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Effect of Geographical Diversification on Informational Efficiency in Emerging Countries

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***Abstract*:** This study investigates the effect of geographical diversification on informational efficiency. Informational efficiency is measured using the price delay measure and is further divided into informational efficiency related to local news and informational efficiency related to global news. Geographical diversification is proxied using four different variables – foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The sample study involves public listed companies from 12 emerging countries for the period from year 2005 to year 2014. The regression results prove that all four geographical diversification proxies show a positive and significant effect on local price delay. This proves that when a company undergoes geographical diversification, its business structure will become complex. Few investors will focus on a geographical diversified company, which leads to lower informational efficiency. All the regression models in this study are robust to heteroscedasticity and multicollinearity problems. All the geographical diversification proxies remain significant towards local delay when alternative delay measures are used, and financial crisis is controlled by using a crisis dummy.

Keywords: Informational efficiency, Price delay, Geographical diversifications, Emerging markets
JEL Classification: F23, G14, G15

1. Introduction

Over the past 25 years, increasingly integrated capital markets and globalization have lowered the cost of companies doing business in foreign markets. Foreign investment made by corporations in the industrialized nations has grown dramatically. Generally, firms adopt geographical diversification with similar business operations in different countries as the main corporate strategy to gain competitive advantages (Barney and Hesterly 2008; Chang and Wang 2007; Hitt *et al.* 1997). For example, large publicly traded US and EU firms operate their businesses, on average, in more than three different geographic markets (Bodnar *et al.* 1999; Pavelin and Barry 2005).

Geographical diversification is said to confer a number of advantages, including full use of resources and distribution of costs on the basis of the growing market and product range, which lead to economies of scale (Ghoshal 1987). To the extent that firms are able to leverage their operations worldwide, international investment may enable them to capture valuable operating synergies (Feinberg and Phillips, 2002). Human capital in multinational companies can learn and innovate faster (Bartlett and Ghoshal 2000). Companies that are able to expand their business globally can gain access to specific skills at lower cost (Kogut 1985; Porter 1986). Companies can also shift their production lines to other countries with lower labour costs (Kogut and Kulatilaka 1994).

This paper departs from the traditional focus of geographical diversification on benefits and cost of firm values to a relatively less explored area, the informational efficiency of stock markets. Market efficiency can be defined as the extent and speed that market prices of tradable assets incorporate the available information. High market efficiency means that the process of incorporating information into market prices is fast and complete.

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Since Professor Eugene Fama introduced his Efficient Market Hypothesis (EMH), "informational efficiency" has become a common term in financial studies. Informational efficiency is used to indicate the extent that market prices of tradable assets incorporate the available information. After the theory of EMH was introduced, researchers started to test the EMH theory in the stock markets around the world. In the early part of the research, researchers only focused on testing whether or not a market was efficient. They used many different methods to test EMH, such as serial correlation tests (Fama 1965), spectral analysis as used by Granger and Morgenstern (1963), and the variance ratio test (Lo and MacKinlay 1988).

In 1997, Campbell *et al.* (1997) offered the concept of "relative efficiency", which is the informational efficiency of a market measured relative to another market. Not only can we indicate whether a market is efficient or not, but also the lead-lag relationship between any two markets can be determined. However, it is still not possible to quantify the degree of efficiency of a market. Hou and Moskowitz (2005) proposed a price delay model that can quantify the informational efficiency of a market. This price delay model has several advantages compared to conventional tests. First, it permits researchers to identify various factors that affect the informational efficiency of stocks. Second, it enables researchers to measure the adjustment of stock price to both local and global market information.

Since this price delay measure has been proposed, many studies have been done to investigate the determinants of informational efficiency. Basically, the determinants of informational efficiency can be divided into two sections – stock specification and firm fundamental. Considerable research has been done on variables about stock specifications, for example, trading volume by Chordia and Swaminathan (2004), the liberalization process by Bae *et al.* (2012), liquidity by Lesmond (2005), short selling by Saffi and Sigurdsson (2011), option pricing by Phillips (2011), and market frictions by Hou and Moskowitz (2005). However, only a few researchers have studied the relationship between firm fundamentals and informational efficiency, such as firm size by Hou and Moskowitz (2005), accounting quality by Callen *et al.* (2013) and analyst coverage by Bae *et al.* (2012). The price delay model is still incomplete, as there are still many other undiscovered factors that affect the informational efficiency of a firm.

This study focuses on public listed companies from emerging markets to study the effect of geographical diversification on informational efficiency. Emerging countries present an interesting case study for geographical diversification because there have been a huge increase in the outflows of foreign direct investment (OFDI) from emerging markets in the 2000s.

OFDI streams from emerging market multinational enterprises (MNEs), which are indicated in Table 1 by companies from both developing countries and transition economies, have demonstrated especially dynamic growth rates of roughly 300% from US$159 billion in 2005 (US$140 billion from developing countries and US$19 billion from transition economies), to reach approximately US$482 billion in 2012 (US$426 billion from developing countries and US$55 billion from transition economies).

In recent decades, the OFDI of emerging countries has changed tremendously in terms of regional distribution. Emerging market MNEs have increased their foreign investment in many other developing countries. They have progressively increased the resources allocation in developed countries. Among all the sectors, firms that export natural resources and service firms make up the highest percentage of OFDI (World Investment Report 2008).

In this study, the relationship between geographical diversification and informational efficiency is investigated. We further divide informational efficiency into local information and global information, which is discussed separately in hypotheses 1 and 2. Each hypothesis is further divided into four subsections that represent four different proxies for geographical diversification – foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index – in order to capture the different dimensions of geographical diversification. We postulate that the different dimensions of geographical diversification have a different effect on informational efficiency.

Table 1: FDI outflows, by region and economy

Region/economy	USD' millions				
	2005	2006	2007	2008	2009
World	903,763	1,427,473	2,272,048	2,005,332	1,149,776
Developed economies	744,407	1 152196	1,890,419	1,600,707	828,005
Developing economies	139,934	244,703	330,033	344,033	273,401
Transition economies	19,422	30,573	51,596	60,591	48,368
Region/economy	2010	2011	2012	2013	2014
World	1,504,927	1 678 035	1 390 956	1,305,910	1,354,046
Developed economies	1,029,836	1 183088	909,383	833,630	822,826
Developing economies	413,219	422,066	426,081	380,784	468,184
Transition economies	61,871	72,879	55,491	91,496	63,072

Source: UNCTAD, World Investment Report 2015. (http://unctad.org/en/PublicationsLibrary/wir2015_en.pdf)

Foreign sales dummy is able to separate diversified firms and focused firms into two groups and compare their influence on informational efficiency related to local news. According to Chen (2005), individual investors and institutional investors prefer information that is easy to understand and widely available. When a company undergoes geographical diversification, its business coverage area becomes larger and the company is exposed to other countries' risk where its business is involved. Its business structure becomes more complex than that of a company that only focuses its sales locally (Morck and Yeung 1991). As a result, they will not pay attention to a firm that has diversified in many different foreign countries, which, consequently, will cause the potential investor base of the diversified firm to become smaller. Eventually the informational efficiency will become lower.

