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Relationship between Share Price and COVID Cases among All Sectors in Main Market of Bursa Malaysia

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Abstract
Purpose: There is twofold of the study aim: (1) To investigate the reaction trends of stock price in Main Market towards COVID-19 spreads in Malaysia. (2) To investigate the relationship between share price with number of confirmed case of COVID-19 in Malaysia.
Design/methodology/approach: This study was tested the reaction of share price based on event study approach and investigate the relationship between share price and COVID-19 using multiple regression approach. Therefore, random effect robust regression model was applied to tackle the dynamic changes in price of stock since the movement is based on daily basis.
Findings: In Overall, the finding shows that more than half of the sectors' share price are significant and have a relationship towards the number of COVID cases for instance, construction, consumer product and services, energy, industrial products & services, property, technology, telecommunication & media and transportation & logistic sector with all indicate negatively association. Meaning that, the higher the number of COVID cases, the lower the share price performance.
Research limitations/implications: The study only focused on Malaysian public listed companies in main market.
Practical implications: The outcome of this project will provide a practical outcome to a government and stock market player (i.e; Bursa Malaysia and Securities Commissions) as well as stakeholders particularly for the future strategize planning while facing with any pandemic event that most probably will be happened again and again.
Originality/value: Since the COVID pandemic was happened at global region where all countries in the world facing with this situations, thus the study is relevant and provide a novelty to all the stakeholders especially policymakers and market players to fore sighting the best position in making their decisions.

Keywords: Share Price, COVID, Sector, Bursa Malaysia

Introduction

The COVID-19 pandemic was first identified to have spread to Malaysia on 25 January 2020. Reported by Malaysiakini news based on source from Ministry of Health Malaysia, the number

of COVID-19 remained relatively low until a large spike in cases in March 2020, however within a few weeks after, Malaysia had become the country with the highest cumulative number of confirmed COVID-19 infections in South East Asia (see Table 1) and in midst of April, 2020 the daily confirmed cases shows a decreasing pattern for instance; as of 19th and 20th April 2020, there are only 84 and 36 new confirmed cases in the country respectively (see figure 1).

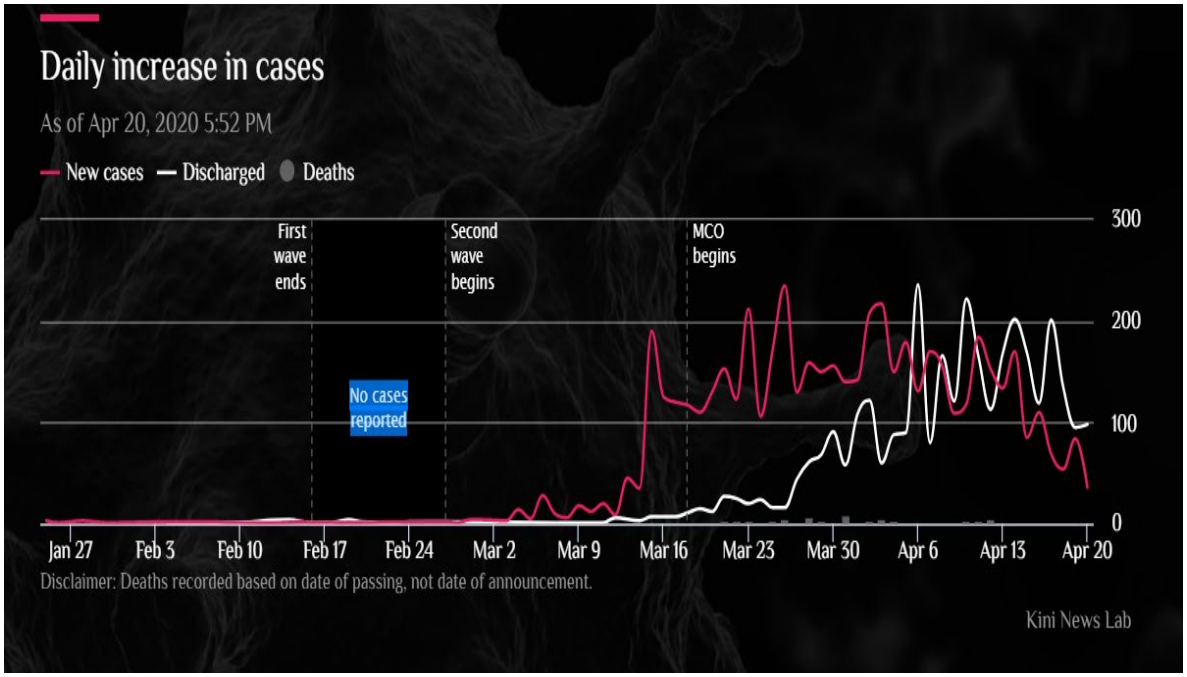

Figure 1: The graph of daily confirmed cases of COVID-19 in Malaysia
Source: Malaysiakini stats, 21st April 2020

