Mispricing in the Global Market:
A New Perspective

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Abstract

The determination of asset prices and the identification of related economic grounds are considerately more intricate in the global market due to the potential market segmentation and frictions. In this paper, we propose and test a novel intuition that cross-country mispricing can be identified when assets are benchmarked against dual listed firms. More specifically, since a parent stock and its American Depository Receipt (ADR) are likely to be subject to a similar degree of mispricing to avoid outright pairwise arbitrages, we expect the local industry to be underpriced compared to its U.S. counterparty when we observe that a parent stock has a higher overpricing-rank within its local industry than the overpricing-rank of its ADR within the corresponding industry in the US. Empirically, we find that underpricing measured in this way has a significant predicting power over industry returns in the global market. A quarterly rebalanced long-short portfolio based on the measure can generate risk-adjusted returns as high as 7.8% per year. Moreover, while foreign mutual funds chase mispricing opportunities and increase market integration, large domestic mutual fund flows exacerbate mispricing and market segmentation. Our results suggest that the global market is partially segmented at the industry level, and that capital flows play a particularly important role in mispricing and its undoing.

Keywords: Mispricing, Segmented markets, ADR
JEL Codes: G14, G15, G20, G40

1. Introduction

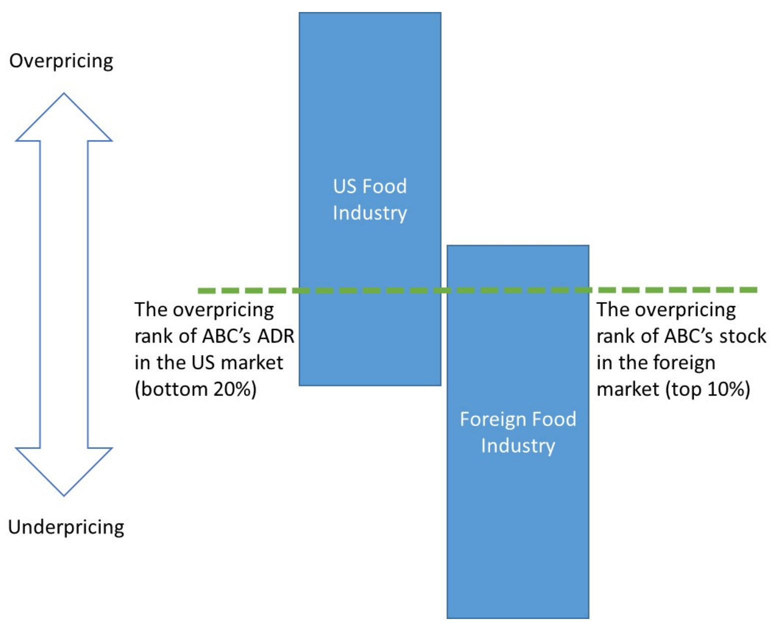
The task of identifying mispricing and uncovering its economic grounds is both essential and challenging in the global market. On one hand, mispricing and arbitrage are at the core of modern financial theories. According to these theories, whether there exist widespread global mispricing and whether arbitrageurs can easily undo such mispricing may have profound influence on the efficiency and development of the global economy. On the other hand, mispricing is highly complex in practice. Just to illustrate how complicated mispricing could be in the U.S., Englberg, McLean and Pontiff (2018) have examined a list of 97 anomalies observed in the U.S. market that could be related to mispricing due to biased expectations; Hou, Xue, and Zhang (2017) compile a database of 447 anomalies. Since U.S. is already the most advanced financial market in the world, the involvement of global assets can only add more complexities. As discussed in Griffin, Kelly, and Nardari (2010), comparing the relative degree of mispricing across markets is challenging as the level and the cost of information production are hard to measure.

This paper aims to address this challenge by proposing a novel way to measure cross-market mispricing based on the benchmark of dual-listings. Furthermore, we show that the cross-market pricing dynamics are in line with the partially segmented market (e.g., Bekaert and Harvey (1995), Bekaert et al. (2011), Carrierri et al. (2007), Errunza and Losq (1985), Griffin and Karolyi (1998), Hou and Moskowitz (2005)) with slow-moving cross-market arbitrageurs (Greenwood, Hanson and Liao (2018), Jylhä and Suominen (2011)).

Our new intuition regarding the measure can be easily explained from a U.S. investor's perspective, who would like to know whether a particular industry of a non-US country, say the food industry, is mispriced or not compared to its U.S. counterpart for investment. Assume that one (and only one) non-US food company ABC has issued both the parent stock traded in the non-US market and American Depository Receipts (ADRs) traded in the US. In this case, although the potential mispricing of non-US food companies could be multifaceted and difficult to gauge, the parent stock and ADR of the same company ABC are likely to be subject to a similar degree of mispricing. Note that we are not arguing that stocks with ADRs are not mispriced. Rather, we only need to notice that, among all pairs of non-US versus U.S. food stocks, the parent stock versus ADR pair is the easiest for arbitrageurs to conduct cross-market arbitrage and, consequently, is likely to exhibit the lowest degree of (mis)price divergence. Rhodes-Kropf et al. (2005) shows that the mispricing of securities can be decomposed into their mispricing determined in the local country-industry pair and the mispricing of the focal country-industry pair. Therefore, when ABC and its ADR have similar mispricing, their respective mispricing rankings within their local markets are then informative about the mispricing of the two markets.

To help that investor answer his question, we can then compare the relative mispricing ranks of ABC and its ADR in the two markets. For instance, suppose that its stock-mispricing rank is top 10% in terms of overpricing among all food companies listed in its local non-US market, while that of its ADR in the U.S. market is bottom 20%. We know that the local food industry is likely to be underpriced relative to the U.S. food industry, because fraction of food stocks more underpriced than ABC is higher in the non-US country (90%) than in the US (20%). Figure 1 below illustrates this intuition.

Figure 1: Industry-level Mispricing Relative to ABC's Stock-ADR Overpricing Ranks



The above intuition can be easily mapped into a three-step empirical strategy that we will adopt in this paper to assess the relative mispricing of industries across countries. We first obtain the overpricing of each stock and ADR within its own market in the spirit of Rhodes-Kropf et al. (2005) by applying country-industry-quarter specific valuation multiples. Next, we can sort stock overpricing within its domestic industry, and obtain the overpricing rank for each stock and ADR.

We finally take the differential between the parent stock's relative mispricing rank within the non-US industry and ADR's relative mispricing rank within the same industry in the U.S. to obtain the mispricing measure. In the example in Figure 1, the relative mispricing of the foreign food industry with respect to the US food industry is calculated as 90%-20% = 70%. Without the loss of generality, we construct the mispricing measure such that a positive value means that the foreign industry is priced below the same industry in the U.S. as illustrated in the above figure. We call this measure *UnderPricing.*

Why do we need ADRs in this measure? Exploiting ADRs and their parent stocks as benchmarks, the *UnderPricing* index construction is free from measuring cost of information production, and projecting mispricing on hundreds of anomalies for each market. To understand the pricing dynamics in segmented markets, we design our measure to capture the relative mispricing across markets which requires securities with comparable pricing across markets. The fungibility between ADRs and their underlying parent stocks guarantees the feasibility of arbitrage which equalizes their mispricing degree across markets.

If the markets are perfectly segmented, then the relative mispricing across markets will persist without arbitrageurs wiping out the price gaps. We do not expect *UnderPricing* to predict future returns in this case. In the perfectly integrated markets, the relative mispricing extent should then be minimal with the arbitrage forces eliminating price differences instantly. We expect *UnderPricing* to stay around zero. However, if the markets are partially segmented then the underpriced market will attract arbitrageurs away from the overpriced one, and the underpricing will revert gradually to zero and even overpricing with rising returns. Our empirical findings support the partially segmented markets at the industry level across the world.

Based on the sample of 39 industries from 44 countries from December 1999 to December 2012, we first show that the statistical properties of *UnderPricing* are consistent with implications of the partial segmentation. *UnderPricing* has both time-series and cross-sectional variations, with a mean and median of 0.05 and 0.02 and max and min of 1 and -0.8. On average, the non-US markets are trivially underpriced compared to the US. Particularly, the rankings of mispricing across-markets for a given industry fluctuate over time and a single country-industry pair exhibits mean-reverting patterns in its mispricing. These evidences also alleviate the concern that permanent systematic differences invalidate the cross-country comparison exercises at the industry level.

We then investigate the role of *UnderPricing* in predicting the cross-section of industry portfolio returns in the partially segmented markets. We show that at both quarterly and semiannual frequencies, *UnderPricing* positively predicts gross returns and DGTW-adjusted returns. The relation is robust to different model specifications in panel and Fama-Macbeth regressions. Precisely, a one standard deviation higher *UnderPricing* is associated with 88(46.2, 74.8) bps higher gross returns (global DGTW-adjusted returns, local DGTW-adjusted returns). A value-weighted hedge portfolio that buys the high *UnderPricing* quantile and sells the low *UnderPricing* quantile earns an alpha of 1.9% (2.2%) per quarter relative to a country-specific (Fama and French (1993), Fama and French (2012)) three- (four-) factor model. The spread earns a 1.2% (2.0%) global (local) DGTW-adjusted returns per quarter.

This return predictability can be driven by within-industry or within-country variation in mispricing. By forming the hedge portfolios within industry and country respectively, we show that the former outweighs the latter in the long-short portfolio tests. Why doesn't mispricing vanish? As Shleifer and Vishny (1997) note, impediments to exploiting such opportunities may contribute to their persistence. For example, international investors can respond to the mispricing in a delayed manner due to distance, information disadvantage, and regulatory barriers. Correspondingly, we show that the predictability power of the underpricing index is stronger for emerging markets than developed markets classified by MSCI. The result is consistent with the perception that market segmentation in the emerging market is more prevalent due to information transparency, accounting standards, regulatory barriers, transaction costs, and corporate governance.

In the partially segmented markets, the forces of arbitrage in the long run ensure that capital will flow into the underpriced market eventually, which is what we find. Precisely, a one standard deviation increase of *UnderPricing* is associated with a 1.1% increase in future semiannual mutual funds flows into the corresponding country-industry pair. The results are robust to different panel regression specifications and Fama-Macbeth regressions. As mutual funds trade on the relative misevaluation at the industry level, we expect the return predictability of underpricing to decay over time which is also confirmed empirically.

However, the process of market integration can be slow because investors are limited in trading across countries due to cognitive limitations and the lack of trading flexibility. For example, local investors can be immune to cross-country comparisons when allocating capital in the domestic markets due to their familiarities within the domestic country. Foreign investors, on the other hand, are more alert to cross-country signals. Accordingly, we do show that the component in flows from mutual funds that responds to *UnderPricing* index is primarily attributed to funds based outside the focal home country rather than domestic funds. The rationale for the six-month delay in foreign funds' reactions to underpricing signals is institutional barriers. In addition, trading on cross-country mispricing opportunities is not risk free due to political risks, currency risks, and high inflation risks which all takes time to assess and hedge against. In this sense, the capital reallocation of foreign funds serves to increase market integration although they are slow-moving. The foreign funds in our setting can be thought of as the slow-moving generalist arbitrageurs in Greenwood, Hanson and Liao (2018) and the hedge funds in Jylhä and Suominen (2011).

When markets are partially segmented, the same industry can receive different valuation under different funding conditions. Prices can deviate from asset fundamentals in the presence of price pressure from institutional investors. We find that the large increases in capital flows from the local mutual funds into a certain country-industry pair account for the decreases in its underpricing (i.e. increases in its overpricing) contemporaneously, controlling for the foreign fund flows. As argued before, local investors are subject to local market conditions and sentiments and can ignore external reference points when specializing and investing in the domestic markets. On the other hand, the same feature does not apply to foreign funds investing abroad. In this case, local funds serve to reinforce market segmentations at the industry level. Our results demonstrate the differential roles played by domestic and foreign funds in the partially segmented markets.

This paper speaks to fours streams of literature. Our findings add to the empirical evidence on market segmentation at the industry level. Bekaert and Harvey (1995) and Carrierri et al. (2007) proposes measures of time-varying market integration at country level, among other works. We exploit the cross-country relative mispricing at industry level to provide a preliminary framework to analyze the industry-wise partial segmentation. We derive new insights as to the origination, decay, and elimination of industry-wise mispricing in the partially segmented markets. We identify foreign mutual funds as the cross-market arbitrageurs increasing market integration and domestic funds as potential contributors to market segmentation at the industry level.

Our novel approach of measuring relative mispricing in the global market contributes to the long line of literature attempting to calibrate mispricings. Jacobs (2016) applies the Stambaugh, Yu, and Yuan (2015) mispricing methodology to global equity markets, constructing cross-sectional composite mispricing metrics incorporating 11 well-established anomalies at stock level. The paper shows that stock-level mispricing associated with these 11 anomalies appears at least as prevalent in the developed markets as in emerging markets. While its mispricing measures are based on the rankings of same-country stocks by sorting characteristics, our approach highlights the importance of benchmarking stocks in the same industries across countries when quantifying mispricing. The benchmark of ADRs and their parent stocks also addresses the challenge of measuring level and the cost of information production in each country as discussed in Griffin, Kelly, and Nardari (2010), and guarantees an operationally feasible measure construction process.

