# How Important Is the Financial Media in Global Markets?

**John M. Griffin**
University of Texas at Austin, McCombs School of Business

**Nicholas H. Hirschey**
University of Texas at Austin, McCombs School of Business

**Patrick J. Kelly**
New Economic School and University of South Florida

This article studies differences in the information content of 870,000 news announcements in 56 markets around the world. In most developed markets, a firm's stock price moves much more on days with public news about the firm. In contrast, in many emerging markets volatility is similar on news and non-news days. We examine several hypotheses for our findings. Cross-country differences in stock price reactions are best explained by insider trading, followed by differences in the quality of the news dissemination mechanism. Our findings are useful for quantifying the extent of insider trading and how the financial media affects international markets. (*JEL* G14, G15)

Public news announcements are a major mechanism for disseminating information to investors. Each day the financial media releases thousands of articles covering companies in markets worldwide. Investors use this news to estimate assets' fundamental values. Despite the perceived importance of the

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financial media, there has been little attempt to either quantify its importance internationally or to understand why its impact may vary across countries.

This article studies differences in the information content of public news announcements in international equity markets. We quantify how the market reaction to these announcements varies across countries and examine potential explanations for these differences. These analyses deepen our understanding of differences in the international information environment and how information is disseminated to investors.

There are several reasons why the market reaction to news announcements may differ across countries. First, there may be differences in how well investors anticipate the information in a news announcement using public news channels, such as peer firms' news announcements. Second, the price may incorporate the information in a news release prior to its announcement because of insider trading. Third, if journalists are more sophisticated in certain countries, one might expect news coverage in countries with sophisticated journalists to provide a more precise signal and lead to larger market reactions. Fourth, accounting quality may differ across countries. We find the most support for insider trading and, to a lesser extent, differences in the quality of the news dissemination mechanism.

We start by collecting a large sample of articles about international stocks from the Factiva news archive. Our sample of general news articles from January 2003 to June 2009 covers 2,593 firms, with 572,987 news articles in 26 developed markets and 298,614 in 30 emerging markets.

To facilitate comparison across stocks, we first study a news event that is common to all firms—earnings announcements. We ensure the accuracy of Bloomberg earnings announcement dates through Factiva by a simple algorithm, which leads to extremely accurate earnings announcement dates. We find that volatility on event days varies substantially both between developed and emerging markets and within each category. Stock price moves range from 50% more than normal volatility in a number of developed markets (Denmark, the United Kingdom, Sweden, the Netherlands, the United States, Finland, Hong Kong, and Germany) to less than 5% more than normal in several emerging markets (Thailand, Turkey, Mexico, and Indonesia). China exhibits earnings reactions only 12% above normal.

Second, we extend our study to all news articles. News is generally more useful for explaining idiosyncratic stock return variation in developed markets than in emerging markets. We find that our results are not driven by earnings announcements, time-stamp conventions, or the type of international financial news.

Third, we use cross-country variables related to the four main hypotheses regarding public informed trading, insider trading, news dissemination, and accounting quality. We investigate cross-country regressions with both earnings and general news. With the stock price reactions to earnings news and standard cross-country regressions, we find that a survey measure of the

prevalence of insider trading, a measure of technological development that we interpret as relating to the speed of news dissemination, and accounting standards are most pertinent. We then investigate a wider set of variables relating to our main hypotheses and other variables commonly used in cross-country studies through the Bayesian Stochastic Search Variable Selection (SSVS) methodology of George and McCulloch (1993). The SSVS selects important explanatory variables based on a combination of their economic and statistical significance while incorporating skepticism to account for the probability a variable is picked by chance. For earnings news, the procedure confirms that insider trading, technological development, and accounting standards are highly important. When investigating the importance of all types of news, accounting standards are no longer significant and insider trading and technological development stand out as the most important determinants. Overall, the cross-country regressions show the most support for the insider trading hypothesis, followed by technological development as a proxy for the news dissemination mechanism.

We investigate two other hypotheses related to insider trading to further scrutinize our findings. If insider trading is part of the reason that public news events are not as important in low-news-reaction countries, then we should see larger price run-ups ahead of mergers as insiders trade on their knowledge of the impending acquisition. Consistent with this prediction, markets in which stock prices have little response to earnings news have nearly three times more pre-announcement news leakage than markets where earnings news is important. Second, in countries where non-public information channels are more important, we expect relatively more informed trading on days without public news. In countries with high average earnings announcement reactions (where prices move more with public news events), we find evidence that reversals concentrate around non-news days, similar to prior studies using only U.S. data. However, in markets where prices respond little to news, we find that non-news days have smaller reversals. This evidence is consistent with relatively more informed trading and proportionally less liquidity trading in low-reaction countries than in high-reaction countries.

This study is related to a number of studies that examine the role of the media in financial markets. Roll (1988) shows that stocks exhibit similarly low market-model $R^2$ on days with and without news and finds that residual volatility is only slightly higher on news days. Chan (2003) and Tetlock (2010) find that stock returns reverse only when the initial price move occurs when there is no news about the stock. Tetlock (2007) and Tetlock, Saar-Tsechansky, and Macskassy (2008) find that the market rapidly incorporates most of the information associated with the linguistic content of news articles.[1] Huberman

[1] Bushee et al. (2010) find that the initiation of media coverage leads to more trading and larger absolute stock return movements for NASDAQ stocks around earnings announcements. Bhattacharya et al. (2009) show that differences in media coverage did not drive differences in Internet stock valuations during the NASDAQ bubble. Fang and Peress (2009) find that stocks with no news earn higher abnormal returns.

and Regev (2001) and Tetlock (2011) provide evidence that even stale news moves prices. A common theme in this U.S.-based literature is that news, even stale news, can drive stock price movements.

Much less is known about news for stocks in international markets. Bhattacharya et al. (2000) examine 75 hand-collected news announcement dates in Mexico from 1994 to 1997 and find no stock price reaction in the news announcement window. In addition to a number of individual country studies of earnings announcements, DeFond, Hung, and Trezevant (2007) examine earnings reaction differences across 26 primarily developed markets. However, their test design, focus, and methodologies are quite distinct from those we employ.[2] Bailey, Karolyi, and Salva (2006) look at earnings event reactions before and after a U.S. cross-listing and find that U.S. accounting requirements lead to increases in earnings announcement reactions.

Our article also fits into a large literature that seeks to understand how emerging and developed markets differ in terms of various aspects of efficiency. Despite a large international literature, there is relatively little understanding of differences in the informational environment across countries, and few studies that attempt to quantify the importance of public news internationally.[3,4] Griffin, Kelly, and Nardari (2010) find that it is not feasible to make statements of relative market efficiency internationally using traditional measures unless one can control for the information environment. Our findings quantify one crucial aspect of the information environment and suggest that the magnitude of news response can be used to identify the presence of informed trading.

Our article also relates to a growing literature that seeks to document trading on inside information in the United States. Griffin, Shu, and Topaloglu (2011) suggest that evidence of trading on information leaked from investment bankers to their clients prior to takeovers and earnings announcements in the United States is less prevalent than is suggested by prior academic work and the U.S. financial media. Our findings suggest that insider trading prior to takeovers is much more prevalent in emerging and some smaller developed markets, where stocks respond little to earnings news.

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[2] There are three important differences with our study. First, we find that I/B/E/S earnings announcements dates, such as those used by DeFond, Hung, and Trezevant (2007), are on average accurate only 23% of the time in developed non-U.S. markets. Second, they examine stock price reactions in 23 developed markets with only three emerging markets. Third, they examine earnings reactions only, whereas we also focus on general news events, takeovers, and return reversals.

[3] Using international microstructure data, Lia, Ng, and Zhang (2009) find small differences in the probability of informed trading between developed and emerging markets.

[4] Gagnon and Karolyi (2009) examine the relation between reversals and continuation (associated with liquidity and informed trading) and trading volume around the world. Lang, Lins, and Miller (2003) find that cross-listing improves a firm's information environment as proxied for by analyst coverage and accuracy, and Bae, Bailey, and Mao (2006) find that analyst coverage increases following liberalization. The enforcement of insider trading laws has been linked to a lower cost of capital (Bhattacharya and Daouk 2002) and higher idiosyncratic volatility in developed markets (Fernandes and Ferreira 2009).

Section 1 develops our hypotheses. Section 2 describes the data sources. Section 3 displays our event reactions for earnings events, and Section 4 reports results for general news. In Section 5, we test our hypotheses with cross-country data, while Section 6 provides additional tests related to insider trading. Section 7 concludes.

## 1. Hypothesis Development

We test four hypotheses for why the price response to public news announcements might differ across countries. We believe that differences in market reactions across countries may be driven by variation in 1) pre-announcement public news dissemination; 2) insider trading; 3) the quality of the news transmission mechanism; and 4) accounting quality.

### 1.1 Public information dissemination

Public news channels provide substantial information about changes in firm value. An important channel is cross-firm learning through peer firms' earnings announcements (Foster 1981; Freeman and Tse 1992). Givoly and Palmon (1982) find that late-reporting firms have dampened stock price reactions, because investors learn about their earnings from earlier-reporting firms' earnings announcements. Hou (2007) documents important lead-lag patterns in intra-industry returns, and Patton and Verardo (2010) show that the order of earnings announcements affects firm betas. In an international sample of firms, if early- or late-reporting firms concentrate in certain countries, then this may affect those countries' average market reaction to earnings news.

**Hypothesis H1:** *Countries with firms reporting late in the earnings reporting cycle will have lower stock price responses to news.*

To capture the importance of the earnings reporting cycle, we compute each firm's reporting order relative to all other firms in the global industry. We use this reporting-order variable in firm-level regressions and the country average in country-level regressions.

### 1.2 Information dissemination through insider trading

If insiders trade on private information, prices may incorporate value-relevant information prior to its public release. This results in a smaller market response to official public announcements of firm information. Bhattacharya et al. (2000), for example, conclude that insider trading is the reason the market does not react to news in Mexico. On the other hand, by the start of our sample period, nearly all countries in our sample have enforced insider trading laws, so there may be little variation in insider trading across countries.

**Hypothesis H2A:** *In countries where insider trading is more prevalent, stock prices move less on announcement dates.*

We use the response from a survey of executives in each country around the world to a question asking whether or not insider trading is common in their country as our primary measure for the prevalence of insider trading in cross-country analysis.

We consider additional testable hypotheses for insider trading. One testable hypothesis relates to a major standardized event, takeover announcements, that are difficult to predict with public news. Markets with insider trading should have more stock price run-up prior to the release of any public takeover news.[5]

**Hypothesis H2B:** *In countries where insider trading is more prevalent, stock prices will increase more rapidly prior to the first takeover announcement date.*

Another implication is that on non-news days, prices will exhibit less reversal in markets where there is greater private informed trading. Chan (2003) and Tetlock (2010) have shown that in the United States, reversals are concentrated on non-news days. For markets with relatively low levels of insider trading, such as the United States, we expect non-news-day trading to be predominately liquidity trading, so there should be reversals on non-news days. However, we expect there to be relatively more informed trading on non-news days in markets with high levels of private informed trading, which should result in smaller non-news-day reversals.

**Hypothesis H2C:** *If cross-country differences in event reactions are related to informed trading, we expect little difference in reversals between news and non-news days in markets with low event reactions.*

We test these predictions both by examining reversals following sorts on extreme return events and for all return moves through cross-sectional regressions.

### 1.3 News transmission

The quality of news gathering and transmission may differ across countries. More sophisticated journalists may be better at focusing on value-relevant news. In contrast, if most news is simply a transmission of company press releases with little filtering or the quality of journalists around the world is similar, stock price reactions to news may not be affected by differences in the quality of the journalism.

**Hypothesis H3A:** *Prices respond to news more in countries with higher-quality journalism.*

[5] Bris (2005) examines general patterns of stock price run-ups prior to takeovers before and after the implementation of insider trading laws.

Direct measures of journalism quality are difficult to observe, but we investigate several alternatives. First, as a firm-level proxy, we use an indicator of whether the news was from a reputable international business news source: *The Wall Street Journal*, *Financial Times*, Dow Jones Newswires, and Reuters.[6] Second, in markets with more sophisticated journalists, journalists may focus their attention on a firm when particularly value-relevant information is being released. Hence, as a proxy for the financial sophistication of the news, we use the ratio of the number of articles in the earnings-event window relative to the number of articles in the pre-event window.[7] Third, as another proxy for journalist sophistication, we count the number of articles with more than 500 words per firm mentioned as a measure of in-depth coverage. Fourth, it is possible that in countries where there is greater press freedom, it is safer for journalists to root out information and report it accurately. We examine country-level press freedom as a general proxy for journalism quality.

A related hypothesis is the means of news dissemination. News is likely distributed faster and to a broader investor base through Internet sources in countries that are more technologically sophisticated, with the result that information is more rapidly incorporated into prices.

**Hypothesis H3B:** *News has a larger impact on prices in countries with greater technological development.*

### 1.4 Accounting quality

Prices will be more responsive to news when the content of the news has greater economic meaning. For earnings-related news, valuation signals are clearer when there are stronger accounting standards and better financial disclosure because the income statements are more trustworthy. This leads to our final hypothesis:

**Hypothesis H4:** *In countries with higher accounting quality, prices respond more to earnings news.*

We use two measures to measure accounting quality. The first is the percentage of firms that follow U.S. Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS). Because accounting standards can be more stringently or less stringently applied even among countries with firms following IFRS, we also use a survey-based measure from the Global Competitiveness Report, "Strength of Accounting Standards."

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[6] Dyck, Volchkova, and Zingales (2008) find that the foreign media can play a disciplining role in Russia because firms care about their reputation abroad.

[7] We thank an anonymous referee for these helpful ideas. This variable also might be thought of more broadly as a measure of news importance.

We examine these hypotheses first in cross-country regressions, but we also use firm-level data and regressions to check our inferences with firm-level controls.

## 2. Data

The main data in this article consist of firm stock returns, news articles, earnings and takeover announcements, and country-level descriptive variables.

### 2.1 Preliminaries: Sample and returns

Daily returns, accounting for dividends and capital structure changes, and market capitalizations are from CRSP for the United States and from Thomson Financial's Datastream for the rest of the world. Since we wish to restrict our sample to common equity, for the United States we use stocks with a CRSP share code of 10 or 11. For non-U.S. securities, we follow the substantial screens of Griffin, Kelly, and Nardari (2010), which eliminate preferred stock, warrants, unit or investment trusts, duplicates, GDRs or cross-listings, and other non-common equity. Because we desire to capture the effects of information release on stock prices, we require stocks to be actively traded; all stocks are required to have price changes on at least 50% of the trading days in the prior year. This way we avoid capturing returns that largely reflect stale information. This measure of liquidity, the percentage of zero return days in a year, is the main measure of liquidity used by Bekaert, Harvey, and Lundblad (2007) and is similar to the Lesmond et al. (1999) and Lesmond (2005) transaction costs measure, but less subject to estimation problems.

### 2.2 News articles

We collect a sample of news articles from the Dow Jones Factiva news archive. Factiva contains articles from over 28,000 sources published in 159 countries and 23 languages.[8] The database includes major business news publishers such as *The Wall Street Journal*, *Financial Times*, Dow Jones, and Reuters. We identify news for a firm using full-text searches for the firm's name in the headline or lead paragraph of articles. The computational burden of the web retrieval process is quite intense, so we collect news for a random sample of 5,875 firms over three windows from January 2003 to June 2009.[9] Before news and liquidity filters, we initially structure the developed market sample to have approximately 50 firms from all countries other than the United States.

[8] http://www.factiva.com/sources.asp. For our dataset the news is from over 5,000 local and foreign sources.

[9] First, we downloaded news from January 2003 through August 2008 for 4,365 firms from emerging markets and non-OECD developed markets. We over-sample emerging markets, because emerging market firms receive less media coverage and we want to ensure that we have a large sample with earnings announcements covered by the media. Second, because U.S. firms represent such a large fraction of firms in the world, we downloaded news from January 2004 through December 2008 for 500 U.S. firms. Third, we downloaded news from January 2004 through June 2009 for 1,173 firms in countries on the MSCI's list of developed markets in 2001.

Table 1 reports summary statistics for this sample of news. For a firm year to be included, in addition to the 50% price change filter discussed above, we require that a firm has at least one news article during a given year. However, to ensure a sufficient number of non-news days, no more than 75% of the trading days during the year can have news articles. The sample consists of 2,593 firms with 1,342 firms from 26 developed markets and 1,251 from 30 emerging markets. This results in 572,987 news articles for developed market stocks and 298,614 articles for emerging market stocks from 4,202 sources. This compares favorably to other firm-level news samples such as Tetlock, Saar-Tsechansky, and Macskassy (2008), whose sample contains over 350,000 articles about S&P 500 firms from the Dow Jones News Service and *The Wall Street Journal* (also collected from Factiva). We have an average of 427 articles per firm in developed markets and 239 in emerging markets, which translates to at least one news article appearing for each firm on 15.8% of trading days in developed markets and 12.2% of days in emerging markets.

### 2.3 Earnings announcement dates

Without accurate earnings announcement event dates, any analysis of market reactions is flawed. For this reason, we spend considerable effort investigating methods for obtaining accurate earnings announcement dates.

We use an automated event checking procedure. We start with Bloomberg announcement dates because we find they are more than twice as accurate as I/B/E/S dates.[10] The procedure then isolates a subset of events for which the date corresponds to the first release of earnings news in Factiva. The procedure isolates a subset of events for which the date from Bloomberg corresponds to the first release of earnings news in Factiva. We verify that each Bloomberg event date corresponds to an article announcing earnings in Factiva and exclude events where earnings news is released prior to the Bloomberg announcement date. Because of Factiva download constraints and the news screening restrictions, the number of events that pass our Factiva date-checking procedure is considerably smaller than the total Bloomberg announcements in each country shown in the Online Appendix Table IA.2.[11] Our sample ranges from January 2004 to September 2008 and is obviously tilted toward firms with more financial media coverage. The automated procedure leads to earnings

[10] Throughout the article, we refer to results that one might refer to as "in unreported results" by referring to their position in an Online Appendix. Viewing these tables and figures is not required for reading the article but they are posted for completeness. In Online Appendix Table IA.3, we find that I/B/E/S dates have a confirming article within a [−1, 1] day window around the date listed by I/B/E/S only 23% of the time in developed markets and 8.4% in emerging markets.