Beginning from 15 March, Malaysia saw a significant jump in active cases. The Prime Minister of Malaysia held a live nationwide telecast on 16 March 2020 at 10:00PM to announce the decision of the federal government in implementing the Movement Control Order. The order was to be in effect from 18 March until 31 March, however was extended till 14 April by 25 March. In the announcement, there were six restrictions have been imposed:

1. The public is prohibited to mass gather or attend massive events including religious, sports, social and cultural activities. All worshiping locations and business premises should be closed except for supermarkets, public markets, grocery stores and convenience stores that sells everyday necessities.
2. Malaysians returning from abroad are required to undergo health check and self-quarantine for 14 days.
3. Tourists and foreign visitors are restricted to enter the country.
4. Closure of all kindergartens, government and private schools, including daily schools, boarding schools, international schools, tahfiz centers and other primary, secondary and pre-university institutions.
5. Closure of all public and private higher education institution (IPTs) and skill training institutes.
6. Closure of all government and private premises except for essential services (water, electricity, energy, telecommunications, postal, transportation, irrigation, oil, gas, fuel,

lubricants, broadcasting, finance, banking, health, pharmacy, fire, prison, port, airport, safety, defense, cleaning, retail and food supply).

With this news or announcement on the restrictions especially no. 3 and no. 6 as highlighted above, majority of the stock market player issue their quick responds towards their trading performance that affect the stock price. They also realize that the stock market performance is globally affected by this COVID-19 pandemic spreads. Thus, next sections proposed on the issues and problem statement arise from this MCO announcement by government on how the stock price react towards number of confirmed cases of COVID-19 in Malaysia. Follows by research objectives, the data and methodology will be utilized to deal with issues, expected outcome and policy implications towards existing government policies compliance by securities commissions and Bursa Malaysia as well as and future regulatory and action need to be taken to facing such pandemic spreads.

Literature Review

Bursa Malaysia and other emerging stock markets will likely remain a laggard until June 2020, partly due to the outbreak of the COVID-19. The regional markets would be extremely weighed down if the deadly COVID-19 prolonged. Foreign investors had taken a cautious stance on Bursa particularly, amid the negative headlines emanating from China, they added. Bursa's benchmark FTSE Bursa Malaysia KLCI (FBM KLCI) index ended mixed yesterday amid profit-taking in heavyweights and bargain hunting in small-cap stocks as global markets continued to face uncertainties. The index fell 1.17 points to 1,550.47 from Tuesday's close of 1,551.64 (Ayisy Yusof, 2020). In an interconnected world, domestic confidence is not usually enough. Well run and profitable companies' prices on stock exchanges will adjust accordingly based on the external environments (Halley, New Straits Times, 29 January 2020).

Stocks on Malaysia's stock exchange of Bursa Malaysia tumbled during the outbreak as investors sold securities due to the expected economic impact caused by the COVID-19, which along with other emerging stock markets are predicted to remain until June 2020 (China Daily, 19 February 2020; Voice of America; 22 February 2020). With China as Malaysia's largest trading partner, the country's economy was directly impacted and economic experts have warned the prolonged virus outbreak could hit the country gross domestic product (GDP) hard. According to Alifah Zainuddin (2020), the country's economic growth may fall below 4% if the coronavirus outbreak worsens and powerhouses like China and the US fail to halt the slides of their own economies. Countries across the world are already calculating the billions of losses due to the Covid-19 which is the worst flu outbreak in 18 years. Trade-reliant economies like South Korea, Singapore and Malaysia would be severely impacted. The three countries had already felt the impact of the US-China trade war. China is Malaysia's largest trading partner and the cooling of the second-largest economy in the world would definitely impact the country. The spread of the Covid-19, hits exports, factory output and tourism. A Bloomberg poll of 33 economists estimated Malaysia's average growth of 4.2% with individual forecasts ranging between 3.7% and 4.7%. One analyst expects the coronavirus will hive 0.4% of Malaysia's GDP.