Our work contributes to the understanding of the pricing mechanism of industries in the international setting. Our results support the notion that industries are subject to both local and global pricing factors, as Bekaert, Hodrick and Zhang (2009), Fama and French (1998), and Hou, Karolyi, and Kho (2011) have shown for global stocks. The same industry in different countries are exposed to similar technology and business cycle shocks, which validates the cross-country mispricing comparison at the industry level. Meanwhile, the country-specific sentiment, supply and demand shocks also affect the industry pricing locally, which makes the relative mispricing time varying.

Our findings also relate to the limits of arbitrage literature. Hou and Moskowitz (2005) suggest that frictions associated with investor recognition are responsible for the delay effect at the stock level. The delay of pricing correction at industry level in our setting is explained by cross-border institutional barriers which are in the same spirits as the financial constraints of arbitrageurs in Gromb and Vayanos (2002). The lagged flow responses from foreign flows adds to empirical evidences about "slow-moving capital" (Duffie (2010), Pedersen, Mitchell and Pulvino (2007), Greenwood, Hanson and Liao (2018)) which is a burgeoning research area.

The rest of the paper is organized as follows. Section 2 describes the data and key measures. Section 3 examines how our underpricing index predicts returns. Section 4 studies the responses of mutual funds against the industry level mispricing. Section 5 explores country characteristics that interact with the effect of our underpricing index. Section 6 concludes.

2. Data and Summary Statistics

In this section, we describe the data sources and present the summary statistics of primary variables. Our sample construction starts with public firms provided by Datastream from December 1999 to December 2012. We keep all ADRs and the primary major listing of equity shares with sufficient information to calculate essential financial variables introduced below. We exclude preferred stocks, warrants, REITs, closed-end funds, and exchange-traded funds. Multiple exchanges are included where applicable. For example, United States has NYSE, AMEX, and NASDAQ. China has Shanghai and Shenzen exchanges. Japan has Osaka and Tokyo exchanges.

2.1. **Financial and Accounting Data**

Company-accounts items come from Worldscope. We control for size computed as the logarithm of market capitalization. To proxy for the growth opportunities, we use the book-to-market ratio (i.e., book value of total assets divided by the market value of total assets). Prior literature finds that capital expenditure and leverage also explain stock market returns. We measure capital expenditure as the item scaled by total assets. Leverage is measured as the ratio of book value of total debt to total book assets. To account for reversal or momentum effects, we also include lagged stock market returns as controls. For all the control as mentioned above variables, we first compute these ratios at stock level and then aggregate them into the country-industry level by taking the value or equal-weight average. We winsorize all control variables at 1% from both ends.

We include dummy variables for each country to capture country effects, dummy variables for each industry (which correspond to the Level 3 GICS code of the primary industry of each firm) to account for industry effects, dummy variables to capture time effects, and in some specification, we also control for country-industry fixed effects. Table A1 describes the variables used in our analysis.

*****Table A1*****

Regarding frequency, accounting data is released every quarter, and hence our key variable of interest *UnderPricing* is also updated every quarter. On the industry classification approach, Datastream categorizes companies into different industries based on their main business activities generating the majority of their revenues. There are a handful of industry classification standards available at Datastream such as NAICS and SIC. To ensure the compatibility across countries, we adopt Level 3 of the Global Industry Classification Standard (GICS)[1]

Stock returns data are from Datastream. We employ the Ince and Porter (2006) screens to clean returns data. To exclude outliers in returns, we winsorize gross and DGTW-adjusted returns that fall outside the 1% and 99% percentile range. We also require the stock to be worth at least 1$ at the end of each quarter to be included in our sample. We construct returns at both quarterly and semiannual frequencies.

2.2. Fund Flows

We trace equity mutual funds flows into our sample stocks and country-industries from Factset/Lionshares and Morningstar International. Factset/Lionshares database contains holdings at stock level by over 35,019 institutional investors from 144 countries. It compiles institutional ownership from public filings such as 13-F from SEC. We focus on only one type of institutional investor, the mutual funds whose characteristics such as headquarter locations and investment styles are available at Morningstar International. Institutions from different countries have different reporting frequencies, the most common of which is semiannual. We adhere to the semiannual frequency and use the latest available holdings update for each half-year.

For each sample stock, we aggregate the holding positions from mutual funds of different categories concerning headquarter locations and construct the corresponding flows. Explicitly, we construct stock level mutual fund flows as the market value change of total shares held by mutual funds of different types for a given stock minus the gross stock returns. We then collapse stock level flows into the country- industry measure by taking the value-weighted average. Flow measures are winsorized at 1% and 99% level.

2.3. ADRs

[1]GICS, developed jointly by Standard and Poor's (S&P) and Morgan Stanley Capital International (MSCI), is a 4 tiered hierarchical classification system. https://en.wikipedia.org/wiki/Global Industry Classification Standard.

For a country-industry pair to be included in our analysis, we require the presence of ADRs. We identify ADRs among securities through the variable *Instrument Type* provided by Datastream. From 1999 to 2012, there exits 3225 ADRs spanning across 42 industries and 63 countries. If we require full information on stock market returns and accounting variables, we are left with 2007 ADRs distributed over 39 industries and 44 countries. By further imposing the availability of mutual funds flow data, the ADR sample shrinks to 1779 ones representing 37 industries and 38 countries. The distribution of the 2007 ADRs by countries and industries can be found in the Appendix Table A2 and Table A3.

Consistent with prior studies, Japan, Australia and United Kingdom are the top three origins for depository receipts traded in the US as tabulated in Table A2. We also note that issuing ADRs is not a random choice. Different industries in different countries have different propensities to issue ADRs, depending on the market development, industrial structures and other factors. For example, 299 Japanese firms have issued ADRs, and 64 of them are concentrated in Industrial Engineering, Automobiles & Parts, and Banks. 90 Australian ADRs are from Mining, Pharmaceuticals & Biotechnology, and Oil & Gas producers, among the total of 209 ADRs.

*****Table A2*****

As reported in Table A2, ADRs are also better represented in capital-intensive industries such as Banks, Industrial Engineering, and Mining[2]. A total of 38 countries have 144 ADRs in the banking industry, with Japan accounting for 19, Italy for 8 and Turkey for 6. Only four countries have 13 ADRs in Aerospace & Defense, and UK alone issues 4.

*****Table A3*****

2.4. UnderPricing Index Construction

We now introduce the construction of our key variable of interest, the UnderPricing Index. We begin with determining the relative mispricing of stocks based on the measures developed in Rhodes-Kropf et al. 2005 and Hoberg and Phillips 2010. These measures capture the deviation of

[2] As for the institutional details of ADRs, please refer to Karolyi 2006 for a thorough review.

a firm's market valuation from the one implied by the average industry-quarter specific multiples. For each country-industry-quarter, we first estimate a valuation model from the following regression using data from 1999 to 2012. We drop industry-country-quarter pairs with less than 10 observations. In robustness checks, we also change the control variables in Equation (1) for different valuation models.

$$logM_{icst} = a_{cst} + \beta 1_{cst} logB_{icst} + \beta 2_{cst} \log(NI)_{icst} + \beta 3_{cst} I_{<0} \log(NI^{+})_{icst} + \beta 4_{cst} \mathrm{LEV}_{icst} + \mathrm{S}_{icst} \quad (1)$$

where *i* indexes firms, *c* indexes countries other than US, *s* indexes industries, and *t* indexes time. *logM* is the logarithm of total market capitalization of firm equity. *logB* is the logarithm of book value of equity. *NI* is net income. NI^{+} stands for the absolute value of net income and $I_{<0}log(NI)^{+}$ is an indicator function for negative net income observations. *LEV* is the book leverage ratio of total long-term debt to total assets.

$$MIS_{icst} = logM_{icst} - \widehat{logM_{icst}} \quad (2)$$

Using the estimates *βcst* from the regression model (1), we obtain the country-industry implied valuation for stock *i* at time *t* in country *c* and industry *s*. We then take the differential between the prevailing market valuation of the firm and the implied valuation as MIS_{icst}. As explained in Rhodes-Kropf et al. 2005, we do not require the growth rates or discount rates to be time-invariant by estimating separate equations for each industry-quarter. This accounts for the issue of time-varying risk premium and growth opportunities. We can interpret the MIS_{icst} as the mispricing component or the firm-specific deviations from contemporaneous, country-industry discount rates and average growth. It is important to recognize that the stocks are priced right on average, since by construction the error terms are zero on average. By allowing the estimates *βcst* to vary across time, countries and industries, we better characterize countrywide, industry-wide and time-specific features when evaluating firms. By applying these multiples to time-varying firm level fundamental accounting variables, we are equipped with time-series and cross- sectional variations in MIS_{icst}. Within each country-sector-quarter group, we sort all stocks by the value of MIS_{icst}, and assign rankings to each stock. A lower value of MIS_{icst} corresponds to a smaller value of ranking and undervaluation. Relative rankings are absolute rankings scaled by the total number of stock in each country-sector-quarter. Relative rankings of ADRs (ADR Parent Stocks) are the benchmark points of cross-country valuations of the same industry, and form the basis of our *UnderPricing* index. A higher value of ADRs' (ADRs parent stocks') relative rankings indicates a higher fraction of stocks with under- pricing in that country-sector-quarter group than ADRs (ADRs parent stocks). Since each industry can have more than one ADRs (ADRs parent stocks), we take the weighted average rankings across all ADRs (ADR parent stocks) in each country-sector-quarter group. Weights are constructed using the market capitalization of within-group ADRs.

Notice that ADRs and their underlying parent firms exist in the US and home countries respectively. These two securities of each firm represent the same underlying assets and receive two values of rankings, one at home one in the US. Although the absolute valuation of the two securities should converge in the presence of arbitrage, their rankings diverge. If the same industry has the same composition and attracts the same investor base in the home country and the US, the two rankings associated with ADRs should also converge. These institutional differences and other potential frictions give rise to the differential of rankings. Moreover, this differential is precisely the essence of our UnderPricing Index. The mispricing of securities can be decomposed into their mispricing determined in the local industry and the mispricing of the focal country-industry pair. When two securities have similar mispricing, their respective mispricing rankings within the local market are informative about the mispricing of the two local markets.

We update our notation by differentiating the US from other countries, ADRs from other stocks. u indexes the US, and c indexes countries other than the US. k indexes ADRs, and i indicates stocks other than ADRs. To sum up, we define our *UnderPricing* index as follows:

$$UnderPricing_{sct} = \sum w_{icst} * (RankParent_{icst} - RankADR_{kust}) \quad (3)$$

For a concrete example, let's assume the auto industry in Japan has ten stocks with Toyota Motor as the only ADR parent stock and the auto industry in the US has 20 firms. If Toyota is ranked 10 out of 10 in Japan and 1 out of 20 in US in terms of MIS_{icst}, then $RankParent_{icst}$ and $RankADR_{kust}$ take values of 1 and 0.05 respectively. The value of $UnderPricing_{sct}$ will be $1 - 0.05 = 0.95$. In this case, the auto industry in Japan experiences higher underpricing than its counterpart in the US. In the case of multiple ADR parent stocks per country-industry pair, we take the value-weighted average of ($RankParent_{icst} - RankADR_{kust}$) with parent stocks' market capitalization as the weight.

2.5. Summary Statistics

After imposing all the sampling criteria and requiring the availability of UnderPricing index, our final sample encompasses 477 country-industry pairs from 1999 June through 2012 Dec. As shown in Table 1a, Germany, India, Japan, Singapore and UK have an extended sample period to 2013 March. Panel A in Table Aa lists the number of stocks we use when aggregating variables at industry level by country. Panel B lists the number of stocks with complete return and financial information from Datastream and Worldscope by country. To be included in our test sample, the country-industry pair the stock belongs to has to have at least one ADR. Comparing Panel A and Panel B, we show that a considerable fraction of stocks are exploited in our tests, as high as 99% in Japan and as low as 23% in Korea. The fractions vary across countries because of differential presence rates of ADRs across country-industry pairs. On average, 66% of stocks in Panel B overlap with Panel A.

*****Table 1a*****

Table 1b presents the summary statistics of the returns, mutual fund flows and other characteristics for our sample. Panel A shows the summary statistics at a quarterly frequency, and Panel B employs semiannual frequency. By construction the value range of *UnderPricing* index is from −1 to 1. The *UnderPricing* index has a mean value of 4.9% and the median value of 1.9% across all country-industry pairs, indicating that on average the industry in home countries is more underpriced than its counterpart in the US. In other words, ADR parent stocks receive a higher premium against their domestic industry peers than the ADRs do in the US. Specifically, for an average industry, the fraction of peers more undervalued than ADR parent stocks in home countries is 4.7% higher than the fraction of US peers more undervalued than ADRs. Quarterly gross returns are on average 4.7%, half the size of the semiannual one. DGTW-adjusted returns are negative on average, adjusted for both domestic and global characteristics. Basic summary statistics on the accounting and financial variables are similar to those reported in the literature. However, the book to market ratio (*BM*) appears high. *Size* is denoted in the unit of log dollars.