Hypothesis 1(a): Foreign sales dummy has a negative and significant effect on informational efficiency related to local news.

Number of foreign countries captures the width of geographical diversification. In this study, we suggest that the number of foreign countries will have the same result as the foreign sales dummy, which has a negative effect on informational efficiency.

Hypothesis 1(b): Number of foreign countries has a negative and significant effect on informational efficiency related to local news.

Foreign sales ratio shows the percentage of the total sales of a company that comes from foreign countries. Foreign sales ratio measures the depth of geographical diversification. We suggest that foreign sales ratio will have the same result as the foreign sales dummy, which has a negative effect on informational efficiency.

Hypothesis 1(c): Foreign sales ratio has a negative and significant effect on informational efficiency related to local news.

The Herfindahl Index is used to capture both the width and intensity of the geographical diversification (Hitt *et al*. 1997; Denis *et al*. 2002). We find that geographical diversification has two effects on the investor base of a firm, which will significantly affect its informational efficiency. Firstly, the investor base of a company will increase by the inclusion of foreign investors that recognize the company through its products or business in a foreign country, which will subsequently increase its informational efficiency. Secondly, geographical diversification will cause a company's structure to become more complex. This will cause fewer investors to pay attention to it since most of the investors prefer a simple company that is easy to analyse. We suggest that the complexity effect will outperform the foreign investors' recognition effect and Herfindahl Index will have a negative effect on informational efficiency.

Hypothesis 1(d): Herfindahl Index has a negative and significant effect on informational efficiency related to local news.

For Hypothesis 2, we investigate the effect of geographical diversification on the informational efficiency related to global news instead of local news. First, we use the foreign sales dummy as a proxy. Foreign sales dummy is able to separate diversified firms and focused firms into two groups and compare their influence on informational efficiency related to global news. Merton (1987), in his investor recognition theory, mentions that investors only give consideration to a limited number of stocks and only exchange stocks that they have information about. Consequently, stocks that are less known by investors have a smaller potential speculator base. Because of the restricted consideration, speculators can only consider a subset of all the accessible data. They generally do not consider or focus on data from stocks that they do not take part in. As a result, if a company has sales in foreign countries, it will be able to attract more attention from foreign investors and eventually increase its informational efficiency. Lim and Hooy (2013) also used foreign sales dummy as a moderator in the relationship between foreign shareholdings and informational efficiency. They mentioned that diversified firms can increase their visibility to foreign investors by diversifying their business to foreign countries. Their products will become more recognizable to Foreign investors who will invest in their stocks. In our research, we agree with this statement and suggest that the foreign sales dummy will positively affect a firm's informational efficiency.

Hypothesis 2(a): Foreign sales dummy has a positive and significant effect on informational efficiency related to foreign news.

Number of foreign countries captures the width of geographical diversification. We postulate that the more countries that a firm diversifies in, the more foreign investors will recognize the company. As a result, we suggest that the number of foreign countries will have the same result as the foreign sales dummy, which has a positive effect on informational efficiency.

Hypothesis 2(b): Number of foreign countries has a positive and significant effect on informational efficiency related to foreign news.

Foreign sales ratio shows the percentage of the total sales of a company that comes from foreign countries, and measures the depth of geographical diversification. We postulate that the more foreign sales a company has in foreign countries, the larger the potential foreign investor base it has. Therefore, we suggest that the foreign sales ratio will have the same result as the foreign sales dummy, which has a positive effect on informational efficiency.

Hypothesis 2(c): Foreign sales ratio has a positive and significant effect on informational efficiency related to foreign news.

Herfindahl Index captures both the width and intensity of the geographical diversification (Hitt *et al*. 1997; Denis *et al*. 2002). The investor base of a company that has a higher value of Herfindahl Index will increase by the inclusion of foreign investors who recognize the company through its products or business in a foreign country. This will subsequently increase its informational efficiency. We suggest that the Herfindahl Index will have the same result as the number of foreign countries and foreign sales ratio since it is a combination of both and will have a positive effect on informational efficiency.

Hypothesis 2(d): Herfindahl Index has a positive and significant effect on informational efficiency related to foreign news.

The remainder of the paper is structured as follows. Section 2 discusses the variables and model specification. Section 3 discusses the empirical results. Section 4 presents the conclusion.

2. Methodology and Data

2.1 Measurement of Variables

In this subsection, the three main types of variable – dependent variable, independent variable and control variable – are discussed and the methods used to compute each variable are explained in detail.

2.1.1 Price Delay as Dependent Variable

Our construction of the local and global price delay measures follows the framework of Bae *et al*. (2012), which involves the following unrestricted model:

$$r_{i,t} = \alpha_i + \sum_{k=0}^{4} \beta_{i,k} r_{m,t-k} + \sum_{k=0}^{4} \delta_{i,k} r_{w,t-k} + \varepsilon_{i,t} \quad (1)$$

where $r_{i,t}$ is the return on stock i at week t, $r_{m,t-k}$ and $r_{w,t-k}$ denote the contemporaneous and four weekly lagged returns on the local and world market indices, respectively. We follow the convention in the price delay literature in utilizing weekly instead of monthly or daily returns. As indicated by Hou and Moskowitz (2005), the dispersion for monthly data is small because, generally, the information is incorporated into the stock price within one month, whereas, for daily returns, there are numerous microstructure impacts that influence the results, such as non-synchronous trading. The construction requires the following two restricted models:

$$r_{i,t} = \alpha_i + \beta_{0i} r_{m,t} + \sum_{k=0}^{4} \delta_{i,k} r_{w,t-k} + \varepsilon_{i,t} \quad (2)$$

$$r_{i,t} = \alpha_i + \sum_{k=0}^{4} \beta_{i,k} r_{m,t-k} + \delta_{0i} r_{w,t} + \varepsilon_{i,t} \quad (3)$$