[11] In addition, differences in news checking accuracy across countries create differences in the percentage of events in a country that pass our filters. For example, as shown in Online Appendix Table IA.2, China starts out with more firms than Malaysia, but Malaysia ends up with more events in the final sample because a higher percentage of the Malaysian events pass the accuracy filters. We aggregate most of our data to the country level to put equal weight on inferences in each market.

**Table 1**
**News summary statistics**

| Developed | Total firms | Total articles | Avg. % Eng. | Avg. % Bus. | Avg. % WC <250 | Emerging | Total firms | Total articles | Avg. % Eng. | Avg. % Bus. | Avg. % WC <250 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | 20 | 6, 155 | 98.0 | 2.6 | 57.3 | Argentina | 51 | 21, 605 | 25.2 | 11.9 | 67.1 |
| Austria | 20 | 20, 406 | 28.1 | 41.4 | 53.9 | Brazil | 19 | 3, 341 | 76.5 | 39.9 | 72.8 |
| Belgium | 19 | 13, 163 | 20.8 | 11.8 | 59.2 | Bulgaria | 8 | 2, 552 | 98.2 | 1.7 | 40.4 |
| Canada | 8 | 2, 178 | 99.7 | 7.1 | 42.2 | Chile | 25 | 10, 554 | 51.2 | 15.4 | 69.4 |
| Cyprus | 17 | 2, 086 | 94.0 | 15.5 | 76.9 | China | 231 | 31, 255 | 96.9 | 3.7 | 36.1 |
| Denmark | 26 | 13, 198 | 28.1 | 20.6 | 59.5 | Colombia | 20 | 9, 444 | 35.4 | 28.3 | 69.4 |
| Finland | 25 | 14, 064 | 54.9 | 16.1 | 66.0 | Croatia | 2 | 765 | 82.8 | 21.0 | 59.5 |
| France | 13 | 4, 685 | 28.3 | 15.0 | 64.9 | Czech Republic | 9 | 9, 395 | 60.8 | 26.3 | 69.2 |
| Germany | 13 | 15, 878 | 49.0 | 12.0 | 42.9 | Egypt | 30 | 2, 795 | 96.3 | 14.5 | 81.0 |
| Greece | 43 | 5, 496 | 92.8 | 13.2 | 45.0 | Estonia | 13 | 1, 376 | 64.2 | 0.8 | 65.1 |
| Hong Kong | 188 | 22, 944 | 92.9 | 19.6 | 37.7 | Hungary | 28 | 12, 442 | 66.4 | 14.4 | 65.9 |
| Ireland | 8 | 4, 573 | 96.4 | 26.1 | 45.8 | India | 138 | 57, 404 | 99.5 | 7.1 | 39.7 |
| Israel | 36 | 4, 684 | 92.8 | 8.4 | 51.2 | Indonesia | 28 | 4, 949 | 96.5 | 12.2 | 62.2 |
| Italy | 27 | 34, 864 | 19.9 | 16.5 | 59.1 | Kenya | 25 | 5, 633 | 96.2 | 5.2 | 25.9 |
| Japan | 39 | 7, 932 | 86.8 | 56.1 | 79.4 | Latvia | 8 | 3, 847 | 62.2 | 1.2 | 42.8 |
| Netherlands | 20 | 21, 702 | 24.7 | 40.7 | 65.5 | Lithuania | 31 | 13, 105 | 52.6 | 1.1 | 58.0 |
| New Zealand | 23 | 13, 119 | 99.6 | 8.6 | 49.1 | Malaysia | 154 | 21, 202 | 93.6 | 13.5 | 61.9 |
| Norway | 23 | 12, 163 | 45.4 | 39.2 | 65.7 | Mexico | 19 | 8, 067 | 42.3 | 29.3 | 58.3 |
| Portugal | 13 | 12, 940 | 26.6 | 30.6 | 60.4 | Morocco | 21 | 1, 274 | 57.2 | 26.2 | 73.4 |
| Singapore | 114 | 23, 669 | 93.0 | 16.4 | 34.3 | Pakistan | 73 | 7, 646 | 98.2 | 7.4 | 62.6 |
| Spain | 25 | 53, 052 | 21.6 | 15.4 | 71.8 | Peru | 22 | 4, 010 | 47.9 | 23.0 | 68.9 |
| Sweden | 30 | 16, 667 | 35.1 | 25.4 | 61.5 | Philippines | 29 | 6, 246 | 98.4 | 18.4 | 33.6 |
| Switzerland | 17 | 13, 225 | 11.2 | 11.7 | 59.8 | Poland | 48 | 17, 963 | 33.1 | 5.0 | 55.1 |
| Taiwan | 217 | 46, 700 | 93.6 | 49.8 | 60.1 | Romania | 30 | 1, 600 | 91.5 | 4.3 | 65.9 |
| U.K. | 17 | 3, 695 | 97.8 | 26.9 | 47.9 | Slovakia | 2 | 1, 032 | 67.2 | 2.0 | 64.2 |
| U.S. | 341 | 183, 749 | 96.1 | 20.7 | 43.5 | Slovenia | 11 | 1, 354 | 88.5 | 7.6 | 69.8 |
| | | | | | | South Africa | 46 | 11, 898 | 96.9 | 12.9 | 48.9 |
| | | | | | | Thailand | 67 | 11, 760 | 97.6 | 5.7 | 34.7 |
| | | | | | | Turkey | 58 | 10, 822 | 53.1 | 14.1 | 79.1 |
| | | | | | | Venezuela | 5 | 3, 278 | 28.5 | 46.2 | 71.5 |
| Total | 1, 342 | 572, 987 | | | | | 1, 251 | 298, 614 | | | |
| Mean | 51.6 | 22,038.0 | 62.6 | 21.8 | 56.2 | | 41.7 | 9,953.8 | 71.8 | 14.0 | 59.1 |
| Dev.-Emg. | | | −9.2 | 7.8 | −2.9 | | | | | | |
| (*t*-stat.) | | | (−1.14) | (2.28) | (−0.83) | | | | | | |

We identify firm news using full-text searches for the firm's name in the headline or lead paragraph of articles in Factiva. Firm names are the Datastream expanded name field with common character strings (A, DEAD, CO, SA, etc.) removed. The sample is constructed as discussed in Section 2 and footnote 9. "Avg. % Eng." is the average percentage of articles in a firm year written in English. "Avg. % Bus." is the average percent of articles in a firm year that are published by Dow Jones, Reuters, the *Financial Times*, or *The Wall Street Journal*. "Avg. % WC < 250" is the average percent of articles in a firm year with less than 250 words. A country is classified as developed if the gross national income per capita is greater than 10,725 U.S. dollars in calendar year 2005, following the World Bank's classification for "high income" countries. All other countries are classified as emerging. OECD membership is from calendar year 2005.

dates with considerable accuracy (as discussed in Online Appendix A and Table IA.5).

Panel A of Table 2 shows the number of events by country. Our final sample of earnings announcements contains 3,504 events from 26 developed markets and 2,079 events from 30 emerging markets. Despite the focus on accuracy, the sample seems to have broad coverage across markets. Panel B of Table 2 shows the number of articles around earnings announcements for each of three size bins. Each December we sort all U.S. stocks listed on NYSE/AMEX/NASDAQ into equal portfolios based on dollar-denominated size breakpoints. In the small- and large-size bins, developed markets have slightly more news articles in the non-earnings announcement window. However, in the announcement window the news discrepancy is large, with developed markets exhibiting roughly one more news article per day for small and medium firms, and over 2.6 more articles per day in the large-size bin.

### 2.4 Takeover announcement dates

The sample of initial merger announcements is composed of the earliest date from among three sources: SDC, FactSet, and Bloomberg.[12] Additionally, we check our dates by making sure there is no article in Factiva with both the firm's name and a merger keyword in the headline or lead paragraph from 60 to two calendar days before the merger. For the 22 languages we check articles in, we end up with over 1,500 translated merger words, as discussed in Online Appendix IA.2. Panel A of Table 2 shows that we obtain 466 merger events from 23 developed markets and 105 events from 11 emerging markets.

### 2.5 Country-level variables

We use country-level variables from many sources that have been used in the prior international literature. We describe these variables in detail in Appendix Table A1. Major sources include the World Bank Development Database and the World Economic Forum's Global Competitiveness Report (GCR). The GCR reports the results of a survey of over 4,000 executives in 59 countries. When available, we average annual levels over 2003 through 2008 to reduce year-to-year noise in these variables.[13]

## 3. Earnings Announcements and Stock Returns across Countries

We wish to quantify the relevance of information disseminated on news days. Earnings announcements are advantageous in that they are a common

[12] We require targets to have at least one article in the news from 60 calendar days to two trading days before the event to ensure that the lack of an article discussing rumored mergers is not due to errors that prevented us from downloading any news for the firm.

[13] One notable exception is a GCR survey question that asks executives if "insider trading in your country's stock markets is (1=pervasive, 7=extremely rare)." We average the responses in the editions from 1999, 2000, and 2002–2003, because the question was not surveyed in later years.

**Table 2**
**Earnings and merger announcements summary statistics**

Panel A: Firm and Event Counts

| Developed Countries | Earnings Firms | Earnings Events | Merger Events | Emerging Countries | Earnings Firms | Earnings Events | Merger Events |
|---|---|---|---|---|---|---|---|
| Australia | 25 | 39 | 58 | Argentina | 29 | 66 | – |
| Austria | 26 | 48 | – | Brazil | 20 | 34 | – |
| Belgium | 48 | 100 | 3 | Chile | 30 | 63 | – |
| Canada | 34 | 60 | 125 | China | 167 | 270 | – |
| Denmark | 45 | 83 | 8 | Colombia | 4 | 4 | – |
| Finland | 57 | 106 | 4 | Croatia | 1 | 3 | – |
| France | 44 | 78 | 12 | Czech Republic | 1 | 1 | – |
| Germany | 21 | 37 | 24 | Egypt | 15 | 18 | 2 |
| Greece | 33 | 50 | 17 | Estonia | 4 | 4 | – |
| Hong Kong | 319 | 516 | 37 | Hungary | 19 | 37 | – |
| Ireland | 23 | 44 | 1 | India | 224 | 307 | 33 |
| Israel | 34 | 48 | 2 | Indonesia | 44 | 76 | 1 |
| Italy | 64 | 129 | 12 | Kenya | 8 | 9 | – |
| Japan | 105 | 250 | – | Latvia | 2 | 3 | – |
| Netherlands | 65 | 130 | 8 | Lithuania | 3 | 3 | – |
| New Zealand | 41 | 99 | 3 | Malaysia | 414 | 709 | 23 |
| Norway | 42 | 77 | 11 | Mexico | 22 | 47 | – |
| Portugal | 29 | 62 | – | Morocco | 2 | 2 | 1 |
| Singapore | 188 | 325 | 16 | Pakistan | 4 | 4 | 1 |
| South Korea | 74 | 100 | 23 | Peru | 5 | 12 | – |
| Spain | 55 | 105 | 1 | Philippines | 9 | 15 | – |
| Sweden | 48 | 77 | 18 | Poland | 89 | 133 | 2 |
| Switzerland | 47 | 81 | 3 | Romania | 7 | 7 | 1 |
| Taiwan | 290 | 371 | 49 | Slovakia | 1 | 2 | – |
| U.K. | 36 | 74 | 8 | Slovenia | 1 | 1 | – |
| U.S. | 210 | 415 | 23 | South Africa | 48 | 68 | 21 |
| | | | | Sri Lanka | 1 | 1 | – |
| | | | | Thailand | 62 | 100 | 14 |
| | | | | Turkey | 62 | 76 | 6 |
| | | | | Venezuela | 2 | 4 | – |
| Total | 2, 003 | 3, 504 | 466 | Total | 1, 300 | 2, 079 | 105 |
| Average | 77 | 135 | 20 | Average | 43 | 69 | 10 |

(*continued*)

**Table 2**
**Continued**

Panel B: Average Daily News Coverage

| Developed | [−55,−2] | | | [−1,2] | | | Emerging | [−55,−2] | | | [−1,2] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | M | L | S | M | L | | S | M | L | S | M | L |
| Australia | 0.32 | 0.45 | 2.75 | 2.28 | 4.64 | 13.03 | Argentina | 0.18 | 0.45 | 0.78 | 0.82 | 2.56 | 3.54 |
| Austria | 0.67 | 2.14 | 2.43 | 2.38 | 8.38 | 9.33 | Brazil | 0.00 | 0.43 | 0.37 | 0.50 | 1.79 | 1.24 |
| Belgium | 0.44 | 0.51 | 2.53 | 2.96 | 3.40 | 7.29 | Chile | 0.50 | 0.39 | 1.22 | 1.54 | 1.94 | 2.97 |
| Canada | 0.42 | 0.28 | 1.96 | 2.00 | 1.85 | 8.13 | China | 0.08 | 0.28 | 0.72 | 0.58 | 1.68 | 3.59 |
| Denmark | 0.36 | 0.48 | 1.77 | 3.07 | 3.73 | 10.82 | Hungary | 0.33 | 0.60 | 0.94 | 1.44 | 2.75 | 2.71 |
| Finland | 0.22 | 0.34 | 1.42 | 1.15 | 1.48 | 4.20 | India | 0.34 | 0.58 | 1.45 | 1.25 | 2.06 | 3.86 |
| France | 0.21 | 0.54 | 1.04 | 0.86 | 1.66 | 4.45 | Indonesia | 0.06 | 0.22 | 0.69 | 0.50 | 0.81 | 2.13 |
| Germany | 0.65 | 0.79 | 2.51 | 1.07 | 4.22 | 9.86 | Malaysia | 0.06 | 0.17 | 0.49 | 0.52 | 0.97 | 2.09 |
| Greece | 0.03 | 0.03 | 0.53 | 0.34 | 0.32 | 1.40 | Mexico | 0.13 | 1.39 | 1.11 | 0.25 | 3.79 | 4.16 |
| Hong Kong | 0.07 | 0.14 | 0.53 | 0.56 | 1.31 | 4.24 | Poland | 0.33 | 0.54 | 1.54 | 0.99 | 2.00 | 3.69 |
| Ireland | 0.01 | 0.68 | 0.99 | 0.55 | 1.80 | 4.71 | South Africa | 0.15 | 0.11 | 0.58 | 0.79 | 0.88 | 2.43 |
| Israel | 0.11 | 0.25 | 0.30 | 0.71 | 0.96 | 1.75 | Thailand | 0.18 | 0.35 | 1.11 | 0.70 | 1.36 | 2.79 |
| Italy | 1.05 | 1.62 | 1.37 | 3.34 | 4.05 | 4.15 | Turkey | 0.08 | 0.62 | 1.05 | 0.47 | 1.05 | 3.11 |
| Japan | 0.12 | 0.13 | 0.32 | 0.82 | 1.04 | 1.53 | Other Emerg. | 0.26 | 0.63 | 0.82 | 1.09 | 1.55 | 2.56 |
| Netherlands | 0.28 | 0.75 | 1.54 | 2.14 | 4.67 | 7.85 | | | | | | | |
| New Zealand | 0.37 | 0.55 | 1.59 | 2.19 | 3.35 | 5.57 | | | | | | | |
| Norway | 0.41 | 0.72 | 1.39 | 3.00 | 2.90 | 4.97 | | | | | | | |
| Portugal | 0.42 | 0.75 | 1.13 | 3.61 | 2.59 | 3.39 | | | | | | | |
| Singapore | 0.11 | 0.26 | 0.94 | 0.89 | 1.60 | 4.01 | | | | | | | |
| South Korea | 0.04 | 0.07 | 0.45 | 0.94 | 0.38 | 1.38 | | | | | | | |
| Spain | 0.39 | 0.65 | 2.24 | 1.56 | 2.13 | 6.38 | | | | | | | |
| Sweden | 0.34 | 0.79 | 1.57 | 2.33 | 4.20 | 7.10 | | | | | | | |
| Switzerland | 0.11 | 0.76 | 1.37 | 2.15 | 5.93 | 7.29 | | | | | | | |
| Taiwan | 0.14 | 0.18 | 0.68 | 0.81 | 0.96 | 2.26 | | | | | | | |
| U.K. | 0.85 | 1.30 | 0.88 | 2.95 | 4.53 | 5.52 | | | | | | | |
| U.S. | 0.22 | 0.33 | 0.70 | 1.10 | 1.79 | 3.45 | | | | | | | |

(*continued*)

**Table 2**
**Continued**

Panel B: Average Daily News Coverage

| Developed | [−55,−2] | | | [−1,2] | | | Emerging | [−55,−2] | | | [−1,2] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | M | L | S | M | L | | S | M | L | S | M | L |
| Avg. | 0.32 | 0.60 | 1.34 | 1.76 | 2.84 | 5.54 | | 0.19 | 0.48 | 0.92 | 0.82 | 1.80 | 2.92 |
| Lg - Sm | 1.02 | | | 3.78 | | | | 0.73 | | | 2.10 | | |
| (*t*-stat.) | (8.17) | | | (7.05) | | | | (10.25) | | | (9.20) | | |
| Dev. - Emg. | 0.13 | 0.11 | 0.42 | 0.94 | 1.04 | 2.62 | | | | | | | |
| (*t*-stat.) | (2.07) | (0.89) | (2.49) | (4.24) | (2.41) | (4.12) | | | | | | | |

| | Dev. | | | Emg. | | | Dev. – Emg. | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | M | L | S | M | L | S | M | L |
| [-1,2]-[-55,-2] | 1.44 | 2.24 | 4.20 | 0.63 | 1.32 | 2.00 | 0.81 | 0.93 | 2.20 |
| (*t*-stat.) | (8.77) | (7.51) | (8.76) | (8.68) | (8.17) | (12.44) | (4.53) | (2.73) | (4.35) |

Panel A reports firm and event counts. The earnings announcement sample for Korea contains events from February 2001 to January 2008. The earnings announcement sample for all other countries contains events from January 2004 to March 2008. The merger announcement sample contains events from January 2001 through April 2007. Earnings announcements are dates from Bloomberg that passed an automated date-checking process. The process considers an earnings announcement date from Bloomberg accurate if it is within +/−3 days of a Factiva article that meets the following criteria: 1) the firm's name is in the headline or lead paragraph; 2) the article is tagged by Factiva as earnings news (tag c151); 3) the headline contains a character string indicative of an earnings announcement article; and 4) there is no article meeting criteria 1–3 in the prior 60 days. See Online Appendix A for more details on the automated checking procedure. The sample is the union of the subset of Factiva confirmed earnings announcements with returns that pass our filters and a set of hand-checked Korean dates. The sample of merger announcements is composed of the earliest date from one of three sources: SDC, FactSet, and Bloomberg. We restrict the sample to initial bids (no bids for the target in the prior two years) and mergers where the target has at least one article with the firm's name in the headline or lead paragraph between 60 calendar days and two trading days prior to the announcement and no article with a merger keyword in the same time frame. The language-specific merger keywords are Google translations of acquire, acquires, acquisition, bid, bids, buyout, deal, merge, merger, sell, takeover, and talks. Special character sets prevented us from translating Chinese, Japanese, and Russian merger keywords, so we exclude mergers from China, Japan, and Russia. For most languages, we stem words using the Snowball algorithms (http://snowball.tartarus.org) and compare root words rather than the entire character string. There were no stemmers available for Italian, Hungarian, Polish, Turkish, or Slovak, so for these we searched articles for the full translated merger keywords. Panel B reports the average number of articles per day for a firm during [−55, −2] and [−1, 2] trading-day windows around earnings announcements.The S, M, and L groupings stand for small-, medium-, and large-size portfolios formed using prior-December NYSE/NASDAQ/AMEX breakpoints. In Panel B, countries with fewer than 20 firm-year observations are grouped into the category "Other Emerg." before averaging.

event across countries. Here, we first outline our methodology for examining earnings-event reactions.