*****Table 1b*****

Underpricing index has both time-series and cross-sectional variations, with a mean and median of 0.05 and 0.02 and max and min of 1 and -0.8. On average, the non-US markets are trivially underpriced compared to the US. Particularly, the rankings of mispricing across-markets for a given industry fluctuate over time and a single country-industry pair exhibits mean-reverting patterns in its mispricing. If there exist permanent systemic differences across countries for the same industry, then we would have observed persistent underpricing level per country-industry pair.

A simple example can reject this possibility. Figure 2 plots the time series of UnderPricing for the Construction & Materials industry in Japan, Hong Kong, Mexico and South Africa. Evidently, the mispricing level for the Construction & Materials industry in Hong Kong can be higher or lower than in South Africa, and has a mean reverting pattern around zero. In other words, the Construction & Materials industry does not have permanent systematic differences in different countries. These evidences alleviate the concern that permanent systematic differences invalidate the cross-country comparison exercises at industry level.

Figure 2

3. UnderPricing Index and Returns in the Segmented Market

3.1. Returns Measures

In this section, we examine the sensitivity of stock market returns against the *UnderPricing* index we have constructed using ADRs. We have three sets of returns variables including gross returns (*Returns*), returns adjusted for global characteristics (*GlobalDGTW*), and returns adjusted for local characteristics (*LocalDGTW*). Daniel et al. 1997 shows that characteristics rather than the covariances better explains the cross-sectional returns. Following their methodology, we adjust gross returns using a characteristics- based benchmark portfolio to control for premiums associated with size, equity book to market, and momentum proxied by the lagged returns.

To construct GlobalDGTW, we proceed in two steps. In the first step, we build our benchmark portfolios by sorting all the stocks worldwide into quintiles based on lagged size, lagged equity book to market, and lagged momentum independently each quarter. We thus have 125 groups within which we weight stocks both equally and by the contemporaneous value. In the main regression analysis, we rely on the value-weighted benchmark portfolios. In the second step, we subtract from the stock market returns the benchmark portfolio returns to which the stock belongs to, thus obtaining GlobalDGTW. We expect the average GlobalDGTW to be zero if Size, BM , and Momentum are the only factors influencing stock market returns.

We form *LocalDGTW* in a similar fashion. The difference though is that in the first step, we sort stocks on their lagged characteristics within their home countries and thus form 125 local benchmark portfolios for each country. In the second step, we adjust stock returns for the returns of local benchmark portfolio the stock belongs to.

3.2. A Multivariate Analysis

We start by performing a quarterly multivariate analysis at the country-industry level. We regress future returns on *UnderPricing* and a set of other control variables such as *Size*, *BM*, *Leverage*, *Capex*. More specifically, we regress returns in quarter $t + 1$ on *UnderPricing* and other controls at t. The regression model specification is as following:

$$Return_{t+1} = \alpha + \beta UnderPricing_t + \gamma_0 Return_t + \gamma_1 Size_t + \gamma_2 Leverage_t + \gamma_3 BM_t + \gamma_4 Capex_t + s_t \qquad (4)$$

Notice that our sample excludes US market by construction and covers the period from 1999 to 2012 throughout. Results from panel regressions and Fama-MacBeth tests are tabulated in Table 2.

*****Table 2*****

In Panel A and B of of Table 2, the dependent variables are quarterly gross returns adjusted for global and local characteristics respectively.[3] In Column (1) and (4), we put in Time fixed effects to absorb time and industry shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for coun- trywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6). In Column (7), we then move to the multivariate Fama-MacBeth regressions (Fama and MacBeth 1973) which provide further robustness since they employ a different scheme of weighting observations than Panel regressions

[3] In untabulated tables, we also report results using quarterly gross returns at country-industry level as dependent variables. Across model specifications, gross returns are always positively correlated to the UnderPricing index.

with time fixed effects do. We run Fama-MacBeth cross-sectional tests of regressing future returns on *UnderPricing* and a set of other control variables such as *Size*, *BM*, *Leverage*, *Capex*. Column (7) reports the results and the heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates. The error structure in Column (7) is assumed to be autocorrelated up to 1 lag. The error structure in Column (7) can also be assumed to be autocorrelated up to 2, and 3 lags respectively as in appendix Table A5. The coefficient statistical power does not vary much as we assume different autocorrelation structure in standard errors.

Across model specifications, DGTW-adjusted returns are always positively correlated to the UnderPricing index. The point estimates of the *UnderPricing* coefficient do not decline regardless of the fixed effects dimensions we specify. Moreover, the statistical significance of the coefficient is strong and stable despite the two-way clustering for standard errors. If we focus on the specification in Column (2) with both Time and Industry fixed effects, one standard deviation higher *UnderPricing* index is associated with 46.2 (74.8) bps higher global DGTW-adjusted returns (local DGTW-adjusted returns).

Column (7) in Panel A shows that in FamaMacbeth regressions, one standard deviation higher country-industry UnderPricing index is associated with 42 bps higher future quarterly GlobalDGTW returns of the corresponding country-industry pair. Column (7) in Panel B tells us that one standard deviation increase in Under- Pricing index is linked to 66 bps higher future quarterly LocalDGTW returns. These point estimates of *UnderPricing* in Fama-Macbeth regressions are slightly smaller than the ones in Column (1) to (6), while the statistical significance remains similarly as before.

In Table 3, we show the decay pattern of the return predictability by the *UnderPricing* index. When we replace the dependent variables with two quarters and three quarters ahead GlobalDGTW and LocalDGTW returns in the return predictability regression, the positive coefficient estimates of *UnderPricing* no longs are no longer statistically significant. In particular, the sign of *UnderPricing* coefficient estimate is even negative in the GlobalDGTW predictability regression, suggesting a possible reversal at longer horizons.

*****Table 3 *****

So far, the empirical evidence has supported our prediction that our *UnderPricing* index is positively correlated with future returns. As we have reasoned, frictions of different forms in the international capital markets can lead to the price delay at the industry level.[4]

3.3. A Portfolio Analysis

So far, we have employed the multivariate approach using the country-industry portfolio as underlying assets to test the explanatory power of *UnderPricing* index. As Fama and French 2008 comments, slopes in multiple regressions provide clear inference as to the marginal effects of sorting variable on future returns. However, the methodology faces issues arising from critical extreme values in the sample. We, therefore, employs a second approach for a cross-check, the sorts. If the regressions and sorts suggest difference conclusions, the observations with extreme values are likely to be the culprit.

In this section, we adopt the time-series approach to investigate the role of *UnderPricing* in explaining future returns. We examine the performance of long-short portfolios sorted on *UnderPricing* index. Following Jensen et al. 1972, we regress the *UnderPricing*-sorted test portfolios on standard factors established in the literature. The time-series regression intercepts have the interpretations as the abnormal returns delivered by the *UnderPricing* portfolio controlling for standard factors explaining stock prices.

Each quarter (half-year), We sort all sample country-industry pairs into quintiles based on *UnderPricing* of the previous period. We calculate the equal- and value- weight average returns for each quintile. We define the portfolio returns as the difference between returns of the highest quintile (most undervalued) and the lowest (most undervalued). This is equivalent to forming zero-investment portfolios which go long in country-industry pairs with top 20% values for *UnderPricing* while shorting those with bottom 20% values. The equal- and value- weight

[4] We also show that the semiannual returns predictability regressions results in Appendix Table A4 and Table A5. Panel A, B and C in Table A4 report results described in Table 2 at the semiannual frequency. For gross returns, the point estimates in the semiannual regressions double the size of those in the corresponding quarterly regressions. For the DGTW-adjusted returns, the size of the coefficient is 1.5 times larger than the quarterly estimates. Table A5 parallels Table 2 Column (7) for the semiannual Fama-Macbeth regressions. The difference of point estimates between quarterly and semiannual Fama-Macbeth is similar to the case of panel regressions.

portfolio returns are thus the profitability from this long-short strategy with corresponding weighting scheme inside the long and short position.

The potential concern of focusing on the hedge portfolio returns obtained from this long-short position is that the small stocks with extreme values on financial variables and returns can dominate the returns as they account for a fair share in the extreme sort quintiles. We circumvent the issue by using value-weight portfolios. We report results from both equal- and value-weighted portfolios in Table 4 which displays the abnormal returns of the *UnderPricing* hedge portfolio sorted every quarter. To conserve space, we do not report performance of monthly and semiannually sorted portfolios.

Across columns of Table 4, we control for standard factors. It has been an enduring debate as to whether equity is globally or locally priced or both (Karolyi and Stulz 2003). Griffin 2002 shows that the domestic component in the global version of Fama and French 1993 better explains the time-series variation in returns for stocks and portfolios. While it is not the focus of this paper to take a stance on this topic, we follow Hou et al. 2011 and employ both global and local versions of the Fama French three- factor and four-factor model.[5]

Specifically, Column (1) and (2) of Table 4 estimate the global version of Fama French three-factor model (Equation 5) using the equal- and value- weight hedge portfolios. In Column (5) and (6), we estimate the global version of Fama French four-factor model (Equation 6) using the equal- and value- weight hedge portfolios. In Column (3) and (4), we estimate the local version of Fama French three-factor model (Equation 7). In Column (7) and (8), we estimate the local version of Fama French four-factor model (Equation 8). All standard errors are heteroscedasticity robust.

$$Port_t = \alpha + r^G RmRf_t^G + s^G SMB_t^G + h^G HML_t^G + S_t \quad (5)$$

$$Port_t = \alpha + r^G RmRf_t^G + s^G SMB_t^G + h^G HML_t^G + m^G WML_t^G + S_t \quad (6)$$

$$Port_t = \alpha + r^L RmRf_t^L + s^L SMB_t^L + h^L HML_t^L + S_t \quad (7)$$

$$Port_t = \alpha + r^L RmRf_t^L + s^L SMB_t^L + h^L HML_t^L + m^L MOM_t^L + S_t \quad (8)$$

[5] Data on all the factors come from Kenneth R. French's Data Library. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html

*****Table 4 *****

In the equations above, the subscript *G* denotes the global market portfolio, while *L* indicates the local country-specific market portfolio. *RmRf* is the market portfolio returns minus risk-free rate for the corresponding region. *SML* is the small minus significant size factor. *HM L* means the high minus low value factor. *WML* is the winner minus loser momentum factor.

Across all the different specifications and portfolio sorts in Table 4, we document a robust positive alpha. If we focus on the value-weight portfolio evaluated by the local four-factor model, we see that the hedge portfolio delivers an alpha of 1.9% per quarter over and above traditional factors. The sizable alpha net of standard factors is consistent our findings in the multivariate analysis. Besides, point estimates of global factors are smaller than local factors. Except for factor *SML*, coefficient estimates of global factors are less reliably different from zero than local ones. When we benchmark the *UnderPricing* index hedge portfolio against the four factors constructed using the global market portfolios (Column (6)), the abnormal returns increase to 2.2% per quarter. If we compare the size of *Alpha* between equal- and value- weight portfolios, we find that value-weight portfolios are associated with a higher level, indicating that the small stocks in the extreme quintiles of *UnderPricing* have more extreme stock returns.[6]

Table 5 shows the quintile portfolio quarterly returns sorted by *UnderPricing*. In each quarter, the country-industries are sorted into quintiles by the values of previous quarter *UnderPricing*. Quintile 5 corresponds to the country-industries with top 20% extreme values of previous quarter *UnderPricing*. In Panel A, we sort country-industry pairs by time and they are sorted into quintiles by the values of previous quarter UnderPricing. Quintile 5 corresponds to the country-industries with top 20% extreme values of previous quarter UnderPricingPortfolio returns in column (1)-(6) are equal weighted. Portfolio returns in column (7)-(12) are value weighted. Column (1) (3) (5) (7) (9) (11) tabulate the mean value of gross returns, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns. Column (2) (4) (6) (8) (9) (12) tabulate the t-value for the mean value of raw, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns.

[6] In the unreported tables, we also control for the three and four factors built using all the markets except for the US, and find the results similar to Table 4.

From portfolio quintile 1 to 5, the degree of underpricing in the previous quarter increases. The corresponding equal-weight gross returns almost monotonically increase from 2.8% per quarter to 5.2% per quarter. The only exception is quintile 2 and 3 which are negligibly different. Similarly, the value-weight gross returns range from 2.6% for the most underpriced quintile to 5% for the least underpriced quintile. The portfolio gross returns are all significantly from zero as shown by the t-stats. The similar patterns are observed global- and local- DGTW adjusted returns. Portfolio DGTW returns are all negative, possibly because some negative DGTW returns from certain time periods drag the time-series average for each portfolio to the negative side. In generally, the globa-DGTW adjusted returns are less negative than locally adjusted ones. Also, the DGTW returns for quintile 4 and 5 lose significance for both equal- and value- weight portfolios. [7] The equal weighted hedge portfolio which goes long in quintile 5 and short in quintile 1 yields a spread of 2.4% gross returns, 1.2% global-DGTW adjusted returns, and 2% local-DGTW adjusted returns. The t-statistics from the time-series tests of these spreads stand above 6. Value-weighted hedge portfolios yield similar results.