For each year, from 2005 through to 2014, we estimate equations (4) through (6) for every firm in the sample. Their respective *R*-squares are used to calculate the scaled version of stock price delay for firm *i* in year *t*:

$$DELAYL = 1 - \frac{R^2_{Eq.5}}{R^2_{Eq.4}} \quad (4)$$

$$DELAYG = 1 - \frac{R^2_{Eq.6}}{R^2_{Eq.4}} \quad (5)$$

$DELAYL(DELAYG)$ captures the variation in contemporaneous individual stock returns that is explained by the lagged returns on the local (world) market index, where the latter is used as a market-wide information signal. The greater the explanatory power of these lags, the longer the delay in responding to market-wide news that has common effects across firms. The value of $DELAY$ is limited between zero and one, with a value closer to zero (one) showing the faster (slower) incorporation of information, and hence a higher (lower) degree of stock price efficiency. The data required for the calculation of these stock price delay measures are the weekly closing prices for individual stocks, the local market index and the world market index. Following the common practice, weekly returns are calculated by compounding daily returns between adjacent Wednesdays in order to avoid market anomalies, such as the weekend and Monday effects (Bartholdy and Peare 2005). Hou and Moskowitz (2005) contended that lower frequency data like monthly data will lead to estimation error. For monthly data, there is little dispersion in the price delay measure since the stock prices respond to information within a month. On the other hand, although high level frequency data, such as daily data, provide more precision and greater dispersion in price delay, the daily data are also influenced by confounding microstructure problems, such as nonsynchronous trading and bid-ask bounce.

2.1.2 Geographical Diversification as Independent Variable

Geographical diversification has typically been measured in terms of the intensity of international involvement and the geographic scope of international operations, as highlighted by Lu and Beamish (2004). This study employs several types of geographical diversification proxies in order to capture different aspects of geographical diversification.

Four different methods are used to measure geographical diversification in this study. The first indicator used is the foreign sales dummy variable (DIVERSE). Firms with a foreign sales to total sales ratio of more than 10% are classified as diversified. Firms that do not fulfil the conditions are classified as focused (John and Ozgur 2006).

The second indicator that is used is the number of foreign countries (FCOUNTRY). This indicator shows the total number of foreign countries in which a company diversifies (Tallman and Li 1996).

The third indicator used is foreign sales ratio (FSALES). All the sales recorded outside the country in which the company is registered are perceived as foreign sales (Tallman and Li 1996).

$$\text{FSALES} = \text{Foreign Sales/ Total Sales} \tag{6}$$

The fourth indicator used is the Herfindahl Index (HERFINDAHL), which is constructed from foreign sales in each foreign country; this is a measure that has been commonly used in many previous studies examining diversification issues (Hitt *et al*. 1997; Denis *et al*. 2002). The Herfindahl index is calculated as follows for each firm *i*:

$$\text{HERFINDAHL} = 1 - \Sigma(\text{Sales per country/Total sales}) \tag{7}$$

The Herfindahl Index ranges from 0 to 1. The closer the Herfindahl Index is to 1, the more a firm's sales are diversified geographically, and the closer it is to 0, the more the firm's sales are concentrated in a few countries.

2.1.3 Control Variables

The literature review of informational efficiency shows that numerous researchers have concentrated on finding the determinants of price delay since Hou and Moskowitz (2005) introduced the price delay model to quantify informational efficiency. Thus, there are a few variables that are normally used as control variables in the price delay model. The four control variables that are utilized in this study are firm size, trading volume, liquidity/transaction costs and the number of security analyst's coverage.

First and foremost, firm size (lnMCAP) is measured using the natural logarithm of the annual market capitalization of a company at the end of the calendar year. Previous researchers, such as Lim and Hooy (2010), Phillips (2010), Saffi and Sigurdson (2011), and Hou and Moskowitz (2005), incorporated firm size as a control variable in their study.

Secondly, since Chordia and Swaminathan (2000) demonstrated that high trading volume stocks tend to be promptly changed in accordance with new market information compared to low trading volume stocks, trading volume has turned into an imperative determinant for price delay. For example, Bae *et al*. (2012), Callen *et al*. (2013), and Lim and Hooy (2010), included this control variable in their study of informational efficiency. In this study, trading volume (VOLUME) is proxied by the average monthly share trading volume scaled by total shares outstanding for each firm and year.

Thirdly, the proxy for volatility is the standard deviation of weekly returns for a year (VOLATILITY) (Bae *et al*. 2012). Thomson Reuters DataStream gives the firm-level panel data of annual market capitalization, monthly share volume, and weekly closing stock prices.

Fourthly, analyst coverage is one of the most vital control variables, and has been incorporated by researchers such as Hou and Moskowitz (2005), and Bae *et al*. (2012) in their price delay model. From the perspective of the data given by the Institutional Brokers Estimate System (I/B/E/S), the number of analysts issuing earnings forecasts (ANALYST) for a firm each year is collected. Analyst coverage is written as being equivalent to zero for a firm-year observation if a firm is not listed on the I/B/E/S database or does not have earnings forecasts for any given year.

2.2 Model Specification

In this study, we use multiple regression to test the hypotheses in this study. Multiple regression is used when there are many independent variables but only one dependent variable. The independent variables in this study include a geographical diversification proxy, which acts as the subject variable and other prominent control variables from previous literature. Figure 1 shows the empirical framework.

For the control variables, we include several important variables – firm size, trading volume, liquidity and analyst forecasts. These variables have been proven to have a significant effect on price delay in the previous literature pertaining to informational efficiency. The OLS estimator is a method for estimating a well fitted regression line by minimizing the residual sum of squares. OLS is appropriate in this study as it is the most straightforward regression technique, and the estimation is reliable as long as common regression problems are accounted for. The pooled ordinary least squares (OLS) regression model is specified as follows:

$$DELAY_{i,t} = \alpha_i + \beta_1 \ln(\text{MCAP})_{i,t} + \beta_2 VOLUME_{i,t} + \beta_3 \text{VOLATILITY}_{i,t} + \beta_4 ANALYST_{i,t} + \beta_5 GEOPROXY_{i,t} + \varepsilon_{it} \quad (8)$$

2.3 Data Analysis

The data are considered as panel data as they involve public listed firms in emerging countries that span across 10 years. We choose to collect the data as unbalanced data as each firm may have a varying number of observations. The reason for this is that in many countries, geographical diversification data do not have to be disclosed in the annual report but are left to the free will of each respective firm. Therefore, we predict that there will be incomplete data across the period that we study. Our panel data represent a short panel as

