio Characteristics Sorted by Catering Incentives							
Rank of Catering Incentive	Expense Ratio	Turnover	Log (TNA)	Return	Family External Asset Growth	New Fund-Implied	Flow-Implied
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Panel B1: Sorted by Fam_Num_UIT							
Low	1.159	37.722	19.449	0.715	21.588	4.378	17.210
Mid	1.049	32.426	19.789	0.625	22.682	5.081	17.602
High	1.067	34.366	19.376	0.512	19.682	7.493	12.189
Low-minus-High	0.093*	3.356***	0.072	0.203*	1.906	-3.115***	5.021*
	(2.10)	(3.62)	(1.33)	(2.17)	(1.02)	(-3.32)	(2.15)
Panel B2: Sorted by Fam_Rank_UIT							
Low	1.093	37.953	19.422	0.738	19.908	4.325	15.583
Mid	1.100	33.958	19.829	0.625	24.988	7.408	17.580
High	1.080	32.511	19.296	0.460	19.310	5.311	13.999
Low-minus-High	0.013	5.442*	0.126	0.278***	0.599	-0.986*	1.585
	(0.24)	(2.02)	(1.67)	(7.06)	(0.37)	(-2.21)	(0.80)

Table 3: Performance of Catering-Oriented Cross-Border Expansions

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics:

$$Perf_{f,t:t+4} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Perf_{f,t:t+4}$ refers to the average monthly return of fund f in five years (year t to $t+4$) after inception and $CateringIncentive_{f,t-1}$ refers to the two measures of catering incentives of the management company of fund f in launching this particular fund, including $Num\_UIT_{f,t-1}$, defined as the number of index unexplored by foreign mutual funds in the country where fund f is launched, and $Rank\_UIT_{f,t-1}$, defined as the rank of unexplored indices. Vector *M* stacks all other family and target country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside the family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in domicile country. Raw returns are further adjusted by a Fama-French-Carhart four-factor model comprising the market, size, book-to-market, and momentum factors. Our sample includes all newly launched active funds. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 3—Continued

Out-of-sample Performance of Cross-Border Expansion (in %) Regressed on Catering Incentives				
	New Fund Return		New Fund 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Num_UIT	-0.003*		-0.014***	
	(-1.87)		(-3.08)	
Rank_UIT		-0.094*		-0.280***
		(-2.00)		(-2.86)
Log (Family TNA)	0.024***	0.024***	0.016**	0.017***
	(3.95)	(4.10)	(2.56)	(2.88)
Expense Ratio	0.003	0.005	-0.059**	-0.051*
	(0.19)	(0.35)	(-2.27)	(-1.90)
Family Turnover	-0.000	-0.000	0.001**	0.001**
	(-0.25)	(-0.08)	(2.42)	(2.55)
Log (Family Age)	0.016	0.016	0.007	0.006
	(0.87)	(0.84)	(0.33)	(0.28)
Family Return	0.001	0.001	-0.016	-0.014
	(0.13)	(0.18)	(-1.23)	(-1.11)
Log (Distance)	-0.003	-0.006	-0.003	0.005
	(-0.19)	(-0.40)	(-0.13)	(0.17)
Stock Market Turnover	-0.000*	-0.000*	-0.001**	-0.001***
	(-1.80)	(-1.99)	(-2.48)	(-2.86)
Stock Market/GDP	-0.000	-0.000	-0.001***	-0.001***
	(-1.33)	(-1.26)	(-6.94)	(-6.66)
Private Bond Market/GDP	0.000	0.000	0.001*	0.001*
	(0.07)	(0.20)	(1.97)	(1.70)
Within Family Correlation	0.249***	0.255***	-0.117	-0.100
	(3.69)	(3.67)	(-1.00)	(-0.85)
Outside Family Correlation	-0.200	-0.205	0.257	0.214
	(-1.51)	(-1.53)	(1.38)	(1.13)
HHI_Dom	-0.059	-0.065	0.007	-0.045
	(-0.44)	(-0.49)	(0.03)	(-0.17)
HHI_Target	0.026	0.031	0.127*	0.176**
	(0.37)	(0.43)	(1.71)	(2.45)
HHI_Family	0.027	0.028	-0.011	-0.006
	(0.68)	(0.73)	(-0.18)	(-0.10)
Num_Index_Dom	0.001***	0.001***	0.002***	0.003***
	(2.95)	(3.19)	(4.95)	(5.29)
Constant	-0.545***	-0.519**	0.017	0.139
	(-2.80)	(-2.63)	(0.07)	(0.51)
Adj-Rsq.	0.047	0.048	0.141	0.136
Obs	2,198	2,198	2,198	2,198

Table 4: Performance of Domestic Funds Managed by Catering-Oriented Families

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics:

$$DomPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t},$$

where $DomPerf_{F,t:t+4}$ refers to the average monthly return of the existing domestic portfolios of fund family F in five years (year t to $t+4$) after its foreign expansion; in particular, the family domestic return is computed as the lagged TNA-weighted return of all its domestic mutual funds. $CateringIncentive_{F,t-1}$ refers to the two measures of catering incentives of a family, including $Fam\_Num\_UIT_{F,t-1}$ (the number of unexplored indices at the family level) and $Fam\_Rank\_UIT_{F,t-1}$ (the rank of unexplored indices at the family level). Vector M stacks all other family and domicile country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, return correlations within and outside the family, Herfindahl index in domicile country and within fund family, and the number of indices in domicile country. Raw returns are further adjusted by a Fama-French-Carhart four-domestic-factor model comprising the market, size, book-to-market, and momentum factors. Our sample includes all families that launch active funds in another country. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Out-of-sample Performance of Domestic Funds in Mutual Fund Families (in %) Regressed on Catering Incentives				
	Family Domestic Return		Family Domestic 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Fam_Num_UIT	-0.005**		-0.003*	
	(-2.02)		(-1.83)	
Fam_Rank_UIT		-0.169**		-0.104**
		(-2.52)		(-2.15)
Log (Family TNA)	0.011	0.011	0.008	0.008
	(1.30)	(1.38)	(1.13)	(1.18)
Expense Ratio	-0.121***	-0.119***	-0.089***	-0.088***
	(-3.32)	(-3.29)	(-4.60)	(-4.53)
Family Turnover	-0.000	-0.000	-0.000	-0.000
	(-0.58)	(-0.58)	(-1.17)	(-1.17)
Log (Family Age)	0.028	0.029	-0.003	-0.002
	(1.49)	(1.55)	(-0.16)	(-0.13)
Family Return	0.011	0.011	0.045***	0.045***
	(0.58)	(0.61)	(3.31)	(3.34)
Within Family Correlation	0.140	0.152	-0.002	0.006
	(0.77)	(0.84)	(-0.02)	(0.04)
Outside Family Correlation	0.569	0.525	-0.017	-0.047
	(1.51)	(1.39)	(-0.06)	(-0.16)
HHI_Dom	0.172	0.217	0.583*	0.613*
	(0.55)	(0.69)	(1.76)	(1.87)
HHI_Family	0.160**	0.164**	0.122**	0.124**
	(2.48)	(2.54)	(2.29)	(2.33)
Num_Index_Dom	0.000	0.000	0.001***	0.001***
	(0.00)	(0.02)	(3.15)	(3.36)
Constant	-0.558***	-0.484**	-0.357**	-0.315*
	(-2.76)	(-2.33)	(-2.24)	(-1.95)
Adj-Rsq.	0.507	0.508	0.110	0.110
Obs	1,016	1,016	1,012	1,012

Table 5: Robustness Checks for U.S. Mutual Fund Families

This table reports subsample results for U.S. mutual fund families. Models 1 and 2 present the results of the following annual logistic regressions with year fixed effects and their corresponding t-statistics with standard errors clustered at the family level:

$$Expansion_{F,C,t} = \alpha + \beta Num\_UIT_{C,t-1} + \gamma M_{F,C,t-1} + e_{F,C,t},$$

where all variables are defined as in Table 2. Models 3 to 8 present the results of the following regressions with year fixed effects and their corresponding robust t-statistics:

$$DomPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t},$$

where $DomPerf_{F,t:t+4}$ refers to the average monthly risk-adjusted return of the existing domestic portfolios of fund family F in five years (year t to $t+4$) after its foreign expansion. Raw returns are adjusted by a Fama-French-Carhart four-factor model (Models 3 and 4), Fama-French six-factor model (Models 5 and 6), and value-weighted benchmark return (Models 7 and 8). Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Out-of-sample Family Cross-Border Expansion and Domestic Performance (in %) Regressed on Catering Incentives								
	Family Cross-Border Expansion		Family Domestic 4-Factor-adjusted		Family Domestic 6-Factor-adjusted		Family Domestic Benchmark-adjusted	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Num_UIT	0.045***	0.346***						
	(3.47)	(8.79)						
Fam_Num_UIT			-0.005**		-0.006**		-0.007**	
			(-2.52)		(-2.23)		(-2.31)	
Fam_Rank_UIT				-0.128**		-0.156**		-0.154*
				(-2.46)		(-2.53)		(-1.93)
Log (Family TNA)	0.450***	0.388***	0.003	0.003	0.003	0.003	0.010	0.010
	(9.30)	(5.95)	(0.35)	(0.29)	(0.33)	(0.26)	(0.91)	(0.85)
Expense Ratio	0.382*	0.324	0.009	0.007	0.079*	0.077*	-0.102	-0.104
	(1.91)	(1.13)	(0.17)	(0.13)	(1.73)	(1.67)	(-1.25)	(-1.28)
Family Turnover	0.000	-0.000	-0.001**	-0.001**	-0.001	-0.001*	-0.001**	-0.001**
	(0.21)	(-0.20)	(-2.00)	(-2.02)	(-1.63)	(-1.68)	(-2.54)	(-2.52)
Log (Family Age)	0.038	0.186	0.035	0.036	0.040	0.042*	-0.011	-0.010
	(0.28)	(1.11)	(1.51)	(1.58)	(1.58)	(1.67)	(-0.47)	(-0.42)
Family Return	0.171***	0.169	0.004	0.006	0.014	0.017	0.022	0.024
	(3.11)	(1.60)	(0.14)	(0.21)	(0.52)	(0.61)	(0.67)	(0.73)
Family Flow	-0.009	-0.007						
	(-0.59)	(-0.23)						
Log (Distance)	0.648***	1.195***						
	(3.91)	(4.38)						
Stock Market Turnover	0.005***	-0.012***						
	(6.69)	(-4.39)						
Stock Market/GDP	0.001	0.002						
	(0.99)	(1.47)						
Private Bond Market/GDP	0.020***	0.023***						
	(13.81)	(5.37)						
Within Family Correlation		-1.835**	0.280	0.303	0.307	0.334	0.629**	0.660**
		(-2.35)	(1.13)	(1.22)	(1.06)	(1.18)	(2.16)	(2.24)
Outside Family Correlation		3.008	-0.733	-0.800	-0.998	-1.077*	-1.137	-1.222*
		(1.47)	(-1.23)	(-1.34)	(-1.52)	(-1.69)	(-1.59)	(-1.69)
HHI_Dom		6.303***	-0.140	-0.092	-0.303	-0.243	-0.278	-0.223
		(3.93)	(-0.43)	(-0.28)	(-1.05)	(-0.83)	(-0.83)	(-0.66)
HHI_Target		3.378***						
		(7.24)						
HHI_Family		0.077	0.029	0.029	0.010	0.010	0.120**	0.119**
		(0.20)	(0.51)	(0.52)	(0.17)	(0.18)	(2.01)	(1.99)
Num_Index_Dom		-1.094***	0.004***	0.004***	0.003**	0.003**	0.002**	0.002**
		(-3.08)	(3.89)	(3.90)	(2.51)	(2.53)	(2.05)	(2.04)
Constant	-25.548***	187.900***	-0.370*	-0.273	-0.258	-0.141	-0.029	0.090
	(-15.80)	(2.73)	(-1.72)	(-1.23)	(-1.06)	(-0.58)	(-0.10)	(0.30)
Obs	106,189	50,113	252	252	252	252	252	252

Table 6: Performance of Foreign Funds Managed by Catering-Oriented Families

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics:

$$ForPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t},$$

where $ForPerf_{F,t:t+4}$ refers to the average monthly return of the existing foreign portfolios of fund family F in five years (year t to $t+4$) after its foreign expansion; in particular, the family foreign return is computed as the lagged TNA-weighted return of all its foreign mutual funds. $CateringIncentive_{F,t-1}$ refers to the two measures of catering incentives of a family, including $Fam\_Num\_UIT_{F,t-1}$ (the number of unexplored indices at the family level) and $Fam\_Rank\_UIT_{F,t-1}$ (the rank of unexplored indices at the family level). Vector *M* stacks all other family and country control variables, including the Herfindahl index in the domicile country and within the fund family, the return correlation within and outside the family, the number of indices in the domicile country, Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), and Family Return. Raw returns are further adjusted by a Fama-French-Carhart four-international-factor model comprising the market, size, book-to-market, and momentum factors. Our sample includes all families that launch active funds in another country. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Out-of-sample Performance of Foreign Funds in Mutual Fund Families (in %) Regressed on Catering Incentives				
	Family Foreign Return		Family Foreign 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Fam_Num_UIT	-0.003**		-0.003**	
	(-2.35)		(-2.25)	
Fam_Rank_UIT		-0.094**		-0.072**
		(-2.49)		(-1.97)
Log (Family TNA)	0.013**	0.014**	0.005	0.012*
	(2.29)	(2.44)	(0.77)	(1.94)
Expense Ratio	0.056***	0.056***	-0.024	0.011
	(3.55)	(3.57)	(-1.55)	(0.71)
Family Turnover	-0.000	-0.000	-0.000	-0.000
	(-1.25)	(-1.20)	(-1.63)	(-0.30)
Log (Family Age)	0.023	0.021	0.017	0.008
	(1.63)	(1.54)	(1.18)	(0.54)
Family Return	-0.013	-0.012	0.006	0.037***
	(-1.10)	(-1.07)	(1.41)	(3.12)
Within Family Correlation	0.186*	0.191*	-0.234**	-0.244**
	(1.84)	(1.90)	(-2.16)	(-2.39)
Outside Family Correlation	0.056	0.046	0.013	0.162
	(0.32)	(0.26)	(0.10)	(1.00)
HHI_Dom	0.753***	0.759***	0.906***	0.500***
	(3.47)	(3.50)	(4.79)	(2.72)
HHI_Family	0.033	0.034	0.029	0.039
	(0.83)	(0.84)	(0.75)	(1.03)
Num_Index_Dom	0.001***	0.001***	0.001***	0.001***
	(4.70)	(4.96)	(5.72)	(5.32)
Constant	0.309*	0.332*	-0.184	-0.294
	(1.76)	(1.89)	(-1.42)	(-1.61)
Adj-Rsq.	0.677	0.677	0.165	0.166
Obs	1,525	1,525	1,522	1,522

Table 7: Investor Welfare Related to Catering-Oriented Cross-Border Expansions

Models 1 to 6 present the results of the following regressions with year fixed effects and their corresponding robust t-statistics:

$$Diversification_{f,t:t+4} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Diversification_{f,t:t+4}$ refers to the diversification proxy of fund f in five years (year t to $t+4$) after inception and $CateringIncentive_{f,t-1}$ refers to the two measures of catering incentives of the management company of fund f in launching this particular fund, including $Num\_UIT_{f,t-1}$, defined as the number of index unexplored by foreign mutual funds in the country where fund f is launched, and $Rank\_UIT_{f,t-1}$, defined as the rank of unexplored indices. Vector *M* stacks all other family and target country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside the family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in domicile country. In Models 1 and 2 (Models 3 and 4), the (lack of) diversification is proxied by the return (style-adjusted return) correlation between the newly launched fund and other funds within the same family, and in Models 5 and 6, the correlation is proxied by the return correlation between the newly launched fund and other funds outside the family but in the same domicile country. Models 7 and 8 report similar statistics of the following regressions:

$$Invwt_{f,t} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Invwt_{f,t}$ refers to the optimal investment weight of the newly launched fund f in the mean-variance efficient portfolio including all actively managed equity funds within the family, computed by maximizing the family Sharpe ratio based on monthly fund returns one year after inception. All other variables are defined as above. Models 9 and 10 report similar statistics of the following regressions:

$$Perf_{f,t:t+4} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Perf_{f,t:t+4}$ refers to the average monthly four-factor-adjusted return of fund f in five years (year t to $t+4$) after inception, computed from a Fama-French-Carhart four-factor model comprising the market, size, book-to-market, and momentum factors. All other variables are defined as above, and the analysis is similar to Table 3 while focusing on the sub-period of the 2008 and 2009 financial crisis. Our sample includes all newly launched active funds. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 7—Continued

