

## **Foreign Investment under the Spotlight of Home Media**

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### **Abstract**

Foreign investors' information disadvantage is often viewed as a key impediment to their investment. This study questions whether foreign investors' home media mitigates this information challenge by investigating the relation between U.S. mutual fund ownership and U.S. media coverage of local stocks in their host countries. Using a large sample of 38 host countries, we document a positive association between U.S. mutual fund ownership in a local stock and the coverage of U.S. major news providers on that stock. We find that home media-covered stocks incur lower information acquisition costs and gain greater investor awareness from U.S. investors. The home media effect is most salient in host countries with low quality information environments.

**Keywords:** Foreign equity investment; Foreign mutual fund; Media coverage; Home media bias

**JEL Classification:** F21; F23; G23

## 1. Introduction

Despite the widely documented growth and economic benefits of international investment activity<sup>1</sup>, financial liberalization has made limited progress in reality. While the majority of explicit barriers to capital flow has been removed since the late 1980s, there still exist many implicit barriers. One key implicit barrier is the high cost of acquiring local information by foreign investors (Buch, 2003; Dvorak, 2005; Choe, Kho, and Stulz, 2005; Claessens and Van Horen, 2014). With the advancement of information technology over the past two decades, financial media has become central to many investment decisions. The objective of this study is to explore whether foreign investors' investment is influenced by their home countries' media. Specifically, we examine the relationship between the U.S. media coverage of a local stock in the host country and the U.S. mutual fund ownership in that stock.

We hypothesize that foreign investment is positively associated with home media<sup>2</sup> coverage through three distinct information effects of mass media. First, based on traditional finance theories in a homogenous country setting where all market participants are assumed to trade in the same information and cultural environments, mass media lowers information acquisition costs because popular press closely collects and processes market-wide and firm-specific information on a timely manner. Geographic proximity between foreign investors and media outlets that belong to the home country of those investors (home media) removes any delay in news dissemination as well as language and cultural differences. Media coverage from the home country of foreign investors lowers information acquisition costs on unfamiliar stocks

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<sup>1</sup> Capital market integration has been central to the international finance literature since the opening of many emerging markets in the late 1980s and early 1990s. A large body of literature has discussed and documented the significant welfare benefits of foreign equity investments in terms of risk-sharing benefits (Karolyi and Stulz, 2003), total investment and economic growth arising from financial market integration (Bekaert, Harvey, and Lundblad, 2005), the facilitation of information efficiency in local markets by foreign equity flows (Bae, Ozoguz, Tan, and Wirjanto, 2012), and the improvement of corporate governance arising from the holdings of international institutional investors (Aggarwal, Erel, Ferreira, and Matos, 2011).

<sup>2</sup> In this paper, home media refers to the media providers based in the home country of the investors. For example, US media reporting a foreign firm is considered to be the home media for the US mutual funds investing in that foreign firm.

(i.e., stocks based in host countries), making it cost efficient to invest in these stocks (Grossman and Stiglitz, 1980). We call it the *information acquisition effect* of home media.

Second, home media coverage raises foreign investors' awareness to stocks located in host countries, even if no genuine information is disseminated. On the assumption that attention is a limited resource, financial media reduces the cost of expending investors' attention (Merton, 1987). Therefore, when the visibility of stocks based in host countries enhances, foreign equity ownership in such stocks increases. We call it the *investor attention effect* of home media.

Third, because the global access to information and advancement in information technology eliminate information asymmetry between local and foreign investors, the mass production of news gives rise to a greater potential for investors to have distinct interpretations on the same piece of information. Local investors may be better equipped to understand local news than foreign investors (Dumas, Lewis, and Osambela, 2016), and they trust and analyse local news more than foreign news (Jia, Wang, and Xiong, 2015). Likewise, if foreign investors believe their home media coverage is more reliable and interpretable, they will increase their investment in local stocks covered in their home media outlets. We call it the *home media bias view*. For example, this hypothesis implies that U.S. investors prefer to invest in non-U.S. stocks that are frequently covered by the U.S. media. This view departs from traditional finance theories and it is built on a new literature on differential opinions among investors in a multi-country setting.

In this study, we assess these three effects of home media coverage by evaluating whether and how the U.S. media coverage of a non-U.S. stock drives its U.S. mutual fund ownership based on a large international sample of stocks from 38 non-U.S. countries over the period from 2002 through 2009. The information about U.S. media coverage is collected from

RavenPack DJ News Analytic database.<sup>3</sup> Our variable of interest is the total number of news articles over the previous year.

Our mutual fund ownership database comes from Thomson Reuters international mutual fund database, which is a widely used database in many international mutual fund ownership studies.<sup>4</sup> The apparent advantage of concentrating on international mutual funds is that they are a rather homogenous group of savvy investors, and tend to be independent shareholders with no business ties with the holding companies, as opposed to “grey investors” such as banks and insurance companies which often maintain business relationships with corporate management and thus have alternative, potentially private, information channels (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005; Chen, Harford, and Li, 2007). While we examine non-U.S. and domestic mutual funds in supplementary analysis, our focus remains on U.S. mutual fund ownership. This is because while equity holdings of both foreign and domestic mutual funds are available, non-US mutual funds may not subscribe or have timely access to U.S. media providers. After merging the mutual fund ownership database, the RavenPack news database, and other databases that provide us firm-level variables, we have a total sample of 53,522 non-U.S. firm-year observations over a period of eight years. Our data covers firms that come from 20 developed countries and 18 emerging countries.

Several important findings are documented in this study. First, we present evidence in support of a strong and positive association between the previous-year U.S. media coverage of a particular firm and U.S. mutual fund ownership in the firm after controlling for a battery of firm-level characteristics including firm and year fixed effects. These findings are prevailing in both developed and emerging stock markets. The full-sample results hold for several endogeneity tests including Generalised Method of Moments (GMM) estimation, propensity

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<sup>3</sup> For example, Dang, Moshirian, and Zhang (2015) extract the firm-specific news commonality measure by obtaining the R-squared from the regressions of a firm’s news sentiment scores on the market’s news sentiment scores for global firms from 41 countries.

<sup>4</sup> This database is also used in previous studies such as Covrig, DeFond, and Hung (2007), DeFond, Hu, and Hung (2011), and Chou, Zaiats, and Zhang (2014).

score matching analysis as well as the Heckman two-step estimation in addressing concerns associated with sample selection bias. Second, while non-U.S. foreign mutual fund ownership is positively related to U.S. media coverage, domestic mutual ownership exhibits no significant relation with the firm's media coverage in the U.S. We infer from this result that domestic investors appear to possess other information channels such as following local news coverage and entertaining corporate management while foreign investors hinge their overseas investment decisions on publicly accessible information sources from their home countries.

Third, to better understand how home media coverage serves as a useful informational means through the three different mechanisms, we test the home media effect on U.S. mutual fund ownership with a focus on fund, news, firm and country characteristics. By partitioning U.S. mutual fund investors into long-term and short-term investors, the results show that the news effects are more pronounced for U.S. mutual funds with long investment horizons. To the extent that long-term institutional investors have a greater incentive to monitor (Harford, Kecskes, and Mansi, 2015; Bena, Ferreira, Matos and Pires, 2017), this evidence is consistent with the idea that long-term investors exert their monitoring effort by collecting and analysing information through news wires. Further analysis differentiates U.S. block mutual funds from non-block mutual funds, where a mutual fund is viewed as a block shareholder in the firm they invest if their equity ownership exceeds 5% of the total shares outstanding of the firm. Block shareholders are considered as corporate insiders. They can derive private information through control (Shleifer and Vishney, 1986; Holderness, 2003) and thus are less reliant on publicly accessible news sources.<sup>5</sup> By contrast, non-block mutual fund investors rely more on financial media as one of the key information sources as they have lesser access to insider information compared with the block counterpart. Our test reveals that the media effect on U.S. mutual fund

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<sup>5</sup> For example, Holderness (2003) pinpoints the empirical evidence of blockholders often serving as the board of directors which puts them in the position to directly communicate with corporate management and readily obtain private information.

ownership is strongest among non-block foreign mutual fund investors, which confirms the information dissemination role of financial media.

Fourth, we explicitly distinguish between the information acquisition effect and the investor attention effect of home media coverage by introducing two distinct news measures in the analysis. The information effect of U.S. media coverage is proxied by the total number of news articles originated by the firm while the investor attention effect is captured by the total number of news flashes that are produced by Dow Jones News Wires and contain only a headline summarizing the content following a news story. We find both news effects are present in our data. The results show significant and strong associations of the number of original news articles and the number of news flashes with U.S. mutual fund ownership. In terms of firm attributes, we note that the home media effect is most prominent in firms that appoint a Big 5 auditing firm and firms with high financial analyst coverage. To the extent that reputable auditors and financial analyst coverage ensure financial reporting quality, our results support the information acquisition effect that foreign professional investors are not naively attracted to all media-covered stocks and they show the tendency to gather information from media by attaching to news stories about companies with trustworthy information.

Finally, the third information view, the home media bias, is to address the puzzling fact that the information disadvantage of foreign investors could be easily eliminated due to the timely global access to corporate news by professional investors through their potential business presence in host countries or simply technological advances. We postulate that U.S. investors are more reliant on their home country's news stories due to primarily the superior quality of information and the ease for interpretation. Indeed, we document evidence of a stronger home media effect on US mutual fund ownership in countries with inferior quality of information disclosure. Tying to the previous results that the U.S. mutual fund ownership, but not domestic mutual fund ownership in the company, is significantly associated with the media

coverage in the U.S., and on the assumption that the U.S. news providers disseminate news globally and are accessible to all types of professional investors, our findings suggest a home biased media following behaviour of foreign professional investors.

Our study speaks to a vast body of research in the international finance literature that uses the information asymmetry between domestic and foreign investors as a key determinant of international capital flows (e.g., Gehrig 1993; Brennan and Cao, 1997). For instance, Gehrig (1993) asserts that domestic investors are more certain about the fundamental values of domestic companies than do foreigners, thereby reducing the optimal holdings of their foreign assets. Even if foreign and domestic investors hold the same piece of information, Dumas, Lewis and Osambela (2016) posit that domestic investors are better equipped to interpret local news and this theory well explains anomalies such as home-equity preferences and co-movement of returns and capital flows. While geographic information advantage is at the core of many international equity investment theories, empirical evidence that directly tests how foreign investors overcome their information challenge is rather scarce.