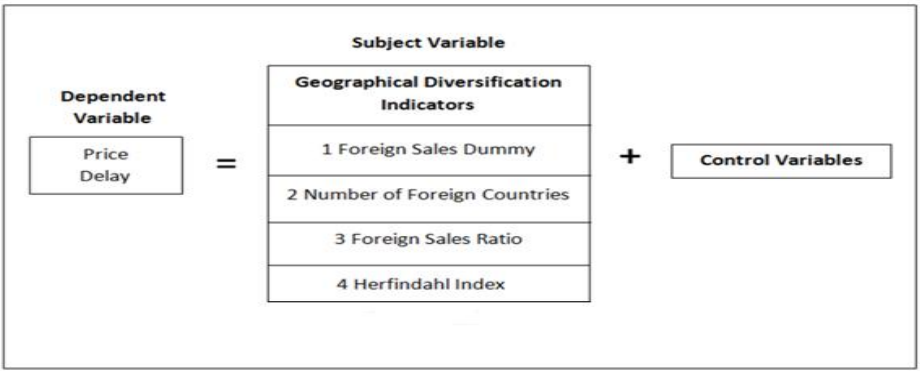

Figure 1: Empirical framework

there are large number of firms with a short time period. The number of firm observations is larger than the number of year observations.

2.3.1 Sample Data

Our sample includes public listed companies in emerging countries following the IMF list. However, due to the unavailability of data for the sales data and analysts' forecasts according to the geographic segment, some countries have been excluded from our sample study. As a result, there are only 12 countries remaining, which are Argentina, Brazil, Chile, China, India, Indonesia, Malaysia, Mexico, Philippines, South Africa, Thailand and Turkey.

To construct the price delay variables, which are the dependent variables in the study, we require stock prices for each public listed company, as well as the local stock index for each emerging country and the MSCI stock index. To construct geographical diversification proxies, the foreign sales of each public listed company in the emerging countries and the foreign countries that the company has diversified in are needed. To construct the control variables, the market capital, stock volumes, stock daily returns and number of analysts that study the company are required. Finally, for further study, the company components of each local index and the number of industries in which the company is involved are needed.

2.3.2 Time Span

The time span of this sample study ranges from year 2005 to year 2014. Since our sample data concentrate on public listed companies in emerging countries, during this time span, the OFDI of emerging countries has increased by a considerable amount (World Investment Report). The increase in OFDI shows that many companies in emerging countries are actively involved in geographical diversification to foreign countries. The objective of this study is to analyse the effect of geographical diversification on informational efficiency. The considerable increase in OFDI will improve the significance of the results.

3. Results and Discussions

3.1 Descriptive Statistics

There are three tables for the overall descriptive statistics. Table 2 describes all the important variables used in this study. Table 3 shows the descriptive statistics of all the variables and compares the mean and t-test of each variable between the diversified and the non-diversified firms. Table 4 shows the correlation matrix for the important variables.

Table 3 shows the descriptive statistics of all the important variables used in this study. In section (1), important descriptive statistics like mean, median, standard deviation, minimum value, maximum value and number of observations of the whole sample study are

Table 2: Description of variables

Variable Name	Variable Description
Dependent Variables	
Local Delay (DELAYL)	Stock price delay relative to local market information, which is constructed using equation (7)
Global Delay (DELAYG)	Stock price delay relative to global market information, which is constructed using equation (8)
Independent Variables	
Foreign Sales Dummy (DIVERSE)	Dummy variable, which is equal to 1 if the company has more than 10% sales in foreign countries
Number Foreign Countries (FCOUNTRY)	Number of foreign countries that a firm diversifies in
Foreign Sales Ratio (FSALES)	Ratio of foreign sales to total sales
Herfindahl Index (HERFINDAHL)	Herfindahl Index is constructed using equation (10)
Control Variables	
Firm Size (lnMCAP)	Natural logarithm of market capital of equity in millions of US dollars
Trading Volume (VOLUME)	Average number of shares traded monthly scaled by total shares outstanding
Volatility (VOLATILITY)	Standard deviation of weekly returns for a year
Number of Analysts (ANALYST)	Number of analyst forecasts that is reported by the Institutional Brokers' Estimate System

displayed. In sections (2) and (3), the descriptive statistics of the variables are further divided according to whether the firm is diversified or non-diversified. The final section shows the t-test results regarding the difference in the mean between the diversified and non-diversified firms for all the variables.

From section (1), the delay in the stock price relative to the local index (DELAYL) has a mean value of 0.413, which is higher than 0.218, the delay in the stock price relative to global index (DELAYG). This shows that the stock price generally reacts slower to the local index compared to the global index. For the independent variables, all four geographical diversification proxies show a median of zero, which indicates that more than half of the companies in our sample study are non-diversified. Firm size (MCAP) has a large different value between the mean (US$1238m) and median (US$111m), which indicates that the tabulation of firm size is skewed to the right with the majority of firms having a small firm size and a small group of firms having a very large firm size. The monthly average trading volume (VOLUME) also shows a large deviation between the mean (0.133) and the median (0.038), which indicates that although most of the stocks are traded normally there is a small group of stocks that are actively traded. The number of analysts (ANALYST) has a median of zero, which shows that more than half of the stocks are not covered by analysts reports by the Institutional Brokers' Estimate System. In sections (2) and (3), diversified firms generally have a smaller delay than non-diversified firms irrespective of whether relative to local or global information at the 1% significance level from the t-test. The relationship between diversification and price delay is further tested using the regression model. All four

Table 4: Descriptive statistics of all variables

(1) Full Sample							(2) Diversified		(3) Non-diversified		Difference between (2) & (3)
stats	mean	median	sd	min	max	N	mean	N	mean	N	(ttest)
Dependent variables											
DELAYL	0.413	0.395	0.195	0.002	0.990	74049	0.421	8825	0.430	23609	-0.009***
DELAYG	0.218	0.165	0.181	0.000	0.972	74049	0.198	8825	0.213	23609	-0.015***
Independent Variables											
DIVERSE	0.265	0.000	0.441	0.000	1.000	48319	1.000	12782	0.000	35537	NIL
FCOUNTRY	0.716	0.000	1.336	0.000	8.000	48319	2.183	12782	0.189	35537	1.994***
FSALES	0.117	0.000	0.229	0.000	1.000	48319	0.427	12782	0.006	35537	0.421***
HERFINDAHL	0.122	0.000	0.205	0.000	0.867	48319	0.431	12782	0.011	35537	0.420***
Control Variables											
MCAP	1238	111	34456	0.010	3775423	99908	2066	11894	1132	32540	933.920***
lnMCAP	4.545	4.715	2.354	-4.605	15.144	99908	5.750	11894	5.227	32540	0.522***
VOLUME	0.133	0.038	0.528	0.000	64.086	69748	0.101	10821	0.108	29637	-0.007
VOLATILITY	0.054	0.049	0.043	0.000	0.922	77350	0.057	8934	0.063	23982	-0.006***
ANALYST	1.273	0.000	4.015	0.000	56.000	125950	3.140	12782	2.230	35537	0.909***