China daily on 19 February 2020 also reported that Malaysia which also largely relied on tourism and being among the top destinations for Chinese tourists, suffered a stark decline of tourist arrival from Mainland China due to the outbreak with the tourism industry hit hardest; costing around RM3.37 billion losses until March. Malaysian states highly dependent on tourism sectors and being the point for Mainland Chinese visitors such as Johor (D'Silva, 2020), Malacca (Aziz, Afiq; Naharul, Muhd Amin, 2020), Penang (Sekaran, 2020) and Sabah (a statement from Sabah Association of Tour and Travel Agents (Satta) president Datuk Seri Winston Liaw) were among the heaviest affected with hotel bookings and food stalls have

reported large loss in businesses (South China Morning Post.).These subsequently forced the states to shift their focus to the Southeast Asian market due to the decline of Mainland Chinese tourists (Bedi, 2020; Kanyakumari, 2020).

Regardless the large losses incurred by tourism businesses, a number of Malaysians have voiced their concerns over the spread of the virus and urging a ban on travellers from China to the country with some 149,000 in support of the call (Farah, 2020; Danial, 2020). Aberdeen Standard Investments of Malaysia also predicted the country currency of Malaysian ringgit (MYR) to weaken further throughout the local and worldwide outbreak which exacerbate further by instable local political scene in the country (Huan & Nee, 2020).

The spread of COVID-19, and international measures to contain it, are having a major impact on economic activity in the UK. In this observation we describe how this impact has varied across industries using data on share prices of firms listed on the London Stock Exchange, and how well targeted government support for workers and companies is in light of this. This follows Ramelli and Wagner (2020) who describe the impact on the US and China by looking at changes in share prices.

Gormsen and Koijen (2020) provide further analysis of the US where changes in share prices allow us to see how different industries are affected by COVID-19 in real-time/daily basis. Stock market data does have a few limitations however, when it comes to measuring the impact of the crisis. Notably it does not include small firms, firms which are not publicly listed, the third sector or the public sector, which might be affected quite differently. For example, many public sector services have seen an increase in demand. In addition, many of these firms operate internationally, so changes in their share prices will represents the effects not only on the UK economy but also in other markets that they operate in. Finally, other factors may also have affected share prices over this period (see figure 2).

Figure 2 shows the change in the share price of all firms listed on the London Stock Exchange relative to the FTSE All-Share index between 2 January and 23 March 2020 (the FTSE All-share index fell by 35% over this period). The industries that have been hardest hit include tourism and leisure (which includes air travel), fossil fuels production and distribution, insurance, retailers (excluding food and drug retailers) and some large manufacturing industries. At the other end of the spectrum some industries have outperformed the market, including food and drug manufacturers and retailers, utilities, high tech manufacturing and tobacco. Unsurprisingly, firms in medical and biotech research have also outperformed the market (falling by 16% relative to the overall fall of 35%).

Changes in share prices reflect market expectations about a number of effects, including: changes in final demand (people are buying more of some items and less of other items), changes in intermediate demand (the firms that they buy or sell to are changing what they want to buy and how much), and restrictions in supply (it may be difficult for some firms to obtain inputs they need due, for example, to interruptions to their supply chain).