We are among the first to provide empirical findings on how foreign investment is sensitive to the home media coverage of stocks in host countries. In sharp contrast to domestic mutual funds which are insensitive to U.S. news coverage, U.S. mutual fund ownership increases with a firm's news coverage in the U.S. Our findings are consistent with Jia, Wang, and Xiong (2015) which document that local investors react more strongly to earnings forecasts by local analysts, while foreign investors react more strongly to forecasts of foreign analysts in China. Our further analysis not only supports the traditional views that news coverage increases foreign equity investments by transferring information and exposing local stocks to international investors but also presents novel evidence that foreign investors are better equipped and have more confidence to interpret news stories delivered in their home countries, even though all professional investors, domestic or foreign, receive the same piece of information. As such, we



contribute to a boarder literature that investigates the determinants of foreign equity investments.<sup>6</sup>

We add new evidence to the literature that establishes significant media effects on stock markets. Extant evidence suggests that the media coverage is critical to capital allocation decisions. Grossman and Stiglitz (1980) and Verrecchia (1982) conjecture that media coverage reduces information acquisition costs while Merton (1987) contends that it raises investor awareness. Prior studies such as Falkenstein (1996), Fang, Peress, and Zheng (2012) and Soloman, Soltes, and Sosyura (2014) provide consistent evidence that media coverage increases mutual fund investments on a sample of actively managed mutual funds in the U.S. However, these studies exclude international mutual funds and foreign holdings of U.S. mutual funds and predominantly emphasize local news effects. We extend this literature by highlighting the importance of home media coverage and offering new international evidence that home media coverage drives foreign, but not domestic, mutual fund investments.

The remainder of the paper is organized as follows: The next section reviews the related literature and outlines the testable hypotheses. Section 3 describes data and details the sample selection processes. Section 4 presents empirical analyses in testing the hypotheses and Section 5 concludes.

## **2. Literature Review and Hypothesis Development**

### ***2.1 Related Literature***

Our research draws on two streams of literature. The first stream of literature emphasizes the information differences between domestic and foreign investors. Geographic information advantage is at the core of a series of theoretical work on international equity investment.

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<sup>6</sup> For studies that explore the driving factors of foreign equity investments, see, for example, Chan, Covrig, and Ng (2005), Ferreira and Matos (2008), Leuz, Lins, and Warnock (2009) and Forbes (2010).

Gehrig (1993) asserts that domestic investors are more certain about the fundamental values of domestic companies than do foreigners, thereby reducing the optimal holdings of their foreign assets. Brennan and Cao (1997) develop a model of international equity flows assuming that local investors have a cumulative information advantage as opposed to foreign investors and show that foreign purchases of equities are positively associated with the return of market portfolio because foreign investors acquire public information. More recently, Dumas, Lewis and Osambela (2016) posit that domestic investors are better equipped to interpret local news and this theory well explains anomalies such as home-equity preferences and co-movement of returns and capital flows.

Empirical evidence on the information advantage of local investors is still contentious. Using the transaction data from Indonesia, Dvorak (2005) reports that domestic investors earn higher profits than foreign investors and domestic clients of global brokerages earn higher profits than foreign clients of global brokerages. Using Korean data, Choe, Kho, and Stulz (2005) document similar results that foreign money managers pay more when they buy and receive less when they sell for medium and large trades. However, numerous studies show just the opposite that foreign investors are better informed (e.g., Grinblatt and Keloharju, 2000; Froot, O'Connell, Seasholes, 2001). These studies are either limited to single-country samples or international portfolio flows aggregated at the country level which cannot shed light on firm-specific information.

Bae, Ozoguz, Tan, and Wirjanto (2012) reconcile the mixed evidence of the information advantage of local investors by showing that returns of stocks that are highly accessible to foreign investors lead the returns of stocks that are inaccessible to foreign investors because they incorporate global information quicker. However, this study does not identify specific types of foreign investors nor examines the level of foreign equity ownership. They use the

returns of the world and local market portfolios to proxy for global and local information, respectively.

The second stream of literature establishes the media effects in financial markets. There are two traditional information views about media coverage. Grossman and Stiglitz (1980) and Verrecchia (1982) conjecture that media coverage reduces information acquisition costs and disseminates information to a broad audience. Their view is consistent with our notion of the “information acquisition” effect of media coverage. Another view originates from Merton (1987). Even if media coverage does not convey any genuine information, appearing in the spotlight elevates the visibility of a company and its stock, which is consistent with our notion of the “investor attention” effect. Existing evidence is consistent with both of the views. Fang and Peress (2009) report higher returns of stocks with no media coverage relative to media-covered stocks in the U.S., inferring that the breadth of information dissemination affects stock returns. Tetlock (2010) contends that public news resolves information asymmetric problem and finds lower ten-day reversals of daily returns and the presence of ten-day volume-induced momentum in daily returns on news days, in line with the belief revisions of uninformed investors upon news arrival. Further evidence (e.g., Tetlock, 2007) suggests that not only media coverage which enlarges the breadth of information diffusion matters, news content also affects stock returns.

Taking a demand side perspective, several institutional investment studies have found that stocks covered in the media attract institutional holdings (Falkenstein (1996), Fang, Peress, and Zheng (2012) and Soloman, Soltes, and Sosyura (2014)). Falkenstein (1996) studies the mutual fund preferences of stock characteristics and finds that mutual fund ownership increases with the number of news stories covering the stock. However, Fang, Peress and Zheng (2012) suggest that chasing media-covered stocks could indicate the inability and limited attention of fund managers as they find that mutual fund managers whose trades are covered in the media

underperform and earn lower returns. Soloman, Sotles and Sosyura (2014) take the mutual funds' investors standpoint and demonstrate that investors' flows follow media-covered holdings. By far, the focus of studies on media effects and mutual fund investments is largely on the U.S. samples, whereby mutual fund managers are on a level playing field with equal access to public media at a minimal cost. Yet, none of these studies provide systematic evidence on whether and how the U.S. media coverage drives U.S. mutual funds' overseas investments. The cross-border investor diversity warrants further analysis in that foreign mutual funds are potentially at an informational disadvantage as compared with their local counterparts. Additionally, the home media effect on international equity investment remains unexplored in the literature.

## *2.2 Hypothesis Development*

In our primary hypothesis, we posit that foreign stocks covered in the U.S. media attract U.S. mutual fund investments. It is plausible that U.S. mutual fund managers have easy access to their home news providers and possess competent skills in processing news reported in the U.S. The geographic, language and cultural proximity reduce the information acquisition costs (the information acquisition effect). Even if no genuine and new information is added to the news stories, frequent and familiar news encounters in the home country can raise U.S. investors' awareness of media-covered foreign stocks (the investor attention effect). In addition to the two traditional information views about the media coverage, we consider a third factor in a cross-country setting where many countries tend to have relatively low quality of information environments compared with the U.S. financial reporting standards (Leuz, Nanda, and Wysocki, 2003; Hail and Leuz, 2006).<sup>7</sup> As a consequence of the disparities in information quality, U.S. investors might tend to trust more on the news reported in their home country

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<sup>7</sup> As shown in Table 2 of Leuz, Nanda, Wysocki (2003), the United States was ranked first in terms of financial accounting quality measured by the lack of earnings management among 31 countries. Similarly, the quality of its legal requirements on financial disclosure and the accompanying enforcements was also ranked first among 40 countries as reported in Table 1 of Hail and Leuz (2006).

rather than news reported in the host countries. Extending a large body of literature that suggests how investors hold differential opinions and disagree on the same piece of information (e.g., Kandel and Pearson, 1995; Cao and Ou-yang, 2009; Dumas, Lewis, and Osambela, 2016), Jia, Wang, and Xiong (2015) provide recent evidence on the information processing of local and foreign investors on the same public news. Using the dual class shares of a few Chinese stocks listed on the A-share market for local investors and H-share market for foreigners, they show that local investors react more strongly to earnings forecasts by local analysts, while foreign investors react more strongly to foreign analysts' forecasts.<sup>8</sup> In a similar vein, the media coverage in the home country of mutual funds can be more trustworthy for international mutual fund managers. We term this new information effect of home media coverage as the "home media bias" effect. In line with the three information views about media coverage, we formalize the first hypothesis as below:

*H1: Foreign mutual fund ownership in a local stock is positively related to the foreign funds' home country media coverage of the stock.*

It is important to establish that the three information views about media coverage are not mutually exclusive. We make an attempt to shed light on which effects are at play in driving the overseas investments of U.S. mutual funds by looking into various fund, news, firm and country characteristics. In terms of the fund characteristics, we identify mutual funds that are long-term investors and non-block investors based on the detailed equity holdings data of U.S. mutual funds. Long-term investors are value investors and have incentives to exert effort to acquire information. Compared to block investors who can extract information through private benefits of control (e.g., serving on the board), non-block institutional investors have less

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<sup>8</sup> As an anecdotal story, Jia, Wang, and Xiong (2015) note that American analysts of Muddy Waters Research and Citron Research issued several research reports accusing several Chinese firms of accounting misreporting. These reports led to large stock price crashes of substantial price declines of all Chinese stocks listed on NASDAQ in June 2011 but local stock markets barely even react to these reports.

access to inside information and have to resort to public sources. This leads to our second hypothesis relating to fund characteristics as below:

*H2: The association between foreign investors' home country media coverage and foreign mutual fund ownership in a local stock is strongest for long-term fund managers and non-block fund managers.*

The information acquisition effect suggests that foreign mutual fund ownership should be responsive to new information disseminated through news wires, while the investor attention effect infers that being frequently covered in the media attracts fund managers' attention, irrespective of the genuine information content of news. If the information acquisition effect holds, we anticipate the number of news originated by local firms or media (such as editorials or commentaries) matters and the impact of good versus bad news differs. However, if the investor attention effect holds, the number of news flashes that briefly summarize an event without detailed analysis is expected to exert a significant influence on U.S. mutual fund ownership as the sole purpose of news flashes is to raise investors' attention. If the information acquisition effect holds, we predict the following:

*H3: Foreign mutual fund ownership increases with the number of news originated by the firm/media covered in the home media. Foreign mutual fund ownership in a local stock increases with the number of good news but decreases with the number of bad news.*

If the investor attention effect holds, we predict the following:

*H4: Foreign mutual fund ownership increases with the number of news flashes covered in the home media. Foreign mutual fund ownership in a local stock increases with the number of both good and bad news.*

Lang, Lins, and Maffett (2012) present international evidence that firm-level information transparency matters most when investor uncertainty is high. This finding implies that foreign

investors, when facing asymmetric information problem, should decrease their holdings of firms with opaque financial information. This conjecture is supported by Leuz, Lins, and Warnock (2009) which show that foreign investors invest less in firms that engage in earnings management in countries with weak investor protection and low quality disclosure. In our context, home media effect is expected to be strongest for firms that can deliver high quality information. Further, professional investors may react to the firm-level news that is easy to comprehend. This gives us the following hypothesis:

*H5: The association between foreign investors' home media coverage and foreign mutual fund ownership in a local stock is strongest for firms that disclose reliable, credible and interpretable information.*

Finally, we argue that the low quality of a host country's information environment and cultural barrier induce foreign investors to be *more* reliant on their home media. Conversely, if the quality of the host country's information is high, or if the host country is culturally similar to the U.S., the U.S. investors will be more willing to rely on the local media as the key information source since U.S. investors are trusting the local sources and are more capable of understanding the locally produced information directly. This gives us the last hypothesis:

*H6: The home media effect on foreign mutual fund ownership in a local stock is strongest in host countries with low quality or culturally distinct information environment.*

### **3. Data and Sample Selection**

The initial sample begins with all the international stocks covered in the *Thomson Reuters' Worldscope* database. The mutual fund ownership data from *Thomson Financial Series international mutual fund* database spans from 1998 to 2009 whereas the *RavenPack News Analytics* database starts from 2001. Thus, our sample period spans from January 2001 to December 2009, as a result of merging these three primary databases. The final sample used in

this study covers 10,669 stocks in 38 non-U.S. host countries. Below we outline the data collection procedure.