### 3.1 Preliminaries

Although unexpected positive earnings news is typically accompanied by a positive stock price reaction, the market may form expectations differently across markets. Our concern is whether or not information release is concentrated around news events, and not whether the information is positive or negative. Hence, we focus our analysis on volatility around the announcement. We take the absolute value of a stock's return in excess of its local value-weighted market return as our measure of abnormal volatility.[14]

Normalized volatility is the average abnormal volatility during the event window divided by the average abnormal volatility during the 55 days before and 55 days after the event minus one. It has intuitive appeal in that it measures absolute event returns in proportion to absolute returns outside the earnings window. If the two periods are equivalent, the ratio will take a value of zero. Differenced volatility is the average abnormal event volatility minus the average abnormal volatility in the $\pm 55$ days around the event. To ensure that our country-level findings are not driven by imprecise measurement, for most of our analysis we include countries with at least 20 events, leaving us with 13 emerging and 26 developed markets with more than 20 events. We group the 17 emerging markets with fewer than 20 earnings announcement events into an "Other Emerging" category.

### 3.2 Event reaction results

Panel A of Figure 1 ranks all of the countries from highest to lowest based on the event volatility ratio. Statistical significance (denoted by stripes) is determined with a non-parametric *t*-test at the five-percent level.

First, the figure highlights how event reactions vary widely around the world. Denmark, the U.K., Sweden, the Netherlands, the United States, Finland, Hong Kong, and Germany have event reactions over 0.5, meaning that volatility during the four-day event window is 50% greater than normal stock volatility. Thailand, Turkey, Mexico, Indonesia, Poland, Argentina, and China exhibit event reactions less than 0.15, indicating that volatility on earnings announcement days is similar to volatility on days with no earnings news. Second, developed markets in black are typically on the left side of the graph with much higher event reactions, while emerging markets in gray are to the right with low event reactions. The top 18 event reactions are developed markets. These markets are followed by some of the more established emerging markets, India, South Africa, Brazil, and Chile, and another group of developed markets, Taiwan, Portugal, Austria,

[14] For individual stocks Griffin (2002) shows that bench marking with a local factor model yields more accurate expected return estimates than a global or international model.

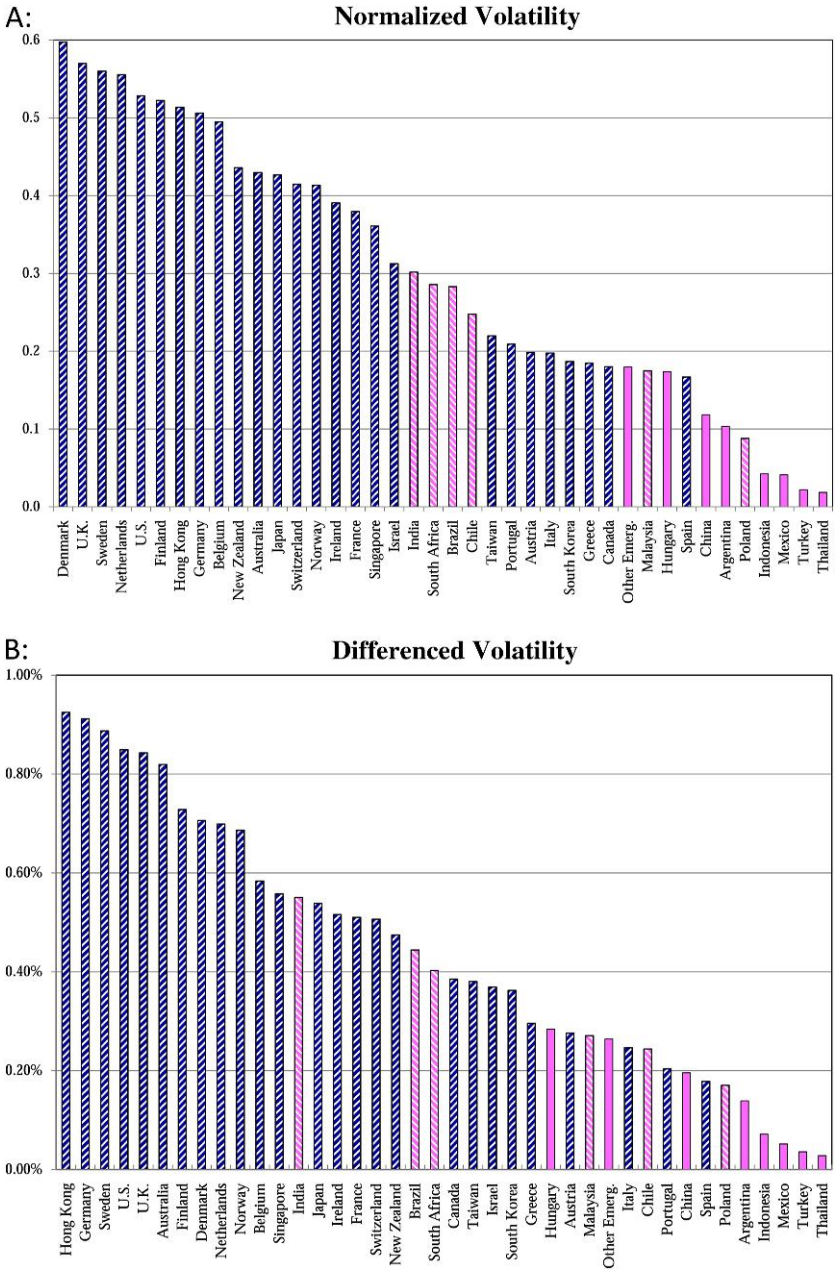


**Figure 1**
**(Continued)**

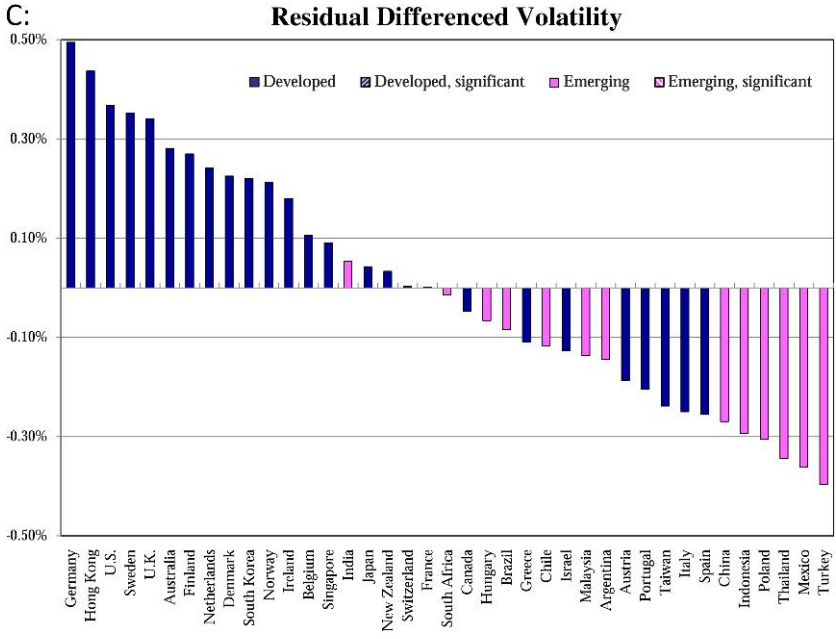


**Figure 1**
**Earnings announcement reactions**
This figure plots three types of earnings announcement reaction volatility: Normalized Volatility, Differenced Volatility, and Residual Differenced Volatility. Normalized Volatility in Panel A and Differenced Volatility in Panel B are calculated as in Table 3. Panel C aggregates the firm $i$ and year $t$ residual reactions from regressions weighted by the reciprocal of the number of events in the country, so as not to over-weight countries with more firms:

$$Vol_{i,t}^{Event} - Vol_{i,t}^{Normal} = \alpha + Industry_i + \beta_1 ln\left(Prior\ Dec.USD\ MV_{i,t}\right)$$

$$+\beta_2 Prior\ Year\ Pct.\ Price\ Trade_{i,t} + \beta_3 Accuracy_{country}$$

$$+Prior\ News\ Coverage_{i,t}.$$

$Vol_{i,t}^{Event}$ is the mean absolute abnormal return over the [-1, 2] event window relative to the earnings announcement date. $Vol_{i,t}^{Normal}$ is the mean absolute abnormal return during the [-55, -2] and [3, 55] windows calculated as described in Section 3.1. *Industry* is a dummy variable for the firm's Fama and French 17 industry. *Prior Dec. USD MV* is the prior December-end market value in U.S. dollars. *Prior Year Pct. Price Trade* is the percentage of trading days with non-zero price changes during the prior calendar year. *Accuracy* for each country is reported in Online Appendix Table IA.5. *Prior News Coverage* is the number of Factiva articles in the [-55, -2] window. In Panels A and B, countries with event volatility significantly greater than normal volatility as indicated by a Corrado (1989) non-parametric rank $t$-test are denoted by striped bars. Countries with fewer than 20 firm-year observations are grouped into the category "Other Emerg."

Italy, South Korea, Greece, and Canada. Interestingly, Canada seems out of place relative to its advanced economy and stock market; however, Bhattacharya (2006) argues that security law enforcement is extremely lax in Canada relative to the United States. Third, the bottom 11 countries with low event reactions are emerging markets, except for Spain. The

non-parametric *t*-statistics for the figure are also reported in the last columns of Table 3 and show that there is no significant difference between event-day and non-event-day volatility in most of these 11 low-reaction countries. Finally, the low event reaction in Mexico is remarkably consistent with the findings from Bhattacharya et al. (2000), who find no market reaction to 75 news events in Mexico during an earlier time period (1994 to 1997).

One concern is that differences in reactions might be due to differences in the distribution of firm size across countries. Table 3 summarizes normalized volatility for firms sorted into three size portfolios. Panel A is for developed markets and Panel B for emerging markets. First, there are significant differences between developed and emerging markets for the two largest size bins, indicating that firm-size differences are not likely driving the differences between developed and emerging markets. Second, surprisingly, there are typically relatively small differences in reactions across size portfolios. Third, for robustness we use a standard market model adjustment using Dimson (1979) (infrequent trading corrected) betas. There is little difference between the Dimson market model adjusted volatility ratios and those calculated using a simple return minus the market. Finally, the difference between developed and emerging markets is relatively large. In developed markets, the average event reaction is 0.38, meaning that average daily volatility during the four-day earnings event window is 38% more volatile than a typical day. In emerging markets, event-window volatility is substantially lower—earnings days exhibit only 15% more absolute return movement than normal days. These findings indicate that event days have two and a half times more abnormal volatility in developed markets.

Since ratios can be inflated by denominators near zero, Panel B of Figure 1 examines the difference between (as opposed to the ratio of) earnings announcement window absolute excess returns and absolute excess returns during normal times. While the precise ordering varies somewhat from Panel A, the general patterns are similar. There are only three emerging markets among the top 25 markets, and 11 emerging markets are among the bottom 15 markets (counting the "Other Emerging" category as one country). Table 3 shows that developed markets exhibit 0.56% more volatility on earnings days, whereas emerging markets only have an additional 0.23% in excess return movement. Conceptually, we prefer the volatility ratio to the volatility difference, because the ratio makes for more intuitive comparisons of abnormal volatility across countries with different levels of idiosyncratic volatility.

The differences in average country reactions could be due to differences in firm characteristics across countries, such as industry differences in the uncertainty and importance of earnings. We estimate a cross-sectional regression at the firm level to remove these effects and plot residuals from these regressions at the country level in Panel C of Figure 1. The ordering changes somewhat from Panel A, but is generally similar. Most developed markets are again on the left side of the graph with much higher volatility during the announcement

**Table 3**
**Earnings event reactions**

Panel A: Developed Markets

| | Normalized Volatility | | | | | Differenced Volatility (%) | | Rank-Based *t*-stat. | |
|---|---|---|---|---|---|---|---|---|---|
| | Size Portfolio (Mkt. Adj.) | | | Country-level | | Country-level | | | |
| Country | S | M | L | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. |
| Australia | 0.36 | 0.47 | 0.57 | 0.43 | 0.46 | 0.82 | 0.89 | (3.69) | (3.93) |
| Austria | 0.34 | 0.15 | 0.21 | 0.20 | 0.23 | 0.28 | 0.34 | (2.40) | (2.32) |
| Belgium | 0.32 | 0.68 | 0.35 | 0.49 | 0.54 | 0.58 | 0.62 | (6.07) | (6.33) |
| Canada | 0.12 | 0.33 | 0.25 | 0.18 | 0.14 | 0.39 | 0.32 | (3.50) | (2.49) |
| Denmark | 0.47 | 0.54 | 0.77 | 0.60 | 0.61 | 0.71 | 0.70 | (5.99) | (5.91) |
| Finland | 0.62 | 0.54 | 0.40 | 0.52 | 0.61 | 0.73 | 0.77 | (5.55) | (6.18) |
| France | 0.28 | 0.34 | 0.71 | 0.38 | 0.40 | 0.51 | 0.53 | (3.45) | (3.59) |
| Germany | 0.54 | 0.34 | 0.61 | 0.51 | 0.51 | 0.91 | 0.93 | (4.26) | (4.36) |
| Greece | 0.06 | 0.38 | 0.26 | 0.18 | 0.17 | 0.30 | 0.27 | (2.07) | (1.67) |
| Hong Kong | 0.55 | 0.55 | 0.31 | 0.51 | 0.51 | 0.92 | 0.94 | (7.57) | (7.74) |
| Ireland | 0.04 | 0.43 | 0.50 | 0.39 | 0.33 | 0.52 | 0.43 | (3.44) | (2.95) |
| Israel | 0.20 | 0.36 | 0.27 | 0.31 | 0.28 | 0.37 | 0.35 | (2.76) | (2.17) |
| Italy | 0.21 | 0.14 | 0.40 | 0.20 | 0.20 | 0.25 | 0.25 | (3.71) | (3.37) |
| Japan | 0.39 | 0.46 | 0.43 | 0.43 | 0.43 | 0.54 | 0.54 | (5.37) | (5.30) |
| Netherlands | 0.36 | 0.60 | 0.70 | 0.56 | 0.58 | 0.70 | 0.72 | (6.35) | (6.31) |
| New Zealand | 0.52 | 0.36 | 0.47 | 0.44 | 0.41 | 0.47 | 0.46 | (4.75) | (4.79) |
| Norway | 0.59 | 0.30 | 0.29 | 0.41 | 0.40 | 0.69 | 0.68 | (4.46) | (4.58) |
| Portugal | 0.13 | 0.24 | 0.28 | 0.21 | 0.31 | 0.20 | 0.29 | (3.03) | (3.82) |
| Singapore | 0.39 | 0.37 | 0.24 | 0.36 | 0.33 | 0.56 | 0.53 | (5.72) | (5.21) |
| South Korea | −0.03 | 0.12 | 0.25 | 0.19 | 0.15 | 0.36 | 0.29 | (3.26) | (2.79) |
| Spain | −0.02 | 0.05 | 0.29 | 0.17 | 0.17 | 0.18 | 0.18 | (2.93) | (2.86) |
| Sweden | 0.54 | 0.51 | 0.70 | 0.56 | 0.58 | 0.89 | 0.90 | (4.47) | (4.78) |
| Switzerland | 0.45 | 0.35 | 0.53 | 0.41 | 0.44 | 0.51 | 0.52 | (4.70) | (4.81) |
| Taiwan | 0.22 | 0.25 | 0.16 | 0.22 | 0.20 | 0.38 | 0.35 | (3.00) | (2.73) |
| U.K. | 0.43 | 0.60 | 0.67 | 0.57 | 0.50 | 0.84 | 0.77 | (5.80) | (5.51) |
| U.S. | 0.39 | 0.53 | 0.77 | 0.53 | 0.51 | 0.85 | 0.84 | (8.02) | (7.76) |
| Dev. Avg. | 0.33 | 0.38 | 0.44 | 0.38 | 0.38 | 0.56 | 0.55 | (8.56) | (8.39) |

(*continued*)