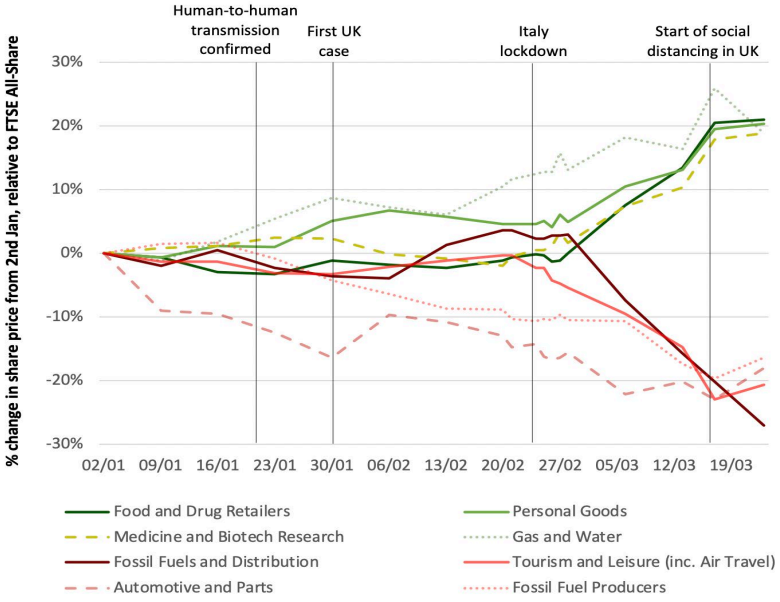

Figure 2: Percentage change in share prices of firms listed on the London Stock Exchange in sectors with the largest share price movements relative to the FTSE-All Share Index, from 2 January 2020
Source: Gormsen and Koijen (2020)

Notes: Authors calculations based on indices of sector share prices, as reported on shareprices.com (accessed on 25 March 2020), using Industry Classification Benchmark definitions.

In addition to that, with respect to the timing of changes in share prices reflect the timing of changes in market expectations. Figure 2 shows the cumulative change in share price over the period for the four sectors with the largest increase and the largest decrease in their relative share price over the period from 2 January to 23 March 2020. For most of these sectors, changes in share prices did not take place steadily over the period. Instead, big changes in share prices occurred from the end of February, in the days following Italy's introduction of a lockdown in Lombardy, with very little change in prices in the period before. The exceptions to this are the gas and water, automotive and parts, and fossil fuel production sectors, where changes in share prices took place steadily over the three-month period, possibly driven by other factors.

Theoretical Framework and Hypothesis Development

Theoretically, a stock price takes into account all available information and expectations about the future. So a stock's price is equal to its current price plus the summation of its expected future dividends. According to this theory, it is possible to analyze the effect of a specific event on a company by looking at the associated impact on the company's stock. The market model is the most common analysis used for an event study. This methodology looks at the actual returns of a baseline reference market and tracks the correlation of a firm's stock with the baseline. This model tracks the abnormal returns on the specific day of an event.

Thus, it reveals the difference between the stock's returns on that day and compares it to the normal or average returns. The difference is the actual impact on the company. The market model can be used over time, analyzing consecutive days to understand how an event affects a stock over time. An event study can reveal greater market trends or patterns. If the same type

of model is used to analyze multiple events of the same type, it can predict how stock prices typically respond to a specific event (Kerton, 2020).
Binder (1998) in his study highlighted that the power of the event study methodology is can be applied in different applications and the modeling of abnormal returns as coefficients in a (multivariate) regression framework. It also focuses on frequently encountered statistical problems in event studies and their solutions.
For the purpose of collecting information on the companies' share price, this study was obtained the data from the main market listing firms and the companies' website respectively based on daily basis starting from 24 January 2020 up to 24 August 2020 (*the details of the data was provided in the figure 4)*. As for the COVID-19 information, we were monitored the announcement news by Ministry of Health Malaysia that was published by Malaysiakini whereby the period covers are tally with the share price data from 13 sectors *(refer figure 4)*.
In this study, there are two main variables, dependent and independent and the proxies that represent the both variables as shown in table 2 below:

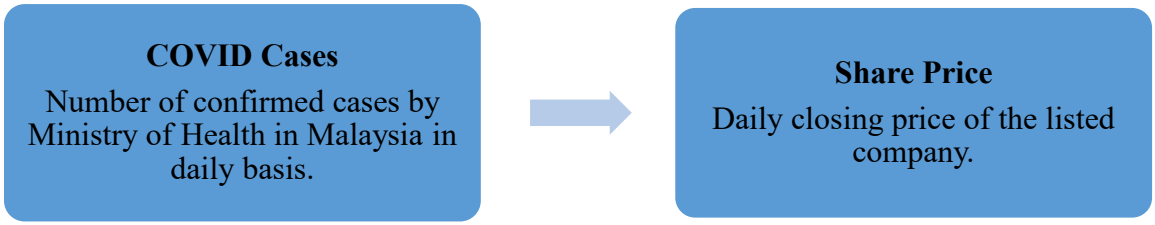

Figure 3: Theoretical Framework

Here with, this study was developing the null and alternate hypothesis to outfit for the multiple regression model as follows:
Hypothesis 1:
Ho: Stock price react negatively with the COVID-19 pandemic spreads in Malaysia.
Ha: Stock price react positively with the COVID-19 pandemic spreads in Malaysia.
Hypothesis 2:
Ho: There is no relationship between share price with COVID-19 pandemic spreads in Malaysia.
Ha: There is a relationship between share price with COVID-19 pandemic spreads in Malaysia.

