Stock Market Reaction to Merger and Acquisitions Announcement: An Event Study (Case of Microsoft Inc. and GitHub Inc.)

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Abstract

Paper is conducted to determine the impacts of merger and acquisitions on the stock prices. On 4th June 2018 Microsoft Inc. has announced their acquisitions of GitHub. Therefore, paper examined the acquisitions impacts on Microsoft Inc. stock prices or abnormal return. In order to determine the impacts of this event, paper used event study methodology. However, mentioned methodology is used widely in stock market to determine the impacts of specific events. Data interval is from 4th June 2017 to 30th June 2018 and window period is also known from the same period which is 10 days after and before of the of event. After analysing the data, it is concluded that impacts of acquisitions on Microsoft stock prices are not significant which means market is highly efficient and information do not leak to make stock prices fluctuate and abnormal.
Keywords: Merger and Acquisitions; Stock Prices; Microsoft Inc.; GitHub Inc.; Event Study.

1.0. Introduction

Background of the Study

The objective of every corporation is to maximize the profit of shareholders through paying them frequent dividends. Therefore, every firms and corporations like to use various kind of techniques in order to be profitable and competitive in the rapid progressive market. The organizations have to respond different events in order to maximize the profit, for which firms induce to enter new market, initiating new products and diversifying the portfolio etc. Lack of financial resources are the major problems which every organization face with, in order to eliminate or solve this problems and enjoy monopoly in the market, these small firms are purchased by large firms. Here the terms merger and acquisitions comes which the paper will discuss the event of Microsoft and GitHub, when Microsoft acquire the GitHub. Thus, paper examines the reaction of stock prices of the acquiring firms (Microsoft) at the time when they announced the acquisition of GitHub.

In general, growth and expansion are key objectives for managers and investors alike. It has been extensively discussed in the literature of contemporary corporations. There is internal growth through several methods, the most important of which is the adoption of modern and sophisticated technology, and external growth which has different methods most notably is mergers and acquisitions (M & A). According to Elad, (2017), M & A is the fastest growing business for public companies, so it has great importance to investors when they want to restructure the company's capital and thus achieve significant investment returns by achieving the value of positive synergies. Accordingly, the announcement of M & A resonates heavily in the stock markets.

Studies have been used to apply different methodologies to assess the impact of the announcement of acquisition and merger on stock returns, in a particular stock market. One of the most important methodologies is the Event Study Methodology (ESM). Through the ESM it is possible to identify the abnormal returns (AR) that could be achieved by the company or the two companies that conducted mergers and acquisitions. Efficient Market Hypothesis (EMH) assumes that it is impossible to achieve abnormal returns if market efficiency is high (Fama, 1970). Thus, the actual and expected returns of the shares can be calculated through historical data and therefore calculation of AR will be easy. Therefore, the current study adopted the methodology of the study of the event.

Microsoft Corporation: It is an American multinational technology company with headquarters in Redmond, Washington. The corporation is well known for its software products such as Microsoft Windows, Microsoft Office, Internet Explorer and Edge web browsers. It was established in 1975 by Bill Gates and Paul Allen who were friends from childhood. They named the company "Microsoft" which is originated from the words microcomputer and software.

GitHub Inc. offers code hosting services that support more than 28 million people to learn, share, and work together for developing software for open source and private projects in organizations. It has a strategic partnership with International Business Machines Corporation. The company was established in 2008 with its headquarters in San Francisco, California. As of November 2018, GitHub reported having 100 million repositories hosted.

On June 4, 2018 Microsoft announced to acquire GitHub. At that time, it was approved by GitHub's CEO who intended to become a fellow of the Microsoft Corporation on October 19, 2018 the $7.5 billion acquisition of GitHub Inc, was declared by Microsoft Corporation. The acquisition became official after receiving regulatory approval. Microsoft officials have said they intend to treat the GitHub acquisition largely like it has acted with LinkedIn, meaning it will let it run mostly independently.

The study found that the acquisition announcement affected Microsoft's shares negatively. The stocks' returns slowly dropped from the announcement day and continued until the ninth day, with the abnormal returns revolving around zero, but on the tenth day, the last days of the event window, the ARs began to rise back to the meet the expected returns. The study also determined that the NASDAQ index is highly efficient, as there were no abnormal returns before the announcement made, especially on the day before the returns were zero, indicating that no information was leaked informally, and investors were receiving the information equally.