**Table 3**
**Continued**

Panel B: Emerging Markets

| | Normalized Volatility | | | | | Differenced Volatility (%) | | Rank-Based *t*-stat. | |
|---|---|---|---|---|---|---|---|---|---|
| | Size Portfolio (Mkt. Adj.) | | | Country-level | | Country-level | | | |
| Country | S | M | L | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. |
| Argentina | −0.01 | 0.29 | −0.06 | 0.10 | 0.11 | 0.14 | 0.15 | (0.74) | (0.97) |
| Brazil | 2.13 | 0.57 | 0.17 | 0.28 | 0.35 | 0.44 | 0.52 | (3.35) | (3.43) |
| Chile | −0.40 | 0.41 | 0.28 | 0.25 | 0.27 | 0.24 | 0.27 | (2.62) | (3.07) |
| China | 0.00 | 0.13 | 0.13 | 0.12 | 0.10 | 0.20 | 0.18 | (1.86) | (1.82) |
| Hungary | 0.24 | 0.14 | −0.08 | 0.17 | 0.21 | 0.28 | 0.31 | (1.05) | (1.52) |
| India | 0.36 | 0.31 | 0.18 | 0.30 | 0.29 | 0.55 | 0.55 | (5.82) | (5.44) |
| Indonesia | 0.17 | 0.06 | −0.12 | 0.04 | 0.02 | 0.07 | 0.03 | (1.13) | (0.59) |
| Malaysia | 0.16 | 0.21 | 0.23 | 0.17 | 0.18 | 0.27 | 0.29 | (4.06) | (3.89) |
| Mexico | −0.63 | 0.04 | 0.08 | 0.04 | 0.11 | 0.05 | 0.14 | (0.32) | (1.32) |
| Other Emerg. | 0.13 | 0.14 | 0.31 | 0.18 | 0.11 | 0.26 | 0.17 | (1.90) | (1.62) |
| Poland | 0.08 | 0.12 | 0.03 | 0.09 | 0.10 | 0.17 | 0.19 | (2.43) | (2.38) |

(*continued*)

**Table 3**
**Continued**

Panel B: Emerging Markets

| | Normalized Volatility | | | | | Differenced Volatility (%) | | Rank-Based $t$-stat. | |
|---|---|---|---|---|---|---|---|---|---|
| | Size Portfolio (Mkt. Adj.) | | | Country-level | | Country-level | | | |
| Country | S | M | L | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. | Mkt. Adj. | Dim. Adj. |
| South Africa | 0.22 | 0.34 | 0.28 | 0.29 | 0.30 | 0.40 | 0.42 | (3.47) | (3.75) |
| Thailand | 0.06 | −0.06 | 0.10 | 0.02 | 0.02 | 0.03 | 0.04 | (0.77) | (1.22) |
| Turkey | 0.10 | 0.03 | −0.21 | 0.02 | 0.08 | 0.04 | 0.13 | (0.15) | (1.44) |
| Emg. Avg. | 0.19 | 0.19 | 0.09 | 0.15 | 0.16 | 0.23 | 0.24 | (6.20) | (6.32) |
| Dev. – Emg. | 0.14 | 0.19 | 0.34 | 0.23 | 0.22 | 0.33 | 0.31 | | |
| ($t$-stat.) | (0.82) | (3.40) | (5.97) | (5.93) | (5.41) | (5.28) | (4.88) | | |

This table reports summary statistics for the reactions to the earnings events described in Table 2. Reactions are based either on market-adjusted abnormal returns (Mkt. Adj.) or Dimson-beta adjusted abnormal returns (Dim. Adj.). Stock returns are measured in local currency. Extreme one-day returns over 200% and returns that revert quickly with a one-day absolute return over 100% and a two-day return of less than 20% are eliminated to reduce potential data errors. In order for an event to be included, there must be at least 50 non-missing returns in the period 250 to 126 days before the event for the purposes of market model estimation. Betas are calculated following Dimson (1979), using three leads and lags of the value-weighted local market return. The reaction statistics for each country $j$ are composed of two parts: event volatility and normal volatility. Event volatility is the mean absolute abnormal return calculated as described in Section 3.1 over the [−1, 2] event window relative to the earnings announcement date,

$$Vol_j^{Event} = \frac{1}{N}\sum_{i=1}^{N}\frac{1}{4}\sum_{t=-1}^{2}|AR_{i,t}|,$$

where $i$ is the event, $t$ is the event day, and $N$ is the number of events in each market. Normal volatility is the mean absolute abnormal return during the [−55, −2] and [3, 55] windows,

$$Vol_j^{Normal} = \frac{1}{N}\sum_{i=1}^{N}\frac{1}{107}\left(\sum_{t=-55}^{-2}|AR_{i,t}| + \sum_{t=3}^{55}|AR_{i,t}|\right),$$

where $i$ is the event and $t$ is the event day. Normalized Volatility is average event volatility, $Vol_j^{Event}$, divided by average normal volatility, $Vol_j^{Normal}$, minus one. Differenced Volatility is event volatility minus normal volatility. Size portfolios are based on prior December NYSE/AMEX/NASDAQ tercile breakpoints from 2000 to 2006. The last two columns report non-parametric rank-based $t$-stats for each country calculated following Corrado (1989) for tests of the hypothesis that event-period volatility equals normal-period volatility. The average at the bottom of each panel is the average of event reactions within either developed or emerging markets. Countries with fewer than 20 firm-year observations are grouped into the category "Other Emerg." before averaging.

window. The five highest-reaction countries are Germany, Hong Kong, the United States, Sweden, and the U.K., and the five lowest-reaction countries are Indonesia, Poland, Thailand, Mexico, and Turkey.

We Winsorize firm-level turnover data at the first and 99th percentiles and examine turnover before and after earnings announcements for the low- and high-earnings-reaction countries for robustness. Confirming inferences from absolute returns, turnover spikes on earnings announcements in high-earnings-announcement-reaction countries, but the relative increase is much smaller for low-reaction countries.[15]

Overall, relative to normal absolute returns, earnings announcement reactions show a striking tendency to be two and a half times higher in developed markets. The cross-country differences also indicate interesting variation for cross-country analysis.

## 4. General News Announcements and Stock Returns

A natural question is whether the patterns we observe around earnings announcements generalize to the typical news release. We examine the extent to which news-media releases affect returns. After aligning news according to a market's time zone, we start by examining all news that occurs after the prior day's close and before the current day's open.

### 4.1 Firm-level regressions

Because the influence of news on prices may differ on a firm-by-firm basis, we estimate the following simple firm-level regressions:

$$ln\left(1+\left|AR_{i,t}\right|\right) = \alpha_i + \beta_{NewsDay,i} NewsDay_{i,t-1} + \beta_{ArtCount,i} ArtCount_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

where the dependent variable is the natural log of one plus the absolute abnormal return, $NewsDay_{t-1}$ indicates whether there is at least one article with the firm's name in the headline or lead paragraph appearing just prior to that trading day, and $ArtCount_{t-1}$ is the number of articles meeting this criteria. News days with more articles may be events of greater importance, or the market may respond to a greater extent simply because more investors are aware of the news.[16]

The adjusted $R^2$ from these regressions give a simple sense for how closely returns are related to variation in news coverage. We estimate this regression at the firm level and then average the adjusted $R^2$ across all firms in a country. Figure 2 reports the average news adjusted $R^2$ for each country with 26

[15] These results are presented in Online Appendix Figure IA.2. For the rest of the article, we focus on absolute returns because we believe Datastream's volume data are less accurate than return data.

[16] Roll (1988) does not run such regressions with absolute returns but does show that return volatility is slightly lower when public news days are excluded from a sample of U.S. stocks.

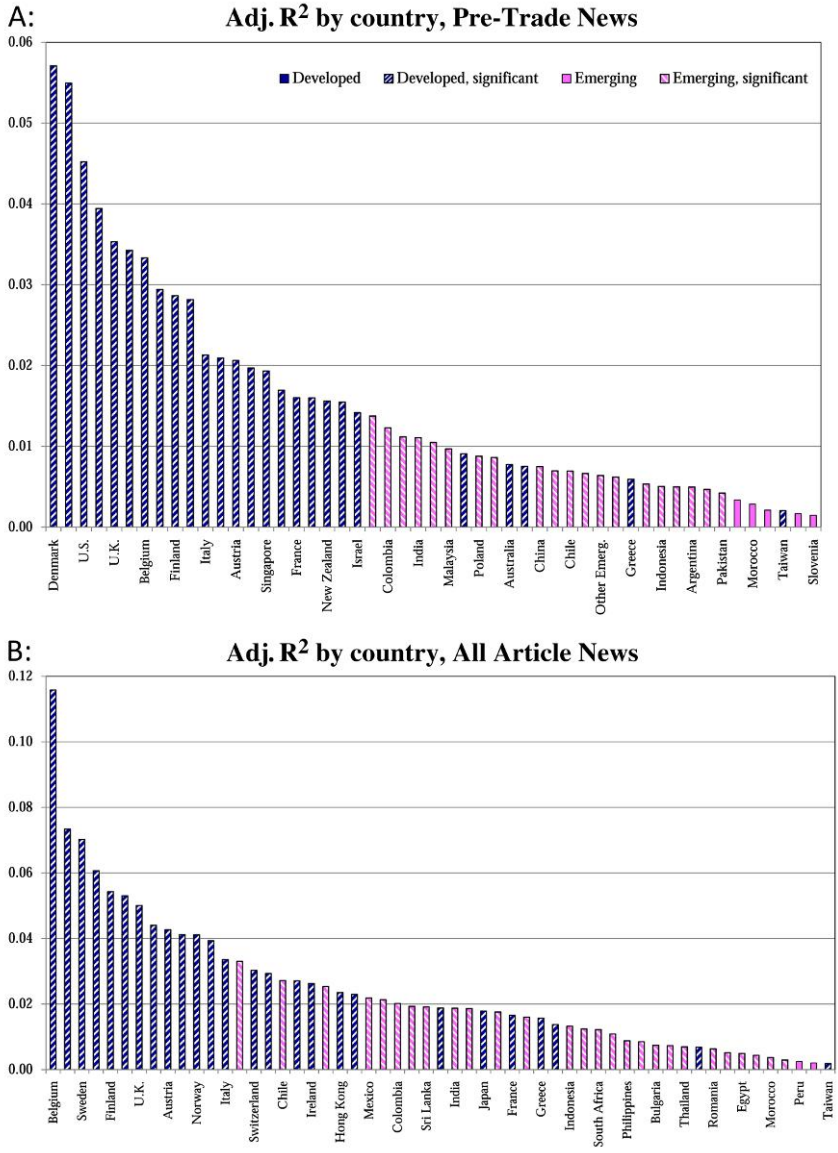


**Figure 2**
**(Continued)**

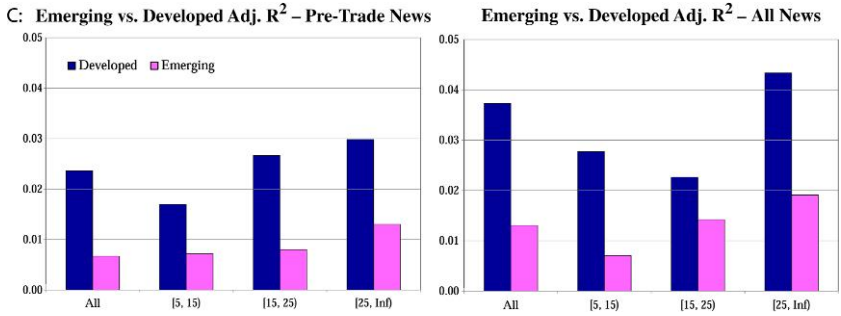


**Figure 2**
**Adjusted $R^2$ from regressions of returns on news**
This figure plots average adjusted $R^2$ from firm-level regressions of returns on news variables. Details of the calculation of the average adjusted $R^2$ are discussed in Table 4 and Section 4.1. In Panel A and the left panel of Panel C, the charts include only "Pre-Trade News" articles with time stamps that occurred between the previous day's market close and the current day's market open. In Panel B and the right panel of Panel C, we count all articles as news even if there is no time stamp as in Panel C of Table 4. Emerging markets with fewer than 20 firm years are grouped together in the "Other Emerg." category. Panel C presents the developed- and emerging-market average of the country-level average Adj. $R^2$ measures. Averages are also presented for firms in three "news bins": 5 to 15 news days in a year, 15 to 25, and 25 and more. Before averaging across countries, we delete a news-bin observation if there are fewer than five firm-year observations in the bin. In Panels A and B, stripes indicate that the Adj. $R^2$ is significantly higher, using a two-sided bootstrapped $t$-test with *alpha*=0.05.

developed markets in black and 25 emerging markets in gray.[17] Bars are striped if the average adjusted $R^2$ is significantly higher than a random reassignment of (the same number of) news days, using a two-sided bootstrapped $t$-test with *alpha* = 0.05. Countries are ordered according to the magnitude of the adjusted $R^2$. Panel A in Figure 2 shows that most developed markets are to the left with a greater fraction of return volatility "explained" by news days and article counts on those news days. The average adjusted $R^2$ is over 3% in Denmark, Sweden, the United States, the Netherlands, the U.K., Portugal, and Belgium, whereas Peru, Argentina, Kenya, Pakistan, Latvia, Morocco, the Philippines, Taiwan, Egypt, and Slovenia exhibit adjusted $R^2$s below 0.005. All emerging markets have average adjusted $R^2$s below 0.014. The developed markets of Cyprus, Australia, Canada, Greece, and Taiwan do not conform to the developed/emerging split as they have adjusted $R^2$s below 0.01.

Corresponding to Figure 2, Panel A1 of Table 4 presents more detail and developed and emerging-market averages. Panel A1 shows that in developed markets, the average adjusted $R^2$ is 0.024, whereas in emerging markets it is only 0.007, a significant difference using a bootstrapped test; the $t$-statistic is 5.85. We also ask whether the regression fit is improved on an individual firm basis. The news variables help explain volatility for 40% of developed market firms, but only 18% of emerging market firms.

[17] We require a minimum of 20 firm-year observations for the country to be included. Six emerging markets with less than 20 firm years are in the "Other emerging" group and count as one of the 25 markets.

**Table 4**
**News regression fit (adj. $R^2$)**

Panel A1: Pre-Trading Day News Only

| Country | Firm-Year Count | Adj. $R^2$ - All | News Improves Fit (% of Firms) | Adj. $R^2$ [5,15) | Adj. $R^2$ [15,25) | Adj. $R^2$ [25,Inf) |
|---|---|---|---|---|---|---|
| Australia | 44 | 0.008* | 22.7% | 0.005* | 0.017* | 0.018* |
| Austria | 66 | 0.021* | 42.4 | 0.002 | 0.032* | 0.023* |
| Belgium | 70 | 0.033* | 60.0 | 0.018* | 0.026* | 0.042* |
| Canada | 20 | 0.008* | 25.0 | – | – | 0.011* |
| Cyprus | 21 | 0.009* | 33.3 | – | – | – |
| Denmark | 61 | 0.057* | 62.3 | – | 0.020* | 0.065* |
| Finland | 69 | 0.029* | 43.5 | 0.039* | 0.050* | 0.034* |
| France | 45 | 0.016* | 37.8 | 0.016* | | 0.030* |
| Germany | 35 | 0.016* | 40.0 | 0.007 | 0.002 | 0.044* |
| Greece | 57 | 0.006* | 24.6 | 0.015* | – | 0.008 |
| Hong Kong | 474 | 0.015* | 27.4 | 0.021* | 0.037* | 0.008* |
| Ireland | 36 | 0.020* | 33.3 | 0.017* | 0.035* | 0.019* |
| Israel | 53 | 0.014* | 30.2 | 0.005 | 0.040* | 0.028* |
| Italy | 80 | 0.021* | 35.0 | 0.003 | – | 0.025* |
| Japan | 159 | 0.029* | 50.3 | 0.032* | 0.030* | 0.012* |
| Netherlands | 71 | 0.039* | 46.5 | 0.029* | 0.040* | 0.054* |
| New Zealand | 70 | 0.016* | 32.9 | 0.014* | 0.027* | 0.005 |
| Norway | 71 | 0.028* | 45.1 | 0.001 | 0.029* | 0.033* |
| Portugal | 42 | 0.034* | 45.2 | 0.010* | 0.005 | 0.044* |
| Singapore | 242 | 0.019* | 36.8 | 0.019* | 0.035* | 0.019* |
| Spain | 86 | 0.017* | 33.7 | 0.014* | 0.001 | 0.023* |
| Sweden | 81 | 0.055* | 69.1 | 0.066* | 0.033* | 0.067* |
| Switzerland | 52 | 0.021* | 40.4 | 0.008* | 0.014* | 0.034* |
| Taiwan | 864 | 0.002* | 8.9 | 0.001 | 0.004* | 0.009* |
| U.K. | 37 | 0.035* | 59.5 | 0.033* | 0.042* | 0.031* |
| U.S. | 873 | 0.045* | 53.8 | 0.018* | 0.040* | 0.058* |

(*continued*)