Methodology
This study was tested the reaction of share price based on event study approach and investigate the relationship between share price and COVID-19 using multiple regression approach. Thus, robust regression model will be applied to tackle the dynamic changes in price of stock since the movement is based on daily basis. It also tested by using STATA software for further analyze on the random effect robust model of such relationships. The multiple regression for such relationship is represented by the random effect model equation as follow:

$$SP = \alpha + COVID\text{-}19 + \varepsilon, \ re\ robust$$

With respect to an event study approach, operationally it refers to a statistical method to assess the impact of an event on the value of a firm. The basic idea is to find the abnormal return attributable to the event being studied by adjusting for the return that stems from the price fluctuation of the market as a whole. According to Kenton (2020), an event study is an empirical analysis performed on a security that examines the impact of a significant catalyst

occurrence or contingent event on the value of that security. He further mentioned that event studies can reveal important information about how a security is likely to react to a given event. An event study conducted on a specific company examines any changes in its stock price and how it relates to a given event. An event study can also be used as a macroeconomic tool to analyze the impact of an event on an industry, sector or the overall market. A study on the market looks at the impact of the change in supply and demand. An event study, whether on the micro- or macro-level, tries to determine if a specific event has, or will have, an impact on a business's or economy's financial performance.

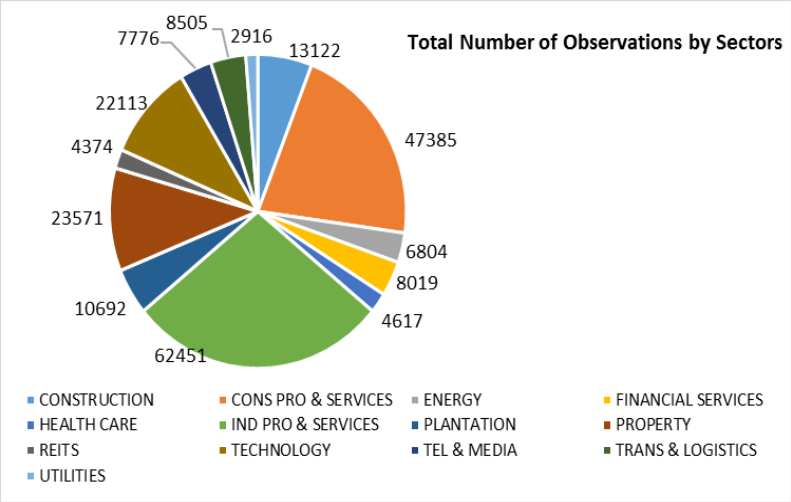

Figure 4: The Number of Observations for the Company in each Sectors

Findings

Based on the timeline graph shown in figure 5, it can be said that the trend of share price in general for all sectors is quite stagnant whereas the number of COVID cases for the study period (January to August 2020) is fluctuate. The graph is important to highlight the minimum and maximum level of COVID cases that hit the share price performance in Malaysia. At the initial stage, the number of COVID cases in Malaysia is low trend continues going upward with the highest case of 277 and was showed diminishing trend after the government announced for the MCO and extended MCO period as an immediate action for COVID from spreading.