The results of the study mention that investors in the NASDAQ index, particularly those who invest in Microsoft, may prefer cash dividends, so they did not want to invest in Microsoft after announcing the acquisition, because they expected that there is no distribution of cash dividends in the near future. Finally, the results of the T-test were insignificant throughout the event window period, and therefore the study failed to reject the null hypothesis.

Research objectives

Many studies have done on the reaction of stock prices to merger and acquisitions. Thus, the objective of this paper is the same but more specific to Microsoft and GitHub acquisitions and the impacts on Microsoft stock prices.

Research questions

1. To what extent Microsoft acquiring GitHub has impacts on Microsoft stock price?

Organizations of the Paper

Frist section of the study is introduction, which introduce the background of the study, short information about Microsoft and GitHub and their acquisitions, study objectives and questions. Second section of the study will describe the short literature review. Third section consists of methodology, however, methodology is the most important part in the event study therefore it is explained in more details in the sections. Forth section describes the analysis and discussion and fifth section presents conclusion of the study.

2.0. Literature Review

The event study

Economists usually try to find the impacts of economic events on the valuation of the firms, finding the impacts seems to be complicated but scholars generally use the event study method in order to determine the relationship between economic circumstances and firms value (MacKinlay & MacKinlay, 1997). According to Shou Woon, (2018) event study is designed methodology to know the impacts of the specific event on the dependent variables, commonly saying, dependent variables are most of time are return in the stock markets. Sitthipongpanich, (2011) augments that once the event is announced in efficient market, return will become abnormal because of the efficiency of the market, thus in the same time, event study will recognize the change of the return in order to know the positive or negative impacts of the events. Therefore, Kothari & Warner, (2006) explain that event study also examine whether market is efficient or not. However, there are many researches which evaluate the stock prices at the time when acquisition is announced. Thus this paper is on the same track.

Efficient Markets

Market is efficient when securities' prices fully reflect the information regarding securities available in the market. Efficient market hypothesis (EMH) assumes that in the financial market, the information related to the securities is related to the stock prices (Naseer & Tariq, 2016). Therefore, efficient market hypothesis assumes three following assumptions:

1. In the financial market, investors are rational and securities valuation on the basis "maximum expected utility".
2. The trades would be random if investors are irrational in the financial markets, this behaviour cause offsetting in the market.
3. On the other hand, rational arbitragers balance the imbalance of prices created by irrational investors.

According to Elad, (2017) merger and acquisition are correlated with the efficient market. M&A can prove that whether market is efficient or not, because when the acquisition is announced market will rapidly react and prices influenced by. And Elad, (2017) further argues that in efficient market prices automatically come to equilibrium and abnormal return move to normal expected return. This equilibrium is the result of arbitragers. Moreover, according to Marcus, (2001) there is three type of market efficient: "weak form- trading on past trend; semi-strong form- trading on publicly available information and past trends; and strong form- trading on any information which may be public or private information".

Merger and Acquisitions

The terms merger, takeover and acquisition use interchangeably and tell us the situation where two or more firms get together and save their selves from the competition and take an advantage of the synergy. Thus the action of merger and acquisitions influence the stock market and stock market react the information regarding relevant news (Arora, Kumar, & Up, 2014). On the other hand, according to Malik, Anuar, Khan, & Khan, (2014) define similarly that sometimes both terms "merger and acquisitions" use interchangeably but there is slight difference between them, when two or more organization merge together and become one company it's called merger while in the acquisition financially large company purchase the small firm.

Similarly, Bessler & Murtagh, (2002) argue that a merger is when two corporations mix together and only one of the corporation is survived and the merged corporation goes away completely. The assets and liabilities of the merged company is obtained by the acquiring company. Additionally, even though the buying firm might be a significantly different organization after the merger, its original identity will be kept. However, Walkling & HUANG, (1987) define that an acquisition occurs when one company shows controlling ownership interest in another firm, a legal property of another firm, or selected assets of another firm. For instance, a facility of manufacturing. In other words, the purchase of assets such as plant, division or the whole company is called acquisition. The objectives of merger and acquisition is that to work with other company which can be more profitable than working alone.