This return predictability can be driven by within-industry or within-country variation in mispricing. To further investigate the sources of the portfolio performance, we form the hedge portfolios within industry and country respectively. In Panel B, we sort all industries by country each quarter and they are sorted into quintiles by the values of previous quarter UnderPricing. In Panel C, we sort all countries by industry each quarter and they are sorted into quintiles by the values of previous quarter UnderPricing. Comparing Panel B and Panel C, we find that the spreads in Panel B is higher than in Panel C across different return measures and weighting schemes. Hence, we argue that within-industry mispricing variations outweighs within-country ones in generating portfolio returns. We also note that Panel A generates the highest hedge portfolio returns among all the three panels, indicating that return predictability of within-industry mispricing variations is enhanced by within-country variations.

*****Table 5*****

In summary, the evidence from portfolio sorts is aligned with what we have seen from the multi-variate analysis section. If *UnderPricing* index does have predictability for returns in the cross-

[7] In Appendix A6, we also report quartile portfolio returns by *UnderPricing*.

section and time-series dimensions, what responses should we expect from mutual funds? Had investors realized the pricing gap between countries instantaneously as the mispricing occurs, then the arbitrage force should wipe out the pricing gap. Hence, the evidence of *UnderPricing* index predicting future returns implies investors respond to the mispricing in a delayed manner. Do mutual funds eventually respond to the relative mispricing of the same industry across countries or instead they remain silent on the pricing differences originated from institutional differences due to the high trading cost or regulatory barriers? Which investors are savvier about the cross-country mispricing at the industry level? In the next section, we investigate how mutual funds respond to industry *UnderPricing* across countries.

4. UnderPricing Index and Mutual Funds Flows in the Segmented Markets

4.1. Sensitivity of Flows to UnderPricing Index

Most works in the mutual funds literature examine flows at the fund level (Frazzini and Lamont 2008). We build flows at stock level and then aggregate them into country-industry pairs level, in the same spirits as the proxy for flows at the fund level. Specifically, we first construct stock level mutual fund flows computed as the market capitalization changes of total shares held by all mutual funds for a given stock adjusted for the gross returns. Stock level flows are winsorized to reduce the impact of outliers. Since the holding data from mutual funds is available at the semiannual frequency, our flow measures are semiannual as well. We then take the equal-weight or value-weight flows of all stocks for a given country-industry group, to obtain mutual fund flow measures at country-industry level. To handle the issue of different reporting frequencies and dates of different institutions holding the same stock, we only use the most recent updates within the half-year. The *Flow* measure is specifically defined as below:

$$Flow_t = \frac{cmv_t}{cmw_{t-1}} - Return_t$$

Where *cmv* means market valuation (i.e., number of shares held times the stock price) of all mutual funds' position in a given stock or country-industry group. Our baseline measure *Flow* include mutual funds all over the world. In the next section, we further decompose flows into the foreign and domestic components, based on the headquarter locations of the mutual funds.

Table 6 Panel A shows that one standard deviation increase of *UnderPricing* index is associated with 1.1% higher future semiannual mutual funds flows into the corresponding country-industry pair. In Panel A of Table 6, the dependent variable of all the columns is the semiannual flows into a given country-industry pair from global mutual funds. In Column (1) and (4), we put in Time fixed effects to absorb time and industry shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6).

Across model specifications, one-period ahead flows are always positively correlated to the *UnderPricing* index. The point estimates of the *UnderPricing* coefficient do decline by 25% when we change from one- dimension fixed effects to two-dimension, as the variation in flows is further soaked up. Also, the statistical significance of the coefficient is strong and stable despite the presence of two-way clustering for standard errors. If we focus on the specification in Column (2) with both Time and Industry fixed effects, one standard deviation higher *UnderPricing* index is associated with 1.1% increase in flows. The sign and magnitude of the Underpricing Index coefficient change a bit as we change the fixed effects dimensions, but the statistical power remains stable as we adjust standard errors for clustering over different dimensions. We use the same set of control variables as in the return predictability regressions. Notably, the negative sign of *Size* coefficient means that flows in country-industries with larger market capitalization are lower than small-cap country-industries. This is probably because mutual funds' stakes in larger industries are less frequently adjusted. Also, flows into country-industries from mutual funds exhibit rehearsals, as shown by the negative sign of $Flow_t$ although it is not always reliably different from zero.

*****Table 6*****

As robustness checks, we provide cross-check on the relation between mutual funds using multivariate Fama-MacBeth regressions (Fama and MacBeth 1973) in Appendix Table A7 and obtain similar results as our analysis in the returns section, Now we see that mutual funds do allocate more capital into country-industries with greater extent of undervaluation, and a natural question to ask is which funds respond more strongly and what factors could prevent funds from reacting to the undervaluation.

4.2. Which Mutual Funds React More Strongly?

To investigate different reactions from mutual funds of different kinds, we first decompose funds into domestic and foreign funds. For a single stock, domestic (foreign) funds are defined as funds headquartered in the same (different) country as the stock. We then aggregate all the holding positions of the domestic (foreign) funds to construct domestic (foreign) flows denoted as FlowHome (FlowFrn). We then collapse stock level FlowHome and FlowFrn into country-industry level using stocks' market capitalization as weights.

In Table 6, Panel B reports results from regressing future foreign flows on UnderPricing index and Panel C uses flows from the home country as the dependent variable.

Comparing the coefficients of UnderPricing in Panel B and C in Table 6, we find that the predictability power of UnderPricing Index in flows mainly comes from flows originating from mutual funds headquartered in foreign countries excluding the local focal country. Specifically, we have a larger point estimate of UnderPricing in Panel B of Table 6 when explaining future foreign flows than what we obtain in Panel A when predicting global flows. Besides, point estimates of *UnderPricing* in Panel C all lose statistical power. [8]

To interpret these differential responses between local and foreign mutual funds investors, we first need to understand the required steps to react to the industry mispricing. To begin with, mutual funds need to realize the existence of such mispricing with their information and skills. Hence, investors who are savvier about local and foreign capital markets should be better able to capture misvaluation opportunities. In this step, local mutual funds may specialize in analyzing local industries and stocks from the local perspective without considering their valuation implication in countries elsewhere, because their investment strategy or purpose can focus on the local market.

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[8] This divergence of coefficient estimates becomes even more evident in the Fama- Macbeth regression outputs tabulated in Table A7. Panel B of Table A7 has foreign flows as dependent variable, and Panel C in Table A7 has domestic flow as dependent variable. The sign of UnderPricing coefficient in Panel C even turns negative although not reliably different from zero. Panel B in Table A7 reports quantitatively consistent point estimates as in Column (1) of Panel B in Table 6.

Hence, local investors may be insensitive to the valuation gap vis-a-vis the industry abroad. On the contrary, foreign investors are savvier about the different pricing of the same industry across countries as they establish investment positions all over the world.

Up to now, we have presented evidence that the pricing gap of the same industry across countries does exist and does not vanish spontaneously. Correspondingly, institutional investors such as mutual funds act on the pricing in a delayed fashion and hence explaining the one-period persistence of the pricing gap. In particular, the reaction from mutual funds in response to the undervaluation of country- industry pairs is attributed to foreign funds headquartered outside the country in question. However, we do not make any causality argument about whether increased flows from mutual funds lead to the return jumps or instead mutual funds flow chase country-industry pairs experiencing high returns. Solving the return-flow simultaneity issue is beyond the scope of this paper.

We also want to highlight that the price jump in industries having experienced undervaluation is a result of not only flows into the country, but also the equity market pricing efficiency concerning processing information, and trades from other types of investors.

4.3. How Do Fund Flows Explain UnderPricing?

How does the underpricing come into existence in the first place? We investigate this question in Table 7. Columns (1) to (3) shows that contemporaneously, the change of underpricing is explained by the change of domestic mutual flows rather than foreign flows. Faster increases in domestic flows is correlated with slower increases in underpricing changes. The equivalent interpretation is that when domestic flows slowly move into the country-industry, that country-industry witnesses a faster increase in the underpricing degree. The dependent variable in Table 7 is the first-differenced UnderPricing, and the independent variable of interest is the first-differenced FlowHome. All the control variables are first-differenced as well. For the first three columns, we include both ΔFlowHome and ΔFlowFrn when explaining ΔUnderPricing and find that the coefficient of ΔFlowHome is statistically significant but ΔFlowFrn is insignificantly negative. Fund flows have price impacts especially in the short run. Local and foreign funds exhibit different styles when investing in the same country-industry pair. Local funds do not seem to incorporate the cross-market pricing references in their investment decision locally. Chan, Covrig, and NG (2005) uncovers the home and foreign biases in asset allocation using a sample of mutual funds from 26 countries. Funds allocate a disproportionately larger fraction of investment to domestic stocks and smaller fraction to foreign markets. Our results further show that funds may be only concerned with local market conditions and sentiment when investing in their home country, but pay attention to cross-country comparisons when investing abroad.

*****Table 7*****

In Column (1) and (4), we put in Time fixed effects to absorb time shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(6) are clustered by time and country.

5. Country Characteristics

In this section, we take a step back and explore the potential channels influencing the return-UnderPricing sensitivity, and hence shedding light on the mechanism underneath the phenomenon we have documented so far.

5.1. Country Characteristics Influencing Return-UnderPricing Sensitivities

If the financial markets and real economies are all fully integrated, then the same industry in different countries should be viewed identical from the valuation perspective because the productivity and pricing difference will be wiped out by arbitrageurs in the financial markets and real economies. Our finding reflects market segmentation that has long been investigated in the literature from both empirical and theoretic angles (Bekaert and Harvey 1995, Bekaert et al. 2011, Carrieri et al. 2007, Griffin and Karolyi 1998, Hou and Moskowitz 2005, Errunza and Losq 1985). Bekaert et al. 2011 proposes an empirical measure of market segmentation and shows that financial and trade openness, political risk profile and equity market development are significant factors explaining the extent of segmentation globally.

Specifically, we will first concentrate on the country characteristics by employing the market classification of MSCI. From 1999-2012, 21 countries remain as developed markets, and 22 countries stay as emerging markets. The only exception is Israel which changed from emerging market to developed market. Presumably the market segmentation in the emerging market is more prevalent due to information transparency, accounting standards, regulatory barriers, transaction costs, corporate governance and so on so forth.

In emerging markets, the pricing gaps are left open without arbitrageurs immediately jumping onto them. If our underpricing measure indeed captures mispricing not realized by market participation, then as information gets gradually impounded into prices and the mispricing gets corrected, our underpricing measure can predict future returns. As the cross-market arbitrage forces face more impediments and information impounding process is slower in emerging markets, we expect the underpricing measure to have stronger forecasting power.

Table 8 displays the interaction effect between *UnderPricing* and *DM*. DM dummy equals to one if the country is defined as a developed market by MSCI and zero as an emerging market. DM*UP is the interaction term between DM dummy and UnderPricing Index.The sample period is 1999 through 2012 and sample size is slightly reduced as we exclude Israel in the analysis. This table tabulates how semiannual industry underpricing level index predicts nextperiod returns. In Column (1) - (4), the dependent variables are gross returns adjusted for global characteristics at country-industry level and control lagged dependent variable is current gross returns adjusted for global characteristics. In Column (5) - (8), the dependent variables are gross returns adjusted for local characteristics at country-industry level and control lagged dependent variable is current gross returns adjusted for local characteristics. In Column (1) (3) (5) (7), we put in Time fixed effects to absorb time and industry shocks. In Column (2) (4) (6) (8), we further add Industry fixed effects to account for industry shocks. We do not include country fixed effects in this test as the dummy DM is colinear with country fixed effects. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1) (2) (5) (6) are clustered by time and country, while they are clustered by country and industry in Column (2) (3) (7) (8).

***** Table 8 *****

In all the columns of Table 8, the coefficient estimates of interaction term *DM*UP* are always significantly negative. Given the dummy construction of *DM*UP*, we can calculate the overall effect of *UnderPricing* on *Flows* as the sum of *UnderPricing* coefficient and *DM*UP* coefficient when *DM* takes the value of 1. Take column (1) as an example, when the country is developing market, one standard deviation increase in *Underpricing* is associated with (0.054 − 0.042)*0.22 = 0.22% increase in GlobalDGTW returns . When the country is a emerging market, one standard deviation increase in *UnderPricing* is associated with 1.19% increase in GlobalDGTW returns. We can interpret this finding as return predictability of *UnderPricing* concentrate in developed countries. This interaction effect between *UnderPricing* index and *DM* is statistically reliably different from zero.

This interaction effect also alleviates the concern that our empirical results are driven by countries hosting more ADR parent stocks such as Australia, Japan, UK, since developed markets have more ADRs issued than emerging markets.

For further robustness checks, we drop Australia, Japan, UK in the empirical analysis and find the results remain quantitatively similar. We also drop ADR-popular industries such as Mining and Banks in the return and flow analysis, as a robustness check against that endogenous choice of issuing ADRs by industries is driving our result.

6. Conclusion

To conclude, this paper proposes an ADR-based industry level mispricing measure and a preliminary framework to analyze dynamics of partially segmented markets at the industry level. The long-short trading strategy built around *UnderPricing* index generates significant alphas accounting for standard pricing factors. Mutual funds exploit this industry level return predictability by moving their capital to countries where the focal industry experiences a higher level of undervaluation in the period before, particularly when the mutual funds are headquartered abroad. Also, we present evidence that the returns predictability of our *UnderPricing* index is stronger in emerging markets. We provide suggestive evidence that domestic fund flows explain the origination of mispricing. Overall, our empirical results add to the evidence of market segmentation at the industry level. We also uncover how mutual funds exploit cross-country mispricing with a given set of market conditions and country characteristics.