### 3.1 News database

Our news coverage data is sourced from the RavenPack News Analytics which became available in 2001.<sup>9</sup> The RavenPack equity news analytics contains comprehensive global news stories about companies which are released through the Dow Jones Newswire, regional editions of the Wall Street Journal, Baron's and other internet sources including financial sites, blogs, local and regional newspapers. It contains more than 45,000 equities in over 100 countries. Dow Jones have over 2,000 journalists reporting worldwide. These journalists publish "local language" news and then quickly translate them into English for their financial newswires. RavenPack news database is comparable to other news databases such as Factiva (Shroff, Sun, White, and Zhang, 2013), which has been used in the accounting and finance literature. But, a unique feature of RavenPack is that it uses proprietary algorithms to analyze the textual content of each news article and produces a range of measurements pertaining to the qualitative aspect of the news. The two qualitative measurements used in this study are the relevance of news and the sentiment of news.

For each news article or news headline RavenPack assigns a *relevance score*, which indicates how relevant the news story to a particular firm. The score is a numeric that ranges between 0 and 100. A score of 100 suggests that the news story is highly specific to a particular firm while a score of less than 50 may indicate that the firm is passively mentioned in the news story. Generally speaking, a score of 75 or above is considered to be significantly relevant. In

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<sup>9</sup> RavenPack database has become increasingly popular among researchers in media-related studies. For example, using global news data from RavenPack, Dang, Moshirian and Zhang (2015) examine how the co-movement of firm-level news relate to firm's institutional environment. Shi, Liu and Ho (2016) examine the role of firm-specific news arrival explains the idiosyncratic volatility puzzle. Dai, Parwada and Zhang (2015) show how news dissemination reduces insiders' future trading profits.



this study, we count the total number of firm-specific news articles with relevance scores equal to 100 as the proxy for the level of *news coverage*.<sup>10</sup>

In addition to relevance score, RavenPack produces various scores that measure the sentimental tendency of the news articles. The sentiment score we use in this study is the *composite sentiment score (CSS)*, which measures the overall sentimental tendency of the news articles. The score is computed using a rule-based market response methodology. The algorithm involves identifying and mapping individual words or word combinations in the story/news headlines to the price impact on stocks of companies mentioned in the story/news headlines. The price impact is measured in the hours ahead of the arrival of the news item and is transformed into an impact score using advanced machine learning techniques.<sup>11</sup> The score is a numeric that ranges between 0 and 100. A score of 50 or higher (lower) indicates that the news item carries a positive (negative) sentiment and therefore it should have a potential positive (negative) impact on stock prices.<sup>12</sup> For each stock, we measure the number of good news and bad news by counting the number of news items with *CSS* more than 50 and less than 50, respectively, which are then used to test Hypothesis 3.

To test Hypotheses 3 and 4, we utilize RavenPack's classification which groups news items into various broad categories including press releases, media reports and any tabular materials and news flashes. Press releases are news items released directly by the firm or distributed through news distribution service providers such as PRNewswire, whereas media reports cover items such as media stories, editorials and commentaries. An example of tabular materials is profit and loss statement tabulated in the firm's earnings announcement. Collectively, we count the total number of press releases, media reports and tabular materials

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<sup>10</sup> Our baseline results are robust to the inclusion of news with scores less than 100.

<sup>11</sup> For an outline of the RavenPack News Analytics methodology see the online appendix 2 of Ho, Liu and Yu (2017).

<sup>12</sup> In terms of the reliability of the sentiment score, RavenPack did not change the *CSS* algorithm since its inception, which implies that the way the score is computed is persistent over time. RavenPack version controls their news analytics feeds so that new events and analytics can be added in any future version of the feed without disrupting users' models that are built and backtested using the current version.

as a proxy for the level of information produced through media coverage. To proxy for investor awareness, we use the total number of news flashes produced by Dow Jones News Wire, which summarize the news content with a headline. Since attention is scarce, sensationalized words are often chosen and presented in the headlines to manipulate the attention of investors on specific content. The higher the number of news flashes released through the news channel, the greater the chance of harnessing investors' attention to a particular stock.

To mitigate the influence of outliers, we winsorize the news count variables at the top and bottom 1% of their distribution.

### *3.2 Foreign mutual fund holding and firm level variables*

Similar to Covrig, DeFond, and Hung (2007), Defond, Hu, Hung, and Li (2011) and Chou, Zaiats, and Zhang (2014), we collect annual foreign mutual fund holdings data from the Thomson Financial Series international mutual fund database. To align the different reporting frequencies of foreign mutual fund holdings across countries, we employ the latest update of their holdings information at each year-end from 2002 to 2009. Our sample covers the equity holdings of mutual funds in 38 host countries, of which our sample firms come from 20 developed markets and 18 emerging markets. The list of countries and their corresponding number of firm-year observations are presented in Table I. Our central variable of interest is the U.S. mutual fund ownership (denoted as *USMF*) which is defined as aggregate equity holdings of mutual funds domiciled in the U.S. as a percentage of the total number of outstanding shares in a given year. Following Ferreira and Matos (2008), we set the U.S. mutual fund ownership variable to zero if a stock is not held by any U.S. mutual fund in Thomson Reuters' mutual fund database in a given year.

Our firm-level control variables include the adoption of International Financial Reporting Standards (IFRS) dummy variable (equal one if the firm adopts the IFRS, and zero

otherwise; *IFRS*), the employment of any Big 5 auditing firm (*BIGN*)<sup>13</sup>; market capitalization (natural log of market capitalization; *MV*), book-to-market ratio (*BM*), dividend yield ratio (average dividend yield; *DY*), return on equity ratio (net income before extraordinary items scaled by book value of equity; *ROE*), annual stock return (average monthly stock returns over the year; *RET*), stock return volatility (standard deviation of monthly stock returns over the year; *STDY*), the number of years since included in Datastream (*AGE*), and whether the firm has an American Depositary Receipt (ADR thereafter) (*ADR*) and the proportion of shares closely held by large investors (*CH*). Except the ADR information collected from depository banks and the U.S. stock exchanges, the IFRS adoption data from Compustat Global, and auditor information from Compustat Global and Worldscope<sup>14</sup>, all other variables are constructed using data from Worldscope and Datastream.

Our final sample consists of annual mutual fund holdings of non-US firms in 38 countries from 2002 onwards because we use the total number of news counts lagged by one year as a proxy for the news coverage to avoid the simultaneity concern and the news variable commences from 2001. After excluding firms not covered by RavenPack and firms with missing firm-level data, we are left with a total of 53,522 firm-year data. Table I Panel A presents the sample distribution by country. There is a predominant ownership bias towards developed markets in our sample (77%), which may be attributed to less news coverage by Dow Jones Newswire in emerging markets, relatively more domestic media coverage which are not captured by Dow Jones Newswire, or inadequate coverage of RavenPack database.<sup>15</sup>

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<sup>13</sup>The Big 5 auditing firms include Arthur Anderson, Deloitte and Touche, Ernst&Young, PricewaterhouseCoopers, and KPMG. Arthur Anderson was indicted of obstruction of justice by shredding documents related to the 2001 Enron Scandal. The conviction led to the end of Arthur Anderson in 2002 when the firm voluntarily surrendered its licenses as Certified Public Accountants in the U.S.

<sup>14</sup> We would like to thank the authors of Chou, Zaiats and Zhang (2014) for providing the firm-level auditor information for Chinese and Japanese companies. As noted in their study, the auditor information for these two countries are unavailable in Compustat Global or Worldscope. They hand collected the auditor information of Chinese firms by reading the annual reports via Mergent Online and Thomson Reuters, and manually retrieved the auditor data for Japanese firms through EDINET, Japan's electronic filing system for disclosure documents.

<sup>15</sup> In our robustness check, we use the Heckman's two-step method to correct for sample selection bias and we obtain results broadly consistent with our baseline results.

Table I Panel B presents the descriptive statistics of variables. The cross-sectional average percentage of non-US foreign mutual fund ownership is 3.5%, which is slightly higher than that of the U.S. mutual fund (2.6%). The average number of news coverage in the sample is 16.5. Further decomposing news coverage into press releases and news flashes, we note that the average number of press releases issued by the firm or news reports generated by the media is around 10 while the average number of news flashes is 6. Panel C presents the mean values of variables. It is worth noting that there is a significant country-level variation in mutual fund holdings and there is no clear pattern between news coverage and mutual fund holding at the country level, but evidently the average news coverage in developed markets is higher than that in emerging markets.

[Insert Table I here]

## 4. Empirical Analysis

### 4.1 Main Analysis

To examine the information effects of foreign investors' home media coverage we begin by estimating the following panel regression:

$$y_{it} = \beta_0 + \beta_1 HMEDIA_{it-1} + \delta' \mathbf{Z}_{it} + \theta_i + \theta_t + \varepsilon_{it}, \quad (1)$$

where  $y_{it}$  is the level of mutual fund holding in year  $t$  for firm  $i$ . To mitigate the issue of endogeneity we use the level of news coverage in the prior year ( $HMEDIA$ ) as our main dependent variable.  $\mathbf{Z}_{it}$  is a vector of firm-level control variables including the IFRS adoption dummy ( $IFRS$ ), the appointment of Big 5 auditor ( $BIGN$ ); the natural log of market capitalization ( $MV$ ), the natural log of book-to-market ratio ( $BM$ ), dividend yield ratio ( $DY$ ), return on equity ratio ( $ROE$ ), average of monthly stock returns ( $RET$ ), standard deviation of monthly stock returns ( $STDY$ ), the number of years since included in Datastream ( $AGE$ ), and

whether the firm has an ADR listing in the U.S. (*ADR*) and closely held stock ownership (*CH*).

$\theta_i$  and  $\theta_t$  are firm and year fixed effects.

Table II summarizes the estimation results of our baseline regression model on the full sample as well as the subsamples. We observe a consistently strong and positive association between the U.S. mutual fund ownership in a local stock and the U.S. media coverage of the stock on the full sample in Models 1-3 with and without control variables. The coefficient of *HMEDIA* is 43.267 ( $t$ -statistic = 17.08) in Model 1 without controlling for any firm and stock characteristics and firm/year fixed effects. While the economic magnitude is smaller, the *HMEDIA* coefficient estimate continues to be positive and significant at the 5% level after including control variables in Model 2 and including control variables as well as firm and year fixed effects in Model 3. This is consistent with a positive home media effect on the local equity holdings of U.S. mutual funds. We take Model 3 as an example to gauge the economic significance of the home media effect. One standard deviation increase in the U.S. news coverage is associated with 0.63% increase in the U.S. mutual fund ownership in the local stock.