Out-of-sample Diversification and Performance From Cross-Border Expansion (in %) Regressed on Catering Incentives										
	Return Correlation Within Family		Style-adjusted Return Correlation Within Family		Return Correlation Outside Family		New Fund Optimal Investment Weight		New Fund 4-Factor-adjusted Return in Crisis Period	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Num_UIT	0.158*		0.240***		0.067		-0.176		-0.006	
	(1.84)		(4.42)		(0.69)		(-1.56)		(-0.28)	
Rank_UIT		4.451*		5.120***		0.881		-3.626		-0.273
		(1.75)		(3.62)		(0.30)		(-1.19)		(-0.72)
Log (Family TNA)	0.016	-0.018	-1.863***	-1.900***	0.138	0.136	-1.596***	-1.567***	0.071*	0.070*
	(0.07)	(-0.09)	(-8.19)	(-8.40)	(0.49)	(0.48)	(-3.77)	(-3.68)	(2.06)	(2.08)
Expense Ratio	2.046***	1.941***	0.754	0.627	0.387	0.363	-0.285	-0.155	-0.377***	-0.381***
	(4.02)	(4.14)	(0.72)	(0.60)	(1.32)	(1.19)	(-0.26)	(-0.14)	(-4.53)	(-4.62)
Family Turnover	0.013***	0.012***	-0.000	-0.002	0.001	0.001	0.024**	0.025**	0.001	0.001
	(3.87)	(3.59)	(-0.05)	(-0.21)	(0.30)	(0.27)	(2.32)	(2.50)	(1.27)	(1.31)
Log (Family Age)	0.390	0.423	2.589***	2.613***	0.522	0.516	0.233	0.224	-0.028	-0.025
	(0.56)	(0.64)	(4.15)	(4.04)	(1.60)	(1.67)	(0.17)	(0.17)	(-0.19)	(-0.17)
Family Return	0.156	0.148	2.094***	2.074***	-0.044	-0.048	0.261	0.246	-0.065	-0.065
	(0.44)	(0.41)	(3.84)	(3.78)	(-0.22)	(-0.24)	(0.30)	(0.28)	(-1.61)	(-1.60)
Log (Distance)	-1.396***	-1.324***	-0.353	-0.453	-1.728***	-1.821***	-0.661	-0.564	0.229**	0.217**
	(-3.13)	(-3.43)	(-0.39)	(-0.46)	(-3.78)	(-4.19)	(-0.57)	(-0.50)	(2.20)	(2.10)
Stock Market Turnover	0.008	0.010	0.010*	0.015**	0.013	0.014*	0.012	0.009	-0.002*	-0.002**
	(1.22)	(1.59)	(1.79)	(2.50)	(1.53)	(1.88)	(1.11)	(0.87)	(-1.96)	(-2.34)
Stock Market/GDP	0.008	0.008*	-0.000	0.001	0.011**	0.012**	-0.002	-0.003	-0.002***	-0.002***
	(1.52)	(1.70)	(-0.06)	(0.22)	(2.20)	(2.13)	(-0.43)	(-0.49)	(-5.46)	(-6.43)
Private Bond Market/GDP	-0.000	-0.000	0.011	0.017	-0.008	-0.005	-0.005	-0.010	-0.001	-0.001
	(-0.03)	(-0.02)	(0.89)	(1.32)	(-0.51)	(-0.29)	(-0.24)	(-0.48)	(-0.42)	(-0.54)
Within Family Correlation	29.820***	29.724***	38.212***	38.067***	-0.607	-0.671	11.043**	11.584**	0.101	0.133
	(12.61)	(12.53)	(6.79)	(6.89)	(-0.18)	(-0.20)	(2.54)	(2.70)	(0.14)	(0.17)
Outside Family Correlation	-0.755	-0.757	-25.368***	-25.007***	22.022***	22.255***	3.747	2.694	-0.059	-0.163
	(-0.12)	(-0.12)	(-3.42)	(-3.51)	(10.39)	(10.14)	(0.34)	(0.25)	(-0.04)	(-0.10)
HHI_Dom	-14.441*	-13.818*	-8.393	-7.267	-6.045	-5.721	5.349	4.987	1.993	1.943
	(-2.01)	(-1.98)	(-0.86)	(-0.77)	(-1.69)	(-1.67)	(0.57)	(0.53)	(0.50)	(0.48)
HHI_Target	-1.307	-1.736	-0.494	-1.383	-1.034	-1.360	1.325	1.805	-0.229	-0.252
	(-0.88)	(-1.22)	(-0.33)	(-1.00)	(-0.55)	(-0.74)	(0.39)	(0.52)	(-0.70)	(-0.89)
HHI_Family	1.523	1.467	-0.987	-1.051	-0.588	-0.599	4.080	4.000	0.243	0.246
	(1.19)	(1.17)	(-0.41)	(-0.44)	(-0.61)	(-0.61)	(1.66)	(1.64)	(0.62)	(0.63)
Num_Index_Dom	0.011	0.010	0.010*	0.007	0.011	0.010	0.009	0.011	0.002***	0.003***
	(1.21)	(1.07)	(1.77)	(1.15)	(1.07)	(1.03)	(0.57)	(0.73)	(3.10)	(3.27)
Constant	50.611***	49.581***	18.115**	16.152**	52.106***	51.521***	28.098**	30.157***	-1.161	-0.185
	(8.53)	(8.59)	(2.53)	(2.19)	(5.31)	(5.26)	(2.69)	(2.92)	(-1.11)	(-0.19)
Adj-Rsq.	0.311	0.312	0.117	0.116	0.347	0.346	0.046	0.045	0.296	0.297
Obs	2,348	2,348	2,372	2,372	2,429	2,429	1,450	1,450	221	221

Table 8: Influence of Catering-Oriented Cross-Border Capital Flows on Stock Market Efficiency

This table presents the results of the following panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level:

$$Delay_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Delay_{i,t}$ refers to market delay of stock i in year t to the global market information ($Delay\_Global_{i,t}$) or the local market information ($Delay\_Local_{i,t}$), and $CateringForOwn_{i,t-1}$ refers to the ownership of catering-oriented active foreign funds either by all foreign funds of catering-oriented families ($CateringForOwnAll_{i,t-1}$) or by newly launched catering-oriented funds ($CateringForOwnNew_{i,t-1}$), as well as the extreme flow-motivated change in ownership of catering-oriented active foreign funds ($CateringForOwnFS_{i,t-1}$). $CateringForOwnAll_{i,t-1}$ further refers to a set of variables, i.e., $CateringForOwnAll\_Num_{i,t-1}$ and $CateringForOwnAll\_Rank_{i,t-1}$, when catering incentives of mutual fund families are proxied by $Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$, respectively. Similarly, $CateringForOwnNew_{i,t-1}$ refers to a set of variables, i.e., $CateringForOwnNew\_Num_{i,t-1}$ and $CateringForOwnNew\_Rank_{i,t-1}$, and $CateringForOwnFS_{i,t-1}$ refers to a set of variables, i.e., $CateringForOwnFS\_Num_{i,t-1}$ and $CateringForOwnFS\_Rank_{i,t-1}$. Vector M stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 8—Continued

Out-of-sample Market Efficiency Measures (in %) Regressed on Catering-Oriented Mutual Fund Ownership												
	Delay_Global						Delay_Local					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.037***						0.025***					
	(3.50)						(2.67)					
CateringForOwnNew_Num		0.040***						0.025**				
		(3.41)						(2.48)				
CateringForOwnFS_Num			0.003***						0.003***			
			(11.70)						(5.48)			
CateringForOwnAll_Rank				0.037***						0.027***		
				(3.65)						(2.99)		
CateringForOwnNew_Rank					0.043***						0.028***	
					(3.83)						(2.93)	
CateringForOwnFS_Rank						0.003***						0.002***
						(8.79)						(5.48)
Domestic IO	-0.059***	-0.059***	-0.059***	-0.059***	-0.059***	-0.059***	-0.040***	-0.040***	-0.041***	-0.040***	-0.040***	-0.041***
	(-5.60)	(-5.60)	(-5.60)	(-5.59)	(-5.60)	(-5.60)	(-3.80)	(-3.81)	(-3.81)	(-3.80)	(-3.80)	(-3.81)
Foreign IO	-0.011	-0.009	0.000	-0.011*	-0.011*	0.000	-0.005	-0.004	0.002	-0.006	-0.005	0.002
	(-1.64)	(-1.47)	(0.07)	(-1.74)	(-1.66)	(0.06)	(-0.74)	(-0.57)	(0.34)	(-0.88)	(-0.74)	(0.34)
Stock Return	-0.063***	-0.063***	-0.063***	-0.063***	-0.064***	-0.063***	-0.072***	-0.073***	-0.072***	-0.073***	-0.073***	-0.072***
	(-7.58)	(-7.59)	(-7.53)	(-7.59)	(-7.60)	(-7.53)	(-8.54)	(-8.54)	(-8.50)	(-8.54)	(-8.55)	(-8.50)
Log (Stock Size)	-1.867***	-1.866***	-1.870***	-1.867***	-1.866***	-1.870***	-2.058***	-2.057***	-2.060***	-2.058***	-2.057***	-2.060***
	(-24.75)	(-24.74)	(-24.80)	(-24.76)	(-24.73)	(-24.80)	(-27.02)	(-27.01)	(-27.05)	(-27.02)	(-27.00)	(-27.05)
Turnover	-3.431***	-3.435***	-3.440***	-3.428***	-3.429***	-3.440***	-2.943***	-2.946***	-2.950***	-2.941***	-2.943***	-2.949***
	(-15.08)	(-15.10)	(-15.11)	(-15.07)	(-15.08)	(-15.11)	(-12.48)	(-12.49)	(-12.50)	(-12.46)	(-12.47)	(-12.50)
Log (Net Income)	-0.119***	-0.119***	-0.119***	-0.119***	-0.119***	-0.119***	-0.082***	-0.082***	-0.082***	-0.082***	-0.082***	-0.082***
	(-6.39)	(-6.39)	(-6.38)	(-6.39)	(-6.40)	(-6.38)	(-4.37)	(-4.37)	(-4.36)	(-4.37)	(-4.37)	(-4.36)
Log (Sales)	0.065	0.065	0.064	0.065	0.066	0.064	0.060	0.061	0.060	0.061	0.061	0.060
	(0.75)	(0.75)	(0.73)	(0.75)	(0.75)	(0.73)	(0.69)	(0.69)	(0.69)	(0.69)	(0.70)	(0.69)
Log (Total Assets)	-0.561***	-0.563***	-0.561***	-0.561***	-0.563***	-0.561***	-0.551***	-0.552***	-0.551***	-0.551***	-0.552***	-0.551***
	(-6.06)	(-6.08)	(-6.06)	(-6.06)	(-6.08)	(-6.06)	(-5.96)	(-5.97)	(-5.96)	(-5.96)	(-5.97)	(-5.96)
Stock Market Turnover	-0.001	-0.001	-0.000	-0.001	-0.001	-0.000	0.001	0.001	0.001	0.001	0.001	0.001
	(-0.64)	(-0.64)	(-0.58)	(-0.66)	(-0.66)	(-0.58)	(0.76)	(0.76)	(0.80)	(0.75)	(0.75)	(0.80)
Stock Market/GDP	0.018***	0.018***	0.018***	0.018***	0.018***	0.018***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***
	(10.99)	(10.99)	(10.98)	(11.00)	(10.99)	(10.98)	(6.13)	(6.12)	(6.12)	(6.13)	(6.12)	(6.12)
Private Bond Market/GDP	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***	-0.028***	-0.017***	-0.017***	-0.017***	-0.017***	-0.017***	-0.017***
	(-9.68)	(-9.67)	(-9.67)	(-9.68)	(-9.67)	(-9.67)	(-5.60)	(-5.60)	(-5.59)	(-5.60)	(-5.59)	(-5.59)
Constant	36.268***	36.288***	36.266***	36.271***	36.291***	36.266***	36.385***	36.397***	36.384***	36.387***	36.400***	36.384***
	(48.95)	(48.98)	(48.95)	(48.95)	(48.98)	(48.95)	(48.23)	(48.25)	(48.23)	(48.24)	(48.25)	(48.23)
Adj-Rsq.	0.069	0.069	0.069	0.069	0.069	0.069	0.067	0.067	0.067	0.067	0.067	0.067
Obs	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283

Table 9: Influence of Catering-Oriented Cross-Border Capital Flows on Liquidity and Stock Market Integration

Panel A presents the results of the following panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level:

$$Illiq_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Illiq_{i,t}$ refers to the illiquidity proxies of stock i in year t, including the logarithm of Amihud (2002) illiquidity and proportion of zero returns, as well as the proxy for liquidity co-movement. $CateringForOwn_{i,t-1}$ is the ownership of catering-oriented active foreign funds either by all foreign funds of catering-oriented families ($CateringForOwnAll_{i,t-1}$) or by newly launched catering-oriented funds ($CateringForOwnNew_{i,t-1}$), as defined in Table 8. Vector *M* stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Panel B reports similar statistics of the following panel regressions:

$$Integration_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Integration_{i,t}$ refers to the market integration proxies (|*Intercept_8Fac*| and *Co-movement_8Fac*) of stock i in year t. The integration is defined with respect to four Fama-French-Carhart domestic factors (market, size, book-to-market, and momentum) and four foreign factors (value-weighted four factors excluding the domestic country). All other variables are defined as above. Only the main variables are tabulated for brevity. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 9—Continued

Panel A: Out-of-sample Stock Illiquidity Measures Regressed on Catering-Oriented Mutual Fund Ownership												
	Log (Amihud)				%Zero				Liquidity Co-movement			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.002**				0.063***				0.001***			
	(2.16)				(5.54)				(3.69)			
CateringForOwnNew_Num		0.003***				0.070***				0.001***		
		(2.73)				(5.88)				(4.01)		
CateringForOwnAll_Rank			0.002**				0.067***				0.001***	
			(2.28)				(5.91)				(3.44)	
CateringForOwnNew_Rank				0.003***				0.074***				0.001***
				(2.98)				(6.34)				(4.04)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.527	0.527	0.527	0.527	0.079	0.079	0.079	0.080	0.052	0.052	0.052	0.052
Obs	183,210	183,210	183,210	183,210	190,913	190,913	190,913	190,913	174,691	174,691	174,691	174,691

Panel B: Out-of-sample Market Integration Measures (International 8-Factor, in %) Regressed on Catering-Oriented Mutual Fund Ownership								
	|Intercept_8Fac|				Co-movement_8Fac			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
CateringForOwnAll_Num	-0.006				-0.011			
	(-0.34)				(-0.93)			
CateringForOwnNew_Num		-0.004				-0.016		
		(-0.19)				(-1.40)		
CateringForOwnAll_Rank			-0.002				-0.017	
			(-0.14)				(-1.48)	
CateringForOwnNew_Rank				0.001				-0.020*
				(0.03)				(-1.79)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.178	0.178	0.178	0.178	0.214	0.214	0.214	0.214
Obs	190,913	190,913	190,913	190,913	190,909	190,909	190,909	190,909

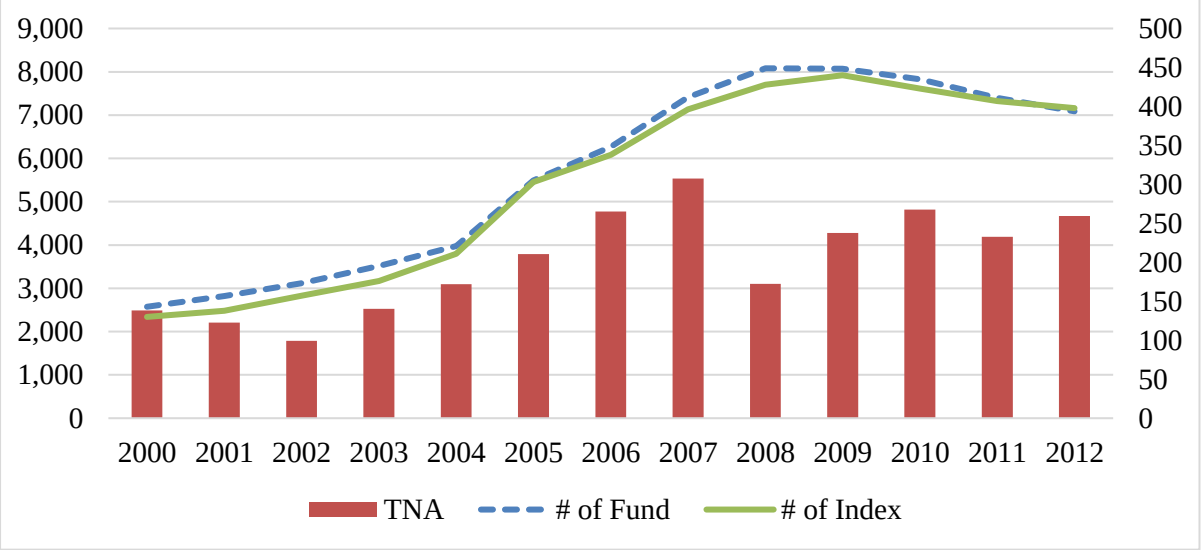
Table 10: Flow-Performance Sensitivity and Outside Investment Opportunity

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics: $Flow_{f,t} = \alpha + \beta_1 Num\_UIT_{f,t-1} + \beta_2 Perf_{f,t-1} + \beta_3 Perf_{f,t-1} \times MktShr_{f,t-1} + \beta_4 MktShr_{f,t-1} + \gamma M_{f,t-1} + e_{f,t}$, where $Flow_{f,t}$ refers to the average monthly flow of fund f in year t, $Num\_UIT_{f,t-1}$ refers to the number of unexplored indices in the country where fund f invests, and it is further replaced by $Rank\_UIT_{f,t-1}$, defined as the rank of unexplored indices. $Perf_{f,t-1}$ refers to the average monthly benchmark-adjusted return. $MktShr_{f,t-1}$ refers to a list of market share proxies, including %Target_Num, computed as the number of funds with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country; %Target_ActNum, computed as the number of active mutual funds with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country; and %Target_PasNum, computed as the number of passive funds (i.e., index funds and ETFs) with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country. Vector *M* stacks all other fund, family and target country control variables, including lagged Fund Flow, Log(Fund TNA), Fund Expense Ratio, Fund Turnover, Log(Fund Age), Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside the family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in the domicile country. Only the main variables are tabulated for brevity. Appendix A provides detailed definitions for each variable. Numbers with "*," "**," and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Out-of-sample Fund Flow (in %) Regressed on Performance and Market Share						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
BMK-adj Return	0.215***	0.215***	0.011	0.058	0.176***	0.035
	(3.82)	(3.81)	(0.10)	(0.55)	(2.65)	(0.32)
Num_UIT	0.039***					
	(2.72)					
Rank_UIT		0.991**				
		(2.35)				
BMK-adj Return × %Target_Num			0.563**			
			(2.29)			
BMK-adj Return × %Target_ActNum				0.492**		0.458*
				(1.99)		(1.87)
BMK-adj Return × %Target_PasNum					0.703	0.603
					(1.35)	(1.18)
%Target_Num			0.612**			
			(2.27)			
%Target_ActNum				0.611**		0.627**
				(2.23)		(2.33)
%Target_PasNum					-0.142	-0.272
					(-0.29)	(-0.58)
Controls	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.160	0.159	0.160	0.160	0.158	0.160
Obs	6,016	6,016	6,016	6,016	6,016	6,016

Figure 1: Number of Stock Market Indices and Size of the Global Mutual Fund Industry

This figure plots the number of stock market indices explored by the global mutual fund industry as well as the total net assets (TNA, indicated by the left axis in billions USD) and number of mutual funds from 2000 to 2012. The numbers of mutual funds and stock market indices are indicated by the right axis.