Apparently, the difference among the meaning of "merger" and "acquisition" might not be a big issue, because the aftereffect is often the similar: two or more companies that used to have separate ownership are currently functioning in the same home, usually done to achieve some strategic or financial targets. Although the impact of a deal might be very different regarding the strategy, finance, tax and even culture depending on the type of transaction

Stock Market Reaction to M&As' Announcements

The impacts of merger and acquisition news is vary in different situation. According to Jennings & Mazzeo, (2018), based on the common theory of merger and acquisitions in the context of the stock market is that, at the time of announcement of M&As the stock price of the target firm move high because of the demand while the price of the acquiring firm goes down because of the increase of supply. However, Shleifera & Vishny, (2003) describe that stock prices reaction also depend on the payment methods, at the time of Merger and acquisition the firm is paid by different ways. One of them is paying through owning stocks of the target company while another way is cash payment. These payment method also influence the stock prices in the market.

Many event studies have been conducted, evaluating the impacts of merger and acquisitions' news on stock markets, this paper will mention some of them in the following lines, in order to determine the significant relationship between M&As and stock market. As (Elad, 2017) founded in his study that stock prices were lower prior to the announcement M&As, while after the announcement the immediately prices went up, and after three days the prices came to equilibrium which prove that market is efficient. Another study conducted by Papadimitriou, (2017) found that good news has the positive impacts on stock prices while bad news has marginal negative impacts on stock prices. Thus, this paper will examine that whether acquiring of GitHub by Microsoft Inc. has significant impacts on stock prices or not.

Abnormal Returns

Abnormal return is widely used as independent variable in the stock market in order to detect the stock prices variations tide with unanticipated event such as merger and acquisitions. And this is a significant variation in the measure of abnormal return Elad, (2017). According to Ma, J., Pagan, J. A., & Chu, Ma, Pagán, & Chu, (2009) most of the event studies describe the effect of merger and acquisition on the stock market prices is in the short run and abnormal return around the M&As news indicate the value destruction and creations. According to Schout, (2009) there should be difference among bidder return, target return and total return. While in this event study there is no need for these terms because the paper just describe the acquisition and the target firm GitHub is private limited and doesn't have contribution in the stock market.

Thus, here the paper will test the abnormal return of Microsoft Inc. at the day when they announced of acquiring the GitHub Inc., the paper will examine whether there is significant relationship between M&As and abnormal return on the Microsoft's stocks. For this purpose, paper will develop the following hypothesis:

H0: the news of Microsoft Inc. acquiring GitHub has significant impacts on Microsoft Inc. stock prices.
H1: the news of Microsoft Inc. acquiring GitHub doesn't have significant impacts on Microsoft Inc. stock prices.

3.0. Methodology

In this paper, methodology is used in order to determine the specific impacts of announcement of the merger and acquisitions on their stock prices. Event study methodology is used to determine the announcement impacts on the stock prices, following few paragraphs will explain in brief the event study methodology and how it is used in this paper.

Sample of the Study

As the study is conducted in order to know the Microsoft abnormal return relationship with acquisition announcement, therefore data is collected regarding Microsoft Inc. from investing.com. The data interval is from 4th June 2017 to 30th June 2018. The window period has also chosen from the same period. The stock of the Microsoft Inc. trade in NASDAQ. Microsoft stock prices are examined based on the NASDAQ index.

Framework for the Event Study Methodology

This part involves the methodology of event study with the explanation of its basis, concept and steps.

For the first time event study methodology was employed for observing stock price variations by Dolley, (1933). One other study involves areas of other disciplines for quantifying the relationship between events and company values suchlike, management, economics, law and so on (Mackinlay, 1997). Though, the main study which applied the methodology of event study in the field of social science was the work of Fama, Fisher, Jensen, Eugene Fama, & Roll, (1969), (Ball, 2014).

The efficiency of the stock market has increased because of the large numbers of the trade in the financial market , and the fluctuations in the market, these circumstances provide the opportunities to the player in the market such as arbitragers (MacKinlay & MacKinlay, 1997)

Event Study Methodology

Methodology of the event study is statistical based approach which in general, quantify relationship among events and stock/bond prices. It also evaluates the effect of events on exchange rates.

Mainly, the methodology of the event study is finding the changes among the actual and expected returns of the chosen stocks after the range of event is identified. The difference found is known as abnormal returns (AR), these returns are usually revealed because of market response to the drift of event (Park, 2004).