Note: The descriptions of all variables in this table are provided in Table 3

Table 5: Correlation matrix

	DELAYL	DELAYG	$DIVERSE_D$	$FCOUNTRY_N$	$FSALES_R$	HERFINDAHL	lnMCAP	$VOLUME_R$	VOLATILITY	$ANALYST_N$
DELAYL	1									
DELAYG	-0.0833	1								
DIVERSE	-0.0306	-0.0284	1							
FCOUNTRY	-0.035	-0.0315	0.6688	1						
FSALES	-0.0305	-0.0246	0.8103	0.6673	1					
HERFINDAHL	-0.0345	-0.0353	0.9022	0.7817	0.878	1				
lnMCAP	-0.0252	-0.1266	0.121	0.1392	0.0939	0.1334	1			
VOLUME	-0.0123	0.0334	-0.0239	-0.0358	-0.0214	-0.0269	0.0552	1		
VOLATILITY	-0.0491	0.0892	-0.0725	-0.0778	-0.0431	-0.0781	-0.2899	0.0523	1	
ANALYST	0.0448	-0.1327	0.091	0.0986	0.0954	0.1081	0.5009	-0.0106	-0.1455	1

Note: The descriptions of all variables in this table are provided in Table 3 geographical diversification proxies show consistent descriptive statistics since the number of foreign countries, foreign sales ratio and Herfindahl index show a higher mean value for diversified firms compared to non-diversified firms with a t-test significance level of 1%. Diversified firms record a firm size mean value of US$2066m, which is higher than the US$1132m for non-diversified firms. This is reasonable because multinational companies usually have a larger firm size as their business segments have expanded to other foreign countries all over the world. The difference between the monthly average trading volume between diversified and non-diversified firms is negligible and does not pose a significant t-test result. The volatility of the weekly stock return for diversified firms is lower than that for non-diversified firms because diversified firms can reduce their unsystematic risks through diversification to other foreign countries. Lastly, there is more analysts' coverage on diversified firms compared to non-diversified firms, which shows the preference of analysts towards diversified firms.

3.2.1 OLS, Fixed Effects and Random Effects

Three different regression models – ordinary least squares model, fixed effects model and random effects model – are run for all regression models, which include the regression model with control variables only and the regression model with different types of geographical diversification proxies including foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index. Most of the results show an inconsistent sign and a significant level among the coefficient of variables. For example, DIVERSE. The FCOUNTRY and HERFINDAHL are significant at 1% in all three models but have different signs. As a result, it is appropriate to determine which model is the most suitable. The results of all the regression models are not shown in this table due to space constraints.

3.2.2 Breusch and Pagan Lagrangian Multiplier Test

The Breusch and Pagan Lagrangian multiplier tests are used to identify whether normal OLS or the random effects model is a better choice for the regression. If the significance level is below 10%, it suggests that the random effects model should be chosen over normal OLS. All regression models attain a significance level below 1%, which means that the random effects model is preferable to the normal OLS for all models.

Table 5: Summary results of Breusch and Pagan Lagrangian Multiplier tests

Chi2	Control model	Foreign Sales Dummy Model	Number of Foreign Countries Model	Foreign Sales Ratio Model	Herfindahl Index Model
Local Delay	114.79***	120.35***	114.72***	121.02***	115.42***
Global Delay	8663.76***	4593.97***	4595.50***	4591.25***	4593.37***

. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

3.2.3 Hausman Test

Hausman test is used to identify whether the random effects model or the fixed effects model is a better choice for the regression. If the significance level is below 10%, it suggests that the fixed effects model should be chosen over the random effects model. All the regression models have a significance level below 1%, which means that the fixed effects model is preferable to the random effects model for all models.

Table 6: Summary results of Hausman test

Chi2	Control model	Foreign Sales Dummy Model	Number of Foreign Countries Model	Foreign Sales Ratio Model	Herfindahl Index Model
Local Delay	363.90***	328.77***	341.39***	313.45***	337.16***
Global Delay	148.62***	114.64***	115.84***	116.12***	115.74***

. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

3.2.4 Fixed Effects Model

After running the Breusch and Pagan Lagrangian multiplier tests and the Hausman test, the results suggest that the fixed effects model is the most suitable for our study for both local delay and global delay. Table 7 and Table 8 show the fixed effects model for four different geographical diversification proxies for both local and global delay.

Table 7 shows the fixed effects models for local delay with different geographical diversification proxies. All the geographical diversification proxies show a significant and positive effect on local delay, where DIVERSE, FCOUNTRY and HERFINDAHL show significant at 1% and FSALES show significant at 5%. The results shown are consistent with our hypothesis, which postulates that geographical diversification will increase the local delay since investors do not favour companies that have a complex business structure. When a company undergoes geographical diversification, its business coverage area becomes larger and the company is exposed to other countries' risk in which its business is involved. Its business structure becomes more complex than that of a company that only focuses its sales locally (Morck and Yeung 1991). Since individual investors and institutional investors prefer information that is easy to understand and widely available (Chen 2005), many investors will abandon their research on diversified companies, which will cause their potential investor base to become small and eventually decrease their informational efficiency to local news. Due to the cost of information (Shapiro 2002), when the information on a company or stock is hard to acquire or analyse, its informational efficiency related to local news will decrease since most of the institutional investors are more concerned about local news.

For the control variables, firm size (lnMCAP) shows a negative and significant effect on local delay, which is consistent with previous literature (Bae *et al*. 2012). Firm size is an important and prevalent determinant of delay, which is often used in previous literature, such as Lim and Hooy (2010), Phillips (2010), Saffi and Sigurdson (2011) and Hou and Moskowitz (2005). Larger firms usually have higher visibility and therefore less delay. The monthly average trading volume (VOLUME) shows a positive and significant effect on local delay. Stock return volatility shows a negative and significant result on local delay. This result is consistent with previous literature since stocks with higher volatility will attract more investors and therefore have less delay (Bae *et al*. 2012). It is surprising that the number of analyst forecasts (ANALYST) shows a positive and significant result, since more analyst forecasts should mean higher visibility of the firms.