Internet Appendix

Catering through Globalization: Cross-border Expansion and Misallocation in the Global Mutual Fund Industry

In this Internet Appendix, we provide four sets of robustness tests of the main results. First, we perform portfolio-based analyses to gauge the economic impact of catering incentives. Second, we conduct robustness tests regarding the market influence of cross-border capital flows from three dimensions: informational efficiency, liquidity, and market integration. We adopt placebo tests to confirm our main results and exclude the closet indexers in our analyses. Next, we confirm our main findings on mutual fund managerial skills in the full sample and in a sub-sample excluding the closet indexers, and we employ alternative performance and catering incentive measures. Finally, we present full specification results when regression coefficients on control variables are not reported in the main tables.

Table IA1 tabulate the summary statistics for the full sample, and the distribution is largely similar to that of active funds. Next, we perform a portfolio-based analysis to further gauge the economic impact of catering incentives. We proceed as follows. At the beginning of each year, mutual fund families are sorted into terciles within the domicile country according to their lagged catering incentives, proxied by the number and the rank of unexplored index at the family level ($Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$). We then construct portfolios going long (short) the Low (High) catering incentive families and calculate their holding period (year t) monthly returns. The mutual fund family returns are measured by (one-month lagged) TNA-weighted average return of all domestic funds within the same family. The returns are first averaged across fund families within the same domicile country and then averaged across countries. Next, we calculate performance of these portfolios by using either a one-factor model (international market factor) or a Fama-French-Carhart four-international-factor model comprising the market, size, book-to-market, and momentum factors. The "Low-minus-High" rows report the difference in profits between low and high catering incentive portfolios. We adjust the errors using a Newey-West adjustment. We report the results in Table IA2 Panel A. We find that in line with the previous findings in Table 4, the families with high catering incentives underperform those with low catering incentives in their existing domestic funds by 2.8% (2.78%) per year in FFC four-factor alpha when catering incentives are proxied by the number (rank) of unexplored indices.

Table IA2 Panel B presents similar portfolio-based results when we focus on foreign funds within the family. In particular, we construct portfolios going long (short) the Low (High) catering incentive

families and calculate their holding period monthly returns. Mutual fund family returns are measured by (one-month lagged) TNA-weighted average return of all foreign funds within the same family. We can see that families with high catering incentive underperform those with low catering incentive in their existing foreign funds by 2.09% to 2.57% per year (in FFC four-factor alpha). Overall, we find that higher catering incentives are related to low performance for all the categories of funds that a family offers, and catering-oriented families are of low skills to explore the investing opportunities in their own domestic market as well as in the foreign markets. The development and prevailing of catering funds, in this regard, imply a misallocation between capital and managerial skills during the process of financial globalization.

We move on to examine the relation between informational efficiency and the ownership of actively managed foreign funds offered by catering-oriented and non-catering-oriented fund families. Unlike in Table 8, we further include the ownership of non-catering-oriented active foreign funds as a placebo test. Empirically, mutual fund families are sorted into terciles within the domicile country, according to their lagged catering incentives, proxied by the number and the rank of unexplored indices at the family level (*Fam_Num_UIT* and *Fam_Rank_UIT*). Those in the top (bottom) tercile are defined as catering-oriented (non-catering-oriented) families. We then aggregate the ownership of non-catering-oriented active foreign funds either by all foreign funds of non-catering-oriented families (*Non-CateringForOwnAll*) or by newly launched non-catering-oriented funds (*Non-CateringForOwnNew*). We also include the extreme flow-motivated change in ownership of non-catering-oriented active foreign funds (*Non-CateringForOwnFS*). *Non-CateringForOwnAll* (*Non-CateringForOwnNew*, *Non-CateringForOwnFS*) further refers to a set of variables, i.e., *Non-CateringForOwnAll_Num* and *Non-CateringForOwnAll_Rank* (*Non-CateringForOwnNew_Num* and *Non-CateringForOwnNew_Rank*, *Non-CateringForOwnFS_Num* and *Non-CateringForOwnFS_Rank*) when catering incentive is proxied by *Fam_Num_UIT* and *Fam_Rank_UIT*, respectively. The results are reported in Table IA3, and only the main variables are tabulated for brevity. In Panel A, the informational efficiency is proxied by price delay to global and local market information, following Bae, Ozoguz, Tan, and Wirjanto (2012), as defined in Table 8 and Appendix A. In Panel B, we consider alternative measures of market efficiency. We first compute the *Variance Ratio* for stock i in year t as follows:

$$VR_{i,t} = \left| \frac{VAR5_{i,t}}{5 \times VAR1_{i,t}} - 1 \right|, \quad \text{(A1)}$$

where $VAR5_{i,t}$ and $VAR1_{i,t}$ refer to the variance of five-week and one-week accumulated returns of stock i in year t, following Griffin, Kelly, and Nardari (2010).

The second proxy – *Market Delay* – for stock i in year t is defined as follows:

$$Delay_{i,t} = 1 - \frac{R^2_{restricted,i,t}}{R^2_{unrestricted,i,t}}, \quad \text{(A2)}$$

where $R^2_{restricted,i,t}$ and $R^2_{unrestricted,i,t}$ refer to the adjusted R-square from restricted and unrestricted market models estimated using weekly returns in each year t. The restricted model (RM) and unrestricted model (UM) are defined, respectively, as follows:

$$RM: R_{i,w,t} = \alpha_i + \beta_{0,i} R_{mkt,w,t} + e_{i,w,t}, \quad \text{(A3)}$$

$$UM: R_{i,w,t} = \alpha_i + \sum_{k=0}^{4} \beta_{i,k,t} R_{mkt,w-k,t} + e_{i,w,t}, \quad \text{(A4)}$$

where $R_{i,w,t}$ refers to the accumulated return of stock i in week w of year t, and $R_{mkt,w,t}$ refers to the value-weighted market return in the same week, following Mech (1993), Hou and Moskowitz (2005), and Griffin, Kelly, and Nardari (2010).

In line with the findings in Table 8, the results in Panel A suggest that the capital flows associated with catering-oriented cross-border expansions do not improve the price discovery in terms of incorporating both global and local market news. For instance, a one-standard-deviation increase in the ownership of catering-oriented foreign funds identified based on the number (rank) of unexplored indices is related to 1.33% (1.35%) greater price delay (i.e., the influence of additional price delay scaled by the standard deviation of price delay) to the global market information and 0.96% (0.99%) greater price delay to the local market information. However, the cross-border expansions from skilled (least-catering-oriented or non-catering-oriented) foreign funds indeed improve the overall market efficiency in the target country by reducing the price delay to both global and local market information. A one-standard-deviation increase in the ownership of non-catering-oriented foreign funds identified based on the number (rank) of unexplored indices is related to 0.84% (0.68%) less price delay to the global market information and 0.91% (0.61%) less price delay to the local market information. The results are robust to alternative measures of ownership when focusing only on newly launched funds.

To further alleviate potential concerns of endogeneity, we investigate the exogenous change in foreign ownership using flow-induced mutual fund transactions, i.e., fire sales and fire purchases (Coval and Stafford (2007)). Since mutual funds usually do not maintain significant cash balances given the equity benchmarks they track and rarely take short positions, when outside investors withdraw their capital and mutual funds experience extreme outflows, mutual fund managers are forced to sell some of existing holdings to cover redemptions. Therefore, the extreme flow-motivated ownership change is driven by idiosyncratic fund-level liquidity shocks instead of certain stock characteristics. As a result, fire sales experienced by individual funds introduce plausibly exogenous shocks into their ownership (e.g., Coval and Stafford, 2007; Jotikasthira, Lundblad, and Ramadorai, 2012), which are unlikely to be directly related to the price efficiency of the fund investing country except through the investment behavior of these funds. The empirical evidence suggest that exogenous exit of catering-oriented foreign funds reduces the price delay to both global and local market information and improves the overall market efficiency in the target country. On the other hand, fire sale flows of least catering-oriented funds are no longer beneficial – they become largely statistically insignificant. Intuitively, such trades are not information-driven and even funds with the proper incentives may not benefit the investing country when these funds are themselves in trouble. The results are also robust to alternative measures of market efficiency in Panel B. Hence, the harmful impact really comes from catering-oriented and low-skilled foreign expansions.

Since the emerging markets have a generally more opaque information environment and are less efficient than developed markets, catering-oriented overseas expansions can be more detrimental to emerging markets. To formally test this notion, we apply the analyses in Panel A to a sub-sample of emerging markets and report the findings in Panel C. The classification of emerging markets follows Griffin, Kelly, and Nardari (2010). The results suggest that the catering incentives contribute to the price delay in emerging markets only, and a one-standard-deviation increase in ownership of catering-oriented foreign funds (none-catering funds) is associated with 3.63% greater (2.37% less) price delay with respect to global market information and with 2.82% greater (2.07% less) price delay with respect to local market information. Therefore, catering-oriented foreign capital flows could reduce price efficiency by approximately 4.9% to 6% than non-catering-oriented foreign capital flows.

Next, we relate catering incentives to stock liquidity and commonality in liquidity. The tests closely follow Table 9, while we further employ the ownership of non-catering-oriented active foreign funds as a placebo test. Controlling for the ownership of non-catering-oriented active foreign funds, Table IA4 Panel A provides supporting evidence that catering-oriented foreign capital flows do not improve liquidity but increase the commonality in liquidity. In contrast, skilled (least-catering-oriented) foreign funds display a similar pattern and fail to provide liquidity in the target country. Similarly, we assess whether catering incentives affect market integration. The results in Table IA4 Panel B suggest that catering-oriented foreign ownership in general is uncorrelated with integration with respect to the overall international market factors.

As an additional robustness check, we show that the market influence of cross-border capital flows on informational efficiency, liquidity, and market integration still holds when we exclude closet indexers. The results are reported in Table IA5. Panel A confirms that price delay to both global and local market information is enhanced after catering-oriented cross-border expansions. In particular, a one-standard-deviation increase in ownership of catering-oriented foreign funds identified based on the number (rank) of unexplored indices is related to 1.28% (1.19%) greater price delay (i.e., the influence of additional price delay scaled by the standard deviation of price delay) to the global market information and 0.92% (0.89%) greater price delay to the local market information. In terms of liquidity conditions, the findings in Panel B suggest that catering-oriented foreign capital flows do not improve the stock liquidity in the target country but lead to higher commonality in liquidity. A one-standard-deviation increase in the ownership of catering-oriented foreign funds identified based on the number (rank) of unexplored indices is associated with an increase in Amihud *illiquidity* by 0.41% (0.4%), the proportion of zero return days by 1.32% (1.31%), and commonality in liquidity with respect to the local market by 0.97% (0.96%, all scaled by the standard deviation of illiquidity or liquidity commonality measures). In addition, the results for market integration are tabulated in Panel C. We find confirming evidence that catering-oriented foreign ownership is not related to integration with respect to the overall international market factors.

We also provide additional analysis to confirm our main findings on mutual fund managerial skills. Table IA6 investigates the subsequent performance of newly launched funds after cross-border

expansion. Panel A includes all (both active and passive) fund expansions and suggests that new funds launched for catering purposes perform poorly in the subsequent five years after inception. In particular, a one-standard-deviation increase in the number (rank) of unexplored indices reduces annual returns and risk-adjusted performance by 0.31% and 1.33% (0.34% and 0.92%) in the overall sample. Moreover, Cremers, Ferreira, Matos, and Starks (2016) document that some active funds are largely passively managed, and these closet indexers manage approximately 20% of the worldwide mutual fund assets. In Panel B, we further exclude the closet indexers, defined as funds with an active share below 60% (following Cremers and Petajisto (2009) and Cremers, Ferreira, Matos, and Starks (2016)). The results show a similar statistical and economic impact.

Panels C and D of Table IA6 examine alternative performance measures. Panel C constructs *New Fund 8-Factor-adjusted Return*, computed from an 8-factor model, including four Fama-French-Carhart (FFC) factors (market, size, book-to-market, and momentum) measured in the target country where the new fund is launched, as well as four foreign factors, that is, the value weighted average of the four factors in all other countries. Our main results are robust to this alternative performance measure for both the active funds sample and the full sample. While thus far we have focused on the net return delivered to mutual fund investors after all fees and expenses, Panel D employs gross-of-fee performance of newly launched active funds. Gross-of-fee fund return is computed as the fund total return plus one-twelfth of the annualized expense ratio, and gross-of-fee fund returns are further adjusted by a Fama-French-Carhart four-factor model. The results confirm that the fund performance is significantly worse after catering-oriented cross-border expansions, even on a gross-of-fee basis. A one-standard-deviation increase in the number (rank) of unexplored indices reduces annual returns and risk-adjusted gross-of-fee performance by 0.31% and 1.43% (0.26% and 0.87%). Overall, our findings imply that the cross-border expansion of mutual fund families due to catering incentives is associated with lower performance.

Next, we investigate whether catering-oriented overseas expansions are related to the managerial skills of the mutual fund families, proxied by the family performance in both the domestic and the foreign market. We first re-estimate the same specifications as Equation (6), and the results are reported in Table IA7. Panel A includes all families with overseas expansion, with Models (1) to (4) focusing

on domestic performance and Models (5) to (10) focusing on foreign performance. Foreign performance is adjusted by an international Fama-French-Carhart four-factor model and an 8-factor model consisting of four domestic factors and four foreign factors, which are the value weighted average of four domestic factors in all other countries. A one-standard-deviation increase in the number (rank) of unexplored indices reduces returns and FFC four-factor-adjusted performance by 0.43% and 0.35% (0.48% and 0.34%) per year in the domestic market and by 0.26% and 0.26% (0.27% and 0.2%) per year in the foreign market. To better understand the economic magnitude, we also perform a portfolio-based analysis. Unreported results show that the families with high catering incentives underperform those with low catering incentives by 2.78% (2.77%) per year in FFC four-factor alpha in the domestic market and by 2.81% (3.11%) in the foreign market when catering incentive is proxied by the number (rank) of unexplored indices. Panel B reports similar statistics in a sub-sample excluding closet indexers and confirms the negative relationship between mutual fund catering incentives and its performance. For instance, a one-standard-deviation increase in the rank of unexplored indices reduces returns (FFC four-factor alpha) by 0.29% (0.19%) per year in the domestic market and by 0.19% (0.13%) per year in the foreign market. In addition, Panel C constructs gross-of-fee family performance for all families that launch active funds in another country. Gross-of-fee family domestic (foreign) return is computed as the lagged TNA-weighted gross-of-fee return of all its domestic (foreign) mutual funds. Gross-of-fee family returns are further adjusted by a Fama-French-Carhart four-factor model and an 8-factor model. A one-standard-deviation increase in the rank of unexplored indices reduces gross-of-fee FFC four-factor alpha by 0.22% per year in the domestic market and by 0.15% per year in the foreign market. To conclude, we provide evidence that catering-oriented mutual fund families appear to be low-skilled and underperform in both the domestic and foreign markets. The results are robust to alternative samples and performance measures.

Another potential concern is that some funds are regionally or globally distributed and may be sold to investors outside the domicile country of the fund family. As a robustness check, we use fund sales country as opposed to domicile country in empirical analyses. In particular, a foreign fund to an index is defined as a fund whose sales country or countries (obtained from Morningstar 'Region of Sale' and 'Country Registered for Sale') are all different from that of the index. Next, we construct proxies for

catering incentive similar to *Fam_Num_UIT* and *Fam_Rank_UIT* using this alternative definition of foreign fund, and label them as *Fam_Num_UIT_Sales* and *Fam_Rank_UIT_Sales*, respectively. We report the results in Table IA7 Panel D, and our findings confirm that both domestic and foreign funds offered by catering-oriented families underperform. A one-standard-deviation increase in the rank of unexplored indices reduces FFC four-factor alpha by 0.22% per year in the domestic market and by 0.18% per year in the foreign market.

Finally, we present full specification results when regression coefficients on control variables are not reported in Table 9 and Table 10.