Besides, the assumption which state that the value of a company can be influenced by an exact event, is the beginning of this study and it is where the abnormal return appears. The main purpose of the ESM is to examine the null hypothesis (H0). Ho states that in a certain time of event the average rate of return is zero. To reach this conclusion, the crucial part of the ESM which is abnormal return should be well known in the event time. The differences between real and expected returns of shares which is AR, actually denotes that the value of assets are echoed by share prices (Ball, 2014).

To summarize, the steps which are considered while using ESM are standard. Therefore, ESM has a broad implication in economics and finance (Gul, Khan, Saif, Rehman, & Roohullah, 2013).

Determination of Event Window

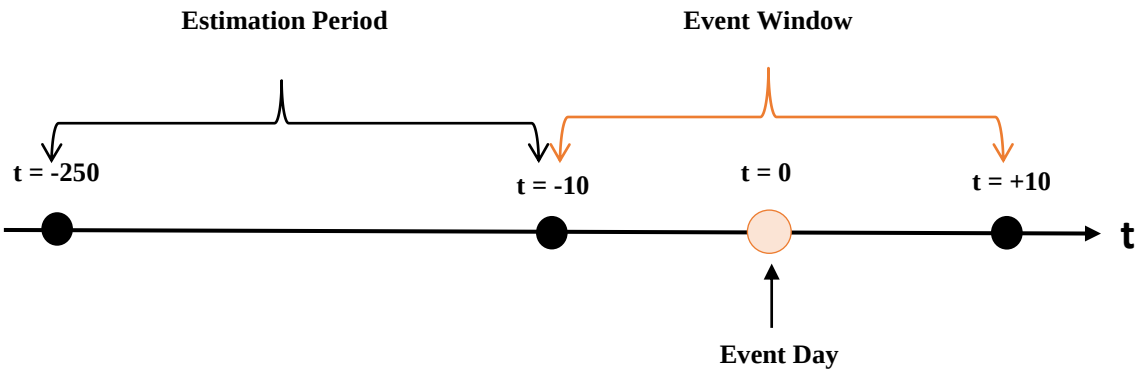
In general, Event Window or "Event Period" is practiced for the determination of an exact period which is formerly and afterward the event, the period practiced is typically five or ten days (Park, 2004). For this study ten days were chosen to be the window of the event, beforehand and later the announcement for the purchases of the companies Microsoft and GitHub due to the largeness of the event as well as its impacts are lasting. Hence, for the deep understanding of the variations and deviations, it would be better to give a comparatively large period. In order to examine the degree of leak of data or anticipations of investors and the anticipation of possible news the pre-event period is used. The post- event period pursues to examine market's ability for the absorption of the information flown to markets rapidly and completely. Therefore, the full period of event that was practiced in this study was 41 days. (t = -10, ..., 0, ..., 10)

Test Period Determinant

In general test period is a period that comprises event day and event window. Thus, for this study test period is 21 days.

Estimation Period

The "*estimation period*" refers to a period which is prior of event window, applied for the estimation of the market model parameters *Alpha and Beta* (αi, Bi). Conferring to Warner & Brown, (1985) the everyday stock prices for 120 days is enough for estimating the period., therefore correctly computing the event window. Conversely, in this study this 250 trading days were used in order to make an estimation for this period as well as examining event period. Figure (1) shows the timeline for the event study .



Normal Return Estimation

We cannot obtain normal returns per share directly, because they have to be estimated by using a proper method. Previously based on the performance of market, normal return on equity was measured by a simple approach of regression analysis.

This study approved the "Capital Asset Pricing Model (CAPM)" due to the widespread usage of this model for the estimation of normal returns. (Hirschey & Mark, 1989; Hovav & D'Arcy, 2003; MacKinlay & MacKinlay, 1997). Hence, in order to make an estimation of the normal stock returns, the study had applied "the market model" which has been proved as one of the most useful and popular model exploited in the testing.

By using this model, the linear relationship among the return of firms' shares and the returns on the market index has been investigated.

Mathematically the model can be stated as follows:

$$"R_{it} = \propto_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)"$$

Where;

"R_{it} : The normal expected return for the share *i* during period *t.*

$\propto_i$, β_i: Represent market coefficient for share i in period t

R_{mt} : Market return m in period t

ε_{it}: Random error, and the value of the impact of information in the institution/stock".