We postulate that the positive result may be due to investors being strongly affected by the forecast made by analysts until it causes a stock price delay to the local index. For example, when the stock market crashes, many investors still believe in the analysts' forecast of a particular share and hold on to it; such a situation will cause the stock price to experience a price delay relative to the local index.

Table 8 shows the fixed effects models for global delay with different geographical diversification proxies. All the geographical diversification proxies – DIVERSE, FCOUNTRY, FSALES and HERFINDAHL – show an insignificant effect on global delay.

Table 7: Fixed effects model for local delay

This table shows the fixed effects model for local delay with the control variables and different geographical diversification proxies. Column (1) only includes the control variables, while column (2), (3), (4), (5) includes the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$DELAYL = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.4301***	0.4915***	0.4918***	0.4926***	0.4904***
	(0.0076)	(0.0119)	(0.0119)	(0.0119)	(0.0119)
lnMCAP	-0.0002	-0.0074***	-0.0077***	-0.0074***	-0.0076***
	(0.0014)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
VOLUME	0.0088***	0.0123***	0.0123***	0.0123***	0.0123***
	(0.0022)	(0.0037)	(0.0037)	(0.0037)	(0.0037)
VOLATILITY	-0.4138***	-0.7170***	-0.7160***	-0.7188***	-0.7160***
	(0.0288)	(0.0408)	(0.0408)	(0.0408)	(0.0408)
ANALYST	0.0045***	0.0046***	0.0046***	0.0046***	0.0045***
	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
DIVERSE		0.0160***			
		(0.0051)			
FCOUNTRY			0.0073***		
			(0.0018)		
FSALES				0.0281**	
				(0.0117)	
HERFINDAHL					0.0524***
					(0.0127)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.123	-0.188	-0.1877	-0.1882	-0.1877
R^2	0.0082	0.0173	0.0175	0.0171	0.0175

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

The results show that whether a firm is geographical diversified or non-diversified does not have any important effect on global delay. The different effects of the geographical diversification proxies towards local delay and global delay suggest that there are two different groups of investors who are monitoring the stock prices. The first group of investors who take the local index into consideration when choosing stocks are strongly affected by the geographical diversification decision of a firm. When a firm undergoes geographical diversification, it will abandon the stock and will not make buy or sell decisions on that stock, which causes the stock to become informationally inefficient. The second group of investors who take global index into consideration when choosing stocks is indifferent to whether or not a firm is geographically diversified.

For the control variables, firm size (lnMCAP) shows a negative and significant effect on global delay, which is consistent with the result of the local delay model. The monthly average trading volume (VOLUME) shows an insignificant effect on global delay. Stock return volatility shows a positive and significant result on global delay. This result shows that investors who emphasize global news do not favour stock with high volatility because high volatility means high risk. The number of analyst forecasts (ANALYST) shows a

Table 8: Fixed effects model for global delay

This table shows the fixed effects model for global delay with the control variables and different geographical diversification proxies. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$DELAYG = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.2517***	0.2246***	0.2240***	0.2238***	0.2240***
	(0.0063)	(0.0094)	(0.0094)	(0.0094)	(0.0094)
lnMCAP	-0.0064***	-0.0056***	-0.0057***	-0.0057***	-0.0057***
	(0.0012)	(0.0016)	(0.0016)	(0.0016)	(0.0016)
VOLUME	-0.0022	-0.0009	-0.0009	-0.0009	-0.0009
	(0.0018)	(0.0029)	(0.0029)	(0.0029)	(0.0029)
VOLATILITY	0.2710***	0.3128***	0.3133***	0.3132***	0.3133***
	(0.0241)	(0.0322)	(0.0322)	(0.0322)	(0.0322)
ANALYST	-0.0015***	-0.0008**	-0.0008**	-0.0008**	-0.0008**
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
DIVERSE		-0.0028			
		(0.0040)			
FCOUNTRY			0.0004		
			(0.0014)		
FSALES				0.0061	
				(0.0092)	
HERFINDAHL					0.0018
					(0.0101)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.1263	-0.202	-0.2021	-0.202	-0.2021
R^2	0.0053	0.0057	0.0056	0.0056	0.0056

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

negative and significant result, which is consistent with previous literature since more analyst forecasts means higher visibility of the firms (Bae *et al*. 2012).

3.3 Robustness Test

The robustness test of this study can be divided into four sections. In the first section, the white standard error is employed to solve the heteroscedasticity problems. VIF proxies are used in the second section to show that our regression results do not face serious multicollinearity problems. In the third section, we employ an alternative measure for both local and global delay to show that our dependent variables are robust to other measurements of delay. In the last section, we employ a crisis dummy to control for the financial crisis effect.

3.3.1 White Standard Error

We solve the heteroscedasticity problem by using the White standard error, as suggested by White (1980). The White standard error is used to solve the within cross-sectional correlation and arbitrary heteroscedasticity issues. Table 9 shows the results of the local delay for the fixed effects model using the White standard error. The results show that although the standard error of our subject variables do increase (standard error of DIVERSE

Table 9: White standard error for local delay

This table employs the White standard error on the fixed effects model of local delay, as shown in Table 7. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$DELAYL = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.4301***	0.4915***	0.4918***	0.4926***	0.4904***
	(0.0084)	(0.0136)	(0.0136)	(0.0136)	(0.0136)
lnMCAP	-0.0002	-0.0074***	-0.0077***	-0.0074***	-0.0076***
	(0.0015)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
VOLUME	0.0088	0.0123**	0.0123**	0.0123**	0.0123**
	(0.0061)	(0.0058)	(0.0058)	(0.0059)	(0.0058)
VOLATILITY	-0.4138***	-0.7170***	-0.7160***	-0.7188***	-0.7160***
	(0.0361)	(0.0518)	(0.0515)	(0.0517)	(0.0517)
ANALYST	0.0045***	0.0046***	0.0046***	0.0046***	0.0045***
	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
DIVERSE		0.0160***			
		(0.0054)			
FCOUNTRY			0.0073***		
			(0.0019)		
FSALES				0.0281**	
				(0.0128)	
HERFINDAHL					0.0524***
					(0.0135)
N	49626	29339	29339	29339	29339
Adjusted R^2	0.0081	0.0171	0.0173	0.0169	0.0174
R^2	0.0082	0.0173	0.0175	0.0171	0.0175

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

increases from 0.0051 to 0.0054, standard error of FCOUNTRY increases from 0.0018 to 0.0019, standard error of FSALES increases from 0.0117 to 0.0128, standard error of HERFINDAHL increases from 0.0127 to 0.0135), the significant level remains unchanged. As a result, we can conclude that the result remains significant after accounting for the heteroscedasticity problem.