In conclusion, our findings are robust to the alternative definition of active funds, i.e., based on 60% active share breakpoint, following Cremers and Petajisto (2009) and Cremers, Ferreira, Matos, and Starks (2016). Low-skilled fund companies are likely to adopt catering-oriented overseas expansions to differentiate their products and attract global style-investors to invest in their new funds, and such expansions are associated with low performance for all categories of funds that a family offers. In addition, catering-oriented cross-border capital flows reduce both price efficiency and liquidity conditions.

Table IA1: Summary Statistics

This table presents the summary statistics for the data used in the paper, including the mean, median, standard deviation, and the quantile distribution of number and rank of unexplored index at the country level as well as family level, monthly fund and family return, and other annual family and country characteristics. The sample consists of all mutual fund families with foreign expansion of all equity mutual funds over the period 2001−2012. Appendix A provides detailed definitions of each variable.

Quantile Distribution of Family and Country Characteristics (All Funds)							
	Mean	Std.Dev.	Quantile Distribution				
			10%	25%	Median	75%	90%
Num_UIT	8.649	8.521	0	0	6	16	21
Rank_UIT	0.746	0.289	0.310	0.400	0.905	1.000	1.000
Fam_Num_UIT	9.791	7.242	0.000	3.000	10.333	16.000	19.000
Fam_Rank_UIT	0.754	0.242	0.357	0.574	0.807	1.000	1.000
New Fund Return	0.432	0.744	-0.399	-0.037	0.347	0.864	1.449
New Fund 4-Factor-adjusted Return	0.029	0.588	-0.599	-0.283	-0.020	0.297	0.723
New Fund 8-Factor-adjusted Return	0.064	2.054	-0.600	-0.276	-0.025	0.298	0.705
New Fund Correlation Within Family	79.071	13.912	62.197	73.451	82.116	88.138	92.956
New Fund Correlation Outside Family	70.322	12.228	56.165	64.615	73.060	78.677	82.132
Family Domestic Return	0.548	1.093	-0.280	0.086	0.452	1.029	1.492
Family Domestic 4-Factor-adjusted Return	-0.103	0.471	-0.614	-0.318	-0.075	0.160	0.355
Family Foreign Return	0.533	0.898	-0.257	0.025	0.431	1.014	1.585
Family Foreign 4-Factor-adjusted Return	-0.163	0.523	-0.643	-0.373	-0.162	0.052	0.322
Family Foreign 8-Factor-adjusted Return	0.074	0.512	-0.418	-0.172	0.044	0.295	0.570
Log (Family TNA)	21.032	2.442	17.677	19.466	21.292	22.881	23.929
Expense Ratio	1.028	0.621	0.115	0.549	1.111	1.431	1.763
Family Turnover	56.879	69.505	2.054	10.426	40.557	76.191	128.808
Log (Family Age)	4.546	0.799	3.526	4.205	4.679	5.049	5.402
Family Return	0.587	2.076	-2.171	-0.364	0.927	1.812	2.722
Family Flow	-0.732	8.041	-3.225	-1.118	-0.061	1.171	2.922
Log (Distance)	1.573	0.823	0.302	0.595	1.960	2.274	2.363
Stock Market Turnover	142.016	75.098	63.573	89.112	126.544	182.806	216.458
Stock Market/GDP	126.822	80.576	54.132	79.964	123.923	140.179	172.532
Private Bond Market/GDP	147.287	45.910	87.902	114.819	161.649	184.291	197.678
Within Family Correlation	0.693	0.174	0.479	0.604	0.703	0.825	0.899
Outside Family Correlation	0.576	0.143	0.406	0.511	0.595	0.656	0.742
HHI_Dom	0.085	0.112	0.008	0.016	0.038	0.119	0.209
HHI_Target	0.104	0.203	0.004	0.005	0.008	0.079	0.316
HHI_Family	0.600	0.283	0.192	0.376	0.598	0.832	1.000
Num_Index_Dom	48.101	54.795	2	6	23	64	157

Table IA2: Performance of Portfolios of Domestic Funds Sorted by Catering Incentives

At the beginning of each year, mutual fund families are sorted into terciles according to their lagged catering incentives, proxied by the number and the rank of unexplored indices at the family level ($Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$). Panel A reports the holding period (year t) monthly returns to the strategy of going long (short) for Low (High) catering incentive families, and the returns are measured by the returns of domestic funds in mutual fund families. The returns are first averaged across fund families within the same domicile country and then averaged across countries. Raw returns are further adjusted by CAPM (the international market factor) or a Fama-French-Carhart four-international-factor model comprising the market, size, book-to-market, and momentum factors. The "Low-minus-High" rows report the difference in profits between Low and High catering incentive portfolios. Newey-West adjusted t-statistics are shown in parentheses. Panel B reports similar statistics while the returns are measured by returns of foreign funds in mutual fund families. Our sample includes all families that launch active funds in another country. Appendix A provides detailed definitions for each variable. Numbers with "*", "**" and "***" are significant at the 10%, 5% and 1% levels, respectively.

Panel A: Domestic Portfolio Returns (in %) to Investment Strategies Sorted by Catering Incentives

Rank of Catering Incentive	Sorted by Fam_Num_UIT			Sorted by Fam_Rank_UIT		
	Return	CAPM	FFC	Return	CAPM	FFC
Low	0.600	0.221**	0.175	0.598	0.220**	0.187
	(1.14)	(2.09)	(1.56)	(1.15)	(2.14)	(1.65)
Med	0.577	0.203	0.073	0.572	0.194	0.076
	(1.09)	(1.59)	(0.54)	(1.06)	(1.56)	(0.57)
High	0.413	0.031	-0.058	0.426	0.052	-0.045
	(0.75)	(0.25)	(-0.42)	(0.79)	(0.41)	(-0.33)
Low-minus-High	0.187**	0.190**	0.233**	0.171*	0.168*	0.232**
	(2.04)	(2.06)	(2.42)	(1.84)	(1.73)	(2.29)

Panel B: Foreign Portfolio Returns (in %) to Investment Strategies Sorted by Catering Incentives

Rank of Catering Incentive	Sorted by Fam_Num_UIT			Sorted by Fam_Rank_UIT		
	Return	CAPM	FFC	Return	CAPM	FFC
Low	0.465	0.089	0.010	0.432	0.057	-0.017
	(0.89)	(0.83)	(0.09)	(0.84)	(0.55)	(-0.15)
Med	0.342	-0.031	-0.070	0.434	0.059	0.008
	(0.67)	(-0.30)	(-0.60)	(0.83)	(0.56)	(0.07)
High	0.308	-0.060	-0.164	0.246	-0.118	-0.231**
	(0.60)	(-0.54)	(-1.38)	(0.49)	(-1.09)	(-2.01)
Low-minus-High	0.157*	0.149	0.174*	0.186**	0.175**	0.214**
	(1.83)	(1.65)	(1.98)	(2.28)	(2.04)	(2.48)

Table IA3: Influence of Catering-Oriented Cross-Border Capital Flows on Stock Market Efficiency

Panel A presents the results of the following Panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level,

$$Delay_{i,t} = \alpha + \beta_1 CateringForOwn_{i,t-1} + \beta_2 NonCateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Delay_{i,t}$ refers to market delay of stock i in year t to the global market information ($Delay\_Global_{i,t}$) or the local market information ($Delay\_Local_{i,t}$), $CateringForOwn_{i,t-1}$ and $NonCateringForOwn_{i,t-1}$ refer to the ownership of catering-oriented and non-catering-oriented active foreign funds either by all foreign funds ($CateringForOwnAll_{i,t-1}$ and $NonCateringForOwnAll_{i,t-1}$) or by newly launched funds ($CateringForOwnNew_{i,t-1}$ and $NonCateringForOwnNew_{i,t-1}$), as well as the extreme flow-motivated change in ownership of catering-oriented and non-catering-oriented active foreign funds ($CateringForOwnFS_{i,t-1}$ and $NonCateringForOwnFS_{i,t-1}$). Mutual fund families are sorted into terciles within the domicile country according to their lagged catering incentives, proxied by the number and the rank of unexplored index at the family level ($Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$). Those in the top (bottom) tercile are defined as catering-oriented (non-catering-oriented) families. $CateringForOwnAll_{i,t-1}$ ($CateringForOwnNew_{i,t-1}$, $CateringForOwnFS_{i,t-1}$) further refers to a set of variables, i.e., $CateringForOwnAll\_Num_{i,t-1}$ and $CateringForOwnAll\_Rank_{i,t-1}$ ($CateringForOwnNew\_Num_{i,t-1}$ and $CateringForOwnNew\_Rank_{i,t-1}$, $CateringForOwnFS\_Num_{i,t-1}$ and $CateringForOwnFS\_Rank_{i,t-1}$) when catering incentives of mutual fund families are proxied by $Fam\_Num\_UIT_{F,t-1}$ and $Fam\_Rank\_UIT_{F,t-1}$, respectively. Similar definitions also apply to $NonCateringForOwnAll_{i,t-1}$, $NonCateringForOwnNew_{i,t-1}$, and $NonCateringForOwnFS_{i,t-1}$. Vector *M* stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Panel B reports similar statistics when dependent variables are replaced with *Variance Ratio* and *Market Delay*. Panel C reports similar statistics as in Panel A for sub-samples of emerging markets. Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table IA3—Continued

Panel A: Out-of-sample Market Efficiency Measures (in %) Regressed on Catering-Oriented Mutual Fund Ownership												
	Delay_Global						Delay_Local					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.045***						0.033***					
	(4.01)						(3.28)					
Non-CateringForOwnAll_Num	-0.028***						-0.031***					
	(-2.95)						(-2.89)					
CateringForOwnNew_Num		0.047***						0.033***				
		(3.97)						(3.14)				
Non-CateringForOwnNew_Num		-0.033***						-0.036***				
		(-3.65)						(-3.63)				
CateringForOwnFS_Num			0.003***						0.003***			
			(11.71)						(5.48)			
Non-CateringForOwnFS_Num			-0.036						-0.023			
			(-0.90)						(-0.63)			
CateringForOwnAll_Rank				0.044***						0.033***		
				(3.99)						(3.24)		
Non-CateringForOwnAll_Rank				-0.023**						-0.021*		
				(-2.25)						(-1.94)		
CateringForOwnNew_Rank					0.050***						0.035***	
					(4.35)						(3.31)	
Non-CateringForOwnNew_Rank					-0.029***						-0.026**	
					(-2.85)						(-2.41)	
CateringForOwnFS_Rank						0.003***						0.002***
						(8.82)						(5.49)
Non-CateringForOwnFS_Rank						-0.079						-0.063
						(-1.54)						(-1.24)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.069	0.069	0.069	0.069	0.069	0.069	0.067	0.067	0.067	0.067	0.067	0.067
Obs	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283

Table IA3—Continued

Panel B: Out-of-sample Market Efficiency Measures (in %) Regressed on Catering-Oriented Mutual Fund Ownership												
	Variance Ratio						Market Delay					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.046**						0.049***					
	(2.37)						(3.48)					
Non-CateringForOwnAll_Num	-0.054***						-0.039***					
	(-2.75)						(-2.62)					
CateringForOwnNew_Num		0.052**						0.048***				
		(2.47)						(3.33)				
Non-CateringForOwnNew_Num		-0.074***						-0.057***				
		(-4.01)						(-3.89)				
CateringForOwnFS_Num			0.013***						0.001*			
			(53.52)						(1.84)			
Non-CateringForOwnFS_Num			0.003						-0.087*			
			(0.05)						(-1.69)			
CateringForOwnAll_Rank				0.046**						0.045***		
				(2.38)						(3.19)		
Non-CateringForOwnAll_Rank				-0.053***						-0.025*		
				(-2.68)						(-1.69)		
CateringForOwnNew_Rank					0.052**						0.052***	
					(2.54)						(3.64)	
Non-CateringForOwnNew_Rank					-0.077***						-0.046***	
					(-3.91)						(-3.15)	
CateringForOwnFS_Rank						0.013***						0.002*
						(51.58)						(1.66)
Non-CateringForOwnFS_Rank						-0.077						-0.157***
						(-0.96)						(-2.83)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.017	0.017	0.017	0.017	0.017	0.017	0.100	0.100	0.100	0.100	0.100	0.100
Obs	196,287	196,287	196,287	196,287	196,287	196,287	196,287	196,287	196,287	196,287	196,287	196,287

Table IA3—Continued

Panel C: Out-of-sample Market Efficiency Measures (in %) Regressed on Catering-Oriented Mutual Fund Ownership (Emerging Markets)												
	Delay_Global						Delay_Local					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.044***						0.035***					
	(3.92)						(3.33)					
Non-CateringForOwnAll_Num	-0.029***						-0.026**					
	(-3.12)						(-2.36)					
CateringForOwnNew_Num		0.047***						0.037***				
		(4.04)						(3.47)				
Non-CateringForOwnNew_Num		-0.030***						-0.029***				
		(-3.70)						(-2.91)				
CateringForOwnFS_Num			0.003***						0.003***			
			(13.40)						(6.84)			
Non-CateringForOwnFS_Num			-0.035						-0.018			
			(-1.08)						(-0.58)			
CateringForOwnAll_Rank				0.046***						0.034***		
				(4.15)						(3.17)		
Non-CateringForOwnAll_Rank				-0.029***						-0.018		
				(-2.88)						(-1.62)		
CateringForOwnNew_Rank					0.052***						0.036***	
					(4.56)						(3.47)	
Non-CateringForOwnNew_Rank					-0.030***						-0.019*	
					(-3.21)						(-1.83)	
CateringForOwnFS_Rank						0.003***						0.003***
						(13.40)						(6.85)
Non-CateringForOwnFS_Rank						-0.069						-0.048
						(-1.58)						(-1.07)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj-Rsq.	0.046	0.047	0.046	0.046	0.047	0.046	0.057	0.057	0.056	0.056	0.057	0.056
Obs	33,180	33,180	33,180	33,180	33,180	33,180	33,180	33,180	33,180	33,180	33,180	33,180

Table IA4: Influence of Catering-Oriented Cross-Border Capital Flows on Liquidity and Stock Market Integration

Panel A presents the results of the following Panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level,

$$Illiq_{i,t} = \alpha + \beta_1 CateringForOwn_{i,t-1} + \beta_2 NonCateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Illiq_{i,t}$ refers to the illiquidity proxies of stock i in year t, including the logarithm of Amihud (2002) illiquidity and proportion of zero returns, as well as the proxy for liquidity co-movement. $CateringForOwn_{i,t-1}$ and $NonCateringForOwn_{i,t-1}$ refer to the ownership of catering-oriented and non-catering-oriented active foreign funds either by all foreign funds ($CateringForOwnAll_{i,t-1}$ and $NonCateringForOwnAll_{i,t-1}$) or by newly launched funds ($CateringForOwnNew_{i,t-1}$ and $NonCateringForOwnNew_{i,t-1}$), as defined in Table IA3. Vector *M* stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Panel B reports similar statistics of the following Panel regressions,

$$Integration_{i,t} = \alpha + \beta_1 CateringForOwn_{i,t-1} + \beta_2 NonCateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Integration_{i,t}$ refers to the market integration proxies (|*Intercept_8Fac*| and *Co-movement_8Fac*) of stock i in year t, and all other variables are defined as above. The integration is defined with respect to Fama-French-Carhart four domestic factors (market, size, book-to-market, and momentum) and four foreign factors (value-weighted four factors excluding the domestic country). Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Panel A: Out-of-sample Stock Illiquidity Measures Regressed on Catering-Oriented Mutual Fund Ownership

