

**The Impact of New Product Announcements on Stock Prices:**

**Case for the Technology Sector in the USA**

by

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A research project submitted in partial fulfillment of  
the requirements for the degree of Master of Finance of Finance

Saint Mary's University

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Sep 10<sup>th</sup>, 2012

## **Acknowledgements**

I would like to sincerely express my thankfulness to my supervisor Dr. J. Colin Dodds for all his guidance, help and encouragement through to completion of this project. I would also especially thank Dr. Francis Boabang for all his efforts, guidance and advice which are highly appreciated.

My grateful thanks are also extended to my family, for their motivation and support during my period of study. Finally, I would like to thank my colleagues in the Master of Finance for their help and encouragement.

## **Abstract**

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Technology products are becoming one of the major sources for our daily life. In this modern life, technology products have already become necessary needs. This paper will examine the effect of new product announcements on the share price in the stock market, especially on the technology sector in the US market.

An analysis of 51 technical products announcement events is included in this test. The results showed the negative impact on share price after firms announce new products into the market. Shareholders could not generate abnormal returns within 35 days after the announcement date. There is a statistically significant negative impact on abnormal return between days 35 to 40.

Sep 10<sup>th</sup>, 2012

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## **Chapter 1 Introduction**

### **1.1 Purpose of study**

The purpose of this study is to test the effect of new product announcements on the share price in the stock market, especially on the technology sector in the US market.

In order to test this question, this paper will develop hypotheses whether a new product announcement will increase or decrease the value of share price. Therefore shareholders can investigate the value of the new product announcement to generate abnormal returns.

This paper examines two hypotheses of the price change from the new product announcement- will it increase or decrease the share price. To test these two hypotheses, this paper will analyze 50 new product announcement events in the technology market in the USA to describe the impact of share price changes on the listed companies.

### **1.2 Background of the technology market**

Nowadays, technology development has become one of the major sources for our daily life and economic growth. In this modern life, technology products have already become necessary needs, such as cell phones, iPad or tablet computers etc. Despite this, there are only a few companies who are generating new products in the

technology market, and include Apple Inc., HTC Corporation., and Samsung, etc.

Their main target strategy is defining new products to satisfy consumer needs. Some companies use new product announcements to increase their share price. On the other hand, they might get a negative impact, because their product was not as good as market expectations.

When a company decides to choose the date of their new product announcement, usually they have already performed some research to maximizing the timing effect on their share price. They are conscious of the fact that shareholders would like to have an increasing share price in order to maximize the value of the company.

According to Xin (2010), when firms decide to have a new product announcement, managers will take a look at the product development of new technologies in terms of the platform for future technology innovation, but also the signal to firms' shareholders that they can committed to the development of the technology innovation. There are several reasons that the share price will change after the new product announcement, such as market strategies and market expectations.

In this paper, there are two main key terms. The first is new product innovation. When firms decide to have a new product, they should marketable a lot of activities such as research and development and the new features of the technology products and how they fit the strategy of the firm for it future sustainability. For example, when Apple

Inc. decides to announce a new product, they should include how the old version is to be updated and introduce the new product advantages compared to the old version. This will attract their customers to pay attention on the new technology rather than keep using the old version. For the companies who are involved in the technology industry, they would like to increase their competitive advantage to attract more people to purchase their product and maintain their consumer brand loyalty.

The second key point in this paper will be the announcement event. When the firms decide to announce the new product, they should have already found the “perfect” date for their announcement, because they want to increase their share price after the activity. For example, when Apple Inc. decided to announce its new product on August 13, 2010, Samsung will not choose the same date, because both of them would like to attract all the attention whether from the consumer or the media.

### **1.3 Statement of problem**

The first question to address is there is any impact of a new product announcement on the stock price?

When a company decides to have a new product announcement, the market will reflect consumer expectations. Sometimes the share price will react differently. This paper will examine the changes of share prices, to determine if an announcement will generate positive returns which will increase the share price, or it will have a

negative impact on firm value, which will decrease the share price, or there will be no impact on the share price.

Based on the data of 50 events of new product announcements in the technology market, we will test if there will be an impact on the share price. This paper will use the T-test to measure the performance of the return of different stocks when they have made a new product announcement. Also by using the event window methodology, we can compare the share price between the estimation period and event period to evaluate the effect on stock price.

In posing the question, how to investigate the value of the new product announcement to shareholders to generate abnormal return; according to Xin (2010), the main idea of an event study is to generate the abnormal returns that are associated with the new product announcement. The event study methodology was initially introduced by Fama et al (1969), in the article on the impact of stock split announcements on stock price.