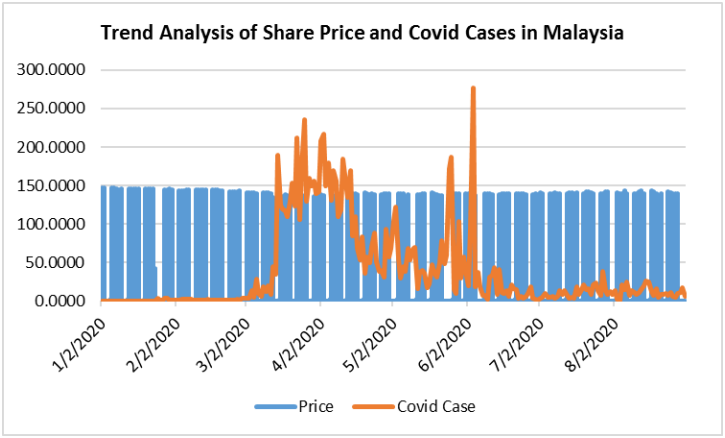

Figure 5: The Trend Analysis of Share Price and COVID Cases in Malaysia

With respect to the descriptive statistics result as presented in table 1, the total number of observations used in this study is N = 222,345 daily bases for both variables proxies either share price or COVID cases. The mean for share price and COVID cases is 0.98 and 38.55 cases respectively. Whereas, the maximum value of this variable is 147.5 and 277 cases respectively indicated that the stock market is still performed in most of the sectors even though the number of cases is high in Malaysia. However, compared to other countries, the number of COVID cases in Malaysia is considered low, for instance China, UK, US and many more.

Table 1: Descriptive Statistic Results

Variables	N	Mean	Std Dev	Min	Max
Share Price	222,345	0.98	4.704	0	147.5
No. of COVID Cases	222,345	38.55	55.42	0	277

Next, table 2 present about the result of random effect based on robust regression between share price and number of COVID cases either there is any significant relationship or not. Notably here that, as for the stock market trading, the number of COVID cases represent the systematic or uncontrollable risk whereby the higher the risk will associate to the lower share price due to confident level crisis among risk adverse investor.

Regarding to the model validation test, this study analyzing the result of Wald-chi-squared and the result show that the Wald-chi-squared is significant at 99% confidence level with 2180.65. It denotes that the validity of estimation model is best-fit to investigate such relationship since the model assumed that the intercept value is identically and independently distributed in this full observation. In addition to that, R-square is reported for the model estimation of regression in order to investigate the percentage of relationship from explanatory variation in explaining the share price. From table 2, the result also reveals the satisfactory and acceptable value of R-square for almost 19 percent.

In Overall, the finding shows that more than half of the sectors' share price are significant and have a relationship towards the number of COVID cases for instance, construction, consumer product and services, energy, industrial products & services, property, technology, telecommunication & media and transportation & logistic sector with all indicate negatively association. Meaning that, the higher the number of COVID cases, the lower the share price performance. Thus, this study was accepted the null for hypothesis 1 and the alternative for hypothesis 2 justifying that there is a negative reaction and significant relationship between share price and COVID cases.

Discussion and Conclusion

An evaluation and comparison of share price volatility across the sectors of the companies listed in Main market of Bursa Malaysia. By segregating the companies into diversify sectors, it can help the policymaker to estimate the market performance during COVID 19 or any future pandemic spreads if happen to the respective business sector based on share price. A robust analysis, which involve a random effect of relationship between share price and COVID-19 cases variables as explained shown a negatively significant relationship in overall. This shows that most of the sectors are affected in their share price performance to worst level even some of them still outperformed.

Therefore, the outcome from this study are beneficial to market player in developing a strategy for buying, selling or hold position for share price movement pattern based on event study approach that can help the policy makers (Government, Bursa Malaysia, Securities

Commission, etc) and investors (domestic and foreigner) as guidelines with respect to specific practices/action to be taken that would require more deliberation to secure their future investment in main market in Malaysia. Besides, this study can provide a reference to stakeholders on the significant association between share price and COVID-19 pandemic spreads in Malaysia.

Table 2: Regression on Random Effect Robust Results

Variables	Random Effect Robust Model
COVID Cases	-0.00211***
	-0.0005
Construction Sector	-1.157***
	-0.409
Consumer Products & Services Sector	-0.892**
	-0.403
Energy Sector	-1.413***
	-0.491
Financial Services Sector	0.213
	-0.465
Health Care Sector	0.0372
	-0.483
Industrial Products & Services Sector	-1.146***
	-0.394
Plantation Sector	-0.16
	-0.436
Property Sector	-1.259***
	-0.402
Real Estate Investment Trusts Sector	-0.228
	-0.414
Technology Sector	-1.676***
	-0.421
Telecommunications & Media Sector	-1.464***
	-0.472
Transportation & Logistics Sector	-1.097**
	-0.442
Utilities Sector	-
Constant	0.406
	-0.388
Observations	131,043
Number of Stock Name & Code	913
R square	0.1876
Wald chi square	2180.65***
Sector RE	Yes
Note: Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

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