	Log (Amihud)				%Zero				Liquidity Co-movement			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.001				0.051***				0.001***			
	(1.49)				(4.38)				(3.02)			
Non-CateringForOwnAll_Num	0.002*				0.045***				0.001			
	(1.90)				(3.14)				(1.63)			
CateringForOwnNew_Num		0.002*				0.064***				0.001***		
		(1.92)				(5.47)				(2.72)		
Non-CateringForOwnNew_Num		0.003***				0.027**				0.002***		
		(2.59)				(2.10)				(4.35)		
CateringForOwnAll_Rank			0.002*				0.056***				0.001***	
			(1.70)				(4.71)				(3.23)	
Non-CateringForOwnAll_Rank			0.001				0.034**				0.000	
			(1.25)				(2.30)				(0.19)	
CateringForOwnNew_Rank				0.002**				0.070***				0.001***
				(2.26)				(5.95)				(2.97)
Non-CateringForOwnNew_Rank				0.002				0.014				0.001***
				(1.51)				(1.12)				(2.83)
Domestic IO	-0.024***	-0.025***	-0.024***	-0.025***	-0.267***	-0.267***	-0.267***	-0.267***	0.009***	0.009***	0.009***	0.009***
	(-25.91)	(-25.91)	(-25.96)	(-25.97)	(-22.15)	(-22.20)	(-22.19)	(-22.20)	(25.82)	(25.80)	(25.80)	(25.77)
Foreign IO	-0.002*	-0.002*	-0.002*	-0.002*	-0.120***	-0.113***	-0.120***	-0.113***	0.001***	0.001***	0.001***	0.001***
	(-1.76)	(-1.93)	(-1.66)	(-1.79)	(-7.65)	(-7.39)	(-7.57)	(-7.37)	(3.60)	(3.26)	(4.07)	(3.71)
Lag (Stock Return)	-0.003***	-0.003***	-0.003***	-0.003***	-0.052***	-0.052***	-0.052***	-0.052***	-0.001**	-0.001**	-0.001**	-0.001**
	(-4.36)	(-4.40)	(-4.37)	(-4.40)	(-5.28)	(-5.31)	(-5.29)	(-5.32)	(-2.28)	(-2.31)	(-2.29)	(-2.31)
Log (Stock Size)	-1.081***	-1.081***	-1.081***	-1.081***	-4.538***	-4.534***	-4.538***	-4.535***	-0.003	-0.003	-0.003	-0.003
	(-131.40)	(-131.39)	(-131.38)	(-131.36)	(-34.87)	(-34.83)	(-34.87)	(-34.83)	(-1.14)	(-1.06)	(-1.15)	(-1.09)
Turnover	-0.813***	-0.814***	-0.813***	-0.813***	6.752***	6.741***	6.762***	6.755***	0.061***	0.061***	0.061***	0.061***
	(-30.67)	(-30.70)	(-30.62)	(-30.64)	(16.32)	(16.31)	(16.33)	(16.32)	(8.23)	(8.15)	(8.24)	(8.21)
Log (Net Income)	-0.032***	-0.032***	-0.032***	-0.032***	0.306***	0.305***	0.306***	0.305***	0.002***	0.002***	0.002***	0.002***
	(-20.89)	(-20.90)	(-20.89)	(-20.90)	(13.29)	(13.28)	(13.30)	(13.27)	(2.75)	(2.74)	(2.75)	(2.75)
Log (Sales)	-0.025***	-0.025***	-0.025***	-0.025***	0.138	0.140	0.139	0.141	-0.002	-0.002	-0.002	-0.002
	(-3.19)	(-3.19)	(-3.19)	(-3.18)	(0.98)	(0.99)	(0.98)	(1.00)	(-0.59)	(-0.60)	(-0.59)	(-0.59)
Log (Total Assets)	0.022***	0.022***	0.022***	0.022***	0.690***	0.686***	0.689***	0.685***	-0.009***	-0.010***	-0.010***	-0.010***
	(2.72)	(2.70)	(2.72)	(2.70)	(4.14)	(4.12)	(4.14)	(4.12)	(-2.94)	(-2.97)	(-2.95)	(-2.97)
Stock Market Turnover	-0.000	-0.000	-0.000	-0.000	-0.024***	-0.024***	-0.024***	-0.024***	0.000***	0.000***	0.000***	0.000***
	(-0.55)	(-0.54)	(-0.57)	(-0.57)	(-25.00)	(-25.00)	(-25.02)	(-25.03)	(3.37)	(3.41)	(3.35)	(3.38)
Stock Market/GDP	0.001***	0.001***	0.001***	0.001***	-0.009***	-0.009***	-0.009***	-0.009***	-0.001***	-0.001***	-0.001***	-0.001***
	(7.50)	(7.51)	(7.52)	(7.52)	(-3.84)	(-3.81)	(-3.82)	(-3.80)	(-14.90)	(-14.93)	(-14.86)	(-14.90)
Private Bond Market/GDP	0.005***	0.005***	0.005***	0.005***	0.028***	0.028***	0.028***	0.028***	-0.001***	-0.001***	-0.001***	-0.001***
	(16.51)	(16.52)	(16.51)	(16.52)	(5.46)	(5.46)	(5.47)	(5.47)	(-13.84)	(-13.82)	(-13.84)	(-13.82)
Constant	8.253***	8.256***	8.253***	8.255***	47.760***	47.807***	47.760***	47.803***	-1.110***	-1.108***	-1.110***	-1.109***
	(111.95)	(111.98)	(111.95)	(111.97)	(37.68)	(37.71)	(37.68)	(37.71)	(-42.18)	(-42.13)	(-42.17)	(-42.13)
Adj-Rsq.	0.527	0.527	0.527	0.527	0.080	0.079	0.080	0.080	0.052	0.052	0.052	0.052
Obs	183,210	183,210	183,210	183,210	190,913	190,913	190,913	190,913	174,691	174,691	174,691	174,691

Panel B: Out-of-sample Market Integration Measures (International 8-Factor, in %) Regressed on Catering-Oriented Mutual Fund Ownership

	|Intercept_8Fac|				Co-movement_8Fac			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
CateringForOwnAll_Num	0.002				-0.020*			
	(0.08)				(-1.67)			
Non-CateringForOwnAll_Num	-0.028				0.033**			
	(-1.39)				(2.56)			
CateringForOwnNew_Num		-0.004				-0.024**		
		(-0.21)				(-2.07)		
Non-CateringForOwnNew_Num		0.002				0.035***		
		(0.10)				(2.67)		
CateringForOwnAll_Rank			0.004				-0.022*	
			(0.19)				(-1.84)	
Non-CateringForOwnAll_Rank			-0.020				0.016	
			(-0.93)				(1.28)	
CateringForOwnNew_Rank				0.002				-0.025**
				(0.10)				(-2.18)
Non-CateringForOwnNew_Rank				-0.006				0.019
				(-0.27)				(1.46)
Domestic IO	-0.157***	-0.156***	-0.156***	-0.156***	0.050***	0.050***	0.050***	0.050***
	(-5.40)	(-5.39)	(-5.39)	(-5.39)	(3.95)	(3.93)	(3.94)	(3.93)
Foreign IO	0.134***	0.127***	0.131***	0.127***	-0.018	-0.016	-0.012	-0.011
	(7.01)	(6.87)	(6.78)	(6.84)	(-1.54)	(-1.41)	(-0.99)	(-1.02)
Lag (Stock Return)	-0.215***	-0.215***	-0.215***	-0.215***	0.015	0.015	0.015	0.015
	(-8.92)	(-8.92)	(-8.92)	(-8.92)	(1.58)	(1.57)	(1.58)	(1.58)
Log (Stock Size)	-6.447***	-6.446***	-6.447***	-6.446***	2.349***	2.350***	2.348***	2.348***
	(-22.87)	(-22.86)	(-22.87)	(-22.86)	(18.70)	(18.70)	(18.69)	(18.69)
Turnover	0.117	0.114	0.115	0.117	10.437***	10.430***	10.438***	10.434***
	(0.17)	(0.17)	(0.17)	(0.17)	(29.75)	(29.74)	(29.75)	(29.75)
Log (Net Income)	-1.653***	-1.653***	-1.653***	-1.653***	0.378***	0.378***	0.378***	0.379***
	(-29.29)	(-29.28)	(-29.29)	(-29.28)	(16.20)	(16.20)	(16.20)	(16.20)
Log (Sales)	-0.611**	-0.612**	-0.612**	-0.612**	0.012	0.012	0.012	0.012
	(-2.38)	(-2.38)	(-2.38)	(-2.38)	(0.09)	(0.10)	(0.10)	(0.10)
Log (Total Assets)	0.058	0.059	0.059	0.059	1.503***	1.502***	1.502***	1.502***
	(0.22)	(0.22)	(0.22)	(0.22)	(10.78)	(10.78)	(10.78)	(10.78)
Stock Market Turnover	0.040***	0.040***	0.040***	0.040***	-0.002**	-0.002**	-0.002**	-0.002**
	(17.31)	(17.32)	(17.31)	(17.31)	(-2.23)	(-2.22)	(-2.23)	(-2.22)
Stock Market/GDP	0.028***	0.028***	0.028***	0.028***	-0.028***	-0.028***	-0.028***	-0.028***
	(7.16)	(7.14)	(7.15)	(7.14)	(-16.71)	(-16.69)	(-16.69)	(-16.67)
Private Bond Market/GDP	0.017**	0.017**	0.017**	0.017**	0.032***	0.032***	0.032***	0.032***
	(2.13)	(2.13)	(2.13)	(2.13)	(7.24)	(7.24)	(7.24)	(7.23)
Constant	94.188***	94.188***	94.192***	94.187***	3.466***	3.475***	3.461***	3.462***
	(42.10)	(42.11)	(42.11)	(42.11)	(3.06)	(3.07)	(3.06)	(3.06)
Adj-Rsq.	0.178	0.178	0.178	0.178	0.214	0.214	0.214	0.214
Obs	190,913	190,913	190,913	190,913	190,909	190,909	190,909	190,909

Table IA5: Influence of Catering-Oriented Cross-Border Capital Flows (Exclude Closet Indexers)

Panel A presents the results of the following Panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level,

$$Delay_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Delay_{i,t}$ refers to market delay of stock i in year t to the global market information ($Delay\_Global_{i,t}$) or the local market information ($Delay\_Local_{i,t}$). $CateringForOwn_{i,t-1}$ and $NonCateringForOwn_{i,t-1}$ refer to the ownership of catering-oriented and non-catering-oriented active foreign funds either by all foreign funds ($CateringForOwnAll_{i,t-1}$ and $NonCateringForOwnAll_{i,t-1}$) or by newly launched funds ($CateringForOwnNew_{i,t-1}$ and $NonCateringForOwnNew_{i,t-1}$), as defined in Table IA4. Vector *M* stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Panel B reports similar statistics of the following Panel regressions,

$$Illiq_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Illiq_{i,t}$ refers to the illiquidity proxies of stock i in year t, including the logarithm of Amihud (2002) illiquidity and proportion of zero returns, as well as the proxy for liquidity co-movement, and all other variables are defined as above. Panel C reports similar statistics of the following Panel regressions,

$$Integration_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Integration_{i,t}$ refers to the market integration proxies (|*Intercept_8Fac*| and *Co-movement_8Fac*) of stock i in year t, and all other variables are defined as above. The integration is defined with respect to Fama-French-Carhart four domestic factors (market, size, book-to-market, and momentum) and four foreign factors (value-weighted four factors excluding the domestic country). Active funds are defined as those with active share no less than 60%, following Cremers and Petajisto (2009) and Cremers, Ferreira, Matos, and Starks (2016). Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Panel A: Out-of-sample Market Efficiency Measures (in %) Regressed on Catering-Oriented Mutual Fund Ownership

	Delay_Global				Delay_Local			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
CateringForOwnAll_Num	0.045***				0.033***			
	(4.09)				(3.53)			
CateringForOwnNew_Num		0.045***				0.034***		
		(3.95)				(3.49)		
CateringForOwnAll_Rank			0.042***				0.032***	
			(3.87)				(3.32)	
CateringForOwnNew_Rank				0.043***				0.032***
				(3.75)				(3.27)
Domestic IO	-0.059***	-0.059***	-0.059***	-0.059***	-0.040***	-0.040***	-0.040***	-0.040***
	(-5.60)	(-5.60)	(-5.60)	(-5.60)	(-3.81)	(-3.81)	(-3.81)	(-3.81)
Foreign IO	-0.012*	-0.011*	-0.011*	-0.010	-0.007	-0.006	-0.006	-0.006
	(-1.91)	(-1.75)	(-1.77)	(-1.64)	(-1.02)	(-0.93)	(-0.92)	(-0.84)
Stock Return	-0.063***	-0.064***	-0.063***	-0.064***	-0.073***	-0.073***	-0.073***	-0.073***
	(-7.59)	(-7.60)	(-7.58)	(-7.60)	(-8.54)	(-8.55)	(-8.54)	(-8.55)
Log (Stock Size)	-1.867***	-1.865***	-1.867***	-1.865***	-2.058***	-2.056***	-2.058***	-2.056***
	(-24.76)	(-24.72)	(-24.76)	(-24.73)	(-27.02)	(-27.00)	(-27.02)	(-27.00)
Turnover	-3.430***	-3.432***	-3.430***	-3.432***	-2.942***	-2.944***	-2.943***	-2.944***
	(-15.09)	(-15.10)	(-15.09)	(-15.10)	(-12.47)	(-12.48)	(-12.47)	(-12.48)
Log (Net Income)	-0.119***	-0.119***	-0.119***	-0.119***	-0.082***	-0.082***	-0.082***	-0.082***
	(-6.39)	(-6.39)	(-6.39)	(-6.39)	(-4.37)	(-4.37)	(-4.37)	(-4.37)
Log (Sales)	0.066	0.066	0.066	0.066	0.061	0.061	0.061	0.061
	(0.75)	(0.75)	(0.75)	(0.75)	(0.70)	(0.70)	(0.70)	(0.70)
Log (Total Assets)	-0.561***	-0.563***	-0.561***	-0.563***	-0.551***	-0.552***	-0.551***	-0.552***
	(-6.06)	(-6.08)	(-6.06)	(-6.08)	(-5.96)	(-5.98)	(-5.96)	(-5.98)
Stock Market Turnover	-0.001	-0.001	-0.001	-0.001	0.001	0.001	0.001	0.001
	(-0.66)	(-0.66)	(-0.65)	(-0.65)	(0.75)	(0.75)	(0.75)	(0.75)
Stock Market/GDP	0.018***	0.018***	0.018***	0.018***	0.010***	0.010***	0.010***	0.010***
	(11.00)	(10.99)	(11.00)	(10.99)	(6.13)	(6.12)	(6.13)	(6.12)
Private Bond Market/GDP	-0.028***	-0.028***	-0.028***	-0.028***	-0.017***	-0.017***	-0.017***	-0.017***
	(-9.68)	(-9.67)	(-9.68)	(-9.67)	(-5.60)	(-5.59)	(-5.60)	(-5.59)
Constant	36.267***	36.288***	36.265***	36.286***	36.384***	36.400***	36.383***	36.398***
	(48.95)	(48.98)	(48.95)	(48.97)	(48.23)	(48.25)	(48.23)	(48.25)
Adj-Rsq.	0.069	0.069	0.069	0.069	0.067	0.067	0.067	0.067
Obs	196,283	196,283	196,283	196,283	196,283	196,283	196,283	196,283

Table IA5—Continued

Panel B: Out-of-sample Stock Illiquidity Measures Regressed on Catering-Oriented Mutual Fund Ownership												
	Log (Amihud)				%Zero				Liquidity Co-movement			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.003***				0.075***				0.001***			
	(2.81)				(6.78)				(3.92)			
CateringForOwnNew_Num		0.003***				0.077***				0.001***		
		(3.06)				(6.58)				(4.17)		
CateringForOwnAll_Rank			0.003***				0.075***				0.001***	
			(2.61)				(6.82)				(3.97)	
CateringForOwnNew_Rank				0.003***				0.078***				0.001***
				(3.00)				(6.68)				(4.18)
Domestic IO	-0.025***	-0.025***	-0.025***	-0.025***	-0.267***	-0.267***	-0.267***	-0.267***	0.009***	0.009***	0.009***	0.009***
	(-25.97)	(-25.98)	(-25.97)	(-25.98)	(-22.19)	(-22.20)	(-22.19)	(-22.20)	(25.79)	(25.78)	(25.79)	(25.78)
Foreign IO	-0.002	-0.002	-0.002	-0.002	-0.113***	-0.111***	-0.112***	-0.111***	0.001***	0.001***	0.001***	0.001***
	(-1.57)	(-1.56)	(-1.51)	(-1.54)	(-7.46)	(-7.42)	(-7.48)	(-7.42)	(4.20)	(4.30)	(4.20)	(4.31)
Lag (Stock Return)	-0.003***	-0.003***	-0.003***	-0.003***	-0.052***	-0.052***	-0.052***	-0.052***	-0.001**	-0.001**	-0.001**	-0.001**
	(-4.38)	(-4.39)	(-4.37)	(-4.39)	(-5.30)	(-5.32)	(-5.30)	(-5.32)	(-2.29)	(-2.30)	(-2.29)	(-2.31)
Log (Stock Size)	-1.081***	-1.081***	-1.081***	-1.081***	-4.539***	-4.535***	-4.539***	-4.535***	-0.003	-0.003	-0.003	-0.003
	(-131.40)	(-131.39)	(-131.40)	(-131.39)	(-34.89)	(-34.84)	(-34.89)	(-34.84)	(-1.15)	(-1.12)	(-1.15)	(-1.11)
Turnover	-0.813***	-0.813***	-0.813***	-0.813***	6.759***	6.755***	6.758***	6.755***	0.061***	0.061***	0.061***	0.061***
	(-30.66)	(-30.67)	(-30.67)	(-30.67)	(16.32)	(16.32)	(16.32)	(16.32)	(8.23)	(8.22)	(8.23)	(8.22)
Log (Net Income)	-0.032***	-0.032***	-0.032***	-0.032***	0.306***	0.305***	0.305***	0.305***	0.002***	0.002***	0.002***	0.002***
	(-20.89)	(-20.89)	(-20.89)	(-20.89)	(13.29)	(13.28)	(13.28)	(13.28)	(2.75)	(2.74)	(2.75)	(2.74)
Log (Sales)	-0.025***	-0.025***	-0.025***	-0.025***	0.141	0.141	0.141	0.141	-0.002	-0.002	-0.002	-0.002
	(-3.18)	(-3.18)	(-3.18)	(-3.18)	(1.00)	(1.00)	(1.00)	(1.00)	(-0.58)	(-0.58)	(-0.58)	(-0.58)
Log (Total Assets)	0.022***	0.022***	0.022***	0.022***	0.688***	0.685***	0.688***	0.685***	-0.010***	-0.010***	-0.010***	-0.010***
	(2.71)	(2.70)	(2.71)	(2.70)	(4.13)	(4.12)	(4.13)	(4.12)	(-2.95)	(-2.97)	(-2.95)	(-2.97)
Stock Market Turnover	-0.000	-0.000	-0.000	-0.000	-0.024***	-0.024***	-0.024***	-0.024***	0.000***	0.000***	0.000***	0.000***
	(-0.58)	(-0.58)	(-0.57)	(-0.58)	(-25.03)	(-25.04)	(-25.03)	(-25.04)	(3.35)	(3.34)	(3.35)	(3.34)
Stock Market/GDP	0.001***	0.001***	0.001***	0.001***	-0.009***	-0.009***	-0.009***	-0.009***	-0.001***	-0.001***	-0.001***	-0.001***
	(7.54)	(7.54)	(7.54)	(7.53)	(-3.78)	(-3.79)	(-3.78)	(-3.80)	(-14.86)	(-14.87)	(-14.86)	(-14.87)
Private Bond Market/GDP	0.005***	0.005***	0.005***	0.005***	0.028***	0.028***	0.028***	0.028***	-0.001***	-0.001***	-0.001***	-0.001***
	(16.50)	(16.51)	(16.50)	(16.51)	(5.46)	(5.47)	(5.46)	(5.47)	(-13.85)	(-13.83)	(-13.85)	(-13.84)
Constant	8.253***	8.254***	8.253***	8.254***	47.758***	47.792***	47.755***	47.791***	-1.110***	-1.109***	-1.110***	-1.109***
	(111.95)	(111.95)	(111.95)	(111.95)	(37.68)	(37.70)	(37.68)	(37.70)	(-42.18)	(-42.15)	(-42.18)	(-42.15)
Adj-Rsq.	0.527	0.527	0.527	0.527	0.080	0.080	0.080	0.080	0.052	0.052	0.052	0.052
Obs	183,210	183,210	183,210	183,210	190,913	190,913	190,913	190,913	174,691	174,691	174,691	174,691