The results on the control variables are broadly consistent with prior literature. The foreign equity ownership of U.S. mutual funds is positively related to the adoption of IFRS at the firm level (DeFond, Hu, Hung, and Li, 2011), the employment of reputable auditing firms (Chou, Zaiats, and Zhang, 2014), firm size, book-to-market ratio, dividend payment (Covrig, DeFond, and Hung, 2007), firm age, but is negatively related to ADR listing in the U.S. (Chou, Zaiats, and Zhang, 2014), and closely held ownership (Chan, Covrig, and Ng, 2005). The only exception is the accounting performance measure, *ROE*. The sign of the accounting performance measure, *ROE*, is positive and significant without controlling for firm and year fixed effects in Model 2, consistent with findings in Covrig, DeFond and Hung (2007) that foreign institutional investors prefer profitable firms but it turns significantly negative once firm and year fixed effects are included. A plausible explanation is that the level of, rather than

the change in, accounting performance matters for foreign mutual fund investment decision (Zhou, 2001 and Coles, Daniel and Naveen, 2006).<sup>16</sup> Importantly, our findings are unaffected without the inclusion of the *ROE* variable.

To ensure that our main results are not a manifestation of a host country's financial development, we split the full sample into the developed markets subsample and emerging markets subsample according to the MSCI market classification. We find in Models 4-5 of Table II that the coefficient of *HMEDIA* is 19.206 ( $t$ -value = 5.73) and 30.728 ( $t$ -value = 2.55) in the developed markets subsample and emerging markets subsample, respectively. This auxiliary evidence corroborates our main findings of the positive home media effect on the U.S. mutual fund investment.

[Insert Table II here]

While not the focus of this study, we examine how the U.S. media coverage on the local company affects the non-US foreign mutual fund ownership as well as domestic mutual fund ownership in the company. U.S. major news providers have a broad global audience. Sophisticated institutional investors can access to the U.S. news coverage and may revise their portfolio holdings accordingly based on their interpretation of global news stories. The analysis of other non-U.S. mutual fund ownership is reported in Table III and it yields intriguing results. We note that the coefficient of *HMEDIA* is positive and significant when non-US foreign mutual fund ownership is used as the dependent variable; yet, it becomes negative and insignificant when domestic mutual fund ownership is the dependent variable. These results are in line with the information advantage of domestic investors over foreign investors (Gehrig, 1993; Brennan and Cao, 1997; Dumas, Lewis and Osambela, 2016). Even though investors have access to the same level of public news disclosure, domestic investors appear not to

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<sup>16</sup> Zhou (2001) and Coles, Daniel and Naveen (2006) suggest that the firm fixed effects model could be a poor match for empirical settings where most variations arise from the cross-section rather than the time series.

respond to the global news coverage. They may trade on local news not covered by the global media outlet or potentially private information channels.

[Insert Table III here]

#### *4.2 Home Media Effect Conditional on Fund, News and Firm characteristics*

As discussed in Section 2, there are two conventional information views that support a positive effect of the home media coverage on U.S. mutual fund ownership. In this section, we explore whether the two views hold by conducting a nuanced analysis on the relationship between home media coverage and U.S. mutual fund holdings across a range of fund, news and firm characteristics.

The first set of tests focuses on the second hypothesis which states that the home media effect is strongest for U.S. mutual funds that have incentives to acquire information. In particular, we distinguish U.S. mutual fund investors on basis of their investment horizon and investment size. A mutual fund is categorized as a long-term investor if its holding in the firm is longer than one year, and otherwise it is deemed as a short-term investor. We also partition U.S. mutual funds into block versus non-block investors based on whether its ownership in the firm exceeds 5% of the firm's shares outstanding. Long term mutual fund managers emphasize on value investments and thus are keen to follow any news events of the firm. In contrast to block mutual funds, non-block mutual funds cannot access private information through the interactions with corporate management or the board and have to gather information via public sources. The analysis reported in Table IV produces results consistent with H2. The coefficient of *HMEDIA* is 0.187 ( $t$ -value = 5.89) for the long-term U.S. mutual fund ownership but it is insignificant for the short-term mutual fund ownership. Likewise, the coefficient of *HMEDIA* is 0.188 ( $t$ -value = 7.55) for the U.S. non-block mutual fund ownership but it is statistically insignificant for the U.S. block mutual fund ownership. To the extent that long investment horizon and small equity holdings reflect the information acquisition incentives of mutual

funds, this group of results supports the information acquisition view that home media coverage mitigates the information disadvantage of U.S. mutual funds by supplying them with firm-specific information at low costs.

[Insert Table IV here]

The next set of results looks into both the information acquisition and investor attention views by examining the result differences with varying news characteristics. To facilitate these tests, we extract three additional news variables from the RavenPack database. To proxy for the new information released through U.S. major news providers, we measure the number of news originated by the firm or the media in the prior year and denote it as the *INFORMATION* variable. To proxy for the attention grabbing effect of public news, we measure the total number of news flashes produced by Dow Jones News Wire which contain only a headline summarizing the content following a news story and denote it as the *ATTENTION* variable. We also look at the sentiment of news by counting the number of good news (defined as the news with event sentiment score (ESS) greater than 50; *GOODNEWS*) as well as the number of bad news (defined as the news with ESS less than or equal to 50; *BADNEWS*).

If U.S. media coverage serves as an important information source for the U.S. mutual funds, as predicted by H3 we should observe a positive effect of the number of news originated by the firm or the media and a positive effect of the number of good news but a negative effect of the number of bad news on U.S. mutual fund ownership. If the media coverage grabs the attention of U.S. mutual funds and improves the firm's familiarity to U.S. mutual funds, then we expect to find a positive effect of the number of news flashes and positive effects of the number of both good and bad news on US mutual fund ownership as stated in H4. Table V reports relevant empirical results.

In Table V, we regress U.S. mutual fund ownership on the number of news originated by the firm in Model 1 and on the number of news flashes in Model 2. The coefficients on both



the *INFORMATION* and the *ATTENTION* variables are positive and significant, supporting the information acquisition and investor attention views. Model 3 yields the same results when we incorporate *INFORMATION* and *ATTENTION* into one regression framework. Further analysis in Models 4-6 generates more support for the investor attention view. Specifically, we regress U.S. mutual fund ownership on *BADNEWS* in Model 4, on *GOODNEWS* in Model 5, and on *BADNEWS* and *GOODNEWS* in Model 6 and document significantly positive coefficients on *BADNEWS* and *GOODNEWS* variables across the three model specifications. This indicates that the media coverage, be it positive or negative news, elevates the visibility of the local company and thus increases U.S. mutual fund ownership in the company.

[Insert Table V here]

The last set of results is pertinent to firm information environment characteristics provided that the information disadvantage of foreign investors is key to cross-border investments of international mutual funds. We argue in H5 that a firm's information credibility and interpretability strengthen the home media effect. We employ two proxies for a firm's information credibility, that is, the appointment of any of the Big 5 auditing firms and financial analyst coverage. The financial analyst coverage data is taken from the I/B/E/S database. We define a *BIGN* dummy variable which equals one if the firm appoints at least one of the Big 5 auditors, and zero otherwise; the analyst coverage variable, *ANALYST*, which equals one if the firm's analyst coverage is greater than the sample median in a given country and year and zero otherwise.

On the premise that hiring Big 5 auditing firms and being monitored by financial analysts enhance the credibility of firm-level information, we anticipate a stronger home media effect for firms using Big 5 auditor(s) and followed by financial analysts. The results reported in Models 1-2 of Table VI strongly support this conjecture. As we augment the baseline regression model (1) by including the interaction term between *HMEDIA* and the information credibility

measures, *BIGN* and *ANALYST*, we observe positive and statistically significant coefficients on  $HMEDIA \times BIGN$  and  $HMEDIA \times ANALYST$ . The evidence suggests that the home media effect on the U.S. mutual fund ownership is most pronounced among firms characterized by trustworthy information disclosure.

Next, we employ another two proxies for the interpretability of firm-level information, the adoption of *IFRS* dummy variable and the *ADR* dummy variable. DeFond, Hu, Hung and Li (2011) show that foreign mutual fund ownership increases as the adoption of IFRS improves the comparability of a firm's financial statements. Doidge, Karolyi, and Stulz (2004) point out that ADR firms that were cross listed on the U.S. stock exchanges must comply with the same Securities and Exchange Commission (SEC) reporting and governance requirements as the U.S. public companies. It is therefore conceivable that the information about ADR firms is easier for U.S. investors to comprehend. In our analysis, the adoption of IFRS dummy variable (*IFRS*) is equal to one if the firm adopts IFRS and zero, otherwise; this information is collected from Compustat Global. The ADR dummy variable (*ADR*) takes the value of one if the firm was cross-listed on the U.S. stock exchanges via ADR listings. This information is taken from depository institutions and the U.S. stock exchanges.

Our findings shown in Models 3-4 of the table only weakly support the importance of information interpretability. When we expand the base model by incorporating the interaction between *HMEDIA* and *IFRS/ADR*, the coefficient of the interaction term is positive for both *IFRS* and *ADR* dummy variables, although it is not significant at any conventional levels. The evidence here is in favour of the information acquisition view of the home media coverage in that U.S. mutual funds collect public news about local companies that produce high quality information. Importantly, the firm-level information quality, but not the information interpretability, accounts for foreign institutional investment.

[Insert Table VI here]

### *4.3 Moderating Effects of Country-level Information Environments*

A distinct feature of our study from prior single-country studies on the media effects is the heterogeneous cross-country setting. The cross-country variations in the information environments allow us to test the third new information view about the home media effect. The rationale follows that despite the global access to the same piece of information, local investors are better equipped to understand local news. Our prior findings that U.S. mutual fund ownership increases with U.S. media coverage while domestic investors do not react to the U.S. media coverage provide strong support for this assertion. Here we attempt to substantiate the home media bias view by evaluating the moderating effect of host countries' information environments on the basis that high quality or culturally similar information environment may mitigate the distrust of U.S. investors. Consequently, as stated in H6, the home media effect on U.S. mutual fund ownership in a local stock is most pronounced in host countries with low quality or culturally different information environment.

To test H6, we employ two different proxies for the information quality of host countries and one proxy for the host country's cultural similarity with the U.S. The first and second country-level information indicators are the disclosure requirements index (*DISREQ*) and the securities regulation index (*SECREG*) constructed in Hail and Leuz (2006) based on the data in La Porta, Lopez-de-Silanes, and Shleifer (2006). *DISREQ* is computed based on the mean of several subindices scoring disclosure requirements at the country's largest stock exchange in the aspects of prospectus requirements, directors' compensation, ownership structure and insider ownership, related-party transactions, and contracts. *SECREG* is intended to capture the enforcement of a country' disclosure requirements and it is computed as the average of the disclosure index, the liability standard index, and the public enforcement index from La Porta, Lopez-de-Silanes, and Shleifer (2006).

The empirical investigation of H6 involves interacting *HMEDIA* with each of the three country-level information measures. Models 1-2 of Table VII contain the results regarding the

cross-country variations in the information environments. First of all, the coefficient of *HMEDIA* continues to be positive and significant after the inclusion of the interaction term. While we find a consistently strong mitigating effect of a host country's information environment on the home media effect using the disclosure requirements index (*DISREQ*) and securities regulation index (*SECREG*) as proxy (the coefficients are -78.949 and -72.333, with *t*-values of -2.56 and -3.49, respectively), which suggests that the home media coverage of the local firms becomes less important for the U.S. mutual fund investments when they can build trust in host countries with high quality news supply.