**Table 4**
**Continued**

Panel A1: Pre-Trading Day News Only

| Country | Firm-Year Count | Adj. $R^2$ - All | News Improves Fit (% of Firms) | Adj. $R^2$ [5,15) | Adj. $R^2$ [15,25) | Adj. $R^2$ [25,Inf) |
|---|---|---|---|---|---|---|
| Argentina | 136 | 0.005* | 16.9 | 0.006* | 0.001 | 0.004* |
| Brazil | 49 | 0.007* | 16.3 | 0.002 | −0.003 | 0.019* |
| Chile | 77 | 0.007* | 19.5 | 0.009* | 0.011* | 0.005* |
| China | 418 | 0.008* | 23.2 | 0.009* | 0.005* | 0.016* |
| Colombia | 43 | 0.012* | 25.6 | 0.005 | – | 0.028* |
| Egypt | 86 | 0.002 | 4.7 | −0.001 | – | 0.012* |
| Hungary | 92 | 0.010* | 25.0 | 0.013* | 0.010* | 0.013* |
| India | 441 | 0.011* | 26.3 | 0.016* | 0.017* | 0.017* |
| Indonesia | 61 | 0.005* | 11.5 | −0.001 | 0.007 | 0.012* |
| Kenya | 100 | 0.005* | 16.0 | 0.008* | 0.016* | 0.000 |
| Latvia | 30 | 0.003 | 20.0 | 0.000 | – | – |
| Lithuania | 62 | 0.006* | 14.5 | 0.008* | 0.005 | 0.001 |
| Malaysia | 432 | 0.010* | 21.3 | 0.018* | 0.025* | 0.011* |
| Mexico | 52 | 0.014* | 25.0 | 0.014* | 0.008* | 0.025* |
| Morocco | 43 | 0.003 | 11.6 | – | – | – |
| Other Emerg. | 62 | 0.006* | 14.5 | 0.005 | 0.003 | 0.010* |
| Pakistan | 127 | 0.004* | 17.3 | 0.004* | 0.005 | 0.033* |
| Peru | 41 | 0.005* | 12.2 | 0.003 | 0.000 | 0.016* |
| Philippines | 69 | 0.002 | 7.2 | 0.003 | 0.005 | 0.000 |
| Poland | 133 | 0.009* | 20.3 | 0.007* | 0.003 | 0.016* |
| Romania | 20 | 0.005* | 20.0 | – | – | – |
| Slovenia | 25 | 0.001 | 4.0 | 0.003 | – | – |
| South Africa | 145 | 0.009* | 24.1 | 0.012* | 0.010* | 0.007* |
| Thailand | 102 | 0.007* | 23.5 | 0.011* | 0.005 | 0.004 |
| Turkey | 167 | 0.011* | 26.3 | 0.011* | 0.018* | 0.023* |

(*continued*)

**Table 4**
**Continued**

| Country | Country Count | Adj. $R^2$ - All | News Improves Fit (% of Firms) | Adj. $R^2$ [5,15) | Adj. $R^2$ [15,25) | Adj. $R^2$ [25,Inf) |
|---|---|---|---|---|---|---|
| Panel A1: Pre-Trading Day News Only (continued) | | | | | | |
| Developed | 26 | 0.024 | 40.0 | 0.017 | 0.027 | 0.030 |
| Emerging | 25 | 0.007 | 17.9 | 0.007 | 0.008 | 0.013 |
| Difference | | 0.017 | 22.1 | 0.010 | 0.019 | 0.017 |
| (*t*-stat.) | | (5.85) | (7.36) | (3.20) | (5.70) | (4.64) |
| Panel A2: Pre-Trading Day News: Sample with Factiva confirmed earnings announcements | | | | | | |
| Developed | 18 | 0.045 | 50.7 | 0.045 | 0.043 | 0.047 |
| Emerging | 13 | 0.012 | 25.0 | 0.010 | 0.013 | 0.019 |
| Difference | | 0.032 | 25.7 | 0.035 | 0.030 | 0.028 |
| (*t*-stat.) | | (4.62) | (5.02) | (3.48) | (4.60) | (2.83) |
| Panel A3: Pre-Trading Day News: Excluding −1 to +2 around earnings announcements | | | | | | |
| Developed | 18 | 0.041 | 47.8 | 0.041 | 0.038 | 0.046 |
| Emerging | 13 | 0.012 | 24.6 | 0.009 | 0.014 | 0.019 |
| Difference | | 0.028 | 23.3 | 0.032 | 0.024 | 0.027 |
| (*t*-stat.) | | (4.62) | (4.45) | (3.40) | (3.37) | (3.03) |
| Panel B: Local Time Stamped News | | | | | | |
| Developed | 26 | 0.039 | 43.0 | 0.025 | 0.041 | 0.043 |
| Emerging | 25 | 0.010 | 19.0 | 0.010 | 0.010 | 0.017 |
| Difference | | 0.029 | 24.0 | 0.015 | 0.031 | 0.026 |
| (*t*-stat.) | | (6.39) | (7.09) | (2.91) | (5.71) | (4.87) |
| Panel C: All Available Articles (not timezone adjusted) | | | | | | |
| Developed | 26 | 0.037 | 44.3 | 0.028 | 0.023 | 0.043 |
| Emerging | 29 | 0.013 | 24.0 | 0.007 | 0.014 | 0.019 |
| Difference | | 0.024 | 20.3 | 0.021 | 0.008 | 0.024 |
| (*t*-stat.) | | (4.91) | (5.07) | (2.53) | (1.44) | (4.24) |

(*continued*)

**Table 4**
**Continued**

| Country | Country Count | Adj. $R^2$ - All | News Improves Fit (% of Firms) | Adj. $R^2$ [5,15) | Adj. $R^2$ [15,25) | Adj. $R^2$ [25,Inf) |
|---|---|---|---|---|---|---|
| Panel D: Dow Jones, Reuters, *Financial Times*, and *The Wall Street Journal*, GMT Date Stamp | | | | | | |
| Developed | 25 | 0.041 | 43.0 | 0.030 | 0.049 | 0.052 |
| Emerging | 23 | 0.014 | 23.2 | 0.015 | 0.014 | 0.023 |
| Difference | | 0.027 | 19.7 | 0.015 | 0.035 | 0.030 |
| ($t$-stat.) | | (5.69) | (5.54) | (2.54) | (4.75) | (4.38) |

This table shows average adjusted $R^2$ from firm-level regressions of returns on news variables derived from the articles summarized in Table 1. The adjusted $R^2$ comes from the following regression run each firm year:

$$ln\left(1+\left|AR_{i,t}\right|\right)=\alpha_i+\beta_{NewsDay,i}NewsDay_{i,t-1}+\beta_{ArtCount,i}ArtCount_{i,t-1}+\varepsilon_{i,t},$$

where $\left|AR_{i,t}\right|$ is firm $i$'s abnormal volatility on day $t$ calculated as described in Section 3.1, $NewsDay_{i,t-1}$ is an indicator if there is an article with the firm's name in the headline or lead paragraph on day $t-1$, and $ArtCount_{i,t-1}$ is the number of these articles. Panel A only uses pre-trade news, which means articles that appear from the close of the market on day $t-1$ to the market open on day $t$. Consequently, Panel A requires that articles have time stamps we can convert to local times. Panel A1 uses all country-firm-years. Panel A2 presents averages over country-firm-years where we have confirmed earnings dates. Panel A3 presents averages over country-firm-years where we exclude earnings dates. In Panels B through D, we use contemporaneous news, $NewsDay_{i,t}$ and $ArtCount_{i,t}$. Panel B also requires articles have time stamps, but we assign articles to day $t$ if they are published from the close on day $t$-1 to the close on day $t$. Panel C uses articles even if we do not have their local time stamps and uses the date published, recorded in Greenwich Mean Time, as the date of the article. Panel D is the same as C, except that we restrict the articles to those from Dow Jones, Reuters, *Financial Times*, or *The Wall Street Journal*. The top of Panel A1 reports average Adj. $R^2$ for countries, while the bottom of Panel A1 and Panels A2 through D report averages over emerging and developed markets and their differences. Counts for countries in the top of Panel A1 list the number of firm years included, but in the remainder of Panel A1 and Panels A2 through D, the counts are the number of countries in the cross-section. Adj. $R^2$-All lists the average Adj. $R^2$ for all firm years."News Improves Fit" is the percentage of firm years where not including the news-day dummy and article counts results in significantly worse fit based on a goodness-of-fit $F$-test at *alpha* = 0.05. Adj. $R^2$ - [5,15) is the average Adj. $R^2$ over firm years with 5 to 15 days with news articles during the year, Adj. $R^2$ - [15,25) is the average Adj. $R^2$ over firm years with 15 to 25 news days, and Adj. $R^2$ - [25,Inf) is the average Adj. $R^2$ over firm years with 25 or more news days. To be included, each news count portfolio must contain at least five firm years. A firm year is included if there are at least 100 trading days with returns, and 20 firm years per country. Abnormal returns, $AR_{i,t}$, are Winsorized at the 1st and 99th percentiles. A star on a country-level Adj. $R^2$ in Panel A1 indicates that the Adj. $R^2$ is significantly higher, using a two-sided bootstrapped $t$-test with *alpha* = 0.05, than specifications where the same number of news days and article counts are randomly assigned the days in the year. To calculate the country-level bootstrapped $t$-statistic for each of 500 iterations, we randomize the news days within each firm-year sample, estimate the regression described above, then calculate the $t$-statistic for the difference between the actual Adj. $R^2$ and the bootstrapped Adj. $R^2$. Significance is based on the distribution of these country-level $t$-statistics. Tests for the difference between levels in emerging and developed markets are $t$-statistics based on bootstrapped standard errors from 1,000 draws with replacement from the sample of country-level average Adj. $R^2$s.

Individual articles may have more information content in markets where there are fewer articles. Hence, in the last three columns of Table 4, we group all firms in a market into three bins according to the number of days in the year that there is news about the firm. The large difference between developed and emerging markets holds for each news-days-per-year bin. In Panel A2 of Table 4, we first limit our sample to the subset of firms where earnings announcements have been cross-checked with Factiva news articles. In Panel A3, we use this same subset of firms but exclude the earnings announcement window. We still find similar large differences between emerging and developed markets.

Rather than only examine pre-trade news, we extend the analysis in Panel B of Table 4 to all news over the day (from market close on day $t$-1 to the close on day $t$) for the sample of firms (the same as in Panel A) where we have a time stamp to confirm the exact local time of the article. Next, we expand the sample in Panel B of Figure 2 and Panel C of Table 4 even further to include all articles, even if we do not have a local time stamp. Both tests show similar patterns, with most developed markets exhibiting much higher average explanatory power in the news regressions. Panel B of Figure 2 shows that financial news bears the strongest relation to prices in northern European countries and the weakest relation in Morocco, Pakistan, Peru, Zimbabwe, and Taiwan.[18] Panel C of Figure 2 presents developed and emerging averages by bins based on the number of pre-trade news articles in the left panel and on all news in the right panel. In most bins, we find that the explanatory power of news for absolute returns is more than twice as high in developed markets. We examine news on only those days when the article is published by Dow Jones, *The Wall Street Journal*, *Financial Times*, or Reuters in Panel D of Table 4 to investigate whether the type of news outlet affects inferences. We find similar large differences between developed and emerging markets.

Overall, the findings indicate that coverage by the financial media helps explain idiosyncratic variation in stock prices much better in developed than in emerging markets.

### 4.2 Ranking

The regressions in the previous subsection are arguably superior to the simple comparisons between the volatility on news and non-news days we present in this subsection, because they allow us to model return volatility as a function of existence of any news (the news-day dummy) and the importance of the news (the article counts). However, simple comparisons of news-day to non-news-day volatility allow us to more directly quantify the magnitude of increased

[18] For Taiwanese earnings announcements, we find that revenues are often released ahead of the earnings announcement. Thus, one possibility is that the news in the articles is mostly known beforehand through the revenue information.

return volatility on news days.[19] We scale each rank within a country by the number of observations to obtain a percentile ranking to make the rankings comparable across countries, where 0.50 would be the mean percentile rank if news-day and non-news-day volatility were the same. We then calculate the average percentile rank and subtract 0.50 to center the averages around zero.

Panel A of Figure 3 shows that the distribution of news-day volatility is higher than non-news-day volatility in most developed markets. Statistically significant shifts in distribution between news-day and non-news-day volatility are indicated in stripes and are based on the non-parametric Fligner-Policello test for differences in central tendency. Most developed markets are to the left of the graph, with relatively higher news-day volatility, and many emerging markets to the right, with little difference between news and non-news days. However, there is variation, with Hungary, India, and Thailand exhibiting news-day volatilities that rank high, whereas the developed markets of Taiwan, Greece, and Cyprus exhibit no meaningful difference between news and non-news days. There are many emerging markets that show no significant differences between news days and non-news days (Indonesia, Brazil, Latvia, Romania, the Philippines, Lithuania, Kenya, Pakistan, Morocco, and Slovenia).

In Panel B of Figure 3, we report the ratio of the average news-day volatility to the average non-news-day volatility minus one. In Panel B of Figure 3, we see large differences between news and non-news days. The ratio above 0.70 for Japan indicates that the average day with news prior to the market open is more than 70% more volatile than the average non-news day.[20] Overall, the patterns across countries are similar to Panel A except that more emerging markets (Romania, China, Malaysia, Thailand, and India) gravitate to the left, meaning higher reactions, because the aggregation can put considerable weight on extreme observations in a country with few stocks. In Panel C, the median ratio is displayed. Here, the patterns are similar to those in Panel A, with most developed markets having higher reactions. However, there are still emerging markets (Thailand, Romania, India, and Poland) that exhibit higher reactions, whereas a few developed markets (Taiwan, Greece, and Cyprus) have lower median reactions. In general, the mean ratios show a slightly more important role for news in emerging markets than the medians. This indicates that there are some large events with news in emerging markets, but in most emerging markets the typical news day is no different from a non-news day.

We also examine, for robustness, the developed and emerging average news-day rankings, mean and median news to non-news-day volatility ratios for samples and classifications of what defines a news day. We examine

[19] We start by calculating the average daily excess return volatility for each firm year on news and non-news days separately (using news prior to the market opening). Then we pool the average firm-year news and non-news volatilities within each country and rank them from lowest to highest average absolute return movement.

[20] For significance, we use the two-side 5% level based on *t*-tests with bootstrapped standard errors.

earnings articles, pre-trading-day news bins, local time-stamped news, all articles regardless of time stamp, and the major world business news outlets (Dow Jones, *The Wall Street Journal*, *Financial Times*, or Reuters) in the

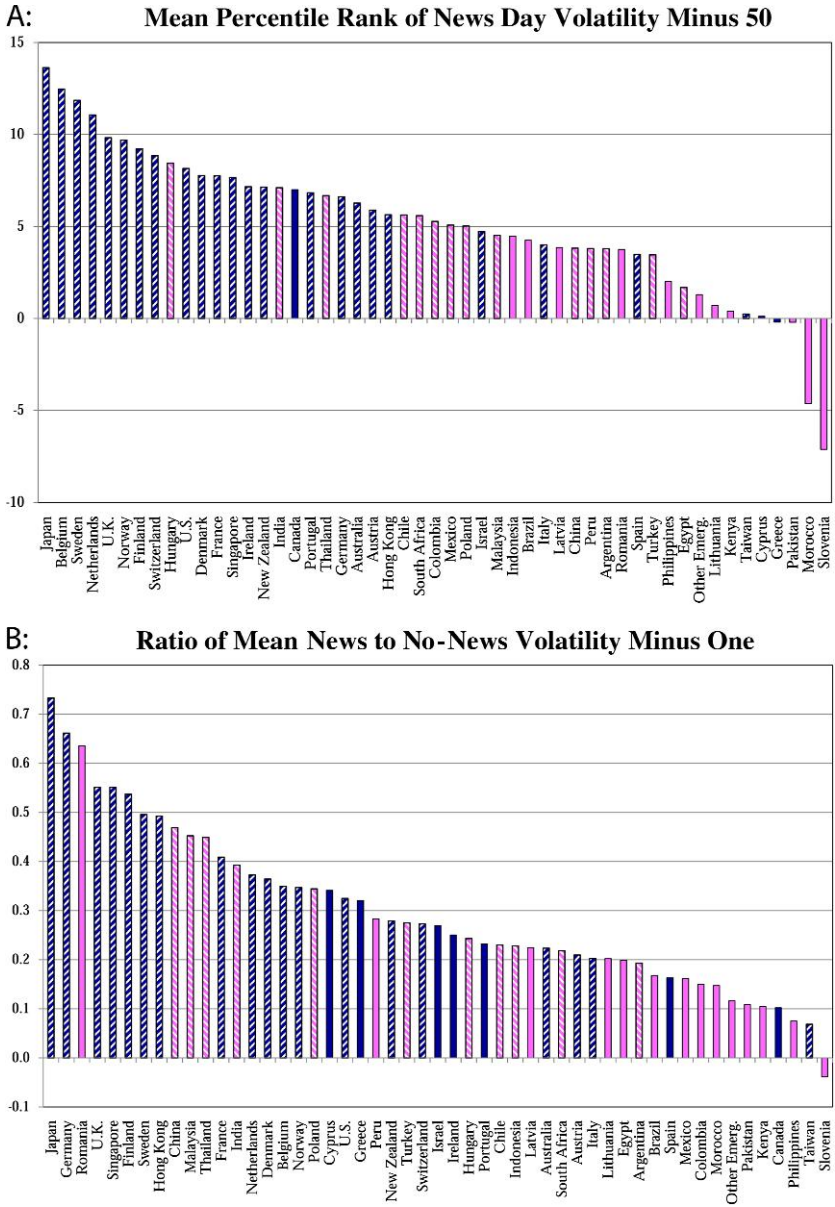


**Figure 3**
**(Continued)**

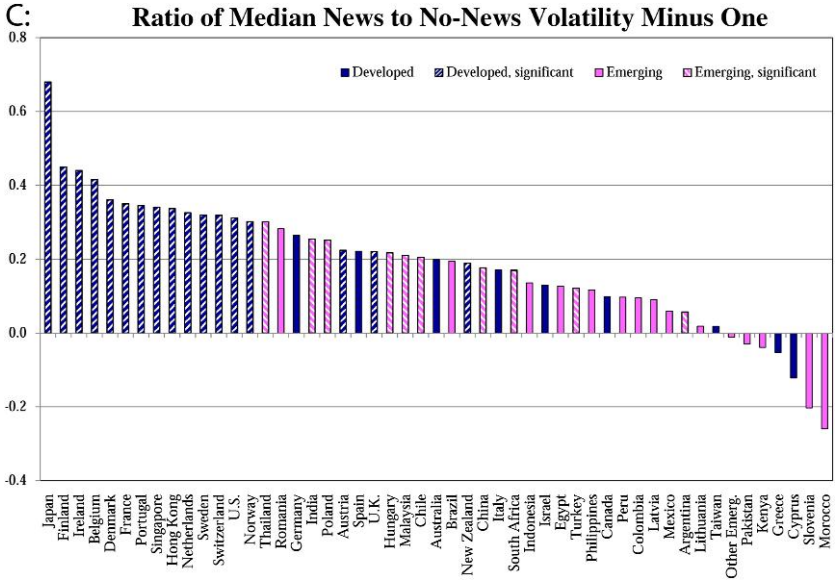


**Figure 3**
**Pre-trade news-day to non-news-day return volatility**
This figure plots measures that relate average news-day volatility to non-news-day volatility, where volatility, $|AR_{i,t}|$, is calculated as described in Section 3.1. This figure uses only "Pre-Trade News," as defined in Table 4. Volatility is averaged separately for news and non-news days to the firm-year level. In Panel A, we rank average firm-year news and non-news volatility from highest to lowest and report the mean rank of the news-day firm-year averages. We divide each rank by the total number of observations to convert the ranks to a percentile and subtract 50 from the percentile for comparability across markets. In Panel B, we average across firm years to get country average news-day and non-news-day volatility, then report the ratio of average news-day to non-news-day volatility minus one. Panel C is the same as B, except using medians. Stripes indicate statistical significance at *alpha* = 0.05. In Panels A and B, standard errors for the difference between news- and no-news-day volatility are bootstrapped with 100,000 draws with replacement. In Panel C, the tests are Fligner-Policello difference in central tendency tests written in SAS by Paul von Hippel and available at http://www.sociology.ohio-state.edu/people/ptv/macros/fligner_policello.htm.