Table 10 shows the results of the global delay for the fixed effects model using the White standard error to solve the heteroscedasticity problem. The results show that all the geographical diversification proxies remain insignificant.

3.3.2 Multicollinearity Problem

We use the VIF indicator to show whether our regression models have multicollinearity problems. If the VIF indicator shows a value of more than 5 or 10, it shows that there is a serious multicollinearity problem in the regression model (O'Brien 2007). The VIF proxies for all the variables used in all the models have a value of less than 5, with the highest being 1.45, which is lnMCAP. The results show that there are no serious multicollinearity problems present in our regression models.

Table 10: White standard error for global delay

This table employs the White standard error on the fixed effects model of global delay, as shown in Table 8. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and the different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$DELAYL = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.2517***	0.2246***	0.2240***	0.2238***	0.2240***
	(0.0070)	(0.0104)	(0.0103)	(0.0104)	(0.0104)
lnMCAP	-0.0064***	-0.0056***	-0.0057***	-0.0057***	-0.0057***
	(0.0012)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
VOLUME	-0.0022*	-0.0009	-0.0009	-0.0009	-0.0009
	(0.0012)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
VOLATILITY	0.2710***	0.3128***	0.3133***	0.3132***	0.3133***
	(0.0289)	(0.0415)	(0.0416)	(0.0416)	(0.0415)
ANALYST	-0.0015***	-0.0008**	-0.0008**	-0.0008**	-0.0008**
	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
DIVERSE		-0.0028			
		(0.0042)			
FCOUNTRY			0.0004		
			(0.0016)		
FSALES				0.0061	
				(0.0106)	
HERFINDAHL					0.0018
					(0.0109)
N	49626	29339	29339	29339	29339
Adjusted R^2	0.0052	0.0055	0.0055	0.0055	0.0055
R^2	0.0053	0.0057	0.0056	0.0056	0.0056

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

Table 11: Summary results of VIF proxies

VIF	Control Model	Foreign Sales Dummy Model	Number of Foreign Countries Model	Foreign Sales Ratio Model	Herfindahl Index Model
lnMCAP	1.42	1.44	1.45	1.44	1.44
VOLUME	1.01	1.01	1.01	1.01	1.01
VOLATILITY	1.1	1.09	1.09	1.09	1.09
ANALYST	1.32	1.34	1.34	1.34	1.34
DIVERSE		1.02			
FCOUNTRY			1.02		
FSALES				1.01	
HERFINDAHL					1.02
Mean	1.21	1.18	1.18	1.18	1.18

3.3.3 Alternative Measure for Delay

Hou (2007) suggested that an alternative measure of delay can be used to replace the original delay measure, which is calculated using equations (4) and (5). The alternative price delay measure is indicated in the following equation:

$$ADELAY = \ln \frac{DELAY}{(1-DELAY)} \quad (9)$$

According to Hou (2007), there are a few engaging properties on this transformed version of price delay measure. First, it is monotonic in x. Second, the logistics transformation of price delay helps to remove the excess skewness and kurtosis of the original price delay measure. Finally, the values of this transformed delay measure are not being restricted within the intervals [0.1].

Table 12 shows the local delay fixed effects regression model using the alternative delay measure constructed using equation (9). The results show that all the geographical diversification proxies remain significant and that the coefficients of all the variables remain unchanged.

Table 13 shows the global delay fixed effects regression model by using the alternative delay measure constructed using equation (9). The results show that all the geographical diversification proxies remain insignificant and the coefficients of the all the variables remain unchanged unless VOLUME becomes significant at 5%.

In conclusion, we suggest that by using the alternative delay measure, most of the coefficient signs and significant levels of control variables do not change. The significant level and coefficient signs of all the geographical diversification proxies remain the same.

3.3.4 Controlling for Crisis

From the descriptive statistics across years for the control variables (Figure 8, 10, 12), the results show that there is a huge fluctuation during Year 2008 and Year 2009. We postulate that the fluctuation is due to the sub-prime financial crisis, which occurred during Year 2008 and Year 2009. To control for the financial crisis, we add a crisis dummy variable for all the observations in Year 2008 and Year 2009.

Table 14 shows the local delay fixed effects regression model after including the crisis dummy for Year 2008 and Year 2009. The results of all the geographical diversification proxies remain unchanged and significant. CRISIS has a negative effect on DELAYL because during a crisis, investors are more alert to the local news and local index. Their decision to buy and sell shares will highly depend on the local index.

Table 15 shows the global delay fixed effects regression model after including the crisis dummy for Year 2008 and Year 2009. The results of all the geographical diversification proxies. remain insignificant. CRISIS has a negative effect on DELAYG because during a crisis, investors are more alert to the global news and global index. Their decision to buy and sell shares will highly depend on the global index.

4. Conclusion

All four geographical diversification proxies – foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index – show a positive and significant effect on local delay but an insignificant effect on global delay. Firm size, volatility and number of analyst forecasts show significant effects on both local and global delay whereas trading volume only shows a significant effect on local delay. After running the Breusch and Pagan Lagrangian multiplier tests and the Hausman test, the results suggest that the fixed effects model is most suitable compared to the OLS model and random effects model. All the regression models in this study are robust to heteroscedasticity and multicollinearity problems. All geographical diversification proxies remain significant towards local delay when we use alternative delay measures and control for financial crisis. The t-tests regarding the difference in the mean between diversified and non-diversified firms for all the variables show significant results except for trading volume.