Finally, we use whether a host country's official language is English as the fourth country-level information environment; Claessens and Van Horen (2014) suggest that using the same language reflects the cultural similarity between the two countries. In Model 3 of the table, the coefficient of *HMEDIA* × *ENGLISH* is 6.765 (*t*-value = 1.01), statistically insignificant at the 5% level. Similar to the results on firm-level information environments, it is the information quality rather than information similarity that matters for foreign investment.

[Insert Table VII here]

#### 4.4 Robustness Tests

We conduct a battery of robustness tests to rule out other factors that potentially confound our previous findings. Table VIII concentrates on specific subsamples and alternative measure of the home media coverage while Tables IX, X and XI look into the potential endogenous relationship between U.S. mutual fund ownership and U.S. media coverage of local stocks.

Our first concern arises from the subset of local firms which are simultaneously cross-listed on the U.S. stock exchanges. U.S. mutual fund managers may not have information asymmetry problem with this group of firms for two main reasons: (i) the firms cross-listed in the U.S. follow the U.S. accounting reporting protocol (Doidge, Karolyi, and Stulz, 2004); and

(ii) U.S. mutual funds can directly own the stocks in their home market at low transaction costs. Therefore, the firms cross-listed in the U.S. through ADR listings are excluded in the sensitivity test. Model 1 of Table VIII suggests that our main result of a positive home media effect remains unaffected after this exclusion.

Our main analysis employs only the news stories with a relevance score of 100. The purpose of this selection criteria is to make sure U.S. mutual fund investments are indeed an outcome of analysing firm-specific public news rather than industry- or market-wide news that involves the mentioning of the stock. As a robustness test, we include all the news articles into the construction of the *HMEDIA* variable. In Model 2 of Table VIII, the coefficient of the new *HMEDIA* variable continues to be positive and significant at the 10% level while the economic magnitude is much smaller. This result suggests that U.S. mutual funds collect firm-specific news rather than industry and market news in their investment decisions.

To ascertain that our results are not driven by the selection of the news database, we construct our news measure using the data from Thomson Reuters News Analytics. The coefficient of the new *HMEDIA* variable is 0.627 ( $t$ -value = 2.25), confirming that our results are unbiased by the use of RavenPack database.

Our sample period covers the most recent global financial crisis that originated in the U.S. in 2008. It is plausible that U.S. mutual fund managers experienced the funding constraints during this financial crisis period and their foreign investments may be adversely affected as these funds direct their attention from firm-specific news following in a foreign market to market-wide systematic risk management. This possibility prompts us to inspect how the association between the U.S. media coverage and US mutual fund ownership in a local firm changes during and outside the financial crisis period. In particular, we exclude the crisis period (years 2008 and 2009) and re-estimate the base model. The coefficient of *HMEDIA* remains significant and positive during the non-crisis period. When we restrict our sample to the crisis

period, the coefficient becomes insignificant, albeit still positive. One possible explanation is that market participants, including mutual funds, shift the attention from individual stocks to the overall market news due to economic or psychological reasons. Increased co-movements in stock returns and liquidity during market stress provide valuable implications for this notion (Ang and Chen, 2002; Karolyi, Lee, and van Dijk, 2012).

Given the predominant news release on the earnings announcements days, one might argue that the positive relation is driven primarily by reaction of mutual fund who trade on earnings news. To rule out this possibility, we exclude all earnings-related news in our news coverage measure and the coefficient continues to be positive and significant at the 1% level.

[Insert Table VIII here]

Last but not the least, we address endogeneity issues that could potentially drive our previous findings. Our baseline regression analysis could be plagued by three types of endogeneity issues. The first endogeneity problem concerns about the model misspecification due to not controlling for some unobservable firm or time characteristics. The observed home media effect may be a mechanical reflection of such unobservable firm characteristics. We have attempted to address this particular issue by estimating panel regressions with firm and year fixed effects as well as use the lagged news coverage variable throughout the analysis.

The second type of the endogeneity problem arises from the potential reverse causative relationship running from U.S. mutual fund ownership to U.S. media coverage. It is likely that the U.S. media coverage caters for the demand of the U.S. large institutional investors by closely covering stocks held by these investors. We perform the GMM and Propensity Score Matching (PSM) analysis to mitigate this concern. We use the average U.S. media coverage of other firms in the same industry and country<sup>17</sup>, a dummy variable that equals one if the country uses English as an official language, and the natural logarithm of the country's population as

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<sup>17</sup> John, Litov and Yeung (2008) also use a similar instrumental variable to address the endogeneity problem.

the instrumental variables. Table IX summarizes the results of the GMM estimation for the full sample as well as various subsamples.<sup>18</sup> In all three GMM regressions, Wald F statistics exceed the critical values of Stock-Yogo weak ID test, leading to the rejection of the null that the instruments are weak. Consistent with prior findings, Table IX reveals that the coefficient of *HMEDIA* is positive and statistically significant in the full sample analysis as well as in the analysis of developed markets subsample. For the emerging markets subsample, *HMEDIA* is positive but not statistically significant at the conventional level. It is noteworthy that the Durbin-Wu-Hausman test of endogeneity suggests that OLS estimation is preferable to the GMM in the emerging markets, which makes us refrain from over-stressing the GMM estimation in the emerging markets subsample.

The results from the PSM approach are similar to the GMM results. In the PSM analysis, we explore the *treatment effect* on stocks that are covered by the media (*treatment group*) versus stocks that are not covered by the media (*control group*). Using the PSM method, we match stocks based on their underlying characteristics, as well as the average U.S. media coverage of other firms in the same industry and country, whether the stocks are listed in country which uses English as an official language, and the natural logarithm of the country's population. Results are reported in Table X. For the full sample, stocks that are covered in media have, on average, 1% more US mutual fund ownership (3.1% versus 2.1% and statistically significant at the 1% level). While the average treatment effect for stocks in the developed market is around 1.3% (3.1% versus 1.8%, and it is statistically significant at the 1% level), media coverage seems to have minimal impact in stocks listed in the emerging markets, keeping in mind that the emerging markets subsample fails to the endogeneity test in the GMM estimation.

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<sup>18</sup> We replace firm fixed effects with industry fixed effects in the GMM estimation because the inclusion of firm fixed effects significantly reduces the endogeneity problem. The unreported tests of endogeneity in both subsamples in presence of firm fixed effects show that endogeneity is rejected. Hence, the OLS estimates are unbiased and consistent in the firm fixed effects models.

[Insert Tables IX and X here]

The last endogeneity concern stems from the sample selection bias. Our data ignores stocks that either received no news coverage or not covered by RavenPack. To the extent that there is a set of variables explaining the sample selection process (selection equation), it is possible that the residuals in the baseline regression model (1) correlate with the residuals from the selection equation.<sup>19</sup> We control for possible sample selection bias created by distinct characteristics of the subsample of stocks using Heckman's two-step approach. The first stage involves estimating the inverse of the Mill's ratio (*LAMBDA*) from a panel probit model based on the same explanatory variables used in the baseline regression model plus the natural log of the country's population and a dummy variable that equals one if the host country is an English-speaking country. We argue that the level of U.S. media coverage is highly correlated with the country's population as it relates to how many journalists being deployed by Dow Jones to that country, but such variable has no direct association with mutual fund holdings. A host country that speaks English has fewer language and cultural barriers for journalists based in the U.S. Thus, the U.S. media coverage in these countries is anticipated to be higher. The second stage estimation of the Heckman's method evaluates the impact of news coverage after controlling for *LAMBDA*. Related results are reported in Table XI. The results controlling for sample selectivity are consistent with the primary findings on the full sample and developed markets subsample but statistically insignificant for the emerging markets subsample.

[Insert Table XI here]

## **5. Conclusion**

This study analyses the role of the media coverage in resolving the information challenge of foreign institutional investors on an international sample of stocks in 38 countries worldwide.

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<sup>19</sup> For example, there may be certain unobserved firm-level characteristics that determines both US mainstream media coverage and mutual fund holding not captured by our control variables.



We observe a positive relationship between the U.S. media coverage of a local firm and the U.S. mutual fund ownership of the firm over the full sample as well as the developed markets and emerging markets subsamples. By contrast, domestic mutual ownership is unrelated to the U.S. media coverage. Our main finding is not driven by firms cross-listed on the U.S. stock exchanges, the construction of news measure, the selection of the news database and more importantly, is robust to various endogeneity tests.

Drawing from prior literature, we propose three information views that can explain the positive effect of home media coverage on the U.S. mutual funds' foreign investments. The first two views, the information acquisition view and investor attention view, focus on the traditional media effects in a single-country setting whereas the third view about home media bias applies to a cross-country sample. Our empirical findings support all of the three information views. In support of the information acquisition view, we show that the effect of home media coverage is most pronounced for U.S. long-term mutual funds and non-block mutual funds and among firms characterized by employing a Big 5 auditor and high analyst following; U.S. mutual ownership is positively related to the number of news originated by the firm or media. Consistent with the investor attention view, we find that U.S. mutual fund ownership increases with the number of news flashes and with the number of both positive and negative news.

After taking into consideration the country-specific information environment, we document evidence consistent with the third view of the home media effect. The results show that the media effect is strongest when a host country has opaque information environments. It appears that U.S. investors distrust local news the most when the local information environment is inferior to their own. Generally, the findings support that foreign professional investors attempt to circumvent the information barriers by following their home media coverage on

local companies. Our evidence stresses the importance of establishing a transparent investment environment to attracting international capital flows.

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**Table I**  
**Sample distribution by country within emerging and developed markets and descriptive statistics**

This table reports the distribution of firm-year observations by country, separated by emerging and developed markets (Panel A), the descriptive statistics of dependent and independent variables (Panel B), and the mean values of variables across countries (Panel C). Our ownership data consists of non-US publicly listed firms that are owned by US and non-US mutual funds from 2002 to 2009. The news data is sourced from the RavenPack DJ News Analytic database.