In many other studies, for the calculation of periodic share returns; various approaches have been applied. As a result, it can be said that there has not been any agreement on the favouritism of a method while in this I have implemented a method which was stated by Park, (2004) for the calculation of average return per share.

$$"R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad (2)"$$

Where;

"P_{it}: The closing price of the share $_i$ on day $_t$

P_{it-1}: The closing price of the share $_i$ before the day $_t$

Likewise, market return (Rm) on the Saudi stock market (TASI) was calculated on day $_t$ giving to the following equation":

$$"R_M = \frac{L_{it} - L_{it-1}}{LP_{it-1}} \quad (3)"$$

Where;

"L_{it} : Market closing price of day $_t$.

L_{it-1} : Market closing price, before day $_t$.

Measurement of Abnormal Return AR_{it}"

We can define Abnormal Return as it is basically the difference amid the actual returns per share throughout the date of the event and the prior normal return as of the market model. The difference (Abnormal Return) indicate the effect, i.e., the abnormal profits or losses on prices of stock, consequently, of M&As announcement. The often used equation for measurement of the abnormal returns is as follows:

$$"AR_t = R_{it} - (E)R_{it} \quad (4)"$$

Where;

"R_{it} : Returns on the stock i in period t

(E)R_{it} : Expected return on share $_i$ in period $_t$"

Calculation of Cumulative Average Return CAR

We use Average Cumulative Abnormal Return (CAR) for the measurement each day of the event, in order to reveal market's reaction to the event, and hence an extraordinary return could be achieved through the magnitude of the M&As event. CAR could be calculated as following:

$$CAR_{it} = \sum_{t=-10}^{t=10} Ar_{it} \quad (6)$$

Were;

Ar_{it}: Abnormal return average in the day $_t$

4.0. Analysis and Discussion

One of the conditions of market efficiency is that there should be no abnormal returns (AR) realized. Thus, the market movement during the study period is assumed to be heading to a certain pattern, and then the stock prices have a margin of volatility to allow for natural returns. This indicates that the cumulative abnormal return (CAR) fluctuates around zero significantly, meaning that the acquisition did not carry any information. Conversely, if the CAR moved quiet far from the zero significantly (negative or positive), it indicates that investors may have news of the takeover prior to its announcement and then take positive or negative action.

Table 1 E[r], AR, CAR and t-statistics during the event window

Days	**E[r]**	**AR**	**CAR**	**AR T-test**
-10	-0.44%	0.63%	0.63%	0.8795
-9	0.74%	0.55%	1.18%	0.7758
-8	-0.22%	0.12%	1.30%	0.1692
-7	0.86%	0.33%	1.63%	0.4569
-6	0.02%	-0.37%	1.26%	-0.5208
-5	0.21%	-0.16%	1.09%	-0.2285
-4	-0.59%	0.23%	1.32%	0.3234
-3	1.18%	-0.22%	1.10%	-0.3124
-2	-0.30%	0.19%	1.29%	0.2625
-1	1.97%	0.00%	1.28%	-0.0058
0	**0.93%**	**-0.06%**	**1.23%**	**-0.0809**
1	0.57%	-0.06%	1.17%	-0.0846
2	0.90%	-0.61%	0.55%	-0.8578
3	-0.85%	-0.72%	-0.17%	-1.0144
4	0.23%	0.51%	0.34%	0.7204
5	0.29%	-0.86%	-0.52%	-1.2046
6	0.77%	-0.51%	-1.03%	-0.7210
7	-0.09%	-0.36%	-1.39%	-0.5000
8	1.13%	-0.56%	-1.95%	-0.7873
9	-0.20%	-1.07%	-3.02%	-1.5060
10	0.06%	0.67%	-2.35%	0.9388

Table 1 shows the abnormal returns of Microsoft during the event window which is 10 days before and after the date of acquisition announcement, in addition to the cumulative abnormal returns (CAR) and T-test. In the pre-event period, the volatility of AR is almost stable and extremely close to zero, which may explain that there is no acquisition information received by investors prior to its official announcement. Especially on the day immediately before the event (Day -1), it observed that ARs equal to zero completely, and this is in line with Efficient Market Hypothesis (EMH) which assumed that under the efficient market investors cannot achieve abnormal returns, and then the AR should be zero (Fama, 1970) .