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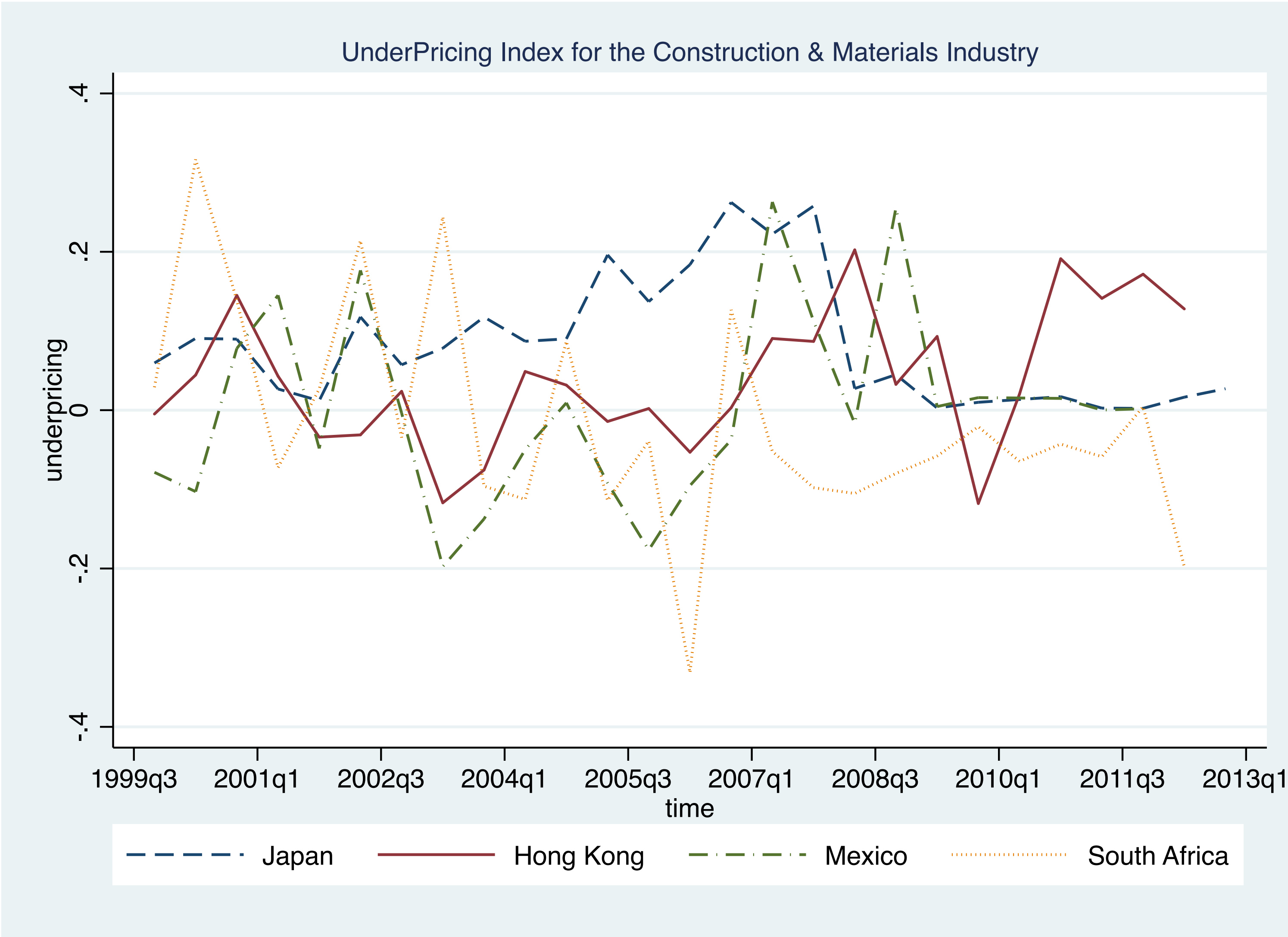

Figure 2: Time series of UnderPricing index for the Construction & Materials industry

Table 1a: Descriptive statistics of individual firms within industries per country

Panel A shows descriptive charactericis of stocks used in our sample per country. For a stock to be used in our sample, its hosting coutry-industry pair should have at least one ADR parent stocks. Panel B shows descriptive charactericis of stocks concurrently covered in Datastream for our sample countries.

		Panel A: Sample firms					Panel B: Datastream and Worldscope Coverage				
Country	ISO Code	No. firms	Start	End	Min no. firms	Max no. firms	No. firms	Start	End	Min no. firms	Max no. firms
Argentina	ARG	53	30-Jun-99	31-Dec-12	7	35	65	30-Jun-99	31-Dec-12	7	46
Australia	AUS	1638	30-Jun-99	31-Dec-12	38	894	1660	30-Jun-99	31-Dec-12	38	914
Austria	AUT	71	30-Jun-99	31-Dec-12	11	47	115	30-Jun-99	31-Dec-12	11	64
Belgium	BEL	99	30-Jun-99	31-Dec-12	12	63	287	30-Jun-99	31-Dec-12	35	183
Brazil	BRA	187	30-Jun-99	31-Dec-12	4	101	216	30-Jun-99	31-Dec-12	4	107
Canada	CAN	291	30-Jun-99	30-Jun-10	44	115	2901	30-Jun-99	31-Dec-12	381	1748
Chile	CHL	91	30-Jun-99	31-Dec-12	21	61	145	30-Jun-99	31-Dec-12	33	93
China	CHN	1311	30-Jun-99	31-Dec-12	58	1084	1993	30-Jun-99	31-Dec-12	102	1593
Colombia	COL	30	30-Jun-99	31-Dec-12	4	14	30	30-Jun-99	31-Dec-12	4	14
Denmark	DNK	137	30-Jun-99	31-Dec-12	42	102	271	30-Jun-99	31-Dec-12	48	178
Egypt	EGY	36	30-Jun-99	31-Dec-12	4	30	94	30-Jun-99	31-Dec-12	5	82
Finland	FIN	85	30-Jun-99	31-Dec-12	29	62	178	30-Jun-99	31-Dec-12	50	124
France	FRA	1163	30-Jun-99	31-Dec-12	151	729	1257	30-Jun-99	31-Dec-12	164	786
Germany	DEU	1183	30-Jun-99	31-Mar-13	2	716	1462	30-Jun-99	31-Mar-13	7	863
Greece	GRC	115	30-Jun-99	31-Dec-12	6	86	381	30-Jun-99	31-Dec-12	30	285
Hong Kong	HKG	767	30-Jun-99	31-Dec-12	100	460	795	30-Jun-99	31-Dec-12	100	479
Hungary	HUN	15	30-Jun-99	31-Dec-09	4	8	24	30-Jun-99	31-Dec-12	1	13
India	IND	663	30-Jun-99	31-Mar-13	18	409	1474	30-Jun-99	31-Mar-13	99	918
Indonesia	IDN	35	31-Dec-99	31-Dec-12	1	20	45	31-Dec-99	31-Dec-12	1	21
Ireland	IRL	34	30-Jun-99	31-Dec-12	4	28	45	30-Jun-99	31-Dec-12	4	33
Israel	ISR	263	30-Jun-99	31-Dec-12	23	222	436	30-Jun-99	31-Dec-12	29	366
Italy	ITA	341	30-Jun-99	31-Dec-12	75	214	461	30-Jun-99	31-Dec-12	93	288
Japan	JPN	5648	30-Jun-99	31-Mar-13	721	4514	5667	30-Jun-99	31-Mar-13	722	4519
Korea	KOR	209	30-Jun-99	31-Dec-12	28	160	884	30-Jun-99	31-Mar-13	8	691
Luxembourg	LUX	18	30-Jun-99	31-Dec-12	1	10	28	30-Jun-99	31-Dec-12	1	18
Malaysia	MYS	299	30-Jun-99	31-Dec-12	29	175	841	30-Jun-99	31-Dec-12	81	431
Mexico	MEX	148	30-Jun-99	31-Dec-12	30	85	158	30-Jun-99	31-Dec-12	30	87
Netherlands	NLD	166	30-Jun-99	31-Dec-12	10	145	263	30-Jun-99	31-Dec-12	18	221
New Zealanc	NZL	39	30-Jun-99	30-Jun-12	2	26	122	30-Jun-99	30-Jun-12	2	79
Norway	NOR	264	30-Jun-99	31-Dec-12	37	165	332	30-Jun-99	31-Dec-12	40	192
Peru	PER	73	30-Jun-99	31-Dec-12	4	52	127	30-Jun-99	31-Dec-12	11	82
Philippines	PHL	38	30-Jun-99	31-Dec-12	6	19	46	30-Jun-99	31-Dec-12	6	23
Poland	POL	109	30-Jun-99	31-Dec-12	3	90	380	30-Jun-99	31-Dec-12	30	304
Portugal	PRT	40	30-Jun-99	31-Dec-12	2	30	65	30-Jun-99	31-Dec-12	2	41
Russia	RUS	162	31-Dec-99	31-Dec-12	3	85	179	31-Dec-99	31-Dec-12	3	94
Singapore	SGP	365	30-Jun-99	31-Mar-13	3	217	475	30-Jun-99	31-Mar-13	3	293
South Africa	ZAF	366	30-Jun-99	31-Dec-12	7	207	463	30-Jun-99	31-Dec-12	7	265
Spain	ESP	120	30-Jun-99	31-Dec-12	26	70	185	30-Jun-99	31-Dec-12	39	104
Sweden	SWE	478	30-Jun-99	31-Dec-12	90	306	615	30-Jun-99	31-Dec-12	108	384
Switzerland	CHE	288	30-Jun-99	31-Dec-12	97	204	377	30-Jun-99	31-Dec-12	105	270
Taiwan	TWN	1113	30-Jun-99	31-Dec-12	89	687	1964	30-Jun-99	31-Dec-12	289	1273
Turkey	TUR	183	30-Jun-99	31-Dec-12	38	160	306	30-Jun-99	31-Dec-12	78	267
United Kingd	GBR	2725	30-Jun-99	31-Mar-13	49	1349	2839	30-Jun-99	31-Mar-13	56	1406
Venezuela	VEN	14	30-Jun-99	31-Dec-11	2	12	14	30-Jun-99	31-Dec-11	2	12

Table 1b: Summary Statistics: Quarterly

This table tabulates the summary statistics of UnderPricing index, flows, returns, control variables at the country-industry pair level. In Panel A, we present the summary statistics of key variables at quarterly frequency. In Panel B, the variables are tabulated at semiannual frequency. The sample period runs from 1999 to 2012. Variables are defined in the previous section.

Panel A: Quarterly

	count	mean	sd	min	p25	p50	p75	max
UnderPricing	14414	0.049	0.223	-0.798	-0.045	0.019	0.143	0.997
Returns	14414	0.047	0.174	-0.585	-0.051	0.040	0.134	1.151
GlobalDGTW	14414	-0.004	0.122	-0.318	-0.075	-0.008	0.060	0.398
LocalDGTW	14414	-0.014	0.126	-0.331	-0.088	-0.019	0.053	0.402
Size(log$)	14414	6.575	3.231	0.072	4.245	7.230	9.029	12.346
BM	14414	1.548	2.307	0.140	0.474	0.745	1.195	9.791
Capex	14414	0.044	0.042	0.000	0.014	0.033	0.059	0.223
Leverage	14414	0.208	0.150	0.001	0.078	0.192	0.313	0.639

Panel B: Semiannually

	count	mean	sd	min	p25	p50	p75	max
UnderPricing	7133	0.049	0.221	-0.798	-0.045	0.021	0.143	0.997
Returns	7133	0.098	0.262	-0.728	-0.053	0.081	0.229	1.772
GlobalDGTW	7133	-0.010	0.185	-0.464	-0.118	-0.019	0.081	0.618
LocalDGTW	7133	-0.028	0.191	-0.511	-0.139	-0.039	0.067	0.635
Flow	4626	0.083	0.375	-1.078	-0.041	0.034	0.164	1.808
FlowFrn	4626	0.205	0.761	-1.079	-0.035	0.055	0.225	5.519
FlowHome	4626	1.076	5.050	-1.141	-0.109	0.030	0.338	40.221
Size(log$)	7133	6.601	3.236	0.068	4.294	7.261	9.051	12.377
BM	7133	1.561	2.373	0.138	0.471	0.740	1.187	10.104
Capex	7133	0.044	0.042	0.000	0.014	0.033	0.059	0.223
Leverage	7133	0.208	0.150	0.001	0.078	0.193	0.314	0.639

Table 2: Quarterly Regression: Future Returns and UnderPricing Index

This table tabulates how quarterly industry underpricing level index predicts next quarter returns. In Panel A and B, the dependent variables are quarterly gross returns adjusted for global and local characteristics respectively at country-industry level. In Column (1) and (4), we put in Time fixed effects to absorb time shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6). Column (7) tabulates Fama-MacBeth regression of how quarterly industry underpricing level index predicts next quarter returns. Column (7) report heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates and the error structure is assumed to be autocorrelated up 1 lag . The sample period is 1999-2012.