<b>Panel A: Sample distribution by country</b>			
Developed markets	No. of firm-year observations	Emerging markets	No. of firm-year observations
Australia	3331	Argentina	104
Austria	340	Brazil	413
Belgium	490	Chile	261
Canada	3583	China	109
Denmark	499	Greece	423
Finland	661	India	2316
France	2510	Indonesia	217
Germany	2419	Israel	344
Hong Kong	2744	Malaysia	858
Ireland	221	Mexico	250
Italy	1213	Philippines	175
Japan	15173	Poland	514
Netherlands	473	Portugal	182
New Zealand	183	South Africa	441
Norway	681	South Korea	2161
Singapore	804	Taiwan	3134
Spain	604	Thailand	261
Sweden	1323	Turkey	403
Switzerland	1097		
United Kingdom	2607		

**Panel B: Descriptive statistics of variables**

Variables	Mean	SD	Median	P10	P90
% US mutual fund ownership ( <i>USMF</i> )	2.60	6.58	0.54	0.00	6.94
% Non-US foreign mutual fund ownership ( <i>NUSMF</i> )	3.48	7.28	0.65	0.00	9.93
Total news coverage ( <i>NEWS</i> )	16.46	31.46	7.00	0.00	41.00
Number of news originated by the firm/media ( <i>INFORMATION</i> )	10.18	16.86	5.00	0.00	23.00
No. of news flashes ( <i>ATTENTION</i> )	5.62	12.83	0.00	0.00	18.00
IFRS dummy ( <i>IFRS</i> )	0.26	0.44	0.00	0.00	1.00
Big 4 four auditor dummy ( <i>BIGN</i> )	0.61	0.49	1.00	0.00	1.00
Log of market capitalization ( <i>MV</i> )	12.70	1.92	12.61	10.31	15.26
Log of book-to-market ratio ( <i>BM</i> )	0.98	0.90	0.73	0.26	1.95
Dividend yield ratio ( <i>DY</i> )	0.02	0.03	0.02	0.00	0.05
Return on equity ratio ( <i>ROE</i> )	0.05	0.25	0.08	-0.14	0.25
Annual stock return ( <i>RET</i> )	0.07	0.62	0.13	-0.68	0.73
Standard deviation of monthly stock returns ( <i>STDY</i> )	0.43	0.29	0.36	0.18	0.74
ADR dummy ( <i>ADR</i> )	0.05	0.22	0.00	0.00	0.00
Number of years since included in Datastream ( <i>AGE</i> )	16.41	9.44	15.00	5.00	32.00
Closely held ownership ( <i>CH</i> )	0.35	0.27	0.34	0.00	0.71

**Panel C: Mean values of variables across countries**

Countries	<i>USMF</i>	<i>NUSMF</i>	<i>NEWS</i>	<i>INFORMATION</i>	<i>ATTENTION</i>	<i>IAS</i>	<i>MV</i>	<i>BM</i>	<i>DY</i>	<i>ROE</i>	<i>RET</i>	<i>STDY</i>	<i>ADR</i>	<i>AGE</i>	<i>CH</i>
<b>Developed Markets</b>															
Australia	2.2	3.27	13.54	7.79	5.41	0.58	11.78	0.71	0.03	-0.04	0.08	0.56	0.04	13.37	0.35
Austria	5.07	10.24	20.06	12.61	7.4	0.88	13.29	0.9	0.02	0.06	0.1	0.36	0.02	14.33	0.52
Belgium	1.85	4.26	20.12	13.47	6.06	0.67	13.04	0.84	0.03	0.07	0.06	0.31	0.02	15.02	0.43
Canada	2.51	3.81	30.48	11.63	18.44	0	12.14	0.83	0.02	-0.01	0.07	0.52	0.18	14.65	0.16
Denmark	1.55	3.58	10.22	5.88	4.26	0.72	12.52	0.94	0.02	0.04	-0.01	0.41	0	19.09	0.31
Finland	3.23	9.18	17.18	11.29	5.45	0.69	12.62	0.66	0.04	0.08	0.12	0.34	0.02	11.98	0.3
France	3.15	4.9	23.28	13.75	7.5	0.62	12.96	0.78	0.02	0.07	0.05	0.39	0.06	14.7	0.49
Germany	3.26	6	21	12.17	7.19	0.74	12.47	0.84	0.02	0.01	0.06	0.44	0.04	14.36	0.41
HK	2.36	4.04	11.07	7.17	3.71	0.03	12.22	1.42	0.03	0.07	0.11	0.51	0.02	13.95	0.58
Ireland	4.77	11.9	23.08	12.9	9.52	0.55	13.08	0.85	0.02	0.05	0.03	0.44	0.18	21.82	0.29
Italy	1.54	4.37	14.35	8.46	4.74	0.69	13.43	0.85	0.02	0.04	0.03	0.33	0.04	14.29	0.47
Japan	2.13	1.63	10.37	8.17	1.98	0	12.66	1.14	0.02	0.03	0.04	0.36	0.02	20.76	0.31
Netherlands	4.15	6.91	32.38	17.77	11.83	0.67	13.48	0.75	0.03	0.1	0.06	0.37	0.17	21.22	0.31
New Zealand	5.65	6.26	25.87	16.33	8.91	0.36	13.07	0.72	0.04	0.12	0.13	0.32	0.13	11.92	0.46
Norway	2.96	5.51	15.49	8.95	5.66	0.68	12.58	1	0.03	0.07	0.08	0.46	0.04	13.26	0.34
Singapore	3.42	3.51	19.25	12.12	6.85	0.08	13.23	0.96	0.04	0.14	0.14	0.41	0.01	15.02	0.58
Spain	1.9	4.09	24.16	15.05	7.54	0.61	14	0.62	0.02	0.11	0.09	0.31	0.07	13.71	0.46
Sweden	1.81	4.89	16.59	10.28	5.81	0.66	12.43	0.7	0.02	0.04	0.07	0.43	0.03	12.42	0.24
Switzerland	3.56	5.71	24.39	15.53	7.08	0.68	13.26	0.71	0.02	0.06	0.08	0.33	0.06	17.48	0.37
UK	4.06	3.73	33.54	19.65	12.02	0.6	13.51	0.73	0.03	0.09	0.03	0.41	0.08	20.35	0.23
<b>Emerging Markets</b>															
Argentina	0.49	0.11	11.08	7.5	3.58	0	13.82	0.84	0.02	0.06	0.08	0.45	0.56	13.61	0.36
Brazil	7.6	4.54	16.17	10.65	4.65	0.04	14.67	0.73	0.05	0.2	0.29	0.47	0.32	11.11	0.45
Chile	0.72	0.89	7.13	4.37	2.77	0.08	14.14	0.74	0.03	0.13	0.17	0.3	0.38	14.28	0.54
China	0.06	1.39	20.39	8.29	11.5	0.29	15.23	0.7	0.02	0.13	-0.03	0.52	0.06	11.01	0.47
Greece	2.29	4.89	7.31	4.78	2.38	0.72	13.04	0.86	0.02	0.11	0.05	0.42	0.02	11.87	0.32
India	1.58	3.04	18.01	11.47	5.83	0	12.17	1.03	0.02	0.15	0.07	0.6	0.03	13.99	0.45
Indonesia	3.28	5.72	12.82	6.89	5.93	0	13.48	0.91	0.02	0.16	0.13	0.57	0.02	13.65	0.61
Israel	1.99	1.12	16.79	9.71	6.89	0.22	13.45	0.78	0.04	0.11	0.15	0.36	0.33	11.75	0.48
Malaysia	2.22	3.78	12.39	9.17	3.22	0	13.1	0.99	0.03	0.11	0.13	0.34	0	16.13	0.5
Mexico	8.71	4.07	18.02	11.11	6.53	0	14.74	0.76	0.02	0.14	0.16	0.39	0.4	12.64	0.21
Philippines	5.73	4.74	18	10.51	7.49	0.7	13.36	1.05	0.03	0.14	0.2	0.41	0.05	14.95	0.78
Poland	2.85	4.69	6.78	4.56	2.22	0.79	12.48	0.97	0.02	0.08	0.01	0.52	0.01	8.78	0.45
Portugal	1.07	3.29	15.28	10.98	4.21	0.65	13.41	0.82	0.03	0.1	0.15	0.31	0.08	13.12	0.56
South Africa	3.74	3.41	11.1	6.23	4.87	0.71	13.91	0.58	0.04	0.22	0.17	0.4	0.12	17.78	0.41
South Korea	3.09	3.29	10.24	6.34	3.77	0	12.57	1.55	0.02	0.06	0.11	0.55	0.03	17.1	0.29
Taiwan	2.26	2.6	17.31	12.47	3.47	0	12.47	0.98	0.03	0.07	0.1	0.47	0.02	12.23	0.22
Thailand	2.55	5.22	16.75	11.12	5.53	0	13.72	0.87	0.04	0.16	0.09	0.4	0	13.48	0.44
Turkey	3.76	5.6	4.14	2.76	1.38	0.28	13.5	1	0.02	0.13	0.1	0.59	0.02	13.88	0.66



**Table II**  
**The Impact of News Coverage on US Mutual Fund Ownership**

The table reports the baseline panel regression results of the impact of US news coverage of a local firm on US mutual fund ownership in the firm. The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). News data are from the RavenPack DJ News Analytic database. Control variables include a dummy variable that equals one if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). Firm and year fixed effects are also included. *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	All			Developed Markets	Emerging Markets
	(1)	(2)	(3)	(4)	(5)
<i>HMEDIA</i>	43.267*** (17.08)	12.425*** (4.70)	20.023*** (5.66)	19.206*** (5.73)	30.728** (2.55)
<i>IFRS</i>	-	0.688*** (5.18)	0.399** (2.33)	0.202 (1.24)	1.887*** (2.75)
<i>BIGN</i>	-	0.351*** (3.75)	0.420*** (3.61)	0.418*** (3.25)	0.100 (0.37)
<i>MV</i>	-	1.046*** (23.05)	1.344*** (9.99)	1.353*** (8.58)	1.414*** (5.65)
<i>BM</i>	-	0.215*** (5.01)	0.548*** (7.74)	0.555*** (6.51)	0.555*** (4.35)
<i>DY</i>	-	-2.614** (-2.30)	2.785** (2.43)	2.219** (2.17)	3.029 (0.95)
<i>ROE</i>	-	0.354** (2.16)	-0.805*** (-4.38)	-0.745*** (-3.70)	-1.026** (-2.21)
<i>RET</i>	-	-0.283*** (-5.85)	-0.083 (-1.19)	-0.084 (-0.96)	-0.118 (-0.97)
<i>STDY</i>	-	1.353*** (9.96)	-0.090 (-0.68)	-0.016 (-0.10)	-0.332 (-1.52)
<i>ADR</i>	-	-1.094*** (-3.16)	-1.528** (-2.03)	-1.786** (-2.15)	0.225 (0.17)
<i>AGE</i>	-	-0.041*** (-6.95)	0.145*** (6.95)	0.152*** (6.46)	0.119** (2.38)
<i>CH</i>	-	-1.880*** (-10.35)	-1.193*** (-3.81)	-1.667*** (-4.01)	-0.354 (-0.83)
Observations	53,522	53,522	53,522	40,956	12,566
Adjusted <i>R</i> <sup>2</sup>	0.0427	0.1017	0.5448	0.5417	0.5577
No. of firms	11,0669	10,669	10,669	7,886	2,783
Firm FE	N	N	Y	Y	Y
Year FE	N	N	Y	Y	Y