In this paper, there will be companies that issue their shares in other countries, such as Korea, Taiwan, United States etc. Of course there will be exchange issues that arise from this. Therefore this paper will focus on the daily return in the USA which will avoid the exchange risk. By using an event study methodology, it will be more accurate to generate financial returns to assess whether there will be some effect on



the new product announcement event for the share price and the market value of the firms.

## **Chapter 2 Literature Review**

### **2.1 Definition of Product innovation**

Based on the Sood and Tellis (2009), study, innovation is becoming one of the most important factors that leads to the growth of new products, sustaining incumbents, creating new markets, transforming industries, and promoting the global competitiveness of nations. On the other hand, many researchers believe that sometimes firms do not invest enough in their projects. This will have an effect on the final products and this may affect share prices. According to Xin (2010), the development of technologically new products is dependent on the customer demands. It is therefore important to investigate whether the innovation of new technology will meet the consumer needs or will there be some negative effects.

### **2.2 Previous Research**

There is previous research that seems to prove that there will be some impact of new technology announcements on stock price so there is a need to investigate the value of the new product announcements in terms of generating abnormal returns.

Dos Santos et al. (1993), in their report, by using the event study methodology, found the effect of an announcement of the technology industry on market value from 1981 to 1988 was not significant, and there were no excess returns for either the full sample or any one of the industry subsamples. On the other hand, the cross-sectional analysis

revealed that the market reacted differently to the innovation of new technology announcement. By measuring the NPV of the new investment, they found the innovation of technology products can increase the value of the firms.

They also mention that through the announcement of the new product effect on the share price of the firm, they can conclude it will change the market value of the firms, which means if new announcements increase the share price, the firm will generate the positive impact on the market value of the firm. Therefore, they measure the impact of the new product announcement by the expected total firm value by examining stock price reactions. Based on their report,

“the two-day average cumulative excess return for the full sample is only 0.09%, while the corresponding average excess returns for the manufacturing and finance industry subsamples are 0.40% and -0.08%, respectively. According to the reported Z-values, these average excess returns are not statistically significantly different from zero” (p.10).

Xin (2010), examined the short-term stock market reaction based on the development of technologically new products. She also estimated this impact on share price based on the OLS-market model and finds the difference between the stock returns and actual stock returns. Based on her analysis, she found the stock market reactions on the new technology announcements are generally positive and significant. In addition, investors are more favored to see the positive returns for future financial performance after the new product announcement.

From her other research, she found the technological innovations are widely becoming the major source of firms' competitive advantages, while many investors are paying attention to their financial impact to individual firms, even though there may not be a positive effect.

In addition, she examined the days of returns after the new product announcement to test the duration of any significant effects on stock price. She found there was no significant result. However, some of the daily abnormal stock returns were positive. Therefore, there is no significant effect of financial value about the duration of new product announcement. Furthermore, she found that when investors are favored by a new product for future cash flows, the stock return increases by 2.3% on average during one day before the announcement date and 74% of the stocks will increase the firm value.

Koku, et al(1997), argued that on average, the announcement has a significant signaling effect on stock prices, on the other hand, the magnitude of this signaling effect varies by industry. However, the announcement of a new product will have no significant effect on firms' market risk. Also they use new product information release event, firm-specific and information variables. They found that there were no effects on the change on the market risk of the firm. Furthermore, their study focused on the impact of stock price changes which were caused by the information release event, and they think disseminating the new product information leads to an important role

in affecting stock price. In addition, they found the firm should use new product announcements to choose the mode of financing and timing of issuing new securities in order to generate the market returns.

Based on their analysis, they used an event study methodology to assume there will be an impact of new product announcements on stock prices. Also they assume the market index model can generate a linear model:

$$E(R(i, t)) = \alpha(i) + \beta(i) R(m, t) + e(i, t) \quad (2.1)$$

where  $i$  index stocks;  $t$  denotes time;  $\alpha(i)$  is the average return that stock  $i$  would realize if the return on the market portfolio  $R(m, t)$  were zero;  $\beta(i)$  stock's sensitivity to the market return;  $e(i, t)$  is the stock's returns resulting from idiosyncratic random shocks (error term).

They also use a figure to show how the new product announcement can change the stock price and this is given in Figure 2.1.