However, on the event day (day 0), there is a negative AR of (-0.06) were observed, which are quite different from the expected return (0.93 percent). Microsoft shares continued this pattern until the third day (day 3). On the fourth day, the market tried to return the company's shares to its position before the announcement of the acquisition almost, achieving an AR of (0.51 percent), which is really close to the ninth day before the event day. Furthermore, on day 5, the ARs also fell to (-0.86 percent) and continued to achieve negative returns until the ninth day. On the tenth day it returned to its normal position to achieve abnormal returns of almost 0.67 percent. Hence, t-test was conducted to confirm the statistical significance. However, the study found that all the days of the event window do not have statistical significance, so the study could not reject the null hypothesis on any day of the event window.

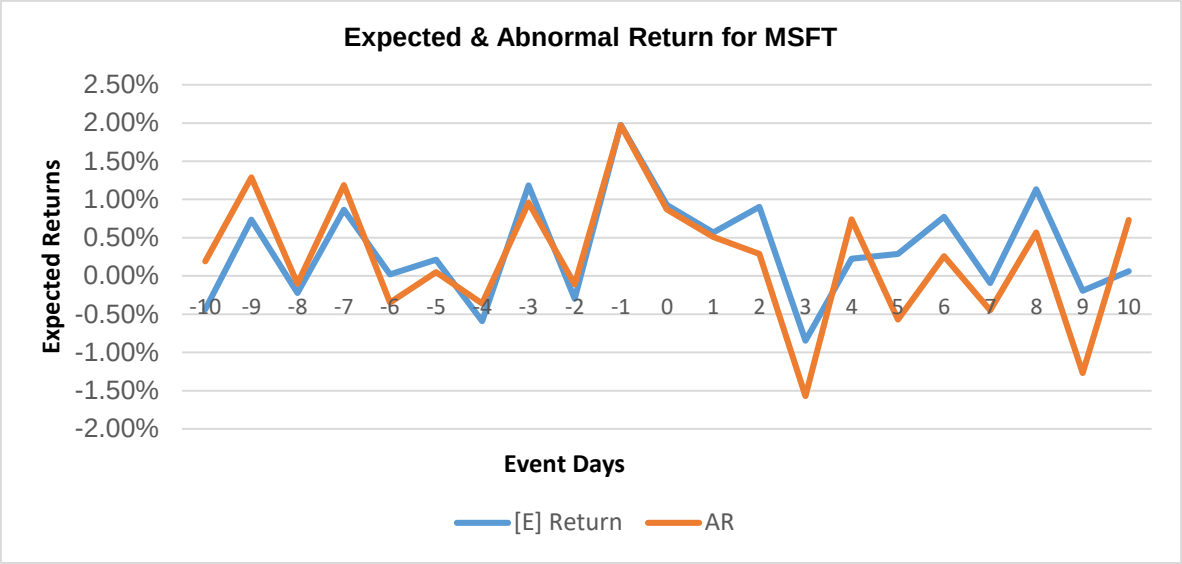


Figure 1 Expected & Abnormal Return for MSFT

Figure 1 displays the relationship between the expected returns that expected to Microsoft stocks can make it in the absence of an acquisition, and the ARs that may occur once the acquisition is announced. Based on the line graph, there is no difference between the expected returns and the abnormal returns realized, as they were moving in the same direction at a so close and sometimes equal level. Especially in the two days before the announcement event were exactly identical, indicating that there were no abnormal returns in this period, and that there was no leaking of acquisition information before it was officially announced. On the day of the event and the days after the market began to interact with the event, there were negative ARs realized during three consecutive days, and then the market began to adjust itself to allow Microsoft shares to return to normal situation.