Table IA5—Continued

Panel C: Out-of-sample Market Integration Measures (International 8-Factor, in %) Regressed on Catering-Oriented Mutual Fund Ownership								
	|Intercept_8Fac|				Co-movement_8Fac			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
CateringForOwnAll_Num	-0.006				-0.010			
	(-0.30)				(-0.88)			
CateringForOwnNew_Num		-0.007				-0.015		
		(-0.36)				(-1.24)		
CateringForOwnAll_Rank			-0.012				-0.006	
			(-0.66)				(-0.52)	
CateringForOwnNew_Rank				-0.008				-0.011
				(-0.42)				(-0.93)
Domestic IO	-0.156***	-0.156***	-0.156***	-0.156***	0.050***	0.050***	0.050***	0.050***
	(-5.39)	(-5.39)	(-5.39)	(-5.39)	(3.93)	(3.93)	(3.93)	(3.93)
Foreign IO	0.128***	0.128***	0.129***	0.128***	-0.011	-0.010	-0.012	-0.011
	(7.16)	(7.17)	(7.28)	(7.24)	(-1.00)	(-0.94)	(-1.11)	(-1.03)
Lag (Stock Return)	-0.215***	-0.214***	-0.214***	-0.214***	0.015	0.015	0.015	0.015
	(-8.92)	(-8.92)	(-8.92)	(-8.92)	(1.57)	(1.57)	(1.56)	(1.57)
Log (Stock Size)	-6.446***	-6.447***	-6.447***	-6.447***	2.348***	2.347***	2.348***	2.348***
	(-22.87)	(-22.86)	(-22.87)	(-22.86)	(18.70)	(18.69)	(18.70)	(18.69)
Turnover	0.114	0.114	0.113	0.114	10.441***	10.441***	10.442***	10.442***
	(0.17)	(0.17)	(0.16)	(0.17)	(29.76)	(29.76)	(29.76)	(29.76)
Log (Net Income)	-1.653***	-1.653***	-1.653***	-1.653***	0.378***	0.378***	0.378***	0.378***
	(-29.28)	(-29.28)	(-29.28)	(-29.28)	(16.19)	(16.20)	(16.19)	(16.19)
Log (Sales)	-0.612**	-0.613**	-0.613**	-0.613**	0.013	0.013	0.013	0.013
	(-2.38)	(-2.39)	(-2.39)	(-2.39)	(0.10)	(0.10)	(0.10)	(0.10)
Log (Total Assets)	0.059	0.059	0.059	0.059	1.502***	1.502***	1.501***	1.502***
	(0.22)	(0.22)	(0.22)	(0.22)	(10.78)	(10.78)	(10.78)	(10.78)
Stock Market Turnover	0.040***	0.040***	0.040***	0.040***	-0.002**	-0.002**	-0.002**	-0.002**
	(17.32)	(17.32)	(17.32)	(17.32)	(-2.25)	(-2.25)	(-2.26)	(-2.25)
Stock Market/GDP	0.028***	0.028***	0.028***	0.028***	-0.028***	-0.028***	-0.028***	-0.028***
	(7.14)	(7.14)	(7.14)	(7.14)	(-16.66)	(-16.66)	(-16.66)	(-16.66)
Private Bond Market/GDP	0.017**	0.017**	0.017**	0.017**	0.032***	0.032***	0.032***	0.032***
	(2.13)	(2.13)	(2.13)	(2.13)	(7.23)	(7.23)	(7.23)	(7.23)
Constant	94.189***	94.185***	94.189***	94.185***	3.467***	3.460***	3.467***	3.462***
	(42.10)	(42.10)	(42.10)	(42.10)	(3.06)	(3.05)	(3.06)	(3.06)
Adj-Rsq.	0.178	0.178	0.178	0.178	0.214	0.214	0.214	0.214
Obs	190,913	190,913	190,913	190,913	190,909	190,909	190,909	190,909

Table IA6: Performance of Catering-Oriented Cross-Border Expansions

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics,

$$Perf_{f,t:t+4} = \alpha + \beta CateringIncentive_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Perf_{f,t:t+4}$ refers to the average monthly return of fund f in five years (year t to $t+4$) after inception, $CateringIncentive_{f,t-1}$ refers to the two measures of catering incentives of the management company of fund f in launching this particular fund, including $Num\_UIT_{f,t-1}$, defined as the number of index unexplored by foreign mutual funds in the country where fund f is launched, and $Rank\_UIT_{f,t-1}$, defined as the rank of unexplored indices. Vector *M* stacks all other family and target country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, Log (Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in domicile country. Raw returns are further adjusted by a Fama-French-Carhart four-factor model comprising the market, size, book-to-market, and momentum factors. Panel A includes all newly launched funds, and Panel B includes all newly launched active funds – defined as those with active share no less than 60% (following Cremers and Petajisto (2009) and Cremers, Ferreira, Matos, and Starks (2016)). Panel C reports similar statistics when raw returns are adjusted by an 8-factor model including four Fama-French-Carhart factors in the target country where the new fund is launched, as well as four foreign factors that are the value weighted average of the four factors in all other countries. Panel D reports similar statistics when we focus on gross-of-fee performance of newly launched active funds. Gross-of-fee fund return refers to the fund total return plus one-twelfth of the annualized expense ratio, and gross-of-fee fund returns are further adjusted by a Fama-French-Carhart four-factor model. Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table IA6—Continued

Panel A: Out-of-sample Performance of Cross-Border Expansion (in %) Regressed on Catering Incentives (All Funds)				
	New Fund Return		New Fund 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Num_UIT	-0.003**		-0.013***	
	(-2.16)		(-3.17)	
Rank_UIT		-0.098**		-0.266***
		(-2.19)		(-2.76)
Log (Family TNA)	0.022***	0.023***	0.014**	0.016**
	(3.82)	(4.00)	(2.29)	(2.63)
Expense Ratio	0.001	0.003	-0.055**	-0.049*
	(0.07)	(0.21)	(-2.05)	(-1.74)
Family Turnover	-0.000	-0.000	0.001**	0.001**
	(-0.38)	(-0.21)	(2.53)	(2.61)
Log (Family Age)	0.013	0.013	0.007	0.007
	(0.72)	(0.69)	(0.35)	(0.32)
Family Return	-0.001	-0.001	-0.015	-0.013
	(-0.14)	(-0.07)	(-1.19)	(-1.03)
Log (Distance)	-0.004	-0.006	-0.002	0.006
	(-0.26)	(-0.44)	(-0.10)	(0.25)
Stock Market Turnover	-0.000*	-0.000**	-0.001**	-0.001***
	(-1.85)	(-2.09)	(-2.32)	(-2.75)
Stock Market/GDP	-0.000	-0.000	-0.001***	-0.001***
	(-1.26)	(-1.23)	(-6.80)	(-6.43)
Private Bond Market/GDP	0.000	0.000	0.001*	0.001
	(0.12)	(0.19)	(1.93)	(1.60)
Within Family Correlation	0.228***	0.233***	-0.120	-0.104
	(3.46)	(3.45)	(-1.02)	(-0.89)
Outside Family Correlation	-0.188	-0.193	0.237	0.201
	(-1.48)	(-1.51)	(1.30)	(1.11)
HHI_Dom	-0.077	-0.088	0.001	-0.062
	(-0.60)	(-0.69)	(0.01)	(-0.26)
HHI_Target	0.025	0.031	0.172**	0.220***
	(0.39)	(0.47)	(2.64)	(3.44)
HHI_Family	0.023	0.025	-0.021	-0.015
	(0.62)	(0.68)	(-0.34)	(-0.24)
Num_Index_Dom	0.001***	0.001***	0.002***	0.003***
	(3.13)	(3.45)	(4.74)	(5.03)
Constant	-0.505***	-0.483***	-0.385*	-0.288
	(-3.34)	(-3.24)	(-1.99)	(-1.53)
Adj-Rsq.	0.046	0.047	0.139	0.133
Obs	2,314	2,314	2,314	2,314

Panel B: Out-of-sample Performance of Cross-Border Expansion (in %) Regressed on Catering Incentives (Exclude Closet Indexers)				
	New Fund Return		New Fund 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Num_UIT	-0.008***		-0.014***	
	(-3.15)		(-3.10)	
Rank_UIT		-0.180***		-0.314***
		(-2.91)		(-3.16)
Log (Family TNA)	0.021**	0.022***	0.022***	0.024***
	(2.48)	(2.60)	(3.01)	(3.36)
Expense Ratio	-0.068***	-0.064**	-0.056**	-0.048*
	(-2.68)	(-2.50)	(-2.06)	(-1.72)
Family Turnover	0.000	0.000	0.001**	0.001***
	(0.38)	(0.57)	(2.34)	(2.79)
Log (Family Age)	0.064**	0.062**	-0.008	-0.011
	(2.44)	(2.37)	(-0.29)	(-0.39)
Family Return	0.002	0.004	-0.023	-0.020
	(0.14)	(0.23)	(-1.39)	(-1.28)
Log (Distance)	0.059***	0.063***	-0.010	-0.004
	(2.84)	(3.04)	(-0.40)	(-0.16)
Stock Market Turnover	0.001***	0.001***	-0.001**	-0.001***
	(5.06)	(4.65)	(-2.69)	(-3.07)
Stock Market/GDP	0.000*	0.000	-0.001***	-0.001***
	(1.69)	(1.55)	(-6.40)	(-6.54)
Private Bond Market/GDP	-0.003***	-0.003***	0.002**	0.001**
	(-6.47)	(-7.19)	(2.10)	(2.08)
Within Family Correlation	0.175	0.186	-0.105	-0.085
	(1.28)	(1.36)	(-0.86)	(-0.68)
Outside Family Correlation	-0.208	-0.239	0.348	0.294
	(-0.81)	(-0.93)	(1.69)	(1.34)
HHI_Dom	0.182	0.164	0.121	0.091
	(0.65)	(0.59)	(0.57)	(0.41)
HHI_Target	0.057	0.082	0.113	0.156*
	(0.59)	(0.86)	(1.31)	(1.98)
HHI_Family	0.006	0.006	0.027	0.026
	(0.10)	(0.09)	(0.42)	(0.40)
Num_Index_Dom	0.001***	0.001***	0.002***	0.003***
	(2.76)	(3.18)	(4.66)	(4.92)
Constant	0.277	0.357	-0.578**	-0.439
	(0.98)	(1.27)	(-2.29)	(-1.62)
Adj-Rsq.	0.367	0.366	0.148	0.145
Obs	1,883	1,883	1,883	1,883

Panel C: Out-of-sample 8-Factor-adjusted Performance of Cross-Border Expansion (in %) Regressed on Catering Incentives

	Active Funds		All Funds	
	Model 1	Model 2	Model 3	Model 4
Num_UIT	-0.013***		-0.013***	
	(-3.37)		(-3.35)	
Rank_UIT		-0.327**		-0.298**
		(-2.42)		(-2.33)
Log (Family TNA)	0.006	0.010	0.004	0.008
	(0.36)	(0.55)	(0.27)	(0.54)
Expense Ratio	-0.086	-0.074	-0.089	-0.080
	(-1.22)	(-1.05)	(-1.64)	(-1.44)
Family Turnover	0.003	0.003	0.003	0.003
	(1.19)	(1.24)	(1.22)	(1.26)
Log (Family Age)	-0.055	-0.057	-0.041	-0.043
	(-0.76)	(-0.79)	(-0.56)	(-0.59)
Family Return	-0.124	-0.121	-0.116	-0.113
	(-1.43)	(-1.40)	(-1.40)	(-1.37)
Log (Distance)	0.039	0.052*	0.049	0.068*
	(1.21)	(1.75)	(1.55)	(1.94)
Stock Market Turnover	0.001	0.001	0.001	0.001
	(1.56)	(1.34)	(1.57)	(1.23)
Stock Market/GDP	-0.000	-0.000	-0.000	-0.000
	(-1.09)	(-1.28)	(-1.20)	(-1.48)
Private Bond Market/GDP	-0.001	-0.001	-0.001	-0.001*
	(-1.24)	(-1.58)	(-1.18)	(-1.86)
Within Family Correlation	-0.625	-0.590	-0.613	-0.578
	(-1.09)	(-1.03)	(-1.05)	(-0.99)
Outside Family Correlation	0.620	0.560	0.675	0.615
	(0.73)	(0.66)	(0.83)	(0.75)
HHI_Dom	-0.060	-0.140	-0.111	-0.209
	(-0.28)	(-0.62)	(-0.54)	(-0.95)
HHI_Target	0.153	0.196	0.159	0.208
	(0.63)	(0.74)	(0.72)	(0.86)
HHI_Family	0.024	0.036	0.021	0.036
	(0.29)	(0.43)	(0.25)	(0.42)
Num_Index_Dom	0.001	0.001	0.001	0.001
	(1.18)	(1.31)	(1.22)	(1.42)
Constant	3.380*	3.450*	-0.605	-0.556
	(1.80)	(1.80)	(-0.81)	(-0.76)
Adj-Rsq.	0.032	0.032	0.037	0.036
Obs	1,220	1,220	1,312	1,312

Panel D: Out-of-sample Gross-of-Fee Performance of Cross-Border Expansion (in %) Regressed on Catering Incentives				
	New Fund Return		New Fund 4-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4
Num_UIT	-0.003**		-0.014***	
	(-2.20)		(-3.23)	
Rank_UIT		-0.074*		-0.251**
		(-1.80)		(-2.69)
Log (Family TNA)	0.023***	0.024***	0.015**	0.017**
	(3.84)	(3.93)	(2.33)	(2.62)
Expense Ratio	0.025	0.026*	-0.031	-0.024
	(1.67)	(1.79)	(-1.19)	(-0.87)
Family Turnover	-0.000	-0.000	0.001**	0.001**
	(-0.45)	(-0.30)	(2.43)	(2.52)
Log (Family Age)	0.016	0.015	0.006	0.005
	(0.83)	(0.81)	(0.25)	(0.21)
Family Return	0.001	0.001	-0.016	-0.014
	(0.10)	(0.16)	(-1.21)	(-1.06)
Log (Distance)	0.005	0.005	0.010	0.022
	(0.35)	(0.38)	(0.42)	(0.83)
Stock Market Turnover	-0.000**	-0.000**	-0.001**	-0.001***
	(-2.25)	(-2.49)	(-2.52)	(-2.82)
Stock Market/GDP	-0.000	-0.000	-0.001***	-0.001***
	(-1.28)	(-1.36)	(-7.41)	(-6.50)
Private Bond Market/GDP	-0.000	-0.000	0.001*	0.001
	(-0.08)	(-0.17)	(1.71)	(1.20)
Within Family Correlation	0.273***	0.278***	-0.110	-0.094
	(4.19)	(4.14)	(-0.96)	(-0.81)
Outside Family Correlation	-0.188	-0.196	0.311	0.265
	(-1.28)	(-1.33)	(1.69)	(1.43)
HHI_Dom	-0.022	-0.032	0.049	-0.006
	(-0.17)	(-0.24)	(0.20)	(-0.02)
HHI_Target	0.033	0.042	0.133*	0.187**
	(0.40)	(0.52)	(1.70)	(2.41)
HHI_Family	0.024	0.025	-0.016	-0.012
	(0.64)	(0.68)	(-0.25)	(-0.17)
Num_Index_Dom	0.001***	0.001***	0.002***	0.003***
	(2.92)	(3.18)	(5.08)	(5.43)
Constant	-0.571**	-0.544**	0.092	0.214
	(-2.73)	(-2.54)	(0.36)	(0.77)
Adj-Rsq.	0.054	0.054	0.141	0.134
Obs	2,198	2,198	2,198	2,198

Table IA7: Performance of Domestic and Foreign Funds Managed by Catering-Oriented Families

Panel A Models 1 to 4 present the results of the following regressions with year fixed effects and their corresponding robust t-statistics,

$$DomPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t},$$

where $DomPerf_{F,t:t+4}$ refers to the average monthly return of the existing domestic portfolios of fund family F in five years (year t to $t+4$) after its foreign expansion, and in particular the family domestic return is computed as the lagged TNA-weighted return of all its domestic mutual funds. $CateringIncentive_{F,t-1}$ refers to the two measures of catering incentives of a family, including $Fam\_Num\_UIT_{F,t-1}$ (the number of unexplored index at the family level) and $Fam\_Rank\_UIT_{F,t-1}$ (the rank of unexplored index at the family level). Vector *M* stacks all other family and domicile country control variables, including Log(Family TNA), Expense Ratio, Family Turnover, Log(Family Age), Family Return, return correlation within and outside family, Herfindahl index in domicile country and within fund family, and number of indices in domicile country. Raw returns are further adjusted by a Fama-French-Carhart four-domestic-factor model comprising the market, size, book-to-market, and momentum factors. Models 5 to 10 present similar statistics of the following regressions,

$$ForPerf_{F,t:t+4} = \alpha + \beta CateringIncentive_{F,t-1} + \gamma M_{F,t-1} + e_{F,t},$$

where $ForPerf_{F,t:t+4}$ refers to the average monthly return of the existing foreign portfolios of fund family F in five years (year t to $t+4$) after its foreign expansion, and in particular the family foreign return is computed as the lagged TNA-weighted return of all its foreign mutual funds. All other variables are defined as above. Raw returns are also adjusted by an 8-factor model including Fama-French-Carhart four domestic factors, as well as four foreign factors that are the value weighted average of the four factors in all other countries. Our sample includes all families that launch funds in another country. Panel B reports similar statistics for all families that launch active funds in another country, and active funds are defined as those with active share no less than 60% (following Cremers and Petajisto (2009) and Cremers, Ferreira, Matos, and Starks (2016)). Panel C reports similar statistics when we focus on gross-of-fee family performance for all families that launch active funds in another country. Gross-of-fee fund return refers to the fund total return plus one-twelfth of the annualized expense ratio, and gross-of-fee family domestic (foreign) return is computed as the lagged TNA-weighted gross-of-fee return of all its domestic (foreign) mutual funds. Gross-of-fee family returns are further adjusted by a Fama-French-Carhart four-factor model. Panel D reports similar statistics when we employ alternative definition of foreign fund to an index, i.e., a fund whose sales countries are all different from that of the index. Appendix A provides detailed definitions for each variable. Numbers with "*", "**" and "***" are significant at the 10%, 5% and 1% level, respectively.