**Table III**  
**The Impact of News Coverage on non-US Foreign and Domestic Mutual Fund Ownership**

The table reports the baseline panel regression results of the impact of news coverage on non-US foreign and domestic mutual fund ownership of local firms (US firms are excluded). The dependent variable is the percentage shares owned by non-US foreign and domestic mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). News data are from the RavenPack DJ News Analytic database. Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). Firm and year fixed effects are also included. *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	Non-US Mutual Fund Ownership	Domestic Mutual Fund Ownership
	(1)	(2)
<i>HMEDIA</i>	8.870*** (3.08)	-3.405 (-0.77)
<i>IFRS</i>	0.544*** (3.06)	-0.180 (-0.83)
<i>BIGN</i>	0.130 (1.13)	0.224 (1.54)
<i>MV</i>	1.933*** (13.36)	2.244*** (11.54)
<i>BM</i>	0.681*** (8.84)	0.744*** (7.33)
<i>DY</i>	2.029* (1.88)	3.240** (2.28)
<i>ROE</i>	-0.311 (-1.30)	0.061 (0.22)
<i>RET</i>	-0.026 (-0.42)	-0.087 (-0.98)
<i>STDY</i>	0.052 (0.32)	-0.295 (-1.45)
<i>ADR</i>	1.643*** (2.65)	-0.472 (-0.80)
<i>AGE</i>	-0.079*** (-3.72)	-0.104*** (-3.94)
<i>CH</i>	-2.144*** (-6.20)	-2.558*** (-6.12)
Observations	53,522	53,522
Adjusted <i>R</i> <sup>2</sup>	0.6342	0.6954
No. of firms	10,669	10,669

**Table IV**  
**Fund Characteristics**

The table reports the baseline panel regression results of the impact of news coverage on US mutual fund ownership (US firms are excluded) across different fund characteristics. The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. Mutual funds are defined as the blockholder of the relevant firm if its ownership in the firm exceeds 5% of the firm's shares outstanding. Mutual fund is defined as a long-term investor if its holding in the firm is longer than one year, and otherwise it is deemed as a short-term investor. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals one if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. Firm and year fixed effects are included. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	Long-term	Short-term	Block	Non-Block
	(1)	(2)	(3)	(4)
<i>HMEDIA</i>	0.187*** (5.89)	0.017 (1.04)	0.017 (0.74)	0.188*** (7.55)
<i>IFRS</i>	0.001 (1.08)	0.002** (2.40)	0.003** (2.37)	0.000 (0.38)
<i>BIGN</i>	0.004*** (3.78)	0.001* (1.74)	0.003*** (2.83)	0.002*** (3.37)
<i>MV</i>	0.010*** (9.25)	0.004*** (6.77)	0.005*** (4.71)	0.009*** (13.32)
<i>BM</i>	0.005*** (7.67)	0.001*** (3.50)	0.002*** (4.03)	0.003*** (9.83)
<i>DY</i>	0.016* (1.69)	0.014*** (3.19)	0.013 (1.30)	0.019*** (3.52)
<i>ROE</i>	-0.006*** (-4.15)	-0.003*** (-2.90)	-0.004*** (-2.80)	-0.004*** (-5.07)
<i>RET</i>	-0.002*** (-3.38)	0.002*** (4.27)	-0.001** (-2.23)	0.001* (1.69)
<i>STDY</i>	-0.001 (-0.79)	-0.001 (-0.73)	-0.001 (-0.61)	-0.001 (-0.87)
<i>ADR</i>	-0.012** (-2.03)	-0.003 (-0.97)	-0.008* (-1.78)	-0.007 (-1.43)
<i>AGE</i>	0.002*** (8.49)	-0.000 (-0.71)	0.000*** (2.63)	0.001*** (9.10)
<i>CH</i>	-0.009*** (-3.36)	-0.003*** (-3.23)	-0.002 (-0.71)	-0.011*** (-6.93)
Observations	53,522	53,522	53,522	53,522
Adjusted $R^2$	0.5207	0.2297	0.3927	0.6172
Number of firms	10,669	10,669	10,669	10,669

**Table V**  
**News Characteristics: Information and Attention**

The table reports the panel regression results of the impact of different type of news coverage on US mutual fund ownership (US firms are excluded). The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variables are (i) the total number of news originated (scaled down by a factor of 1000) by the firm in prior year, which covers press releases, media report and any tabular materials (*INFORMATION*), (ii) the total number of news flashes (scaled down by a factor of 1000), which are produced by Dow Jones News Wire and contain only a headline summarizing the content following a news story, (iii) the number of good news, which is based on the number of news with event sentiment score (*ESS*) > 50 (*GOODNEWS*), and (iv) the number of bad news, which is based on the number of news with *ESS* < 50 (*BADNEWS*). Control variables include a dummy variable that equals one if the firm adopted the IFRS, appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. Firm and year fixed effects are included. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
<i>INFORMATION</i>	30.873*** (4.95)	-	19.720*** (3.29)	-	-	-
<i>ATTENTION</i>	-	41.655*** (5.33)	28.183*** (3.85)	-	-	-
<i>BADNEWS</i>	-	-	-	24.655*** (4.14)	-	18.859*** (3.23)
<i>GOODNEWS</i>	-	-	-	-	11.916*** (2.71)	8.815** (2.19)
<i>IFRS</i>	0.434** (2.54)	0.378** (2.20)	0.403** (2.34)	0.403** (2.35)	0.381** (2.21)	0.383** (2.22)
<i>BIGN</i>	0.391*** (3.38)	0.432*** (3.69)	0.421*** (3.60)	0.393*** (3.38)	0.408*** (3.51)	0.409*** (3.52)
<i>MV</i>	1.361*** (10.09)	1.330*** (9.88)	1.335*** (9.92)	1.378*** (10.15)	1.361*** (10.07)	1.365*** (10.11)
<i>BM</i>	0.554*** (7.81)	0.548*** (7.75)	0.545*** (7.72)	0.565*** (7.92)	0.561*** (7.89)	0.559*** (7.87)
<i>DY</i>	2.780** (2.42)	2.903** (2.53)	2.832** (2.47)	2.934** (2.55)	2.800** (2.44)	2.863** (2.49)
<i>ROE</i>	-0.821*** (-4.46)	-0.799*** (-4.35)	-0.793*** (-4.33)	-0.803*** (-4.37)	-0.862*** (-4.67)	-0.817*** (-4.44)
<i>RET</i>	-0.083 (-1.19)	-0.078 (-1.11)	-0.079 (-1.13)	-0.095 (-1.36)	-0.081 (-1.15)	-0.090 (-1.29)
<i>STDY</i>	-0.084 (-0.63)	-0.098 (-0.74)	-0.096 (-0.72)	-0.090 (-0.68)	-0.075 (-0.56)	-0.086 (-0.65)
<i>ADR</i>	-1.573** (-2.11)	-1.587** (-2.10)	-1.577** (-2.10)	-1.594** (-2.12)	-1.518** (-2.02)	-1.540** (-2.04)
<i>AGE</i>	0.147*** (6.86)	0.160*** (7.94)	0.142*** (6.61)	0.168*** (8.27)	0.177*** (8.68)	0.163*** (7.95)
<i>CH</i>	-1.196*** (-3.82)	-1.200*** (-3.85)	-1.184*** (-3.79)	-1.219*** (-3.90)	-1.232*** (-3.95)	-1.218*** (-3.90)
Observations	53,522	53,522	53,522	53,522	53,522	53,522
Adjusted R <sup>2</sup>	0.5445	0.5445	0.5449	0.5440	0.5439	0.5442
Number of firms	10,669	10,669	10,669	10,669	10,669	10,669

**TABLE VI**  
**Firm-level Information Environments**

The table reports the panel regression results of the effect of both country- and firm-level characteristics on the relation between news coverage and US mutual fund ownership (US firms are excluded). The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). We interact the news count with the firm-level information environment proxies: the Big 5 Auditor dummy (*BIGN*), an analyst dummy, which equals one if the firm has a high (above median) analyst coverage (*ANALYST*) in a given country and year, whether IFRS is adopted (*IFRS*), and a dummy variable that equals one if the firm has an ADR listing in the US. Control variables include a dummy variable that equals one if the firm the adopted (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals one if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. Firm and year fixed effects are included. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

<i>Z</i> =	<i>BIGN</i>	<i>ANALYST</i>	<i>IFRS</i>	<i>ADR</i>
	(1)	(2)	(3)	(4)
<i>HMEDIA</i>	10.905** (2.36)	0.392 (0.06)	15.856*** (3.25)	16.405*** (5.24)
<i>HMEDIA</i> × <i>Z</i>	10.224** (2.39)	20.883*** (2.92)	6.045 (1.45)	13.510 (1.58)
<i>IFRS</i>	0.369** (2.15)	0.313* (1.79)	0.259 (1.43)	0.393** (2.29)
<i>BIGN</i>	0.301** (2.56)	0.424*** (3.66)	0.422*** (3.63)	0.423*** (3.64)
<i>MV</i>	1.345*** (10.00)	1.283*** (9.77)	1.353*** (10.05)	1.349*** (10.01)
<i>BM</i>	0.546*** (7.69)	0.530*** (7.57)	0.553*** (7.82)	0.548*** (7.75)
<i>DY</i>	2.717** (2.37)	2.674** (2.34)	2.748** (2.39)	2.763** (2.41)
<i>ROE</i>	-0.808*** (-4.40)	-0.791*** (-4.32)	-0.814*** (-4.44)	-0.813*** (-4.42)
<i>RET</i>	-0.087 (-1.25)	-0.064 (-0.93)	-0.084 (-1.21)	-0.088 (-1.25)
<i>STDY</i>	-0.087 (-0.66)	-0.111 (-0.84)	-0.088 (-0.66)	-0.083 (-0.63)
<i>ADR</i>	-1.436* (-1.90)	-1.513** (-2.01)	-1.407* (-1.87)	-2.339** (-2.39)
<i>AGE</i>	0.150*** (7.11)	0.164*** (7.76)	0.152*** (7.06)	0.149*** (7.21)
<i>CH</i>	-1.181*** (-3.78)	-1.147*** (-3.70)	-1.195*** (-3.82)	-1.187*** (-3.80)
<i>ANALYST</i>	- -	0.382** (2.48)	- -	- -
Constant	-17.420*** (-10.70)	-17.095*** (-10.62)	-17.573*** (-10.78)	-17.481*** (-10.72)
Observations	53,522	53,522	53,522	53,522
Adjusted <i>R</i> <sup>2</sup>	0.5450	0.5455	0.5449	0.5450
Number of firms	10,669	10,669	10,669	10,669

**Table VII**  
**Country-level Information Environments**

The table reports the panel regression results of the effect of country-level characteristics on the relation between news coverage and US mutual fund ownership (US firms are excluded). The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). We interact the news count with the following country-level factors: (1) Hail and Leuz's (2006) disclosure requirements index (*DISREQ*), (2) Hail and Leuz's (2006) securities regulation index (*SEREG*), (3) English-speaking country dummy (*ENGLISH*). Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. Firm and year fixed effects are included. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