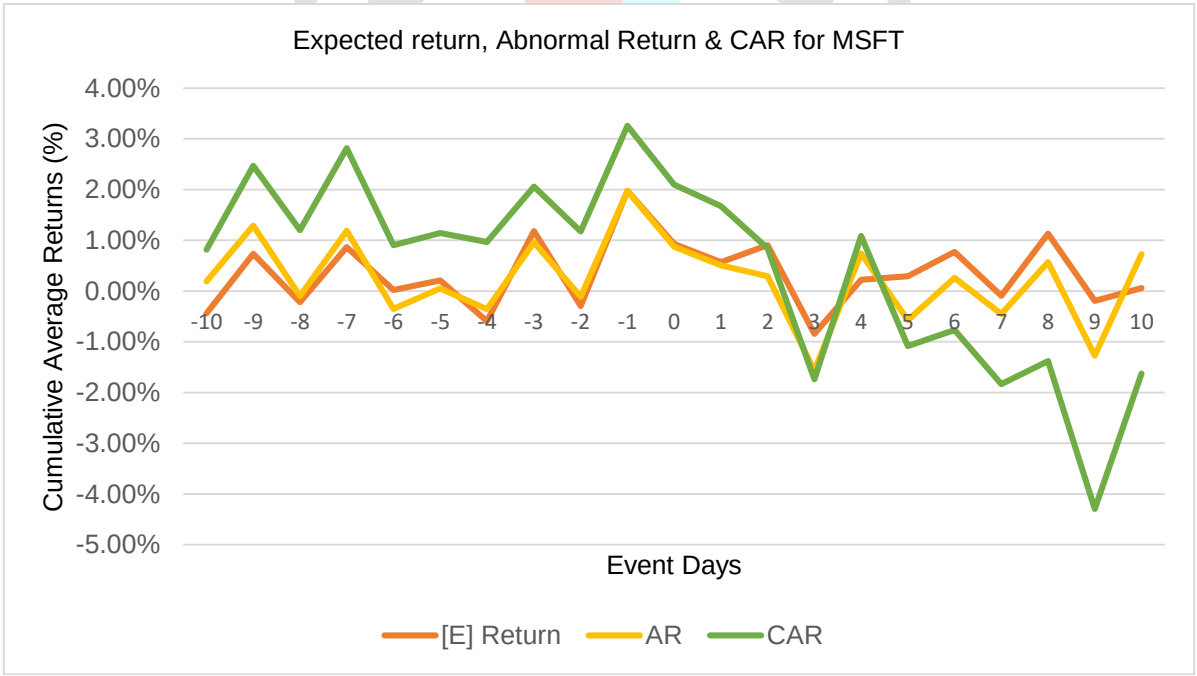


Figure 2 Expected return, Abnormal Return & CAR for MSFT

Figure 2 illustrates the relationship between expected returns, abnormal returns, and cumulative abnormal returns. The CARs were positive and above the expected returns over the period prior to the acquisition announcement (Day 0). However, once the acquisition announced, CARs began to drop down and went with the ARs until the third day after the announcement, then rose the next day, but did not hold much until it started to fall and continued to fall further than the abnormal returns and started to rise on the tenth day but still far from the expected returns. This may be explained by the fact that investors prefer liquidity significantly, and then expect that Microsoft will not distribute dividends in the coming period or will reduce its dividends as a result of the expansion of investments, which motivate investors looking for

other assets to generate liquidity in the short-term, therefore, Microsoft will not be attractive to investors in that period.

5.0. Conclusion

This study aims to investigate the effect of the acquisition announcement on the stocks' return of the company that acquired. Microsoft Corp. acquired GitHub a developer company on June 4, 2018. The daily prices of Microsoft and NASDAQ index were downloaded from ***Investing. Come*** website in the period (06/05/2017 to 06/29/2018), in order to calculate the actual and expected returns, and then calculate the abnormal returns to verify the impact of the acquisition announcement on Microsoft shares' returns. The market model was used to estimate the alpha and beta and thus applied T-statistic to determine the statistical significance for rejecting or accepting the null hypothesis. The estimation period is set to 10 to -250 days, and the event window is -10 to +10 to gives an opportunity to monitor the return movement, as the acquisition may be associated with abnormal returns.

The study concluded that the Nasdaq index has strong-form of efficiency as there is no leakage of information before its official announcement. Obviously, after the announcement, the market reacted well and absorbed the acquisition announcement which allows the Microsoft's stocks returns returned back to its previous situation. Positive returns indicate a positive investor sentiment towards the acquisition information, while negative returns indicate a negative sentiment among the investors. Thus, after the announcement, the acquisition information generated a negative sentiment for investors, which resulted in a continuous decline of approximately nine days for cumulated abnormal returns (CAR). Indeed, Microsoft shares were not attractive in that period because of the low liquidity of the company, which is expected to be distributed in the form of cash dividends. The results of the t-test (statistics) appeared insignificant throughout the period of the event window, and therefore the study failed to reject the null hypothesis.

6.0. References

Arora, M. M., Kumar, A., & Up, N. (2014). A Study on Mergers and Acquisitions – Its impact on Management and Employees. *Research Journal of Economics and BUsiness Studies*, (March 2012).