Table IA7—Continued

Panel A: Out-of-sample Performance in Mutual Fund Families (in %) Regressed on Catering Incentives (All Funds)										
	Family Domestic Return		Family Domestic 4-Factor-adjusted		Family Foreign Return		Family Foreign 4-Factor-adjusted		Family Foreign 8-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Fam_Num_UIT	-0.005**		-0.004**		-0.003**		-0.002		-0.005***	
	(-1.97)		(-2.12)		(-2.50)		(-1.56)		(-2.86)	
Fam_Rank_UIT		-0.167**		-0.117**		-0.092**		-0.070*		-0.118**
		(-2.53)		(-2.47)		(-2.49)		(-1.93)		(-2.34)
Log (Family TNA)	0.009	0.010	0.007	0.007	0.760***	0.769***	0.483***	0.486***	-0.097	-0.083
	(1.13)	(1.22)	(1.05)	(1.13)	(3.53)	(3.58)	(2.68)	(2.69)	(-0.38)	(-0.32)
Expense Ratio	-0.117***	-0.115***	-0.087***	-0.085***	0.029	0.030	0.042	0.041	0.030	0.034
	(-3.26)	(-3.23)	(-4.51)	(-4.45)	(0.74)	(0.76)	(1.12)	(1.11)	(0.60)	(0.67)
Family Turnover	-0.000	-0.000	-0.000	-0.000	0.163*	0.169*	-0.264***	-0.262***	0.086	0.097
	(-0.58)	(-0.57)	(-1.14)	(-1.13)	(1.65)	(1.71)	(-2.67)	(-2.65)	(0.78)	(0.87)
Log (Family Age)	0.030	0.031*	0.000	0.001	0.069	0.056	0.181	0.178	-0.388*	-0.417**
	(1.60)	(1.66)	(0.02)	(0.04)	(0.39)	(0.32)	(1.13)	(1.12)	(-1.95)	(-2.08)
Family Return	0.014	0.014	0.048***	0.049***	0.001***	0.001***	0.001***	0.001***	0.000	0.000*
	(0.74)	(0.76)	(3.57)	(3.60)	(4.83)	(5.15)	(5.21)	(5.40)	(1.37)	(1.73)
Within Family Correlation	0.098	0.107	-0.027	-0.019	0.012**	0.013**	0.010*	0.011*	0.013	0.014*
	(0.56)	(0.61)	(-0.19)	(-0.13)	(2.16)	(2.33)	(1.67)	(1.78)	(1.60)	(1.79)
Outside Family Correlation	0.628*	0.591	0.021	-0.009	0.055***	0.056***	0.010	0.010	0.087***	0.088***
	(1.70)	(1.60)	(0.07)	(-0.03)	(3.60)	(3.62)	(0.64)	(0.63)	(3.98)	(4.01)
HHI_Dom	0.207	0.252	0.616*	0.652**	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.66)	(0.81)	(1.87)	(1.99)	(-1.27)	(-1.21)	(-0.44)	(-0.39)	(1.27)	(1.34)
HHI_Family	0.150**	0.155**	0.112**	0.116**	0.026*	0.025*	0.012	0.011	-0.006	-0.007
	(2.37)	(2.44)	(2.14)	(2.20)	(1.92)	(1.83)	(0.87)	(0.80)	(-0.31)	(-0.38)
Num_Index_Dom	0.000	0.000	0.001***	0.001***	-0.015	-0.015	0.037***	0.037***	0.046***	0.046***
	(0.11)	(0.10)	(3.30)	(3.50)	(-1.30)	(-1.28)	(3.15)	(3.16)	(2.95)	(2.98)
Constant	0.308	0.374	0.011	0.052	0.318*	0.336*	-0.300*	-0.282	0.129	0.136
	(1.22)	(1.45)	(0.06)	(0.27)	(1.85)	(1.95)	(-1.68)	(-1.58)	(0.62)	(0.65)
Adj-Rsq.	0.510	0.511	0.112	0.113	0.677	0.677	0.163	0.164	0.100	0.098
Obs	1,049	1,049	1,045	1,045	1,569	1,569	1,566	1,566	1,362	1,362

Table IA7—Continued

Panel B: Out-of-sample Performance of Mutual Fund Families (in %) Regressed on Catering Incentives (Exclude Closet Indexers)										
	Family Domestic Return		Family Domestic 4-Factor-adjusted		Family Foreign Return		Family Foreign 4-Factor-adjusted		Family Foreign 8-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Fam_Num_UIT	-0.004		-0.003		-0.003**		-0.002		-0.004**	
	(-1.59)		(-1.51)		(-2.27)		(-1.29)		(-2.21)	
Fam_Rank_UIT		-0.147**		-0.097**		-0.096**		-0.064*		-0.098*
		(-2.10)		(-1.99)		(-2.48)		(-1.70)		(-1.79)
Log (Family TNA)	0.091	0.100	-0.007	-0.178	0.710***	0.720***	0.516***	0.519***	-0.301	-0.286
	(0.50)	(0.54)	(-0.04)	(-1.50)	(3.11)	(3.15)	(2.64)	(2.65)	(-1.51)	(-1.43)
Expense Ratio	0.590	0.554	-0.001	0.482***	0.050	0.050	0.050	0.049	0.058	0.061
	(1.47)	(1.37)	(-0.00)	(2.60)	(1.19)	(1.18)	(1.25)	(1.22)	(1.06)	(1.12)
Family Turnover	0.000	0.000	0.001***	0.001***	0.213**	0.217**	-0.215*	-0.214*	0.138	0.149
	(0.32)	(0.32)	(3.40)	(4.30)	(2.01)	(2.05)	(-1.96)	(-1.96)	(1.15)	(1.24)
Log (Family Age)	0.066	0.105	0.485	0.340	0.003	-0.007	0.132	0.131	-0.430**	-0.460**
	(0.21)	(0.33)	(1.44)	(1.03)	(0.02)	(-0.04)	(0.78)	(0.77)	(-1.99)	(-2.13)
Family Return	0.145**	0.148**	0.102*	0.136**	0.001***	0.001***	0.001***	0.001***	0.000	0.000
	(2.14)	(2.18)	(1.85)	(2.42)	(3.85)	(4.13)	(4.68)	(4.85)	(0.95)	(1.27)
Within Family Correlation	0.009	0.010	0.005	0.007	0.013**	0.013**	0.013**	0.013**	0.019**	0.021**
	(1.04)	(1.12)	(0.74)	(0.99)	(2.16)	(2.29)	(2.01)	(2.09)	(2.42)	(2.53)
Outside Family Correlation	-0.127***	-0.124***	-0.093***	-0.093***	0.059***	0.060***	0.014	0.014	0.085***	0.086***
	(-3.28)	(-3.25)	(-4.63)	(-4.66)	(3.65)	(3.67)	(0.87)	(0.86)	(3.59)	(3.61)
HHI_Dom	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000	0.000	0.000	0.000*	0.000*
	(-0.31)	(-0.31)	(-1.19)	(-1.76)	(-0.76)	(-0.72)	(0.17)	(0.20)	(1.70)	(1.74)
HHI_Family	0.030	0.030	-0.000	-0.001	0.025*	0.023	0.007	0.006	-0.006	-0.007
	(1.52)	(1.55)	(-0.01)	(-0.04)	(1.71)	(1.61)	(0.49)	(0.43)	(-0.29)	(-0.34)
Num_Index_Dom	0.004	0.004	0.046***	0.014**	-0.003	-0.003	0.040***	0.041***	0.050***	0.050***
	(0.19)	(0.21)	(3.32)	(2.29)	(-0.29)	(-0.25)	(3.18)	(3.21)	(3.06)	(3.09)
Constant	0.311	0.373	0.056	-0.345**	0.350*	0.377**	-0.357*	-0.335*	-0.048	-0.039
	(1.12)	(1.31)	(0.28)	(-2.32)	(1.91)	(2.05)	(-1.78)	(-1.68)	(-0.22)	(-0.18)
Adj-Rsq.	0.502	0.503	0.110	0.073	0.682	0.682	0.165	0.166	0.101	0.100
Obs	926	926	922	922	1,383	1,383	1,380	1,380	1,209	1,209

Table IA7—Continued

Panel C: Out-of-sample Gross-of-Fee Performance in Mutual Fund Families (in %) Regressed on Catering Incentives (Active Funds)										
	Family Domestic Return		Family Domestic 4-Factor-adjusted		Family Foreign Return		Family Foreign 4-Factor-adjusted		Family Foreign 8-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Fam_Num_UIT	-0.003		-0.004**		-0.003		-0.002*		-0.005***	
	(-1.12)		(-1.98)		(-1.23)		(-1.83)		(-2.73)	
Fam_Rank_UIT		-0.134*		-0.108**		-0.058		-0.078**		-0.116**
		(-1.80)		(-2.23)		(-1.01)		(-2.13)		(-2.24)
Log (Family TNA)	0.723*	0.754*	0.609*	0.642*	-0.014	-0.004	0.511***	0.515***	-0.041	-0.029
	(1.71)	(1.79)	(1.83)	(1.94)	(-0.04)	(-0.01)	(2.67)	(2.68)	(-0.16)	(-0.11)
Expense Ratio	0.201***	0.204***	0.136**	0.138***	-0.019	-0.018	0.047	0.047	0.034	0.036
	(2.69)	(2.73)	(2.55)	(2.59)	(-0.33)	(-0.30)	(1.24)	(1.23)	(0.66)	(0.71)
Family Turnover	0.028	0.035	0.007	0.017	0.197	0.203	-0.226**	-0.224**	0.130	0.140
	(0.13)	(0.16)	(0.05)	(0.12)	(1.26)	(1.30)	(-2.20)	(-2.17)	(1.14)	(1.23)
Log (Family Age)	0.987**	0.960**	-0.006	-0.038	-0.109	-0.126	0.156	0.151	-0.431**	-0.460**
	(2.34)	(2.27)	(-0.02)	(-0.12)	(-0.38)	(-0.44)	(0.96)	(0.94)	(-2.13)	(-2.26)
Family Return	0.000	0.000	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.000	0.000*
	(1.35)	(1.29)	(3.06)	(3.28)	(3.48)	(3.74)	(5.30)	(5.49)	(1.44)	(1.77)
Within Family Correlation	-0.002	-0.002	0.007	0.007	0.022**	0.022**	0.009	0.010*	0.010	0.011
	(-0.18)	(-0.15)	(1.03)	(1.09)	(2.35)	(2.43)	(1.59)	(1.71)	(1.20)	(1.37)
Outside Family Correlation	-0.069**	-0.068**	-0.052***	-0.050***	0.096***	0.097***	0.048***	0.048***	0.129***	0.130***
	(-2.46)	(-2.44)	(-2.73)	(-2.64)	(4.40)	(4.44)	(3.05)	(3.06)	(5.80)	(5.82)
HHI_Dom	-0.000	-0.000	-0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	0.000
	(-1.23)	(-1.23)	(-1.07)	(-1.08)	(0.53)	(0.56)	(-0.38)	(-0.33)	(0.99)	(1.06)
HHI_Family	0.006	0.007	-0.006	-0.005	-0.021	-0.022	0.005	0.004	-0.011	-0.012
	(0.24)	(0.28)	(-0.32)	(-0.30)	(-0.93)	(-0.96)	(0.37)	(0.30)	(-0.54)	(-0.60)
Num_Index_Dom	-0.011	-0.010	0.044***	0.044***	-0.018	-0.018	0.035***	0.035***	0.045***	0.045***
	(-0.56)	(-0.54)	(3.15)	(3.18)	(-1.02)	(-1.00)	(2.96)	(2.99)	(2.89)	(2.92)
Constant	-0.318	-0.250	-0.290*	-0.247	0.456*	0.464*	-0.236	-0.214	-0.014	0.004
	(-1.17)	(-0.90)	(-1.83)	(-1.53)	(1.68)	(1.71)	(-1.29)	(-1.17)	(-0.07)	(0.02)
Adj-Rsq.	0.426	0.427	0.101	0.102	0.469	0.469	0.165	0.165	0.111	0.109
Obs	1,012	1,012	1,012	1,012	1,522	1,522	1,522	1,522	1,322	1,322

Table IA7—Continued

Panel D: Out-of-sample Performance in Mutual Fund Families (in %) Regressed on Alternative Proxies for Catering Incentives										
	Family Domestic Return		Family Domestic 4-Factor-adjusted		Family Foreign Return		Family Foreign 4-Factor-adjusted		Family Foreign 8-Factor-adjusted	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Fam_Num_UIT_Sales	-0.004		-0.003		-0.003**		-0.003*		-0.006***	
	(-1.43)		(-1.29)		(-2.31)		(-1.77)		(-2.70)	
Fam_Rank_UIT_Sales		-0.170**		-0.112**		-0.106***		-0.090**		-0.126**
		(-2.38)		(-2.21)		(-2.69)		(-2.38)		(-2.32)
Log (Family TNA)	0.175	0.212	0.585*	0.611*	0.751***	0.756***	0.494***	0.496***	-0.110	-0.096
	(0.55)	(0.67)	(1.77)	(1.86)	(3.45)	(3.49)	(2.70)	(2.70)	(-0.42)	(-0.37)
Expense Ratio	0.158**	0.160**	0.120**	0.121**	0.032	0.031	0.037	0.036	0.038	0.041
	(2.45)	(2.48)	(2.25)	(2.28)	(0.79)	(0.77)	(0.99)	(0.96)	(0.76)	(0.81)
Family Turnover	0.145	0.144	0.001	0.001	0.186*	0.188*	-0.247**	-0.248**	0.109	0.116
	(0.80)	(0.79)	(0.01)	(0.01)	(1.84)	(1.86)	(-2.43)	(-2.43)	(0.95)	(1.01)
Log (Family Age)	0.555	0.547	-0.026	-0.033	0.052	0.054	0.166	0.172	-0.409**	-0.425**
	(1.48)	(1.45)	(-0.09)	(-0.11)	(0.30)	(0.30)	(1.03)	(1.06)	(-2.02)	(-2.08)
Family Return	0.000	0.000	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.000	0.000
	(0.13)	(0.07)	(3.18)	(3.36)	(4.56)	(4.92)	(4.94)	(5.25)	(1.16)	(1.59)
Within Family Correlation	0.011	0.011	0.008	0.008	0.013**	0.013**	0.011*	0.011*	0.012	0.014*
	(1.30)	(1.31)	(1.13)	(1.13)	(2.24)	(2.37)	(1.78)	(1.88)	(1.52)	(1.70)
Outside Family Correlation	-0.120***	-0.119***	-0.089***	-0.088***	0.056***	0.056***	0.011	0.011	0.086***	0.087***
	(-3.28)	(-3.29)	(-4.56)	(-4.56)	(3.57)	(3.56)	(0.71)	(0.69)	(3.83)	(3.86)
HHI_Dom	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(-0.57)	(-0.59)	(-1.16)	(-1.18)	(-1.25)	(-1.24)	(-0.36)	(-0.34)	(1.27)	(1.31)
HHI_Family	0.027	0.029	-0.004	-0.002	0.023	0.021	0.009	0.008	-0.006	-0.008
	(1.43)	(1.53)	(-0.19)	(-0.14)	(1.63)	(1.54)	(0.61)	(0.54)	(-0.31)	(-0.39)
Num_Index_Dom	0.011	0.012	0.045***	0.045***	-0.013	-0.013	0.037***	0.037***	0.047***	0.048***
	(0.59)	(0.62)	(3.33)	(3.37)	(-1.10)	(-1.08)	(3.10)	(3.12)	(3.01)	(3.05)
Constant	-0.568***	-0.478**	-0.364**	-0.305*	0.319*	0.349**	-0.304*	-0.275	-0.152	-0.129
	(-2.79)	(-2.31)	(-2.28)	(-1.88)	(1.82)	(1.98)	(-1.66)	(-1.50)	(-0.78)	(-0.66)
Adj-Rsq.	0.506	0.508	0.108	0.111	0.677	0.677	0.165	0.167	0.100	0.098
Obs	1,016	1,016	1,012	1,012	1,525	1,525	1,522	1,522	1,322	1,322