Panel A : Global DGTW-adjusted Returns and UnderPricing Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$
$UnderPricing_t$	0.020**	0.021**	0.023***	0.020***	0.021***	0.023***	0.018**
	(3.06)	(3.07)	(3.43)	(3.39)	(3.60)	(3.81)	(2.76)
$GlobalDGTW_t$	0.034***	0.028**	0.025**	0.034**	0.028**	0.025**	0.040**
	(3.69)	(2.97)	(2.58)	(3.27)	(2.73)	(2.31)	(2.79)
$Size_t$	0.001**	0.001	0.001**	0.001**	0.001	0.001**	0.001*
	(2.91)	(1.58)	(2.41)	(2.23)	(1.13)	(2.17)	(2.00)
BM_t	0.001	-0.002	0.007	0.001	-0.002	0.007	0.003
	(0.19)	(-0.29)	(0.98)	(0.21)	(-0.32)	(1.08)	(0.38)
$Capex_t$	0.073*	0.070*	0.038	0.073***	0.070***	0.038*	0.022
	(1.74)	(1.79)	(1.01)	(3.55)	(3.87)	(1.96)	(0.54)
$Leverage_t$	-0.053***	-0.047***	-0.050***	-0.053***	-0.047***	-0.050***	-0.039**
	(-4.80)	(-5.20)	(-4.25)	(-5.31)	(-5.45)	(-4.61)	(-2.35)
FE Time	Y	Y	Y	Y	Y	Y	
FE Industry	N	Y	N	N	Y	N	
FE Country	N	N	Y	N	N	Y	
Clustering Time	Y	Y	Y	N	N	N	
Clustering Industry	N	N	N	Y	Y	Y	
Clustering Country	Y	Y	Y	N	N	N	

Panel B : Local DGTW-adjusted Returns and UnderPricing Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$
$UnderPricing_t$	0.032***	0.033***	0.032***	0.032***	0.033***	0.032***	0.030***
	(4.50)	(4.60)	(4.77)	(5.22)	(5.56)	(5.72)	(4.36)
$LocalDGTW_t$	0.040**	0.033**	0.028	0.040***	0.033***	0.028**	0.041**
	(2.35)	(1.97)	(1.61)	(4.02)	(3.35)	(2.69)	0.000
$Size_t$	0.000	-0.001	0.001	0.000	-0.001	0.001	(0.08)
	(0.02)	(-1.29)	(0.92)	(0.03)	(-1.24)	(0.99)	-0.002
BM_t	-0.004	-0.007	0.008	-0.004	-0.007	0.008	(-0.19)
	(-0.48)	(-1.04)	(1.15)	(-0.58)	(-1.18)	(1.22)	0.038
$Capex_t$	0.105**	0.113**	0.061	0.105***	0.113***	0.061**	(0.77)
	(2.23)	(2.41)	(1.44)	(4.12)	(4.63)	(2.20)	-0.025
$Leverage_t$	-0.039***	-0.038***	-0.046***	-0.039***	-0.038***	-0.046***	(-1.37)
	(-3.39)	(-3.86)	(-3.49)	(-3.42)	(-3.58)	(-3.90)	-0.013**
FE Time	Y	Y	Y	Y	Y	Y	
FE Industry	N	Y	N	N	Y	N	
FE Country	N	N	Y	N	N	Y	
Clustering Time	Y	Y	Y	N	N	N	
Clustering Industry	N	N	N	Y	Y	Y	
Clustering Country	Y	Y	Y	N	N	N	
Observations	13341	13341	13341	13341	13341	13341	13341
R^2	0.441	0.445	0.448	0.441	0.445	0.448	0.086

t statistics in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.001

Table 3: Predictability Decay

This table tabulates how quarterly industry underpricing level index predicts two and three quarters ahead returns. In Panel A and B, the dependent variables are quarterly gross returns adjusted for global and local characteristics respectively at country-industry level. The dependent variables in column (1)-(3) are two quarters ahead returns, and those in column (4)-(6) are three quarters ahead, In Column (1) and (4), we put in Time fixed effects to absorb time shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6).

	Panel A : Global DGTW-adjusted Returns and UnderPricing Index					
	(1)	(2)	(3)	(4)	(5)	(6)
	$GlobalDGTW_{t+2}$	$GlobalDGTW_{t+2}$	$GlobalDGTW_{t+2}$	$GlobalDGTW_{t+3}$	$GlobalDGTW_{t+3}$	$GlobalDGTW_{t+3}$
$UnderPricing_t$	-0.006	-0.005	0.002	-0.005	-0.005	-0.001
	(0.009)	(0.007)	(0.009)	(0.010)	(0.010)	(0.011)
$GlobalDGTW_t$	-0.006	-0.020	-0.015	0.020	0.007	0.010
	(0.036)	(0.036)	(0.037)	(0.031)	(0.030)	(0.030)
$Size_t$	0.003**	0.002	0.003*	0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
BM_t	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Capex_t$	0.048	0.015	-0.032	0.098	0.063	0.020
	(0.105)	(0.097)	(0.104)	(0.091)	(0.089)	(0.081)
$Leverage_t$	-0.056**	-0.034	-0.052**	-0.055**	-0.031	-0.048**
	(0.022)	(0.023)	(0.023)	(0.021)	(0.020)	(0.024)
Constant	-0.040**	-0.028	-0.067***	-0.049***	-0.034*	-0.113***
	(0.015)	(0.025)	(0.019)	(0.009)	(0.018)	(0.009)
FE Time	Y	Y	Y	Y	Y	Y
FE Industry	N	Y	N	N	Y	N
FE Country	N	N	Y	N	N	Y
Clustering Time	Y	Y	Y	Y	Y	Y
Clustering Industry	N	N	N	N	N	N
Clustering Country	Y	Y	Y	Y	Y	Y

Panel B : Local DGTW-adjusted Returns and UnderPricing Index

	(1)	(2)	(3)	(4)	(5)	(6)
	$LocalDGTW_{t+2}$	$LocalDGTW_{t+2}$	$LocalDGTW_{t+2}$	$LocalDGTW_{t+3}$	$LocalDGTW_{t+3}$	$LocalDGTW_{t+3}$
$UnderPricing_t$	0.013	0.013	0.014	0.015	0.014	0.013
	(0.011)	(0.010)	(0.009)	(0.013)	(0.012)	(0.011)
$LocalDGTW_t$	-0.011	-0.024	-0.033	0.020	0.007	-0.005
	(0.037)	(0.036)	(0.036)	(0.030)	(0.030)	(0.029)
$Size_t$	-0.000	-0.001	0.001	-0.001	-0.002	-0.000
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
BM_t	-0.000	-0.000	0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Capex_t$	0.180	0.178	0.050	0.183*	0.170	0.046
	(0.117)	(0.116)	(0.106)	(0.104)	(0.111)	(0.084)
$Leverage_t$	-0.022	-0.007	-0.041*	-0.015	0.004	-0.032
	(0.027)	(0.027)	(0.025)	(0.023)	(0.020)	(0.025)
Constant	-0.016	-0.016	-0.026	-0.064***	-0.063**	-0.111***
	(0.015)	(0.027)	(0.022)	(0.011)	(0.022)	(0.018)
FE Time	Y	Y	Y	Y	Y	Y
FE Industry	N	Y	N	N	Y	N
FE Country	N	N	Y	N	N	Y
Clustering Time	Y	Y	Y	N	N	N
Clustering Industry	N	N	N	Y	Y	Y
Clustering Country	Y	Y	Y	N	N	N
Observations	6,740	6,740	6,740	6,482	6,482	6,482
R^2	0.019	0.034	0.046	0.020	0.034	0.049

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table 4: Portfolio Sorted by UnderPricing Index Quarterly

This table tabulates return performance of the hedge portfolio based on *UnderPricing* index. Each quarter, the portfolio long in the country- industries with top 20% extreme values of previous quarter *UnderPricing* and short in the pairs with bottom 20% values on the index in the previous period. The dependent variable in column (1)-(4) is the equal-weight hedge portfolio, and the dependent variable in column (5)-(8) is the value-weight one. Column (1) and (5) control for global market portfolio of market risk, size, and value factors. Column (2) and (6) build on (1) and (5) by adding the momentum factor. Column (3) and (7) control (2) and (6) for local market portfolio of market risk, size, and value factors. Column (4) and (8) build on (3) and (7) by adding the local momentum factor. Error terms are heteroskedasticityrobust. t statistics in parentheses.

	(1) *PortEW*	(2) *PortEW*	(3) *PortEW*	(4) *PortEW*	(5) *PortVW*	(6) *PortVW*	(7) *PortVW*	(8) *PortVW*
$RmRf_t^G$	-0.001	0.003			-0.002	0.002		
	(-0.53)	(0.63)			(-0.81)	(0.38)		
SMB_t^G	0.281**	0.266**			0.284**	0.271**		
	(2.46)	(2.31)			(2.45)	(2.30)		
HML_t^G	0.022	-0.007			0.044	0.020		
	(0.26)	(-0.07)			(0.52)	(0.22)		
WML_t^G		-0.050				-0.044		
		(-0.97)				(-0.83)		
$RmRf_t^L$			0.126**	0.099**			0.130**	0.100**
			(3.21)	(2.38)			(3.27)	(2.40)
SMB_t^L			0.301**	0.345**			0.322**	0.369**
			(2.28)	(2.63)			(2.42)	(2.80)
HML_t^L			0.184*	0.158			0.233**	0.205**
			(1.83)	(1.59)			(2.30)	(2.05)
MOM_t^L				-0.108*				-0.115*
				(-1.82)				(-1.93)
Alpha	0.020***	0.024***	0.017**	0.020***	0.019***	0.022***	0.015**	0.019***
	(4.15)	(3.95)	(3.34)	(3.85)	(3.85)	(3.61)	(3.00)	(3.57)
Obs	55	55	55	55	55	55	55	55
R^2	0.1	0.186	0.237	0.284	0.184	0.195	0.260	0.312

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table 5: Quarterly Quintile Portfolio Return By UnderPricing

In Panel A, we sort country-industry pairs by time and they are sorted into quintiles by the values of previous quarter UnderPricing. Quintile 5 corresponds to the country-industries with top 20% extreme values of previous quarter UnderPricing. In Panel B, we sort all industries by country each quarter and they are sorted into quintiles by the values of previous quarter UnderPricing. In Panel C, we sort all countries by industry each quarter and they are sorted into quintiles by the values of previous quarter UnderPricing. Portfolio returns in column (1)-(6) are equal weighted. Portfolio returns in column (7)-(12) are value weighted. Column (1) (3) (5) (7) (9) (11) tabulate the mean value of gross returns, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns. Column (2) (4) (6) (8) (9) (12) tabulate the t-value for the mean value of raw, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns.

	Raw Return (ew)		GlobalDGTW (ew)		LocalDGTW (ew)		Raw Return(vw)		GlobalDGTW (vw)		LocalDGTW (vw)	
Qintile	mean	t	mean	t	mean	t	mean	t	mean	t	mean	t
Panel A: Sorting by Time												
1	0.028	1.972	-0.013	-2.966	-0.024	-4.823	0.026	1.91	-0.012	-2.966	-0.024	-5.019
2	0.033	2.347	-0.006	-2.371	-0.018	-5.61	0.034	2.505	-0.005	-1.518	-0.015	-3.861
3	0.031	2.172	-0.009	-2.704	-0.019	-5.356	0.029	2.078	-0.009	-2.453	-0.02	-5.059
4	0.047	3.096	0.002	0.491	-0.006	-1.106	0.045	2.997	0.003	0.604	-0.007	-1.443
5	0.052	3.291	-0.001	-0.221	-0.003	-0.744	0.05	3.221	-0.001	-0.17	-0.004	-0.987
spread(5-1)	0.024	11.659	0.012	6.144	0.020	9.759	0.024	11.272	0.011	6.001	0.020	9.559
Panel B: Sorting by Time-Country												
1	0.037	9.915	-0.007	-2.534	-0.013	-4.332	0.037	9.934	-0.006	-2.338	-0.013	-4.149
2	0.037	8.572	-0.006	-1.979	-0.013	-4.176	0.038	8.693	-0.005	-1.717	-0.013	-3.912
3	0.039	9.014	-0.006	-2.065	-0.013	-3.998	0.039	8.940	-0.006	-2.049	-0.013	-4.050
4	0.043	9.661	-0.003	-0.994	-0.008	-2.433	0.043	9.500	-0.003	-0.961	-0.008	-2.495
5	0.050	9.806	0.001	0.384	-0.004	-0.947	0.050	9.822	0.002	0.448	-0.003	-0.852
spread(5-1)	0.014	9.371	0.006	4.041	0.010	6.334	0.014	9.256	0.006	3.686	0.010	5.976
Panel C: Sorting by Time-Industry												
1	0.028	8.029	-0.011	-4.869	-0.023	-9.117	0.028	7.849	-0.011	-4.743	-0.023	-8.628
2	0.031	8.801	-0.006	-2.511	-0.019	-7.331	0.031	8.670	-0.006	-2.441	-0.019	-7.232
3	0.037	10.104	-0.004	-1.491	-0.011	-4.119	0.036	9.764	-0.004	-1.649	-0.012	-4.411
4	0.044	11.257	0.000	-0.131	-0.006	-2.271	0.043	11.100	-0.001	-0.380	-0.008	-2.707
5	0.047	9.689	-0.005	-1.360	-0.006	-1.533	0.047	9.651	-0.005	-1.329	-0.006	-1.577
spread(5-1)	0.019	12.027	0.007	4.449	0.017	9.608	0.020	12.232	0.007	4.331	0.016	8.937