Ball, R. (2014). *Fama, Fisher, Jensen and Roll (1969): Retrospective Comments*. *SSRN*. https://doi.org/10.2139/ssrn.2396585

Bessler, W., & Murtagh, J. P. (2002). The stock market reaction to cross-border acquisitions of financial services firms : an analysis of Canadian banks. *International Financial Markets, Institutions & Money*, *12*, 419–440.

Dolley, J. C. (1933). Characteristics and procedure of common stock split-ups. *Harvard Business Review*, *11*(3), 316–326.

Elad, F. L. (2017). Event Study on the Reaction of Stock Returns to Acquisition News. *International Finance and Banking*, *4*(1), 33–43. https://doi.org/10.5296/ifb.v4i1.10409

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, *25*(2), 383. https://doi.org/10.2307/2325486

Fama, E. F., Fisher, L., Jensen, M. C., Eugene Fama, B. F., & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *Roll Source: International Economic Review*, *10*(1), 1–21. https://doi.org/10.2307/2525569

Gul, S., Khan, M. T., Saif, N., Rehman, S. U., & Roohullah. (2013). Stock Market Reaction to Political Events (Evidence from pakistan). *Journal of Economics and Sustainable Development*, *4*(1), 165–175.

Hirschey, J.-C., & Mark, B. (1989). The Valuation Effects of Corporate Name Changes. *Financial Management*, *18*(4), 64–73.

Hovav, A., & D'Arcy, J. (2003). The Impact of Denial-of-Service Attack Announcements on the Market Value of Firms. *Risk Management <html_ent Glyph="@amp;" Ascii="&"/> Insurance Review*, *6*(2), 97–121. https://doi.org/10.1046/J.1098-1616.2003.026.x

Jennings, R. H., & Mazzeo, M. A. (2018). Stock Price Movements Around Acquisition Announcements and Management ' s Response Author (s): Robert H . Jennings and Michael A . Mazzeo Source : The Journal of Business , Vol . 64 , No . 2 (Apr ., 1991), pp . 139-163 Published by : The University of, *64*(2), 139–163.

Kothari, S. P., & Warner, J. B. (2006). Econometrics of Event Studies S.P. *Center for Corporate Governance*. https://doi.org/10.1163/157181086X00319

Ma, J., Pagan, J. A., & Chu, Y., Ma, J., Pagán, J. a, & Chu, Y. (2009). Abnormal returns to mergers and acquisitions in ten Asian stock markets. *International Journal of Business*, *14*(3), 235–250. https://doi.org/10.1155/2015/690954

MacKinlay, C., & MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, *XXXV*(March), 13–39. https://doi.org/10.2307/2729691

Malik, F., Anuar, M. A., Khan, S., & Khan, F. (2014). Mergers and Acquisitions : A Conceptual Review. *International Journal of Accounting and Financial Reporting*, (November). https://doi.org/10.5296/ijafr.v4i2.6623

Marcus, B. K. (2001). *Market efficiency* (Vol. 96).

Naseer, M., & Tariq, Y. (2016). The Efficient Market Hypothesis : A Critical Review of the Literature The Efficient Market Hypothesis :, (January).

Papadimitriou, P. (2017). An Event Study Analysis of Stock Price Reaction to Mergers of Greek Industrial and Construction Firms. *The International Journal of Business and Finance Research*, (January 2007).

Park, N. K. (2004). A guide to using event study methods in multi-country settings. *Strategic Management Journal*, *25*(7), 655–668. https://doi.org/10.1002/smj.399

Schout, B. R. A. M. (2009). Abnormal Returns in the Japanese Acquisition Market, (July 2005).

Shleifera, A., & Vishny, R. W. (2003). Stock market driven acquisitions. *Journal of Financial Economics*. https://doi.org/10.1016/S0304-405X(03)00211-3

Shou Woon, W. (2018). Introduction to the Event Study Methodology.

Sitthipongpanich, T. (2011). Understanding the Event Study. *Journal of Business Administration*, *34*(130), 59–68.

Walkling, R. A., & HUANG, Y.-S. (1987). TARGET ABNORMAL RETURNS ASSOCIATED WITH ACQUISITION ANNOUNCEMENTS Payment, Acquisition Form, and Managerial Resistance. *Journal of Financial Economics*, *19*, 329–349.

Warner, J., & Brown, S. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, *14*, 3–31. https://doi.org/10.1016/0304-405X(85)90042-X