Online Appendix Table IA.7. Overall, markets tend to move more on news days in developed markets than emerging.

## 5. Investigating Determinants through Cross-country Analysis

Our findings indicate a clear distinction between the market reaction to news in developed and emerging markets and wide variation within these categories that should be useful for investigating the possible determinants of the return-news relation. We begin investigating hypotheses H1, H2A, H3A, H3B, and H4 through cross-country regressions.

We estimate cross-country OLS regressions with combinations of variables closely tied to our hypotheses in Section 1. We also examine inferences using a Bayesian model selection procedure. The purpose of the Bayesian procedure is to systematically compare our favored hypotheses to alternatives suggested by

the literature. For our purposes, the main advantage of the Bayesian procedure over alternative methods is that it is a robust way to compare a number of alternative specifications in a small sample.

### 5.1 Earnings news

**5.1.1 Basic cross-country regressions.** We start by examining nine variables directly linked to our four major hypotheses from Section 1. The variables that map to these hypotheses are detailed in the Appendix, Table A1. Since we do not have a time series of observations for all explanatory variables, we calculate a measure of the average earnings reaction in each country across our four-year sample period. This is used as the dependent variable. Aggregation across time can reduce noise and does not seem to impose much cost, given that there is relatively little change in market features over our short 2004-to-2008 time period.[21]

Table 5 starts out with nine regressions, each with an intercept and a single variable of interest as explanatory variables. Then, as is common in the cross-country literature, we add *GDP per capita* to capture an alternative null that our cross-country patterns are simply related to the economic development of markets. The regressions in Table 5, Panel A, provide little evidence to support hypothesis 1: Intra-industry timing of earnings announcements is unable to explain cross-country differences in event reactions. All other variables are significant in the direction consistent with our hypotheses (Hypotheses H2A, H3A, H3B, and H4). *Insider trading*, *technological development*, and *accounting standards* have the highest $t$-statistics and adjusted $R^2$s. *Insider trading*, *technological development*, and *accounting standards* are still highly significant, even when including *GDP per capita* in the regressions. In support of the journalism quality hypothesis, *news clustering* around announcement days and *free press* are also significant, with $t$-statistics above 2. In short, where insider trading is more prevalent, the price response to earnings news is lower. Better news transmission (*news clustering*, *free press*, and *technological development*) also yields a stronger response to earnings news.

In Panel B of Table 5 we estimate regressions using combinations of two variables from among those that were significant in Panel A. *Insider trading*, *accounting standards*, and *technological development* are highly significant. *Free press* is significant in all but one specification with *accounting standards*. *News clustering* is only significant in one specification. In Panel C, we estimate combinations of these remaining four significant variables. *Insider trading* is significant in all specifications, and *accounting standards* and *technological development* in three of four. Overall, the specifications show considerable support for cross-country differences in earnings event reactions being driven

[21] We have also collected variables from other papers or from data sources that only cover part of the 2004-to-2008 period. In these cases, we use the average value of the data available.

**Table 5**
**OLS regressions of ln earnings reactions on country characteristics**

Panel A: Regressions with One Variable of Interest

| | No Coef. | Adj. $R^2$ | GDP Coef. | GDP | Adj. $R^2$ |
|---|---|---|---|---|---|
| Pre-Event Public Information Dissemination | | | | | |
| *ln Announcement Order* | −0.03 | −0.03 | 0.05 | 0.67 | 0.41 |
| | (−0.20) | | (0.38) | (5.31) | |
| Insider Trading | | | | | |
| *Insider Trading* | −0.79 | 0.62 | −0.67 | 0.17 | 0.62 |
| | (−7.91) | | (−4.52) | (1.12) | |
| News Transmission | | | | | |
| *Financial Press During Event* $_{[-1,\,2]}$ | 0.37 | 0.12 | 0.10 | 0.62 | 0.41 |
| | (2.45) | | (0.70) | (4.45) | |
| *News Clustering* | 0.51 | 0.24 | 0.28 | 0.54 | 0.47 |
| | (3.57) | | (2.15) | (4.20) | |
| *In-depth Articles During Event* $_{[-1,\,2]}$ | 0.45 | 0.18 | 0.18 | 0.58 | 0.43 |
| | (3.04) | | (1.27) | (4.18) | |
| *Free Press* | 0.61 | 0.36 | 0.37 | 0.47 | 0.51 |
| | (4.72) | | (2.77) | (3.52) | |
| *Tech. Development* | 0.76 | 0.57 | 0.58 | 0.29 | 0.61 |
| | (7.20) | | (4.35) | (2.14) | |
| Accounting Quality | | | | | |
| *Accounting Standards* | 0.80 | 0.63 | 0.63 | 0.27 | 0.67 |
| | (8.14) | | (5.39) | (2.33) | |
| *Pct. Intl. GAAP* | 0.40 | 0.14 | 0.12 | 0.62 | 0.43 |
| | (2.66) | | (0.87) | (4.47) | |
| Control | | | | | |
| *GDP Per Capita* | 0.66 | 0.42 | – | – | – |
| | (5.36) | | – | – | |

(*continued*)

**Table 5**
**Continued**

Panel B: Regressions with Two Variables of Interest

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] |
|---|---|---|---|---|---|---|---|---|---|---|
| *Insider Trading* | −0.43 | −0.65 | −0.50 | −0.77 | | | | | | |
| | (−3.04) | (−6.04) | (−3.78) | (−5.98) | | | | | | |
| *News Clustering* | | | | 0.04 | | | 0.17 | | 0.28 | 0.29 |
| | | | | (0.31) | | | (1.50) | | (1.92) | (2.83) |
| *Free Press* | | 0.29 | | | 0.20 | | | 0.35 | 0.48 | |
| | | (2.67) | | | (1.60) | | | (3.31) | (3.31) | |
| *Tech. Development* | | | 0.40 | | | 0.36 | | 0.61 | | 0.67 |
| | | | (2.97) | | | (2.52) | | (5.86) | | (6.48) |
| *Accounting Standards* | 0.47 | | | | 0.68 | 0.52 | 0.72 | | | |
| | (3.30) | | | | (5.57) | (3.63) | (6.54) | | | |
| Adj. $R^2$ | 0.70 | 0.67 | 0.69 | 0.61 | 0.65 | 0.68 | 0.64 | 0.66 | 0.40 | 0.64 |

Panel C: Regressions with Three and Four Variables of Interest

| | [1] | [2] | [3] | [4] | [5] |
|---|---|---|---|---|---|
| *Insider Trading* | −0.42 | −0.35 | −0.40 | | −0.33 |
| | (−3.02) | (−2.38) | (−3.10) | | (−2.30) |
| *Free Press* | 0.18 | | 0.25 | 0.22 | 0.20 |
| | (1.61) | | (2.58) | (1.93) | (1.85) |
| *Tech. Development* | | 0.25 | 0.36 | 0.38 | 0.27 |
| | | (1.74) | (2.88) | (2.74) | (1.97) |
| *Accounting Standards* | 0.37 | 0.34 | | 0.37 | 0.22 |
| | (2.41) | (2.18) | | (2.36) | (1.31) |
| Adj. $R^2$ | 0.71 | 0.71 | 0.73 | 0.70 | 0.73 |

This table contains regressions of average natural log of normalized earnings reactions for 39 countries on country characteristics. We consider nine potential explanatory variables that reflect hypotheses about public and private pre-event information dissemination, news transmission, and accounting quality. Variables are described in detail in Appendix Table A1. All variables are standardized. Panel A presents regressions with one explanatory variable. Panel B presents regressions with two explanatory variables using all combinations of variables that are significant in Panel A when *GDP Per Capita* is used as a control. Panel C presents regressions with three and four explanatory variables using variables that were consistently significant in the Panel B regressions. Parentheses indicate *t*-statistics.

by differences in the amount of insider trading, the extent of technological development, and accounting standards.

**5.1.2 Stochastic search variable selection.** One challenge in the cross-country literature is that there are many explanations for why stocks in one country might be different from those in another. Since the sample of countries is small, the inclusion or exclusion of one variable in a regression may change inferences about another. A second problem is that for each hypothesis, there are multiple empirical proxies to choose from. In order to combat these two problems and examine the validity of our findings in a systematic framework designed to deal with such issues, we turn to a well-known Bayesian variable selection procedure.

The Stochastic Search Variable Selection (SSVS) methodology of George and McCulloch (1993) embeds standard multiple regression in a hierarchical Bayesian model and is used to identify an important subset of explanatory variables. A primary advantage of SSVS over other variable selection methods is that it selects variables based on the size of their impact on the dependent variable—their economic significance. The model assumes that the dependent variable is generated by a combination of the independent variables, and for each combination, provides a probability that it generated the observed data. These posterior probabilities take into account the number of models and variables being tested. One is also able to come up with a posterior probability that a variable has a coefficient that is meaningfully different from zero. We use these posterior probabilities to identify variables that explain a country's average market reaction to news.[22]

We use a much broader list of variables in the SSVS tests: 33 in the earnings reactions test and 29 in the general news tests. These variables either relate to our four hypotheses or to more general explanations related to economic and financial development, the regulatory environment, governance, or the characteristics of equity markets that are common in the international literature.

SSVS requires priors for the residual variance of the regression, $\sigma^2$, the variances of important and unimportant coefficients, $v_1$ and $v_0$, respectively, and the probability that the independent variables are important, $p$. We use two different priors for the probability that a given independent variable is important. The prior of $p = 0.5$ says the probability a variable is included in the model that best explains the dependent variable is the same as the probability it is not. This is a standard default prior for $p$. Since we look at a large number of variables, we think we should be more skeptical that any given variable is in the true model. We incorporate this greater skepticism through a second prior on the probability a variable is important, $p = 0.15$. This more skeptical prior

[22] This methodology is similar to the one used by Cremers (2002) in selecting important market wide predictor variables.

shrinks posterior probabilities toward zero. Another way to think about this is that we think there is some probability that a variable looks important in the data due to random chance, and to account for this, we use a skeptical prior probability ($p = 0.15$) that the variables we consider are important. We discuss our priors and other details of the SSVS model in Table 6.

Panel A of Table 6 contains the probability that each independent variable is important for explaining earnings reactions. With the prior of $p = 0.15$, *financial market sophistication*, *accounting standards*, *insider trading*, and *technological development* are all relatively more important as they have posterior probabilities above 0.1. With the less skeptical prior ($p = 0.5$), these four variables plus an investor protection rank and the average number of in-depth news articles appearing before the event all have posterior probabilities above 0.30. Notably, some traditional cross-country determinants, such as insider-trading enforcement, trading costs, and market-level characteristic variables (including market model $R^2$),[23] are not likely to help explain differences in earnings event reactions.

Panel B of Table 6 contains the four best models from each of the two prior settings, each of those models' posterior probabilities, along with coefficient estimates and 95% credible intervals. *Financial market sophistication* is in the best model under both priors. With the prior of $p = 0.15$, *accounting standards* is the second-best model, *insider trading* alone third, and *financial market sophistication* and *insider trading* together are the fourth best model. With the less skeptical ($p = 0.5$) prior, this model is the third best. The second-best model with the less skeptical prior contains *financial market sophistication*, *technological development*, the number of *in-depth articles before the event*, *investor protection*, and *news clustering*. Because we are not exactly sure what *financial market sophistication* is measuring, we take more economic content from the other variables. The variable is most highly correlated with *accounting standards*, *financial disclosure*, *technological development*, and *insider trading* (as shown in Online Appendix Table IA.8). The survey variable may have an advantage over other variables as it captures several facets of the information environment related to three of the four main hypotheses.

One concern may be that the cross-country differences are a function of the size and industry composition of firms in the market. To control for these differences in Table 6, Panel C, we estimate event-level regressions in which we first demean each firm's earnings reaction by size and industry average reaction. *Financial market sophistication* is the most important, followed by the prevalence of *insider trading*. *Accounting standards* is the fourth most important variable, but *technological development* is not among the top ten. Hence, except for *technological development*, the firm-level regressions confirm inferences from the country-level regressions.

[23] Kelly (2007) and Bartram, Brown, and Stulz (2011) examine $R^2$ and idiosyncratic risk and do not find support for it as a measure of information production.

**Table 6**
**Regressions of ln earnings reactions on country characteristics with Bayesian model selection**

Panel A: Marginal Posterior Probability that the Variable is Important

| Setting for $p$ | 0.15 | 0.5 | | 0.15 | 0.5 |
|---|---|---|---|---|---|
| *Financial Market Sophistication* | 0.561 | 0.697 | *Pct .Intl. GAAP* | 0.016 | 0.072 |
| *Accounting Standards* | 0.268 | 0.319 | *Anti-Self-Dealing Index* | 0.014 | 0.104 |
| *Insider Trading* | 0.226 | 0.312 | *Short Sales Feasible* | 0.014 | 0.078 |
| *Tech. Development* | 0.158 | 0.324 | *Market Model* $R^2$ | 0.013 | 0.066 |
| *Financial Disclosure* | 0.096 | 0.196 | *Financial Press During Event* | 0.013 | 0.094 |
| *Investor Protection Rank* | 0.074 | 0.420 | *Short Sales Legal* | 0.013 | 0.075 |
| *Country Risk* | 0.064 | 0.157 | *Financial Press Before Event* | 0.013 | 0.082 |
| *Free Press* | 0.053 | 0.199 | *ln Announcement Order* | 0.012 | 0.061 |
| *In-depth Articles Before Event* | 0.039 | 0.343 | *Insider Trading Enforced* | 0.012 | 0.057 |
| *In-depth Articles During Event* | 0.032 | 0.204 | *Disclosure Index* | 0.012 | 0.074 |
| *Market Turnover/GDP x 100* | 0.031 | 0.124 | *Pct. Days Non-Zero Price Chg.* | 0.012 | 0.069 |
| *U.K. Law* | 0.030 | 0.143 | *Director Liability Index* | 0.012 | 0.076 |
| *GDP per Capita* | 0.029 | 0.114 | *Cost to Enforce Contracts* | 0.011 | 0.062 |
| *News Clustering* | 0.028 | 0.215 | *LOT Trading Cost* | 0.011 | 0.064 |
| *Shareholder Lawsuits Index* | 0.020 | 0.090 | *Average Log Firm Size* | 0.010 | 0.057 |
| *Investor Protection Index* | 0.018 | 0.112 | *Average Firm-Level P/E* | 0.010 | 0.059 |
| *Only Annual Earn. Ann.* | 0.016 | 0.118 | | | |

(*continued*)

**Table 6**
**Continued**

Panel B: Best Models

| | Setting for $p = 0.15$ | | | | Setting for $p = 0.50$ | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *Financial Market Sophistication* | 0.77<br>[.051, 1.04] | | | 0.51<br>[0.16, 0.86] | 1.12<br>[0.80, 1.44] | 0.81<br>[0.45, 1.16] | 0.51<br>[0.16, 0.85] | 0.77<br>[0.51, 1.04] |
| *Accounting Standards* | | 0.74<br>[.048, 1.00] | | | | | | |
| *Insider Trading* | | | -0.70<br>[-0.96, -0.45] | -0.38<br>[-0.71, -0.05] | | | -0.38<br>[-0.71, -0.06] | |
| *Tech. Development* | | | | | | 0.33<br>[0.09, 0.58] | | |
| *In-depth Articles Before Event* | | | | | -0.33<br>[-0.57, -0.09] | -0.46<br>[-0.70, -0.21] | | |
| *Investor Protection Rank* | | | | | 0.41<br>[0.17, 0.65] | 0.38<br>[0.15, 0.60] | | |
| *News Clustering* | | | | | | 0.31<br>[0.08, 0.55] | | |
| $P(\gamma \mid Y)$ | 0.202 | 0.087 | 0.045 | 0.035 | 0.005 | 0.005 | 0.004 | 0.004 |

(*continued*)

**Table 6**
**Continued**

Panel C: Firm-Level Marginal Posterior Probability that Top 10 Variables are Important

| Setting for $p$ | 0.15 | 0.5 | | 0.15 | 0.5 |
|---|---|---|---|---|---|
| *Financial Market Sophistication* | 0.120 | 0.427 | *Market Turnover/GDP x 100* | 0.011 | 0.050 |
| *Insider Trading* | 0.020 | 0.083 | *Free Press* | 0.009 | 0.045 |
| *Investor Protection Index* | 0.017 | 0.093 | *U.K. Law* | 0.008 | 0.061 |
| *Accounting Standards* | 0.015 | 0.062 | *Financial Press Article During Event* | 0.008 | 0.047 |
| *Shareholder Lawsuits Index* | 0.013 | 0.092 | *Financial Disclosure* | 0.008 | 0.038 |

This table contains regressions of the natural log of one plus the normalized volatility reported in Table 3 for 39 countries on 33 potential explanatory variables described in Online Table A.1. All variables are standardized by subtracting the cross-country mean and dividing by the standard deviation. We use the Bayesian Stochastic Search Variable Selection methodology of George and McCulloch (1993):

$$Y = X\beta + \epsilon, \varepsilon \sim N\left(0, \sigma^2 I\right), \quad (1)$$

$$\sigma^2 \sim \upsilon\lambda/\chi^2_\nu, \quad (2)$$

$$\beta_i|\gamma_i \sim \begin{cases} N\left(0, \upsilon_1\right) when \gamma_i = 1 \\ N\left(0, \upsilon_0\right) when \gamma_i = 0, \end{cases} \quad (3)$$

$$f(\gamma) \sim \prod p_i^{\gamma_i} \left(1 - p_i\right)^{1-\gamma_i}. \quad (4)$$

The priors are controlled by the hyperparameters $\lambda, \nu, \upsilon_0, \upsilon_1,$ *and* $p$. One may think of $\lambda$ as an estimate for residual variance and $\nu$ as the sample size for the residual variance estimate. We choose the sample variance of the dependent variable as our value for $\lambda$, and we set $\nu$ at 3. The $\upsilon_0$ and $\upsilon_1$ hyperparameters are the prior variances of coefficients on unimportant and important independent variables, respectively. We believe that an economically significant variable is one for which a one-standard-deviation change leads to at least a one-tenth standard-deviation change in the dependent variable, which is ≈[max(*Normalized Volatility*) – min(*Normalized Volatility*)] / [*No. of Countries*]. This threshold corresponds to any $\upsilon_0$ and $\upsilon_1$ satisfying $0.1^2 = log(\upsilon_1/\upsilon_0)/(\upsilon_0^{-1} - \upsilon_1^{-1})$, and we use $\upsilon_1/\upsilon_0 = 3,233$. We consider two values for $p$, the prior probability that an independent variable is important: 0.5 and 0.15. We use the Gibbs sampler to obtain 2,000,000 draws from the posterior distribution $f(\gamma|Y)$ after a 1,000 draw burn-in period. Panel A reports the marginal posterior probability that $\gamma_i = 1$ for all independent variables. In Panel B, we identify the four models with the highest posterior probability from each of the two prior specifications and report mean values of the important coefficients from those model draws. The numbers in brackets are 95% credible intervals. We also run the procedure at the firm level, with the dependent variable demeaned by size and industry portfolio groups. We use U.S. size tercile breakpoints and Fama and French 48 industries. Panel C reports posterior probabilities for the top 10 variables from the firm-level results.