Table 6: Semiannual Panel Regression: Future Global Flow and UnderPricing Index

This table tabulates how semiannual industry underpricing level index predicts next period flow. The dependent variable is the semiannual flow from global mutual funds into the country-industry pair. The dependent variable in Panel A is the semiannual flow from funds headquartered all over the world. The dependent variable in Panel B is the semiannual flow from funds headquartered in the same country as the country-industry pair in question. The dependent variable in Panel C is the semiannual flows from foreign mutual funds headquartered outside the home country. In Column (1) and (4), we put in Time fixed effects to absorb time shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6). The sample period is 1999-2012. t statistics in parentheses

Panel A : Flow from mutual funds in all countries

	(1)	(2)	(3)	(4)	(5)	(6)
	$Flow_{t+1}$	$Flow_{t+1}$	$Flow_{t+1}$	$Flow_{t+1}$	$Flow_{t+1}$	$Flow_{t+1}$
$UnderPricing_t$	0.068**	0.052**	0.047**	0.068**	0.052**	0.047**
	(3.14)	(2.50)	(2.08)	(2.75)	(2.00)	(2.61)
$Flow_t$	-0.025	-0.034	-0.056**	-0.025	-0.034	-0.056*
	(-0.95)	(-1.33)	(-2.45)	(-0.73)	(-1.00)	(-1.81)

Panel B : Flow from mutual funds in foreign countries

	(1)	(2)	(3)	(4)	(5)	(6)
	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$
$UnderPricing_t$	0.104**	0.086**	0.088**	0.104**	0.086	0.088*
	(3.23)	(2.52)	(2.31)	(2.09)	(1.62)	(1.88)
$FlowFrn_t$	0.044**	0.037**	0.028*	0.044**	0.037**	0.028
	(2.57)	(2.34)	(1.86)	(2.54)	(2.20)	(1.65)

Panel C : Flow from mutual funds in the home country

	(1)	(2)	(3)	(4)	(5)	(6)
	$FlowHome_{t+1}$	$F\ lowHome_{t+1}$	$F\ lowHome_{t+1}$	$F\ lowHome_{t+1}$	$F\ lowHome_{t+1}$	$F\ lowHome_{t+1}$
$UnderPricing_t$	0.254	0.225	0.103	0.254	0.225	0.103
	(0.92)	(0.96)	(0.32)	(0.81)	(0.81)	(0.29)
$FlowHome_t$	0.012	0.004	-0.018	0.012	0.004	-0.018
	(0.57)	(0.19)	(-1.14)	(0.61)	(0.20)	(-1.06)
FE Time	Y	Y	Y	Y	Y	Y
FE Industry	N	Y	N	N	Y	N
FE Country	N	N	Y	N	N	Y

* $p < 0.10$, ** $p < 0.05$, *** $p < 0$.

Table 7: Semiannual Regression: Contemporaneous UnderPricing Index and Domestic Flows

This table tabulates how semiannual domestic mutual funds flow changes explain contemporaneous industry underpricing index contemporaneously. In Column (1) - (6), the dependent variables UnderPricing index level. The dependent variable of interest is ΔFlowHome, the level change of domestic mutual fund flows. All conlumns control for the change of foreign flows and other standard controls. Standard errors are two-clustered over time and country. T statistics are reported in partenthese.

	(1)	(2)	(3)	(4)	(5)	(6)
	$UnderPricing_t$	$UnderPricing_t$	$UnderPricing_t$	$UnderPricing_t$	$UnderPricing_t$	$UnderPricing_t$
ΔFlowHomet	-0.001**	-0.001***	-0.001*	-0.001***	-0.001**	-0.001***
	(-2.35)	(-2.85)	(-1.85)	(-2.90)	(-2.11)	(-2.92)
ΔFlowFrnt	0.002	-0.000	0.003	0.000	0.001	-0.001
	(0.37)	(-0.09)	(0.57)	(0.06)	(0.15)	(-0.26)
$Size_t$	-0.002	-0.003	-0.001	0.001	-0.001	0.000
	(-1.00)	(-1.21)	(-0.25)	(0.52)	(-0.46)	(0.18)
BM_t	0.002	0.002	0.005	0.003	0.005	0.003
	(0.63)	(0.63)	(1.22)	(0.90)	(1.19)	(0.80)
$Capex_t$	-0.242	-0.233	0.035	-0.023	0.040	-0.004
	(-1.43)	(-1.32)	(0.17)	(-0.15)	(0.19)	(-0.03)
$Leverage_t$	0.265***	0.274***	0.244***	0.152**	0.253***	0.160**
	(4.07)	(4.24)	(3.57)	(2.35)	(3.79)	(2.55)
FE Time	N	Y	N	N	Y	Y
FE Industry	N	N	Y	Y	Y	Y
FE Country	N	N	N	Y	N	Y
Clustering Time	Y	Y	Y	Y	Y	Y
Clustering Country	Y	Y	Y	Y	Y	Y
Observations	3971	3971	3971	3971	3971	3971
R^2	0.025	0.035	0.088	0.179	0.097	0.183

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table 8: Semiannual Regression: Future Returns and UnderPricing Index

This table tabulates how semiannual industry underpricing level index predicts nextperiod returns. In Column (1) - (4), the dependent variables are gross returns adjusted for global characteristics at country-industry level and control lagged dependent variable is current gross returns adjusted for global characteristics. In Column (5) - (8), the dependent variables are gross returns adjusted for local characteristics at country-industry level and control lagged dependent variable is current gross returns adjusted for local characteristics. DM dummy equals to one if the country is defined as a developed market by MSCI and zero as an emerging market. DM*UP is the interaction term between DM dummy and UnderPricing Index.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$GlobalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$	$LocalDGTW_{t+1}$
$UnderPricing_t$	0.054**	0.056**	0.054***	0.056***	0.075***	0.076***	0.075***	0.076***
	(2.45)	(2.48)	(3.57)	(3.30)	(4.22)	(4.08)	(4.80)	(4.34)
DM	-0.009	-0.005	-0.009	-0.005	-0.019	-0.017	-0.019**	-0.017*
	(-0.86)	(-0.48)	(-1.24)	(-0.67)	(-1.55)	(-1.27)	(-2.22)	(-1.76)
*DM*UPt*	-0.042*	-0.042*	-0.042**	-0.042**	-0.044**	-0.043**	-0.044**	-0.043*
	(-1.90)	(-1.73)	(-2.31)	(-2.14)	(-2.31)	(-2.01)	(-2.12)	(-1.95)
Global (Local) $DGTW_t$	0.004	-0.009	0.004	-0.009	0.019	0.007	0.019	0.007
	(0.21)	(-0.52)	(0.24)	(-0.61)	(0.91)	(0.36)	(1.30)	(0.47)
$Size_t$	0.004***	0.002**	0.004***	0.002	0.001	-0.000	0.001	-0.000
	(3.77)	(2.21)	(2.64)	(1.63)	(0.58)	(-0.38)	(0.57)	(-0.31)
BM_t	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
	(0.89)	(0.45)	(0.72)	(0.43)	(0.43)	(0.11)	(0.33)	(0.08)
$Capex_t$	0.050	0.025	0.050	0.025	0.147	0.146*	0.147**	0.146*
	(0.56)	(0.32)	(0.99)	(0.42)	(1.53)	(1.65)	(2.25)	(1.94)
$Leverage_t$	-0.086***	-0.073***	-0.086***	-0.073***	-0.058**	-0.051**	-0.058**	-0.051**
	(-4.51)	(-4.30)	(-3.71)	(-3.32)	(-2.54)	(-2.50)	(-2.46)	(-2.25)
FE Time	Y	Y	Y	Y	Y	Y	Y	Y
FE Industry	N	Y	N	Y	N	Y	N	Y
Clustering Time	Y	Y	N	N	Y	Y	N	N
Clustering Industry	N	N	Y	Y	N	N	Y	Y
Clustering Country	Y	Y	Y	Y	Y	Y	Y	Y
Observations	6,947	6,947	6,947	6,947	6,947	6,947	6,947	6,947
R^2	0.042	0.058	0.042	0.058	0.032	0.047	0.032	0.047

t statistics in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.001

Appendix:

Table A1: Definitions of Variables

Variable Name	Definition
Returns-Related Variables	
UnderPricing	ADR Parents' within-industry ranking position of relative undervaluation in home countries minus ADRs' corresponding positions
Returns	Gross returns per country-industry pair at quarterly and semiannual frequency
GlobalDGTW	Country-industry stock market returns adjusted for the size, market to book, and momentum benchmark portfolios using all stocks globally at quarterly and semiannual frequency
LocalDGTW	Country-industry stock market returns adjusted for size, market to book, and momentum benchmark portfolios using local stocks at quarterly and semiannual frequency
Flow Related Variable	
Flow	Semiannual growth rate of all global mutual funds' market value of holding positions in the country-industry pair minus the stock market returns during the same period.
FlowFrn	Semiannual growth rate of foreign mutual funds' market value of holding positions in the country-industry pair minus the stock market returns during the same period. Foreign mutual funds are those headquartered in countries other than the country in interest.
FlowHome	Semiannual growth rate of local mutual funds' market value of holding positions in the country-industry pair minus the stock market returns during the same period. Local mutual funds are those headquartered in the home country.
Control Variables	
Size	Logarithm of the market capitalization per country-industry pair
BM	Book value of equity *divided by* market capitalization per country-industry pair
Capex	Capital expenditure divided by book value of asset
Leverage	Book value of debt divided by book value of asset

Table A2 : ADR parent stocks geographic distribution

This table lists the industries hosting most ADR parent stocks by country. Column country lists the country name. Column No. parent denotes the total number of ADR parent stocks per country. D/E indicates whether the country is regarded as emerging or developed market by MSCI. Column First indicates the industry with the highest number of ADR parent stocks of the particular country. Column Second indicates the industry with the second highest number of ADR parent stocks of the particular country. Column Third indicates the industry with the third highest number of ADR parent stocks of the particular country. Column N after each industry name indicates the number of ADR parent stocks in the corresponding industry.

Country	D/E	No. parent	First	N	Second	N	Third	N
Argentina	E	21	Banks	6	Electricity	4	Industrial Metals & Mining	2
Australia	D	209	Mining	55	Pharmaceuticals & Biotechnolog	18	Oil & Gas Producers	17
Austria	D	15	Industrial Engineering	4	Banks	3	Travel & Leisure	2
Belgium	D	17	Chemicals	3	Electronic & Electrical Equipm	3	Pharmaceuticals & Biotechnolog	2
Brazil	E	52	Real Estate Investment & Service	10	Electricity	8	Food Producers	8
Canada	D	3	Mining	1	Media	1	Industrial Metals & Mining	1
Chile	E	18	Beverages	4	Electricity	3	Food & Drug Retailers	3
China	E	47	Banks	6	Industrial Engineering	5	Industrial Transportation	5
Colombia	E	7	Financial Services (Sector)	3	Construction & Materials	2	Banks	1
Denmark	D	16	Banks	4	Pharmaceuticals & Biotechnolog	4	Health Care Equipment & Services	2
Egypt	E	3	Construction & Materials	1	Industrial Metals & Mining	1	Banks	1
Finland	D	15	Industrial Engineering	5	Construction & Materials	2	Forestry & Paper	2
France	D	98	Media	9	Electronic & Electrical Equipm	7	Software & Computer Services	6
Germany	D	90	Industrial Engineering	9	Pharmaceuticals & Biotechnolog	8	Software & Computer Services	8
Greece	D	11	Banks	4	Beverages	2	Travel & Leisure	2
Hong Kong	D	179	Real Estate Investment & Service	22	General Retailers	10	Travel & Leisure	10
Hungary	E	3	Financial Services (Sector)	1	Electricity	1	General Retailers	1
India	E	17	Software & Computer Services	5	Fixed Line Telecommunications	2	Banks	2
Indonesia	E	15	Mining	4	Construction & Materials	3	Banks	3
Ireland	D	14	Food Producers	4	Software & Computer Services	4	Banks	2
Israel	E/D	25	Pharmaceuticals & Biotechnolog	5	Chemicals	3	Banks	3
Italy	D	48	Banks	8	Personal Goods	6	Travel & Leisure	3
Japan	D	299	Industrial Engineering	25	Automobiles & Parts	20	Banks	19
Korea	E	8	Banks	3	Technology Hardware & Equipment	2	Oil & Gas Producers	1
Malaysia	E	15	Real Estate Investment & Service	3	Health Care Equipment & Services	2	Travel & Leisure	2
Mexico	E	66	Construction & Materials	8	General Retailers	7	Food Producers	6
Netherlands	D	30	Technology Hardware & Equipment	4	Industrial Transportation	3	Food Producers	3
New Zealand	D	12	Health Care Equipment & Services	3	Industrial Transportation	3	Construction & Materials	2
Norway	D	30	Oil Equipment & Services	9	Industrial Transportation	6	Oil & Gas Producers	4
Peru	E	9	Construction & Materials	3	Industrial Metals & Mining	2	Mining	1
Philippines	E	8	Banks	2	Food Producers	1	Beverages	1
Poland	E	5	Software & Computer Services	2	Construction & Materials	1	Oil & Gas Producers	1
Portugal	D	7	Construction & Materials	2	Banks	2	Media	1
Russia	E	30	Oil & Gas Producers	6	Industrial Metals & Mining	4	Fixed Line Telecommunications	3
Singapore	D	59	Real Estate Investment & Services	9	Food Producers	6	Travel & Leisure	5
South Africa	E	76	Mining	22	General Retailers	7	Industrial Metals & Mining	6
Spain	E	29	Banks	6	Travel & Leisure	4	Electricity	4
Sweden	D	43	Industrial Engineering	7	Banks	4	Health Care Equipment & Services	4
Switzerland	D	35	Chemicals	4	Banks	4	Health Care Equipment & Services	3
Taiwan	E	25	Technology Hardware & Equipment	8	Banks	4	Oil & Gas Producers	2
Turkey	E	23	Banks	6	Financial Services (Sector)	3	Travel & Leisure	2
United Kingdom	D	272	Travel & Leisure	23	Support Services	23	Pharmaceuticals & Biotechnolog	22
Venezuela	E	3	Banks	2	Construction & Materials	1		