<i>Z</i> =	<i>DISREQ</i>	<i>SEREG</i>	<i>ENGLISH</i>
	(1)	(2)	(3)
<i>HMEDIA</i>	77.920*** (3.25)	64.808*** (4.44)	18.461*** (4.24)
<i>HMEDIA</i> × <i>Z</i>	-78.949** (-2.56)	-72.333*** (-3.49)	6.765 (1.01)
<i>IAS</i>	0.324* (1.87)	0.373** (2.18)	0.371** (2.16)
<i>BIGN</i>	0.393*** (3.40)	0.359*** (3.11)	0.421*** (3.63)
<i>MV</i>	1.347*** (9.94)	1.364*** (9.97)	1.342*** (9.98)
<i>BM</i>	0.549*** (7.68)	0.558*** (7.75)	0.548*** (7.75)
<i>DY</i>	2.850** (2.40)	2.847** (2.40)	2.788** (2.43)
<i>ROE</i>	-0.853*** (-4.69)	-0.870*** (-4.77)	-0.803*** (-4.37)
<i>RET</i>	-0.063 (-0.91)	-0.064 (-0.92)	-0.082 (-1.18)
<i>STDY</i>	-0.101 (-0.76)	-0.097 (-0.73)	-0.094 (-0.71)
<i>ADR</i>	-1.367* (-1.81)	-1.391* (-1.88)	-1.529** (-2.04)
<i>AGE</i>	0.151*** (7.22)	0.145*** (6.91)	0.147*** (6.98)
<i>CH</i>	-1.246*** (-4.04)	-1.234*** (-4.00)	-1.195*** (-3.82)
Constant	-17.489*** (-10.63)	-17.613*** (-10.65)	-17.409*** (-10.69)
Observations	52,899	52,899	53,522
Adjusted <i>R</i> <sup>2</sup>	0.5508	0.5508	0.5449
Number of firms	10,462	10,462	10,669

**Table VIII**  
**Robustness Checks: ADR listing, alternative news variables, and GFC**

We perform various robustness checks. In model (1) we exclude firms with ADR listings. In model (2) we include all news, which include news that has a relevance score less than 100. In model (3), we use an alternative news database: Thomson Reuters News database, which covers news count from 2003 to 2009 to construct our proxy for news coverage. In model (4), we exclude the GFC sample period (< 2008). In model (5), we exclude all earnings announcements. The dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. Firm and year fixed effects are included. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	Exclude firms that have ADR listings	Include all news (i.e. news with ≤100 relevance score)	News data from Thomson Reuters News database	Non-GFC Period (< 2008)	Exclude all earnings announcements
	(1)	(2)	(3)	(4)	(5)
<i>HMEDIA</i>	18.235*** (5.68)	0.180* (1.66)	0.627** (2.25)	18.381*** (4.98)	14.995*** (3.25)
<i>IFRS</i>	0.401** (2.33)	0.195* (1.75)	0.740*** (3.70)	0.082 (0.48)	0.414 (1.57)
<i>BIGN</i>	0.374*** (3.38)	0.384*** (4.26)	0.279** (2.11)	0.282** (2.52)	0.642*** (2.97)
<i>MV</i>	1.364*** (9.87)	1.055*** (10.43)	1.233*** (8.32)	1.440*** (8.23)	1.532*** (7.22)
<i>BM</i>	0.558*** (7.83)	0.424*** (8.22)	0.496*** (4.53)	0.682*** (6.76)	0.576*** (4.44)
<i>DY</i>	3.143*** (2.61)	1.657** (2.19)	3.275*** (2.63)	-0.238 (-0.12)	3.499** (2.42)
<i>ROE</i>	-0.816*** (-4.29)	-0.599*** (-5.22)	-0.549** (-2.50)	-0.871*** (-3.89)	-1.013*** (-3.31)
<i>RET</i>	-0.111 (-1.57)	-0.096** (-2.20)	-0.084 (-1.11)	-0.043 (-0.56)	-0.115 (-0.79)
<i>STDY</i>	-0.078 (-0.59)	-0.078 (-1.06)	-0.112 (-0.70)	-0.164 (-1.20)	-0.278 (-1.03)
<i>ADR</i>	- (-)	-1.398* (-1.74)	0.146 (0.21)	-2.618** (-1.97)	-0.921 (-1.02)
<i>AGE</i>	0.143*** (7.00)	0.180*** (11.80)	0.199*** (6.04)	0.643*** (8.99)	0.198 (1.08)
<i>CH</i>	-1.103*** (-3.49)	-1.052*** (-4.55)	-0.940*** (-2.75)	-1.117*** (-3.51)	-1.495*** (-3.47)
Constant	-17.574*** (-10.65)	-13.761*** (-11.46)	-16.865*** (-8.57)	-27.582*** (-10.39)	-20.584*** (-4.41)
Observations	50,842	75,675	43,379	37,276	29,855
Adjusted <i>R</i> <sup>2</sup>	0.5460	0.5217	0.5972	0.5381	0.5859
Number of firms	10,296	12,548	10,175	9,225	7850

**Table IX**  
**Robustness Checks: Second Stage Results of GMM Estimations**

The table reports the GMM estimation of the impact of news coverage on the U.S. mutual fund ownership (US firms are excluded). In the unreported first stage, the dependent variable is *HMEDIA* and we use (i) a dummy variable which equals one if the country uses English as an official language, (ii) the average news coverage of other firms belonging to the same industry and country, and (iii) natural logarithm of the country's population as the instrumental variables in addition to the list of control variables. In the second stage, our dependent variable is the percentage shares owned by the US mutual funds from 2002 to 2009. The independent variable is the fitted values of *HMEDIA* from the first stage regression in addition to the list of control variables. News data are from the RavenPack DJ News Analytic database. Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock return (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). Industry and year fixed effects are included in both first and second stage regressions. *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	All	Developed Markets Only	Emerging Markets Only
	(1)	(2)	(3)
<i>HMEDIA</i>	33.329*** (3.02)	52.397*** (3.43)	20.137 (0.87)
<i>IFRS</i>	0.346** (2.33)	0.148 (0.93)	0.770* (1.78)
<i>BIGN</i>	0.187* (1.68)	0.047 (0.39)	0.089 (0.22)
<i>MV</i>	0.898*** (8.11)	0.704*** (4.37)	1.099*** (6.00)
<i>BM</i>	0.157*** (2.95)	0.062 (0.87)	0.265*** (3.77)
<i>DY</i>	-2.992*** (-2.69)	-2.630** (-2.12)	-5.587** (-2.07)
<i>ROE</i>	0.372** (2.02)	0.398* (1.96)	1.237*** (2.77)
<i>RET</i>	-0.137* (-1.94)	-0.191** (-2.24)	0.146 (1.20)
<i>STDY</i>	0.862*** (5.51)	0.845*** (3.98)	0.220 (0.91)
<i>ADR</i>	-1.432*** (-2.66)	-3.356*** (-4.14)	0.650 (0.76)
<i>AGE</i>	-0.057*** (-8.68)	-0.054*** (-7.40)	-0.034 (-1.46)
<i>CH</i>	-1.543*** (-6.24)	-0.791** (-2.52)	-3.155*** (-5.05)
Constant	-7.555*** (-6.30)	-5.313*** (-3.03)	-10.075*** (-5.86)
Observations	50,049	40,783	9,266
Durbin-Wu-Hausman test of endogeneity	4.637	7.746	0.113
<i>p-values</i>	0.0313	0.00538	0.737
Wald F Statistic (Weak identification test)	68.12	46.92	51.48



**Table X**  
**Robustness Checks: Treatment model (Propensity Score Matching)**

The table reports estimates of the treatment effect of the media coverage on US mutual fund ownership in local firm (US firms are excluded) using propensity score matching method (kernel matching). In the untabulated first stage logit model, the dependent variable is a dummy variable that equals 1 if the stock is covered by the media and 0 otherwise. The independent variables of the logit model include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*), the proportion of closely held shares (*CH*), a dummy variable which equals one if the country uses English as an official language, the average news coverage of other firms belonging to the same industry and country, and the natural logarithm of the country's population. Industry and year fixed effects are also included in the first and second stage estimations. The treatment outcome is the percentage shares owned by US mutual funds from 2002 to 2009. News data are from the RavenPack DJ News Analytic database. *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	All	Developed Markets Only	Emerging Markets Only
	(1)	(2)	(3)
<i>Treatment effect</i> (Treatment vs. Control)	0.989*** (13.83)	1.300*** (17.95)	-0.013 (0.06)
Observations	50232	40942	9290
<i>Pseudo R</i> <sup>2</sup> (first stage logit model)	0.164	0.181	0.179

**Table XI**  
**Robustness Checks: The Impact of News Coverage on US Mutual Fund Ownership – Heckman Sample Selection**

The table reports the impact of news coverage on US mutual fund ownership (US firms are excluded) with Heckman correction for sample selection bias. Our dependent variable is the percentage shares owned by US mutual funds from 2002 to 2009. The independent variable is the total number of news counts (scaled down by a factor of 1000) for the relevant firm in prior year (*HMEDIA*). News data are from the RavenPack DJ News Analytic database. Control variables include a dummy variable that equals 1 if the firm adopted the IFRS (*IFRS*), appointment of Big5 auditor (*BIGN*), natural log of market capitalization (*MV*), natural log of book-to-market ratio (*BM*), dividend yield ratio (*DY*), return on equity ratio (*ROE*), annual stock return (*RET*), standard deviation of monthly stock returns (*STDY*), a dummy variable that equals 1 if the firm has an ADR, number of years since included in Datastream (*AGE*) and the proportion of closely held shares (*CH*). The panel probit mode is estimated in the first stage using all the stock level control variables plus (i) a dummy variable which equals one if the country uses English as an official language, (ii) the average news coverage of other firms belonging to the same industry and country, and (iii) natural logarithm of the country's population. In the second stage, we estimate the baseline regression model by regressing firm-level US mutual fund ownership on *HMEDIA* and other control variables after controlling for *LAMBDA* derived from the first stage. Industry and year fixed effects are also included in the first and second stage estimations. *t*-statistics based on robust clustered standard errors (clustered by firm) are reported in parentheses. \*, \*\* and \*\*\* represent significance levels of 10%, 5% and 1%, respectively.

	All	Developed Markets Only	Emerging Markets Only
	(1)	(2)	(3)
<i>HMEDIA</i>	9.882*** (3.65)	12.385*** (4.72)	14.836 (1.07)
<i>IFRS</i>	0.476*** (2.85)	0.516*** (2.94)	0.539 (1.12)
<i>BIGN</i>	0.199* (1.69)	-0.012 (-0.09)	0.062 (0.18)
<i>MV</i>	1.067*** (17.00)	0.965*** (14.65)	1.218*** (8.46)
<i>BM</i>	0.208*** (4.62)	0.145** (2.47)	0.268*** (4.55)
<i>DY</i>	-2.265** (-2.01)	-1.721 (-1.39)	-5.873** (-2.14)
<i>ROE</i>	0.184 (1.10)	0.172 (0.95)	1.172*** (2.67)
<i>RET</i>	-0.150** (-2.24)	-0.212*** (-2.64)	0.101 (0.86)
<i>STDY</i>	0.970*** (6.92)	1.070*** (6.56)	0.200 (0.82)
<i>ADR</i>	-0.795** (-2.16)	-1.562*** (-4.03)	0.923 (1.10)
<i>AGE</i>	-0.055*** (-8.25)	-0.054*** (-7.55)	-0.029 (-1.24)
<i>CH</i>	-1.813*** (-8.89)	-1.228*** (-6.41)	-3.056*** (-5.02)
<i>LAMBDA</i>	-0.229 (-1.13)	-0.819*** (-4.12)	0.703 (1.63)
Constant	-10.604*** (-13.07)	-9.013*** (-10.56)	-11.772*** (-7.63)
Observations	50,049	40,783	9,266
Within $R^2$	0.1069	0.1173	0.0981