Internet Appendix

Catering through Globalization: Cross-border Expansion and Misallocation in the Global Mutual Fund Industry

Full Version of Reported Tables

Table 9: Influence of Catering-Oriented Cross-Border Capital Flows on Liquidity and Stock Market Integration

Panel A presents the results of the following Panel regressions with year and stock fixed effects and their corresponding t-statistics with standard errors clustered at the stock level,

$$Illiq_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Illiq_{i,t}$ refers to the illiquidity proxies of stock i in year t, including the logarithm of Amihud (2002) illiquidity and proportion of zero returns, as well as the proxy for liquidity co-movement. $CateringForOwn_{i,t-1}$ is the ownership of catering-oriented active foreign funds either by all foreign funds of catering-oriented families ($CateringForOwnAll_{i,t-1}$) or by newly launched catering-oriented funds ($CateringForOwnNew_{i,t-1}$), as defined in Table 8. Vector *M* stacks all other stock and country control variables, including domestic and foreign IO, Stock Return, Log(Stock Size), Turnover, Log(Net Income), Log(Sales), Log(Total Assets), Stock Market Turnover, Stock Market/GDP, and Private Bond Market/GDP. Panel B reports similar statistics of the following Panel regressions,

$$Integration_{i,t} = \alpha + \beta CateringForOwn_{i,t-1} + \gamma M_{i,t-1} + e_{i,t},$$

where $Integration_{i,t}$ refers to the market integration proxies (|*Intercept_8Fac*| and *Co-movement_8Fac*) of stock i in year t. The integration is defined with respect to Fama-French-Carhart four domestic factors (market, size, book-to-market, and momentum) and four foreign factors (value-weighted four factors excluding the domestic country). All other variables are defined the same as above. Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 9—Continued

Panel A: Out-of-sample Stock Illiquidity Measures Regressed on Catering-Oriented Mutual Fund Ownership												
	Log (Amihud)				%Zero				Liquidity Co-movement			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CateringForOwnAll_Num	0.002**				0.063***				0.001***			
	(2.16)				(5.54)				(3.69)			
CateringForOwnNew_Num		0.003***				0.070***				0.001***		
		(2.73)				(5.88)				(4.01)		
CateringForOwnAll_Rank			0.002**				0.067***				0.001***	
			(2.28)				(5.91)				(3.44)	
CateringForOwnNew_Rank				0.003***				0.074***				0.001***
				(2.98)				(6.34)				(4.04)
Domestic IO	-0.025***	-0.025***	-0.025***	-0.025***	-0.267***	-0.267***	-0.267***	-0.267***	0.009***	0.009***	0.009***	0.009***
	(-25.95)	(-25.97)	(-25.95)	(-25.98)	(-22.18)	(-22.20)	(-22.18)	(-22.19)	(25.80)	(25.78)	(25.80)	(25.78)
Foreign IO	-0.002	-0.002	-0.002	-0.002	-0.111***	-0.109***	-0.113***	-0.111***	0.001***	0.001***	0.001***	0.001***
	(-1.41)	(-1.48)	(-1.45)	(-1.55)	(-7.32)	(-7.35)	(-7.39)	(-7.41)	(4.20)	(4.50)	(4.20)	(4.39)
Lag (Stock Return)	-0.003***	-0.003***	-0.003***	-0.003***	-0.052***	-0.052***	-0.052***	-0.052***	-0.001**	-0.001**	-0.001**	-0.001**
	(-4.37)	(-4.38)	(-4.37)	(-4.39)	(-5.29)	(-5.31)	(-5.30)	(-5.32)	(-2.29)	(-2.30)	(-2.29)	(-2.30)
Log (Stock Size)	-1.081***	-1.081***	-1.081***	-1.081***	-4.539***	-4.536***	-4.539***	-4.536***	-0.003	-0.003	-0.003	-0.003
	(-131.38)	(-131.40)	(-131.37)	(-131.38)	(-34.88)	(-34.85)	(-34.88)	(-34.85)	(-1.14)	(-1.13)	(-1.15)	(-1.13)
Turnover	-0.813***	-0.813***	-0.813***	-0.813***	6.757***	6.750***	6.763***	6.759***	0.061***	0.061***	0.061***	0.061***
	(-30.68)	(-30.69)	(-30.65)	(-30.65)	(16.32)	(16.31)	(16.32)	(16.32)	(8.23)	(8.21)	(8.24)	(8.23)
Log (Net Income)	-0.032***	-0.032***	-0.032***	-0.032***	0.306***	0.305***	0.306***	0.305***	0.002***	0.002***	0.002***	0.002***
	(-20.89)	(-20.89)	(-20.89)	(-20.90)	(13.29)	(13.28)	(13.29)	(13.27)	(2.75)	(2.74)	(2.75)	(2.74)
Log (Sales)	-0.025***	-0.025***	-0.025***	-0.025***	0.140	0.140	0.140	0.141	-0.002	-0.002	-0.002	-0.002
	(-3.18)	(-3.18)	(-3.18)	(-3.18)	(0.99)	(1.00)	(0.99)	(1.00)	(-0.58)	(-0.58)	(-0.59)	(-0.58)
Log (Total Assets)	0.022***	0.022***	0.022***	0.022***	0.689***	0.686***	0.688***	0.686***	-0.010***	-0.010***	-0.010***	-0.010***
	(2.71)	(2.70)	(2.71)	(2.70)	(4.13)	(4.12)	(4.13)	(4.12)	(-2.95)	(-2.96)	(-2.95)	(-2.96)
Stock Market Turnover	-0.000	-0.000	-0.000	-0.000	-0.024***	-0.024***	-0.024***	-0.024***	0.000***	0.000***	0.000***	0.000***
	(-0.57)	(-0.57)	(-0.58)	(-0.59)	(-25.01)	(-25.02)	(-25.03)	(-25.04)	(3.36)	(3.36)	(3.35)	(3.34)
Stock Market/GDP	0.001***	0.001***	0.001***	0.001***	-0.009***	-0.009***	-0.009***	-0.009***	-0.001***	-0.001***	-0.001***	-0.001***
	(7.54)	(7.53)	(7.54)	(7.53)	(-3.79)	(-3.80)	(-3.78)	(-3.80)	(-14.86)	(-14.87)	(-14.86)	(-14.87)
Private Bond Market/GDP	0.005***	0.005***	0.005***	0.005***	0.028***	0.028***	0.028***	0.028***	-0.001***	-0.001***	-0.001***	-0.001***
	(16.50)	(16.51)	(16.50)	(16.51)	(5.45)	(5.46)	(5.46)	(5.47)	(-13.85)	(-13.84)	(-13.85)	(-13.84)
Constant	8.253***	8.254***	8.253***	8.255***	47.761***	47.794***	47.765***	47.798***	-1.110***	-1.109***	-1.110***	-1.109***
	(111.94)	(111.95)	(111.95)	(111.96)	(37.68)	(37.70)	(37.68)	(37.71)	(-42.18)	(-42.15)	(-42.17)	(-42.14)
Adj-Rsq.	0.527	0.527	0.527	0.527	0.079	0.079	0.079	0.080	0.052	0.052	0.052	0.052
Obs	183,210	183,210	183,210	183,210	190,913	190,913	190,913	190,913	174,691	174,691	174,691	174,691

Table 9—Continued

Panel B: Out-of-sample Market Integration Measures (International 8-Factor, in %) Regressed on Catering-Oriented Mutual Fund Ownership								
	|Intercept_8Fac|				Co-movement_8Fac			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
CateringForOwnAll_Num	-0.006				-0.011			
	(-0.34)				(-0.93)			
CateringForOwnNew_Num		-0.004				-0.016		
		(-0.19)				(-1.40)		
CateringForOwnAll_Rank			-0.002				-0.017	
			(-0.14)				(-1.48)	
CateringForOwnNew_Rank				0.001				-0.020*
				(0.03)				(-1.79)
Domestic IO	-0.156***	-0.156***	-0.156***	-0.156***	0.050***	0.050***	0.050***	0.050***
	(-5.39)	(-5.39)	(-5.39)	(-5.39)	(3.93)	(3.93)	(3.93)	(3.93)
Foreign IO	0.128***	0.127***	0.127***	0.126***	-0.011	-0.010	-0.009	-0.009
	(7.09)	(7.17)	(6.91)	(7.04)	(-0.95)	(-0.92)	(-0.74)	(-0.80)
Lag (Stock Return)	-0.214***	-0.215***	-0.215***	-0.215***	0.015	0.015	0.015	0.015
	(-8.92)	(-8.92)	(-8.92)	(-8.92)	(1.57)	(1.58)	(1.58)	(1.58)
Log (Stock Size)	-6.446***	-6.446***	-6.446***	-6.446***	2.348***	2.347***	2.347***	2.347***
	(-22.87)	(-22.86)	(-22.87)	(-22.86)	(18.69)	(18.69)	(18.69)	(18.68)
Turnover	0.114	0.115	0.115	0.116	10.441***	10.442***	10.438***	10.439***
	(0.17)	(0.17)	(0.17)	(0.17)	(29.76)	(29.77)	(29.75)	(29.76)
Log (Net Income)	-1.653***	-1.653***	-1.653***	-1.653***	0.378***	0.378***	0.378***	0.379***
	(-29.28)	(-29.28)	(-29.28)	(-29.28)	(16.19)	(16.20)	(16.19)	(16.20)
Log (Sales)	-0.612**	-0.612**	-0.612**	-0.612**	0.013	0.013	0.013	0.012
	(-2.38)	(-2.38)	(-2.38)	(-2.38)	(0.10)	(0.10)	(0.10)	(0.10)
Log (Total Assets)	0.059	0.059	0.059	0.059	1.502***	1.502***	1.502***	1.502***
	(0.22)	(0.22)	(0.22)	(0.22)	(10.78)	(10.78)	(10.78)	(10.78)
Stock Market Turnover	0.040***	0.040***	0.040***	0.040***	-0.002**	-0.002**	-0.002**	-0.002**
	(17.32)	(17.32)	(17.32)	(17.32)	(-2.25)	(-2.25)	(-2.24)	(-2.23)
Stock Market/GDP	0.028***	0.028***	0.028***	0.028***	-0.028***	-0.028***	-0.028***	-0.028***
	(7.14)	(7.14)	(7.14)	(7.14)	(-16.66)	(-16.66)	(-16.67)	(-16.66)
Private Bond Market/GDP	0.017**	0.017**	0.017**	0.017**	0.032***	0.032***	0.032***	0.032***
	(2.13)	(2.13)	(2.13)	(2.13)	(7.23)	(7.23)	(7.23)	(7.23)
Constant	94.188***	94.187***	94.188***	94.189***	3.466***	3.458***	3.464***	3.455***
	(42.10)	(42.10)	(42.10)	(42.10)	(3.06)	(3.05)	(3.06)	(3.05)
Adj-Rsq.	0.178	0.178	0.178	0.178	0.214	0.214	0.214	0.214
Obs	190,913	190,913	190,913	190,913	190,909	190,909	190,909	190,909

Table 10: Flow-Performance Sensitivity and Outside Investment Opportunity

This table presents the results of the following regressions with year fixed effects and their corresponding robust t-statistics,

$$Flow_{f,t} = \alpha + \beta_1 Num\_UIT_{f,t-1} + \beta_2 Perf_{f,t-1} + \beta_3 Perf_{f,t-1} \times MktShr_{f,t-1} + \beta_4 MktShr_{f,t-1} + \gamma M_{f,t-1} + e_{f,t},$$

where $Flow_{f,t}$ refers to the average monthly flow of fund f in year t, $Num\_UIT_{f,t-1}$ refers to the number of unexplored indices in the country where fund f invests, and it is further replaced with $Rank\_UIT_{f,t-1}$, defined as the rank of unexplored indices. $Perf_{f,t-1}$ refers to the average monthly benchmark-adjusted return. $MktShr_{f,t-1}$ refers to a list of market share proxies, including %Target_Num, computed as the number of funds with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country; %Target_ActNum, computed as the number of active mutual funds with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country; %Target_PasNum, computed as the number of passive funds (i.e., index funds and ETFs) with the same domicile country and investment country as fund f divided by the total number of foreign funds in the same domicile country. Vector *M* stacks all other fund, family and target country control variables, including lagged Fund Flow, Log(Fund TNA), Fund Expense Ratio, Fund Turnover, Log(Fund Age), Log(Distance), Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, return correlation within and outside the family, the Herfindahl index in the domicile country, target country and within fund family, and the number of indices in domicile country. Only the main variables are tabulated for brevity. Appendix A provides detailed definitions for each variable. Numbers with "*", "**", and "***" are significant at the 10%, 5%, and 1% levels, respectively.

Table 10—Continued

Out-of-sample Fund Flow (in %) Regressed on Performance and Market Share						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
BMK-adj Return	0.215***	0.215***	0.011	0.058	0.176***	0.035
	(3.82)	(3.81)	(0.10)	(0.55)	(2.65)	(0.32)
Num_UIT	0.039***					
	(2.72)					
Rank_UIT		0.991**				
		(2.35)				
BMK-adj Return × %Target_Num			0.563**			
			(2.29)			
BMK-adj Return × %Target_ActNum				0.492**		0.458*
				(1.99)		(1.87)
BMK-adj Return × %Target_PasNum					0.703	0.603
					(1.35)	(1.18)
%Target_Num			0.612**			
			(2.27)			
%Target_ActNum				0.611**		0.627**
				(2.23)		(2.33)
%Target_PasNum					-0.142	-0.272
					(-0.29)	(-0.58)
Lag (Fund Flow)	0.362***	0.362***	0.362***	0.362***	0.363***	0.362***
	(17.51)	(17.54)	(17.53)	(17.53)	(17.49)	(17.52)
Log (Fund TNA)	-0.024	-0.024	-0.017	-0.017	-0.019	-0.017
	(-0.87)	(-0.85)	(-0.62)	(-0.62)	(-0.70)	(-0.60)
Fund Expense Ratio	0.076*	0.063	0.093*	0.095**	0.071	0.093*
	(1.66)	(1.36)	(1.95)	(1.96)	(1.53)	(1.92)
Fund Turnover	-0.001	-0.001	-0.001	-0.001*	-0.001	-0.001*
	(-1.47)	(-1.53)	(-1.63)	(-1.69)	(-1.48)	(-1.72)
Log (Fund Age)	-0.095	-0.098	-0.088	-0.093	-0.085	-0.090
	(-1.36)	(-1.41)	(-1.26)	(-1.33)	(-1.20)	(-1.29)
Log (Distance)	-0.047	-0.044	-0.001	-0.008	-0.055	-0.027
	(-0.80)	(-0.75)	(-0.02)	(-0.13)	(-0.83)	(-0.39)
Stock Market Turnover	-0.000	-0.000	-0.001	-0.001	0.000	-0.001
	(-0.64)	(-0.60)	(-1.00)	(-0.96)	(0.02)	(-0.96)
Stock Market/GDP	0.001**	0.001*	0.001*	0.001	0.001	0.001*
	(2.09)	(1.95)	(1.69)	(1.59)	(1.17)	(1.67)
Private Bond Market/GDP	-0.001	0.001	0.001	0.001	0.002	0.001
	(-0.54)	(0.38)	(0.77)	(0.86)	(1.37)	(0.82)
Within Family Correlation	0.642	0.647	0.780	0.757	0.656	0.774
	(1.31)	(1.32)	(1.56)	(1.52)	(1.34)	(1.56)
Outside Family Correlation	-0.344	-0.327	-0.558	-0.525	-0.328	-0.572
	(-0.41)	(-0.39)	(-0.64)	(-0.61)	(-0.38)	(-0.66)
HHI_Dom	-0.608	-0.670	-0.800	-0.802	-0.569	-0.789
	(-0.39)	(-0.43)	(-0.51)	(-0.51)	(-0.36)	(-0.49)
HHI_Target	1.117***	1.054**	0.191	0.204	0.227	0.223
	(2.81)	(2.57)	(1.08)	(1.15)	(1.27)	(1.25)
HHI_Family	-0.112	-0.108	-0.131	-0.137	-0.105	-0.136
	(-0.68)	(-0.65)	(-0.80)	(-0.84)	(-0.63)	(-0.83)
Num_Index_Dom	0.001**	0.001	0.001*	0.001**	0.001*	0.001**
	(2.14)	(1.40)	(1.84)	(2.07)	(1.88)	(2.09)
Constant	0.450	-0.397	0.222	0.245	0.364	0.282
	(0.57)	(-0.44)	(0.28)	(0.31)	(0.45)	(0.35)
Adj-Rsq.	0.160	0.159	0.160	0.160	0.158	0.160
Obs	6,016	6,016	6,016	6,016	6,016	6,016