### 5.2 General news regressions and robustness

Beyond earnings news, we examine news more broadly by constructing a simple composite measure of news importance using the standardized average of the variables from Panel A of Figure 2 and the three panels of Figure 3.[24] We first estimate OLS cross-country regressions in Table 7. Only prevalence of insider trading and technological development survive the simple GDP per-capita controls.

We again apply SSVS to test the robustness of our findings. Panel A of Table 8 shows that with the prior of $p = 0.15$, *technological development*, the prevalence of *insider-trading* survey variable, and the in-depth article variable are the only three variables with posterior probabilities above 0.10. Panel B of Table 8 shows that with the prior of 0.15, the favored specification is *technological development* alone, followed by *insider trading* alone, and then in the third specification both variables. With the less skeptical prior ($p = 0.50$), the specification with *technological development*, *insider trading*, *in-depth articles before the event*, and *financial disclosure* is the favored specification, followed by *technological development* alone, and then *technological development*, *insider trading*, and *financial disclosure*.

As with the responses to earnings news for robustness, we use this same methodology at the event level in Panel C of Table 8. In these general news regressions, *financial disclosure*, *freedom of the press*, *insider trading*, *investor protection*, and *technological development* are the five variables with the highest posterior probabilities. It is comforting that both the prevalence of *insider trading* and *technological development* are again important in the firm-level regressions.

Among our earnings reaction and general news regressions, both at the market and firm level, the prevalence of *insider trading* is always one of the most important variables. *Technological development* is important in all SSVS tests except the firm-level earnings reactions test. Quite sensibly, *accounting standards* are important for understanding the reaction to earnings, but not general news. Overall, the hypothesis with the most support in the data is insider trading (Hypothesis H2A), followed by news transmission (Hypothesis H3B).

## 6. Implications for Informed and Uninformed Trading

Because our cross-country regressions point to the importance of insider trading, we seek additional verification by testing Hypotheses H2B and H2C, both of them related to insider trading.

[24] The four measures are *Mean Percentile Rank of News Day Volatility*, *Ratio of Mean News to No-News Volatility*, *Ratio of Median News to No-News Volatility*, and *Adj. News* $R^2$.

**Table 7**
**OLS regressions of ln general news on country characteristics**

Panel A: Regressions with One Variable of Interest

| | No controls | | GDP control | | |
|---|---|---|---|---|---|
| | Coef. | Adj. $R^2$ | Coef. | GDP | Adj. $R^2$ |
| Pre-Event Public Information Dissemination | | | | | |
| *ln Announcement Order* | −0.04 | −0.02 | 0.00 | 0.33 | 0.17 |
| | (−0.31) | | (0.03) | (3.11) | |
| Insider Trading | | | | | |
| *Insider Trading* | −0.46 | 0.39 | −0.46 | −0.01 | 0.37 |
| | (−4.97) | | (−3.34) | (−0.07) | |
| News Transmission | | | | | |
| *Financial Press During Event* $_{[-1,\,2]}$ | 0.24 | 0.08 | 0.10 | 0.29 | 0.19 |
| | (2.04) | | (0.76) | (2.41) | |
| *News Clustering* | 0.29 | 0.12 | 0.16 | 0.27 | 0.21 |
| | (2.43) | | (1.22) | (2.26) | |
| *In-depth Articles During Event* $_{[-1,\,2]}$ | 0.12 | 0.00 | −0.05 | 0.36 | 0.18 |
| | (1.02) | | (−0.43) | (2.96) | |
| *Free Press* | 0.23 | 0.08 | 0.07 | 0.30 | 0.18 |
| | (2.02) | | (0.58) | (2.37) | |
| *Tech. Development* | 0.47 | 0.41 | 0.43 | 0.05 | 0.40 |
| | (5.18) | | (3.60) | (0.44) | |
| Accounting Quality | | | | | |
| *Accounting Standards* | 0.36 | 0.23 | 0.25 | 0.18 | 0.25 |
| | (3.50) | | (1.92) | (1.40) | |
| *Pct. Intl. GAAP* | 0.21 | 0.06 | 0.06 | 0.31 | 0.18 |
| | (1.78) | | (0.50) | (2.54) | |
| Control | | | | | |
| *GDP Per Capita* | 0.33 | 0.20 | – | – | – |
| | (3.17) | | – | – | |

Panel B: Regression with Two Variables of Interest

| | [1] |
|---|---|
| *Insider Trading* | −0.24 |
| | (−1.88) |
| *Tech. Development* | 0.29 |
| | (2.20) |
| Adj. $R^2$ | 0.45 |

This table contains regressions of a country-level measure of market reaction to news for 38 countries on country characteristics. The measure is the average of four standardized measures: the *Mean Percentile Rank of News Day Volatility*, the *Ratio of Mean News to No-News Volatility*, the *Ratio of Median News to No-News Volatility*, and the *News Regression Fit (*adj. $R^2$). Construction of the three volatility measures is discussed in Figure 3, and Table 4 discusses the adj. $R^2$ measure. We consider nine potential explanatory variables which reflect hypotheses about pre-event information dissemination, public and private, news transmission, and accounting quality. Variables are described in detail in Appendix Table A1. All variables are standardized. Panel A presents regressions with one explanatory variable. Panel B presents one regression with the two explanatory variables that are significant in Panel A when *GDP Per Capita* is used as a control. Parentheses indicate *t*-statistics.

## 6.1 Leakage prior to takeovers

According to Hypothesis H2B, if the low stock price reaction to news is driven by insider trading, we should see much more stock price run-up ahead of mergers in low-reaction markets than in markets where stock prices respond more to public news. Hence, we separate markets into two groups based on the ranking of the target firm's country of origin in the earnings announcement

**Table 8**
**Regressions of the general news reaction measure on country characteristics with Bayesian model selection**

Panel A: Marginal Posterior Probability that the Variable is Important

| Setting for $p$ | 0.15 | 0.5 | | 0.15 | 0.5 |
|---|---|---|---|---|---|
| *Tech. Development* | 0.635 | 0.736 | *Short Sales Feasible* | 0.021 | 0.120 |
| *Insider Trading* | 0.369 | 0.664 | *Cost to Enforce Contracts* | 0.019 | 0.094 |
| *In-depth Articles Before Event* | 0.108 | 0.556 | *Anti-Self-Dealing Index* | 0.017 | 0.124 |
| *Country Risk* | 0.072 | 0.255 | *Director Liability Index* | 0.017 | 0.132 |
| *Financial Disclosure* | 0.053 | 0.440 | *Investor Protection Rank* | 0.016 | 0.121 |
| *UK Law* | 0.036 | 0.231 | *Short Sales Legal* | 0.016 | 0.096 |
| *Disclosure Index* | 0.033 | 0.297 | *Free Press* | 0.016 | 0.098 |
| *Average Firm-Level P/E* | 0.032 | 0.165 | *Only Annual Earn. Ann.* | 0.014 | 0.104 |
| *Investor Protection Index* | 0.029 | 0.176 | *Pct. Days Non-Zero Price Chg.* | 0.014 | 0.081 |
| *Financial Market Sophistication* | 0.027 | 0.156 | *Market Model* $R^2$ | 0.014 | 0.076 |
| *Accounting Standards* | 0.027 | 0.143 | *Financial Press Before Event* | 0.014 | 0.083 |
| *Market Turnover/GDP x 100* | 0.025 | 0.207 | *Insider Trading Enforced* | 0.014 | 0.076 |
| *Shareholder Lawsuits Index* | 0.023 | 0.140 | *LOT Trading Cost* | 0.013 | 0.076 |
| *Pct.Intl. GAAP* | 0.023 | 0.127 | *Average Log Firm Size* | 0.013 | 0.092 |
| *GDP per Capita* | 0.022 | 0.131 | | | |

Panel B: Best Models

| | Setting for $p$= 0.15 | | | | Setting for $p$= 0.50 | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *Tech. Development* | 0.64 | | 0.42 | 0.73 | 0.58 | 0.64 | 0.55 | 0.46 |
| | [0.35, 0.94] | | [0.04, 0.80] | [0.43, 1.02] | [0.24, 0.94] | [0.35, 0.93] | [0.17, 0.93] | [0.11, 0.81] |
| *Insider Trading* | | -0.63 | -0.35 | | −0.71 | | −0.64 | −0.45 |
| | | [−0.93, −0.33] | [-0.74, 0.03] | | [−1.13, −0.31] | | [−1.08, −0.20] | [−0.82, −0.09] |
| *In-depth Articles Before Event* | | | | −0.28 | −0.33 | | | −0.34 |
| | | | | [−0.54, 0.00] | [−0.57, −0.08] | | | [−0.61, −0.08] |
| *Financial Disclosure* | | | | | −0.49 | | −0.51 | |
| | | | | | [−0.90, −0.08] | | [−0.93, −0.08] | |
| $P(\gamma \mid Y)$ | 0.304 | 0.155 | 0.027 | 0.025 | 0.008 | 0.006 | 0.005 | 0.005 |

(*continued*)

**Table 8**
**Continued**

Panel C: Firm-Level Marginal Posterior Probability that Top 10 Variables are Important

| Setting for $p$ | 0.15 | 0.5 | | 0.15 | 0.5 |
|---|---|---|---|---|---|
| *Financial Disclosure* | 0.046 | 0.182 | *Disclosure Index* | 0.014 | 0.081 |
| *Free Press* | 0.024 | 0.170 | *Financial Market Sophistication* | 0.013 | 0.064 |
| *Insider Trading* | 0.024 | 0.099 | *Anti-Self-Dealing Index* | 0.013 | 0.073 |
| *Investor Protection Index* | 0.023 | 0.126 | *Director Liability Index* | 0.011 | 0.067 |
| *Tech. Development* | 0.022 | 0.094 | *Market Model* $R^2$ | 0.010 | 0.056 |

This table contains regressions of a country-level measure of market reaction to news for 38 countries on country characteristics. The measure is the average of four standardized variables as described in Table 7. We consider 29 explanatory variables, all of which are standardized. We use the Stochastic Search Variable Selection (SSVS) model discussed in Table 6. Panel A reports the marginal posterior probability that each variable is important for explaining the data. In Panel B, we identify the four models with the highest posterior probability from each of the two prior specifications and report mean values of the important coefficients from those model draws. The numbers in brackets are 95% credible intervals. We also run the procedure at the firm level, with the dependent variable demeaned by size and industry portfolio groups. We use U.S. size tercile breakpoints and Fama and French 48 industries. Panel C reports posterior probabilities for the top 10 variables from the firm-level results. Appendix A1 contains descriptions of all regressors considered in the SSVS procedure.

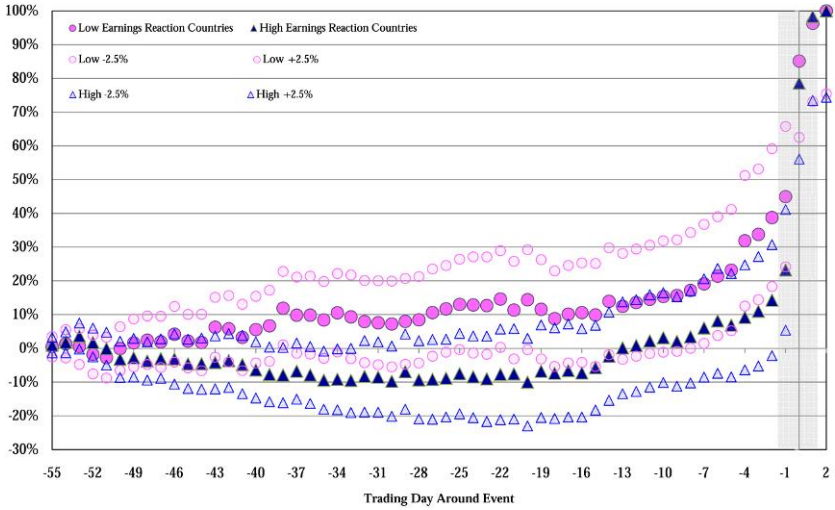


**Figure 4**
**Merger buy-and-hold abnormal returns (BHARs) as a percentage of BHARs for the entire period**
This figure shows buy-and-hold abnormal returns (BHARs) for mergers from 55 days before an announcement through two days after an announcement as a percent of the BHAR for the entire [-55, 2] period. The sample of merger announcements is collected from Bloomberg, Mergerstat, and SDC. We restrict the sample to initial bids (no bids for the target in the prior two years) and mergers where the target has at least one article written about it between 60 calendar days and two trading days prior to the announcement and no merger-related articles in the same time frame. A merger event in any of the three sources is considered the same event as one from another source if the bids are for the same target and within two years of each other. We take the earliest announcement date for each event from the union of all three sources. Events are divided according to whether the firm's home country has an average earnings announcement reaction above or below the median for all countries with at least 20 earnings announcements and SUEs as calculated in Figure 1, Panel A. There are 293 events in the high-reaction group and 278 events in the low-reaction group. Abnormal returns are market adjusted, which means they are the buy-and-hold return for a stock minus the buy-and-hold return for the market. In order for an event to be included, the stock must have 50% of trading days with price changes in the calendar year prior to the event. The shaded region in each panel marks the [-1, 2] event window. 95% confidence intervals for the BHARs are marked with smaller, lighter circles or triangles.

reactions in Figure 1. As described in the data section, we go to great extremes to ensure that the announcement date is the first public announcement date from three sources, and there are no news articles that hint of a pending merger. These restrictive criteria leave us with 571 merger events from 34 countries.

Figure 4 plots the takeover run-up for the high- and low-earnings-reaction countries. Although the average price run-up is similar, each group's price move is scaled by the average total run-up for comparison purposes. In high-earnings-reaction countries, the trading ahead of earnings announcements is responsible for 14% of the pre-announcement run-up by two days prior to the first public news announcement or rumor date. In contrast, low-earnings-reaction countries have experienced 39% of their price run-up—nearly three times the information leakage. The difference in run-up is statistically significant, with a one-sided $p$-value of 0.034. As an additional check on our findings, we relax the requirement that targets have at least one news article in the days

prior to the merger, increasing the sample to 1,301 events. The differences are similar.[25] The correlation between event-day volatility around earnings announcements and merger announcements is 0.44, with a *t*-statistic of 1.88 despite having only 17 countries that we can use to calculate the correlation, indicating similar forces driving both events.[26]

### 6.2 Implications for reversals

Next, we seek to test the implications for reversals of Hypothesis H2C. Evidence in the United States has shown that there are greater reversals following extreme returns on non-news days than on news days. We hypothesize that markets with more insider trading will have less reversal following extreme returns on non-news days, because markets with more insider trading will have relatively more informed trading than liquidity trading on non-news days. For extreme return events, we choose daily returns that are at least two standard deviations from the prior 250-day mean absolute return. Additionally, to ensure independence across events, we only use extreme-return events that have no extreme return in the prior 20 days. We separate positive and negative extreme return events according to whether the country is a high- or low-average earnings-announcement-reaction country and examine the extent of the return reversal in the following 20 days.

In high-reaction markets, reversals are present only after non-news days, as shown in Table 9. Following news days, reversals are much smaller. Non-news-day reversals are much smaller in low-reaction markets than in high-reaction markets. This is prevalent for both positive and negative stock price moves. For example, large daily negative stock price moves in high-reaction markets are followed by a reversal of 1.31% in high-reaction markets, whereas the reversal is only 0.55 and statistically significantly lower in low-reaction markets. In Panel B, we scale these reversals relative to the size of the initial shock. The patterns are similar.[27] We also examine reversals more generally across all days and find that reversals following non-news days are much greater in high-reaction countries than in low-reaction markets (as shown in Online Appendix Tables IA.12 and IA.13).

Weaker reversals in low-reaction markets also suggest that there is proportionally less liquidity trading in these markets and that reactions to news events are important for providing insight into the differences in the magnitude of return reversals across markets. Both the takeover and reversal findings are

[25] The one-sided *p*-value is 0.082 and is displayed in Figure IA.3.