Table 12: Alternative measure for local delay

This table employs the alternative measure of local delay generated using equation (9) for the fixed effects model shown in Table 7. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$ADELAYL = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	-0.3710***	-0.0642	-0.0626	-0.0582	-0.0686
	(0.0377)	(0.0585)	(0.0584)	(0.0584)	(0.0585)
lnMCAP	0.0033	-0.0320***	-0.0334***	-0.0319***	-0.0329***
	(0.0069)	(0.0103)	(0.0103)	(0.0103)	(0.0103)
VOLUME	0.0378***	0.0612***	0.0612***	0.0613***	0.0612***
	(0.0108)	(0.0181)	(0.0181)	(0.0181)	(0.0181)
VOLATILITY	-1.8852***	-3.4399***	-3.4349***	-3.4487***	-3.4357***
	(0.1431)	(0.2012)	(0.2012)	(0.2012)	(0.2012)
ANALYST	0.0212***	0.0215***	0.0214***	0.0215***	0.0214***
	(0.0022)	(0.0025)	(0.0025)	(0.0025)	(0.0025)
DIVERSE		0.0769***			
		(0.0250)			
FCOUNTRY			0.0354***		
			(0.0090)		
FSALES				0.1278**	
				(0.0576)	
HERFINDAHL					0.2396***
					(0.0628)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.1242	-0.1891	-0.1888	-0.1893	-0.1889
R^2	0.0072	0.0163	0.0166	0.0162	0.0165

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

Table 13: Alternative measure for global delay

This table employs the alternative measure for global delay generated using equation (9) for the fixed effects model, as shown in Table 8. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The descriptions of all the variables in this table are provided in Table 2. The regressions in this table are based on the following equation:

$$ADELAYG = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	-1.3515***	-1.5477***	-1.5529***	-1.5547***	-1.5527***
	(0.0411)	(0.0650)	(0.0650)	(0.0650)	(0.0651)
lnMCAP	-0.0419***	-0.0311***	-0.0317***	-0.0321***	-0.0317***
	(0.0075)	(0.0114)	(0.0114)	(0.0114)	(0.0114)
VOLUME	-0.0245**	-0.0469**	-0.0470**	-0.0470**	-0.0470**
	(0.0118)	(0.0201)	(0.0201)	(0.0201)	(0.0201)
VOLATILITY	1.2593***	1.4748***	1.4786***	1.4788***	1.4785***
	(0.1563)	(0.2238)	(0.2238)	(0.2238)	(0.2238)
ANALYST	-0.0120***	-0.0089***	-0.0090***	-0.0091***	-0.0090***
	(0.0024)	(0.0028)	(0.0028)	(0.0028)	(0.0028)
DIVERSE		-0.0332			
		(0.0278)			
FCOUNTRY			-0.0004		
			(0.0100)		
FSALES				0.0345	
				(0.0641)	
HERFINDAHL					-0.0039
					(0.0699)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.1277	-0.2045	-0.2046	-0.2046	-0.2046
R^2	0.004	0.0036	0.0035	0.0036	0.0035

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively

Table 14: Crisis controlling dummy for local delay

This table adds in a crisis dummy for all the observations in Year 2008 and Year 2009 for the fixed effects model shown in Table 7. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The descriptions of all the variables in this table are provided in Table 3. The regressions in this table are based on the following equation:

$$DELAYL = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 CRISIS + \beta_6 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.4363***	0.5098***	0.5101***	0.5109***	0.5087***
	(0.0076)	(0.0119)	(0.0119)	(0.0119)	(0.0119)
lnMCAP	-0.0016	-0.0115***	-0.0117***	-0.0115***	-0.0117***
	(0.0014)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
VOLUME	0.0091***	0.0119***	0.0119***	0.0119***	0.0118***
	(0.0022)	(0.0037)	(0.0037)	(0.0037)	(0.0037)
VOLATILITY	-0.3455***	-0.5501***	-0.5496***	-0.5515***	-0.5491***
	(0.0300)	(0.0429)	(0.0429)	(0.0429)	(0.0429)
ANALYST	0.0045***	0.0046***	0.0046***	0.0046***	0.0046***
	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
CRISIS	-0.0181***	-0.0379***	-0.0378***	-0.0380***	-0.0379***
	(0.0022)	(0.0030)	(0.0030)	(0.0030)	(0.0030)
DIVERSE		0.0159***			
		(0.0051)			
FCOUNTRY			0.0070***		
			(0.0018)		
FSALES				0.0293**	
				(0.0117)	
HERFINDAHL					0.0521***
					(0.0127)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.1214	-0.1805	-0.1803	-0.1807	-0.1802
R^2	0.0096	0.0235	0.0237	0.0233	0.0237

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively

Table 15: Crisis controlling dummy for global delay

This table adds in a crisis dummy for all the observations in Year 2008 and Year 2009 for the fixed effects model shown in Table 8. Column (1) only includes the control variables, while columns (2), (3), (4), (5) include the control variables and different geographical diversification proxies, which are foreign sales dummy, number of foreign countries, foreign sales ratio and the Herfindahl Index. The descriptions of all the variables in this table are provided in Table 3. The regressions in this table are based on the following equation:

$$DELAYG = \alpha + \beta_1 lnMCAP + \beta_2 VOLUME + \beta_3 VOLATILITY + \beta_4 ANALYST + \beta_5 CRISIS + \beta_6 GEOPROXY + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.2710***	0.2429***	0.2424***	0.2421***	0.2424***
	(0.0063)	(0.0094)	(0.0094)	(0.0094)	(0.0094)
lnMCAP	-0.0108***	-0.0097***	-0.0097***	-0.0098***	-0.0097***
	(0.0012)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
VOLUME	-0.0013	-0.0013	-0.0013	-0.0013	-0.0013
	(0.0018)	(0.0029)	(0.0029)	(0.0029)	(0.0029)
VOLATILITY	0.4862***	0.4803***	0.4807***	0.4807***	0.4807***
	(0.0248)	(0.0338)	(0.0338)	(0.0338)	(0.0338)
ANALYST	-0.0015***	-0.0008**	-0.0008**	-0.0008**	-0.0008**
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
CRISIS	-0.0570***	-0.0380***	-0.0380***	-0.0380***	-0.0380***
	(0.0019)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
DIVERSE		-0.0029			
		(0.0040)			
FCOUNTRY			0.0002		
			(0.0014)		
FSALES				0.0073	
				(0.0092)	
HERFINDAHL					0.0015
					(0.0100)
N	49626	29339	29339	29339	29339
Adjusted R^2	-0.1025	-0.1898	-0.1898	-0.1898	-0.1898
R^2	0.0263	0.0158	0.0158	0.0158	0.0158

Notes: The standard error of each coefficient is reported in parentheses. N denotes the number of observations Adjusted R^2 represents the adjusted R-squared, while R^2 represents R-squared. ***, ** and * denote the statistical significance at the 1%, 5% and 10% levels, respectively.

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