Table A3: ADRs Industry Distribution

This table tabulates the industry distribution of ADRs and their parent stocks. Column No.ADRs reports the number of ADRs per industry. Column No. countries denotes the number of countries spanned by ADR parent stocks per industry. Column Top1 lists the ISO three-digit code of the country hosting the largest number of ADR parent stocks per industry. Column Top2 lists the ISO three-digit code of the country hosting the second largest number of ADR parent stocks per industry. Column Top3 lists the ISO three-digit code of the country hosting the thrid largest number of ADR parent stocks per industry. Column No. report the number of ADR parent stocks hosted by the country listed on the left.

Industry	No. ADRs	No. countries	Top1	No.	Top2	No.	Top3	No.
Aerospace & Defense	13	4	GBR	7	FRA	4	DEU	1
Alternative Energy	8	4	AUS	3	HKG	2	DEU	2
Automobiles & Parts	45	13	JPN	20	HKG	5	DEU	5
Banks	144	38	JPN	19	ITA	8	TUR	6
Beverages	32	13	JPN	5	MEX	5	CHL	4
Chemicals	70	21	JPN	17	DEU	7	HKG	6
Construction & Materials	85	27	JPN	11	MEX	8	HKG	7
Electricity	55	17	GBR	8	BRA	8	JPN	7
Electronic & Electrical Equipm	52	14	JPN	17	FRA	7	HKG	5
Financial Services (Sector)	76	22	JPN	17	GBR	13	AUS	11
Fixed Line Telecommunications	32	13	GBR	4	MEX	4	HKG	4
Food & Drug Retailers	31	15	JPN	3	AUS	3	GBR	3
Food Producers	74	23	HKG	8	GBR	8	BRA	8
Forestry & Paper	12	9	FIN	2	GBR	2	HKG	2
Gas, Water & Multiutilities	28	13	GBR	6	FRA	4	HKG	3
General Industrials	43	17	HKG	7	ZAF	6	GBR	5
General Retailers	67	18	GBR	13	JPN	11	HKG	10
Health Care Equipment & Services	42	15	AUS	8	SWE	4	BRA	4
Household Goods & Home Construction	35	14	MEX	5	HKG	5	JPN	4
Industrial Engineering	90	19	JPN	25	DEU	9	GBR	9
Industrial Metals & Mining	68	25	AUS	16	JPN	8	ZAF	6
Industrial Transportation	64	23	HKG	9	NOR	6	JPN	5
Leisure Goods	24	6	JPN	16	SGP	2	HKG	2
Life Insurance	19	9	GBR	6	ZAF	4	ITA	2
Media	62	21	GBR	14	FRA	9	JPN	6
Mining	104	10	AUS	55	ZAF	22	GBR	13
Mobile Telecommunications	22	10	GBR	3	MEX	3	JPN	3
Nonlife Insurance	26	8	GBR	8	DEU	4	CHE	3
Oil & Gas Producers	68	18	GBR	17	AUS	17	RUS	6
Oil Equipment & Services	24	8	NOR	9	SGP	4	FRA	3
Personal Goods	52	17	JPN	11	HKG	9	DEU	6
Pharmaceuticals & Biotechnolog	88	15	GBR	22	AUS	18	JPN	11
Real Estate Investment & Services	63	13	HKG	22	BRA	10	SGP	9
Real Estate Investment Trusts	7	4	GBR	3	FRA	2	AUS	1
Software & Computer Services	76	14	GBR	17	JPN	15	DEU	8
Support Services	54	15	GBR	23	JPN	9	AUS	6
Technology Hardware & Equipment	67	18	JPN	15	HKG	9	TWN	8
Tobacco	2	1	GBR	2				
Travel & Leisure	83	22	GBR	23	HKG	10	JPN	9

Table A4: Semiannual Panel Regression: Future Returns and UnderPricing Index

This table tabulates how semiannual industry underpricing level index predicts next half-year returns. In Panel A, the dependent variable the quarterly gross returns at country-industry level. In Panel B and C, the dependent variables are quarterly gross returns adjusted for global and local characteristics respectively. In Column (1) and (4), we put in Time fixed effects to absorb time shocks. In Column (2) and (5), we further add Industry fixed effects to account for industry shocks. In Column (3) and (6), we change from Industry to Country fixed effects to account for countrywide shocks. For all columns, we adopt two-way clustering for standard errors. Standard errors in Column (1)-(3) are clustered by time and country, while they are clustered by country and industry in Column (4)-(6). t statistics in parentheses. The sample period is 1999-2012.

Panel A : Gross Returns

	(1) $Return_{t+1}$	(2) $Return_{t+1}$	(3) $Return_{t+1}$	(4) $Return_{t+1}$	(5) $Return_{t+1}$	(6) $Return_{t+1}$
$UnderPricing_t$	0.076***	0.076***	0.076***	0.076***	0.076***	0.076***
	(4.73)	(4.89)	(4.57)	(6.32)	(5.84)	(6.01)
$Return_t$	0.041	0.023	0.010	0.041**	0.023	0.010
	(0.92)	(0.54)	(0.23)	(2.45)	(1.36)	(0.57)

Panel B : Global DGTW-adjusted Returns

	(1) $GlobalDGTW_{t+1}$	(2) $GlobalDGTW_{t+1}$	(3) $GlobalDGTW_{t+1}$	(4) $GlobalDGTW_{t+1}$	(5) $GlobalDGTW_{t+1}$	(6) $GlobalDGTW_{t+1}$
$UnderPricing_t$	0.029**	0.031**	0.037**	0.029**	0.031**	0.037***
	(2.20)	(2.28)	(2.45)	(2.94)	(2.89)	(3.40)
$GlobalDGTW_t$	0.005	-0.008	-0.008	0.005	-0.008	-0.008
	(0.30)	(-0.46)	(-0.50)	(0.35)	(-0.56)	(-0.54)

Panel C : Local DGTW-adjusted Returns

	(1) $LocalDGTW_{t+1}$	(2) $LocalDGTW_{t+1}$	(3) $LocalDGTW_{t+1}$	(4) $LocalDGTW_{t+1}$	(5) $LocalDGTW_{t+1}$	(6) $LocalDGTW_{t+1}$
$UnderPricing_t$	0.051***	0.052***	0.052***	0.051***	0.052***	0.052***
	(4.34)	(4.40)	(3.82)	(4.68)	(4.41)	(4.48)
$LocalDGTW_t$	0.022	0.010	-0.001	0.022	0.010	-0.001
	(1.07)	(0.48)	(-0.04)	(1.62)	(0.67)	(-0.05)
Observations	6947	6947	6947	6947	6947	6947
R^2	0.028	0.045	0.050	0.028	0.045	0.050
FE Time	Y	Y	Y	Y	Y	Y
FE Industry	N	Y	N	N	Y	N
FE Country	N	N	Y	N	N	Y

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table A5: Semiannual FamaMacbeth Regression: Future Returns and UnderPricing

This table tabulates how semiannual industry underpricing level index predicts next half-year returns. Fama-MacBeth regression methods are employed. he dependent variable in Panel A is gross returns. In Panel B and C, the dependent variables are global and local DGTW-adjusted returns. All columns reports heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates. The error structure in Column (1), (2) and (3) is assumed to be autocorrelated up to 1, 2, and 3 lags respectively. t-statistics are reported in the parentheses.

Panel A : Gross Returns

	(1) $Return_{t+1}$	(2) $Return_{t+1}$	(3) $Return_{t+1}$
$UnderPricing_t$	0.070***	0.070***	0.070***
	(4.19)	(4.48)	(4.42)
$Return_t$	0.044	0.044	0.044
	(1.08)	(0.99)	(0.98)

Panel B : Global DGTW-adjusted Returns

	(1) $GlobalDGTW_{t+1}$	(2) $GlobalDGTW_{t+1}$	(3) $GlobalDGTW_{t+1}$
$UnderPricing_t$	0.027*	0.027*	0.027*
	(1.91)	(1.99)	(2.00)
$GlobalDGTW_t$	0.012	0.012	0.012
	(0.58)	(0.52)	(0.49)

Panel C : Local DGTW-adjusted Returns

	(1) $LocalDGTW_{t+1}$	(2) $LocalDGTW_{t+1}$	(3) $LocalDGTW_{t+1}$
$UnderPricing_t$	0.048***	0.048***	0.048***
	(3.79)	(4.14)	(4.19)
$LocalDGTW_t$	0.026	0.026	0.026
	(1.24)	(1.23)	(1.36)
Observations	6947	6947	6947
R^2	0.053	0.053	0.053
Lags	1	2	3

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Table A6: Quarterly Quartile Portfolio Return By UnderPricing Index

Each quarter, the country-industries are sorted into quintiles by the values of previous quarter UnderPricing. Quintile 5 corresponds to the country-industries with top 20% extreme values of previous quarter UnderPricing. Portfolio returns in Panel A are equal weighted. Portfolio returns in Panel B are value weighted. Column (1) (3) (5) tabulate the mean value of gross returns, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns. Column (2) (4) (6) tabulate the t-value for the mean value of raw, global-DGTW adjusted, and local-DGTW adjusted portfolio quarterly returns.

	Raw Return		GlobalDGTW Return		LocalDGTW Return	
Quartile	**mean**	**t**	**mean**	**t**	**mean**	**t**
			Panel A: Equal- Weight			
1	0.027	1.948	-0.013	-3.501	-0.025	-5.414
2	0.034	2.351	-0.004	-1.397	-0.015	-4.984
3	0.041	2.838	-0.003	-0.901	-0.011	-2.656
4	0.051	3.228	0.000	-0.101	-0.004	-1.027
			Panel B: Value- Weight			
1	0.026	1.931	-0.012	-3.236	-0.024	-5.398
2	0.036	2.505	-0.002	-0.641	-0.013	-3.533
3	0.040	2.773	-0.002	-0.452	-0.012	-2.703
4	0.048	3.143	0.000	-0.094	-0.005	-1.316

Table A7: Fama-Macbeth Regression: Future Foreign and Domestic Flows and UnderPricing Index

This table tabulates the Fama-Macbeth regression results examining how semiannual industry level underpricing index predicts next period flows from mutual funds based in the home country and foreign countries respectively. The dependent variable in Panel A is the semiannual flow from funds headquartered all countries. The dependent variable in Panel B is the semiannual flow from funds headquartered in the same country as the country-industry pair in question. The dependent variable in Panel C is the semiannual flows from foreign mutual funds headquartered outside the home country. All columns report heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates. The error structure in Column (1), (2) and (3) is assumed to be autocorrelated up to 1, 2, and 3 lags respectively. The sample period is 1999-2012. *t* statistics in parentheses

Panel A : Flow from mutual funds in all countries			
	(1)	(2)	(3)
	$Flow_{t+1}$	$Flow_{t+1}$	$Flow_{t+1}$
$UnderPricing_t$	0.073*	0.073**	0.073**
	(1.95)	(2.26)	(2.48)
$FlowFrn_t$	-0.022	-0.022	-0.022
	(-1.32)	(-1.15)	(-1.11)
Panel B : Flows from mutual funds in foreign countries			
	(1)	(2)	(3)
	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$	$FlowFrn_{t+1}$
$UnderPricing_t$	0.103**	0.103**	0.103**
	(2.25)	(2.58)	(3.23)
$FlowFrn_t$	0.028	0.028	0.028
	(1.33)	(1.33)	(1.36)
Panel C : Flow from mutual funds in the home country			
$UnderPricing_t$	-0.432	-0.432	-0.432
	(-0.59)	(-0.59)	(-0.56)
$FlowHome_t$	-0.020	-0.020	-0.020
	(-0.81)	(-0.75)	(-0.78)
Lags	1	2	3

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$