[26] To reduce noise, we require a country to have at least 10 mergers to be included in this calculation, reducing the number of markets to 17. When we repeat the findings in Figure IA.4, Panel B, starting with the larger sample of 1,301 events, the correlation increases to 0.59, with a *t*-statistic of 3.49.

[27] In supplemental results (Panels B1 and B2 of Figure IA.5 and Table IA.11), we sort into three groups based on the prior percentage of days traded as a liquidity measure. We find that the patterns of no reversals on non-news days for stocks in low-reaction markets are prevalent in the most liquid stock group. This is consistent with the patterns not being driven by illiquidity.

**Table 9**
**Buy-and-hold excess returns from days +1 to +20 following extreme return events**

Panel A: Buy-and-Hold Excess Returns

| Extreme Return with | No News | | News | |
|---|---|---|---|---|
| | Neg. Ret (-) | Pos. Ret (+) | Neg. Ret (-) | Pos. Ret (+) |
| High Reaction | 1.31* | −0.91* | −0.33 | 0.35 |
| Low Reaction | 0.55* | −0.22 | −0.27 | 0.82* |
| Difference | 0.76 | −0.68 | −0.06 | −0.48 |
| *t*−test | *2.02* | *−2.22* | *−0.12* | *−1.07* |
| *p*-value | (0.04) | (0.03) | (0.90) | (0.28) |

Panel B: Buy-and-Hold Excess Returns as a Percentage of Day Zero Returns

| Extreme Return with | No News | | News | |
|---|---|---|---|---|
| | Neg. Ret (-) | Pos. Ret (+) | Neg. Ret (-) | Pos. Ret (+) |
| High Reaction | −19.18* | −11.33* | 4.19 | 4.07 |
| Low Reaction | −8.85* | −3.18 | 4.49 | 12.21* |
| Difference | −10.32 | −8.16 | −0.31 | −8.14 |
| *t*−test | *−1.80* | *−2.00* | *−0.04* | *−1.35* |
| *p*−value | (0.07) | (0.05) | (0.97) | (0.18) |

This table presents buy-and-hold excess returns (return minus the value-weighted country portfolio) following days with extreme returns. We assign days to bins depending on whether the extreme return is positive or negative, whether the stock is from a high- or low-reaction country, and whether there is or is not news for the stock on the extreme return day. An extreme return day is a day with excess returns at least two standard deviations away from the mean compared to excess returns over the previous 250 trading days. High-and low-reaction country classification is defined as in Figure 4. We require all stocks to have at least one news article in the prior 60 trading days to ensure that these are firms covered by our news source and no other extreme returns in the 20 days prior to the observed extreme return event to avoid clustering of the events. Panel A presents the raw day +1 to +20 buy-and-hold excess returns following days with extreme returns in percent. Panel B presents the average portfolio day +1 to +20 buy and hold excess returns as a percent of the average portfolio day zero returns. The difference in means tests use a pooled/unpooled *t*-test where the null of equal averages between emerging and developed markets is tested. A pooled *t*-test is used when a folded *F*-test indicates that sample variances are insignificantly different at the five-percent significance level; otherwise, an unpooled *t*-test is used. * indicates significance at $alpha = 0.05$.

consistent with insider trading driving stock price reactions to news across countries.

## 7. Conclusion

Despite the fact that developed market firms have more news articles written about them and more days with news coverage, market reactions to their public news events are considerably stronger than for emerging markets. This is surprising given that with less news coverage, one might think that emerging market news events should be particularly important. Additionally, even among developed or emerging markets, there are large differences in the extent to which stock prices respond to news. We hypothesize that the differences could be due to the extent of public news dissemination before the news announcement, insider trading, the quality of the news transmission mechanism, and the quality of accounting. The prevalence of insider trading and, to a slightly lesser extent, the quality of news transmission play the strongest role in explaining cross-market differences in the information content of financial news. In a sample of mergers carefully screened for prior merger news, we find that stock price run-up is greater prior to announcements in countries where the response to news is weaker, suggesting substantial private information leakage. Similarly, in markets where public news is less important for stock prices, there are fewer reversals following extreme returns on non-news days, which is consistent with relatively more informed and less liquidity trading on non-news days.

Our cross-country findings may be useful to policymakers, stock exchanges, and investors as they seek to understand differences in the extent to which markets rely on public and non-public information. Even in today's relatively sophisticated and global capital markets, there appears to be substantial insider trading in many markets; news from the media is only a partial surprise. Additionally, since understanding the extent of news incorporation and insider trading has implications for many other aspects of financial markets, we hope our findings will be useful for future academic research to advance our understanding of cross-country differences in trading volume, liquidity, foreign (outsider) ownership, and market valuations.

# Appendix A:Variable Description

**Appendix Table A1**
**Variable description**

| Variable | Description |
|---|---|
| | Pre-Event Public Information Dissemination |
| *ln Announcement Order* | All U.S. firms and all firms in sample are sorted in to industry according to Factset's Primary SIC. All firms from Datastream are matched on ISIN and SEDOL. All firms from CRSP are matched on CUSIP. Each annual earnings announcement date is compared to all annual earnings announcement dates from firms in the same Primary SIC within the prior 120 calendar days. All announcements are ranked from first to last and the Announcement Order is this rank. We take the log of the order and average to the country level in cross-country regressions. |
| | Insider Trading |
| *Insider Trading* | The average of the 1999, 2000, and 2002-2003 GCR responses. The question asks if "Insider trading in your country's stock markets is (1=pervasive, 7=extremely rare)." We reverse this variable so, extremely rare is 1 and pervasive is 7. |
| *Insider Trading Enforced* | Dummy variable that equals one if insider trading laws exist and are enforced as of 2008 [from Bhattacharya and Daouk (2002) and updated by authors in 2008]. |
| | News Transmission |
| *Financial Press Before Event* | Log of one plus the count of articles about the firm in *The Wall Street Journal*, *Financial Times*, Dow Jones, or Reuters in the 55 to 2 days before the event. |
| *Financial Press During Event* | Log of one plus the count of articles about the firm in *The Wall Street Journal*, *Financial Times*, Dow Jones, or Reuters in the -1 to 2 days around the event. |
| *In-depth Articles Before Event* | The count of articles about the firm in the window 55 to 2 days before the event with more than 500 words per firm mentioned. |
| *In-depth Articles During Event* | The count of articles about the firm in the window -1 to 2 days around the event with more than 500 words per firm mentioned. |
| *News Clustering* | The log ratio of one plus the number of articles per day in the window -1 to 2 days around the event to one plus the number of articles per day in the window 55 to 2 days before the event. |
| *Free Press* | *Free Press* is from the 2003, 2004, and 2006 GCR and asks if "the media can publish/broadcast stories of their choosing without fear of censorship or retaliation." |
| *Tech. Development* | *Technological Development* is the average of three variables: The Technological Availability measure from 2007, which asks, "To what extent are the latest technologies available in your country? (1 = not available; 7 = widely available)"; the Technological Readiness measure from 2006, which asks, "What is your country's position in technology relative to world leaders'? (1 = Behind; 7 = Ahead)"; and Technological Sophistication from the 2003 GCR, which asks, "Your country's position in technology (1=generally lags behind most countries, 7= is among the world's leaders)". |
| | Accounting Quality |
| *Accounting Standards* | Average response to question about the strength of accounting standards. From the 2003, 2004, 2006, and 2007 Global Competitiveness Report, where 7 is high/strongly agree and 1 is low/strongly disagree on these surveys. |
| *Financial Disclosure* | *Financial Disclosure* is from the 2005-2006 GCR and reports "The level of financial disclosure required is extensive and detailed." |
| *Pct. Intl. GAAP* | Percent of Firms Following International Accounting Standards (IFRS) or U.S. GAAP is the percent of firms following those standards in the sample of firms included in the country-level averages (as the dependent variable); U.S. firms are assumed to follow GAAP and Worldscope is the source for the rest of the world. |
| *Only Annual Earn. Ann.* | The fraction of firms in the sample that have only annual earnings announcements. |

(*continued*)

**Appendix Table A1**
**Continued**

| Variable | Description |
|---|---|
| *Firm Follows GAAP or IFRS* | An indicator that is one if the firm follows International Accounting Standards (IFRS) or U.S. GAAP. Worldscope is the source for all foreign firms, and U.S. firms are assumed to follow GAAP. |
| | Economic & Financial Development |
| *GDP per Capita* | ln(*GDP per Capita*) in 2000 constant dollars is from World Bank's Financial Structure Dataset developed by Beck, Demirgüç-Kunt, and Levine (2000) and are annual observations averaged over 2003 to 2007. |
| *Market Turnover/ GDP x 100* | *Market Turnover/GDP* in 2000 constant dollars is from World Bank's Financial Structure Dataset developed by Beck, Demirgüç-Kunt, and Levine (2000) and are annual observations averaged over 2003 to 2007. |
| *Financial Market Sophistication* | The average measure of *Financial Market Sophistication* from the 2003 through 2007 Global Competitiveness Report and asks if "The level of sophistication of financial markets is higher than international norms." |
| *Ln Firm's Prior Dec. USD MV* | Natural log of the firm's prior December market capitalization in U.S. dollars. |
| | Regulatory Environment |
| *Short Sales Legal* | Dummy variable set to 1 if short sales are not against the law (Charoenrook and Daouk 2005). |
| *Short Sales Feasible* | Dummy variable set to 1 if short sales are actually used in the market (Charoenrook and Daouk 2005). |
| *UK Law* | Dummy variable for whether the legal system in a country is based on common law. |
| *Cost to Enforce Contracts* | Costs to enforce contracts as a percentage of debt. Average of the annual measures from 2005 through 2008 from Doingbusiness.org. |
| | Governance |
| *Investor Protection Rank* | Average of the annual measures from 2003 through 2008 from Doingbusiness.org. |
| *Investor Protection Index* | Average of the annual measures from 2005 through 2008 from Doingbusiness.org. |
| *Anti-Self-Dealing Index* | From Djankov et al. (2008). |
| *Shareholder Lawsuits Index* | Average of the annual measures from 2005 through 2008 from Doingbusiness.org. |
| *Director Liability Index* | Average of the annual measures from 2005 through 2008 from Doingbusiness.org. |
| *Disclosure Index* | Average of the annual measures from 2005 through 2008 from Doingbusiness.org. |
| | Trading Costs |
| *LOT Trading Cost* | Computed following Lesmond et al. (1999). We use the prior year average over firms included in the sample from 2003 through 2008. |
| *Pct. Days Zero Price Chg.* | Alternate liquidity measure that is percent of days with zero price changes in the prior year for the firms in the sample from 2003 through 2008. |
| | Characteristics of Equity Markets |
| *Average Log Firm Size* | Natural log of the prior December firm size averaged over all firms in our sample. |
| *Average Firm-Level P/E* | Average P/E ratio for firms in sample. P/E data are from Compustat for the U.S. and Datastream and World scope for the rest of the world. Values are from the previous calendar year. |
| *Market Model $R^2$* | Natural log of $(R^2/(1-R^2))$ where $R^2$ is the SST weighted average $R^2$ of simple market model regressions including the local and the U.S. market for each stock in our sample for each year from 2003 through 2008 (through 2007 in the U.S.) and averaged over all years. |
| *Country Risk* | Average over the period 2003-2008 of the country risk index published by Euromoney. Higher values indicate lower risk. |

**References**

Bae, K., W. Bailey, and C. Mao. 2006. Stock Market Liberalization and the Information Environment. *Journal of International Money and Finance* 25:404–28.

Bailey, W., G. Karolyi, and C. Salva. 2006. The Economic Consequences of Increased Disclosure: Evidence from International Cross-listings. *Journal of Financial Economics* 81:175–213.

Bartram, S., G. Brown, and R.Stulz. 2011. Why Are U.S. Stocks More Volatile? Working Paper, Ohio State University.

Beck, T., A. Demirgüç-Kunt, and R. Levine. 2000. A New Database on the Structure and Development of the Financial Sector. *World Bank Economic Review* 14:597–605.

Bekaert, G., C. Harvey, and C. Lundblad. 2007. Liquidity and Expected Returns: Lessons from Emerging Markets. *Review of Financial Studies* 20:1783–831.

Bhattacharya, U. 2006. Enforcement and Its Impact on Cost of Equity and Liquidity of the Market. In *Canada Steps Up: Report of the Task Force to Modernize Securities Regulation in Canada 6* (Task Force to Modernize Securities Legislation in Canada, Thomas I.A. Allen, chairman).

Bhattacharya, U., and H. Daouk. 2002. The World Price of Insider Trading. *Journal of Finance* 57:75–108.

Bhattacharya, U., H. Daouk, B. Jorgenson, and C. Kehr. 2000. When an Event Is Not an Event: The Curious Case of an Emerging Market. *Journal of Financial Economics* 55:69–101.

Bhattacharya, U., N. Galpin, X. Yu, and R. Ray. 2009. The Role of the Media in the Internet IPO Bubble. *Journal of Financial and Quantitative Analysis* 44:657–82.

Bris, A., 2005. Do Insider Trading Laws Work? *European Financial Management* 11:267–312.

Bushee, B., J. Core, W. Guay, and J. Wee. 2010. The Role of the Business Press as an Information Intermediary. *Journal of Accounting Research* 48:1–19.

Chan, W. 2003. Stock Price Reaction to News and No-news: Drift and Reversal after Headlines. *Journal of Financial Economics* 70:223–60.

Charoenrook, A., and H. Daouk. 2005. A Study of Market wide Short selling Restrictions. Working Paper, Cornell University.

Chipman, H., E. George, and R. McCulloch. 2001. Practical Implementation of Bayesian Model Selection. In *Model Selection*, ed. P. Lahiri. Beachwood, OH: Institute of Mathematical Statistics, Monograph Series, volume 38:65–134.

Corrado, C. 1989. A Non parametric Test for Abnormal Security-price Performance in Event Studies. *Journal of Financial Economics* 23:385–95.

Cremers, M. 2002. Stock Return Predictability: A Bayesian Model Selection Perspective. *Review of Financial Studies* 15:1223–49.

DeFond, M., M. Hung, and R. Trezevant. 2007. Investor Protection and the Information Content of Annual Earnings Announcements: International Evidence. *Journal of Accounting and Economics* 43:37–67.

Dimson, E. 1979. Risk Measurement When Shares Are Subject to Infrequent Trading. *Journal of Financial Economics* 7:197–226.

Djankov, S., R. La Porta, F. Lopez-de-Silanes, and A. Shleifer. 2008. The Law and Economics of Self-dealing. *Journal of Financial Economics* 88:430–65.

Dyck, A., N. Volchkova, and L. Zingales. 2008. The Corporate Governance Role of the Media: Evidence from Russia. *Journal of Finance* 63:1093–135.

Fang, L., and J. Peress. 2009. Media Coverage and the Cross-section of Stock Returns. *Journal of Finance* 64:2023–52.

Fernandes, N., and M. Ferreira. 2009. Insider Trading Laws and Stock Price Informativeness. *Review of Financial Studies* 22:1845–77.

Foster, G. 1981. Intra-industry Information Transfers Associated with Earnings Releases. *Journal of Accounting and Economics* 3:201–32.

Freeman, R., and S. Tse. 1992. An Earnings Prediction Approach to Examining Intercompany Information Transfers. *Journal of Accounting and Economics* 15:509–23.

Gagnon, L., and G. Karolyi. 2009. Information, Trading Volume, and International Stock Return Comovements: Evidence from Cross-listed Stocks. *Journal of Financial and Quantitative Analysis* 44:953–86.

George, E., and R. McCulloch. 1993. Variable Selection via Gibbs Sampling. *Journal of the American Statistical Association* 88:881–89.

Givoly, D., and D. Palmon. 1982. Timeliness of Annual Earnings Announcements: Some Empirical Evidence. *Accounting Review* 57:486–508.

Griffin, J. 2002. Are the Fama and French Factors Global or Country-specific? *Review of Financial Studies* 10:783–803.

Griffin, J., P. Kelly, and F. Nardari. 2010. Do Market Efficiency Measures Yield Correct Inferences? A Comparison of Developed and Emerging Markets. *Review of Financial Studies* 23:3225–77.

Griffin, J., T. Shu, and S. Topaloglu. 2011. Examining the Dark Side of Financial Markets: Do Institutions Trade on Information from Investment Bank Connections? Working Paper, University of Texas.

Hou, K. 2007. Industry Information Diffusion and the Lead-lag Effect in Stock Returns. *Review of Financial Studies* 20:1113–38.

Huberman, G., and T. Regev. 2001. Contagious Speculation and a Cure for Cancer: A Nonevent That Made Stock Prices Soar. *Journal of Finance* 56:387–96.

Kelly, P. 2007. Information Efficiency and Firm-specific Return Variation. Working Paper, University of South Florida.

Lang, M., K. Lins, and D. Miller. 2003. ADRs, Analysts, and Accuracy: Do ADRs Improve a Firm's Information Environment and Lower Its Cost of Capital? *Journal of Accounting Research* 41:317–45.

Lesmond, D., J. Ogden, and C. Trzcinka. 1999. A New Estimate of Transaction Costs. *Review of Financial Studies* 12:1113–41.

Lesmond, D. 2005. Liquidity of Emerging Markets. *Journal of Financial Economics* 77:411–52.

Lia, S., L. Ng, and B. Zhang. 2009. Informed Trading around the World. Working Paper, Singapore Management University.

Patton, A., and M. Verardo. 2010. Does Beta Move with News? Firm-specific Information Flows and Learning about Profitability. Working Paper, Duke University.

Roll, R. 1988. $R^2$. *Journal of Finance* 43:541–66.

Tetlock, P. 2007. Giving Content to Investor Sentiment: The Role of Media in the Stock Market. *Journal of Finance* 62:1139–68.

Tetlock, P., M. Saar-Tsechansky, and S. Macskassy. 2008. More Than Words: Quantifying Language to Measure Firms' Fundamentals. *Journal of Finance* 63:1437–67.

Tetlock, P. 2010. Does Public Financial News Resolve Asymmetric Information? *Review of Financial Studies* 23:3520–57.

———. 2011. All the News That's Fit to Reprint: Do Investors React to Stale Information? *Review of Financial Studies* 24:1481–512.