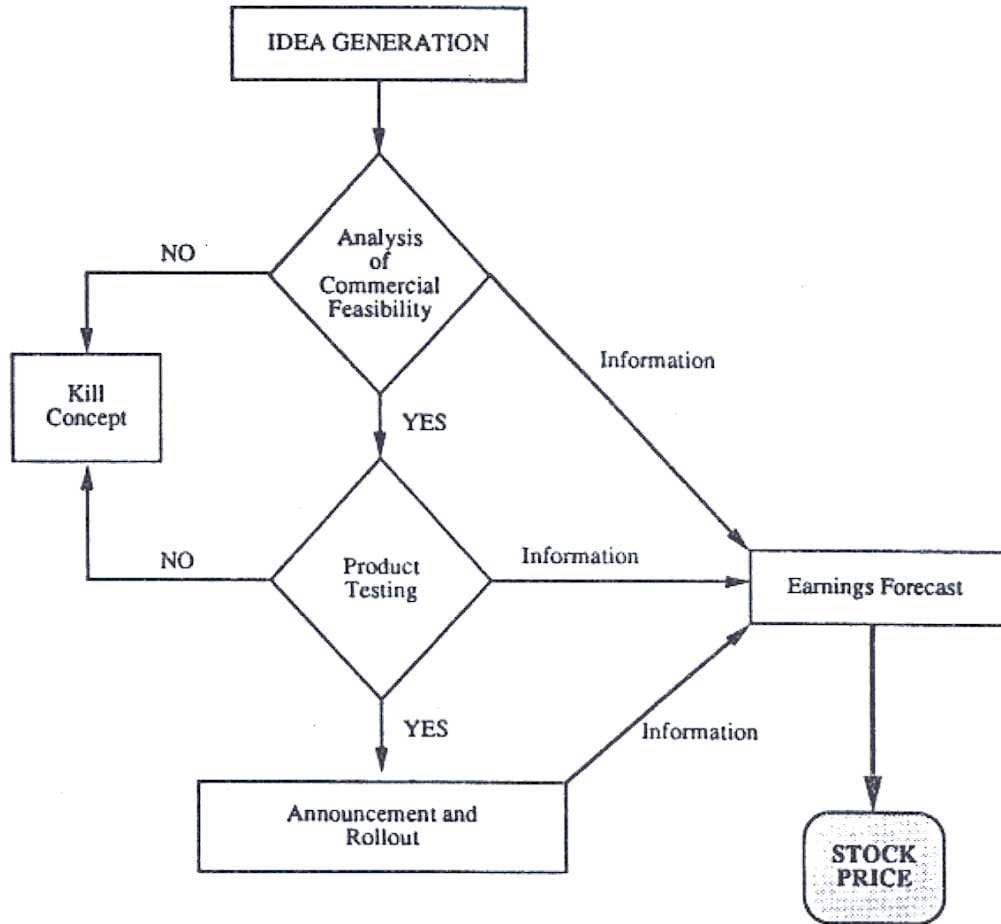


Figure 2.1 The new product evaluation process

Sood and Tellis (2009), argue that the true rewards to innovation depend on the abnormal stock market returns. They also thought the effect of innovation on firms' performance can be measured by sales, profits, or market shares although factors are not totally clear. However, Chaney et al. (1991) report market returns of 0.25% to an isolated event, new product introduction and new product innovation.

In their analysis, they generate the abnormal returns to the event to see the difference between actual return and abnormal return.

$$\text{Abnormal Return}(i, t) = R(i, t) - E(R(i, t)) \quad (2.2)$$

$AR(i, t)$ ;  $R(i, t)$ , and  $E(R(i, t))$  are abnormal, observed and normal return, also they were using announcement  $i$  and event window  $t$ .

According to their report, they found by using the event study methodology, the market response to the new product announcement suggests that cumulative average abnormal returns to all announcements are positive. Also on the event day, the cumulative average abnormal returns on announcements are 0.4%, and this result found in firms of different industries. Furthermore, the returns on the day of the announcement are highest and not significantly different from zero for the event window longer than five days. They also concur with Aaker (1995), Suárez (2002), Anand and Khanna (2000), Das et al.(1998), Doukas and Switzer (1992), that announcements may lead to positive returns as they enable market expansion, and this will improve the probability of success and enhance firms' competitive position.

In addition, they believed “if the returns to the entire innovation project could be estimated from a single, target event during the project, then returns for other events would not be significantly different from zero. That target event would be critical with important implications for firms and investors. On the other hand, if firms continue to experience incremental returns to various events over the innovation project, ignoring certain events would result in underestimating the total returns to innovation. It would also mean that firms should pay close attention to all innovation-related events and optimize their announcement strategy (p.444).”

However, if the total returns of the new project are the sum of returns of all the announcement events, which means if the firms have many new product announcement events, then the total return can be measured by the sum of the total return to all events.

For their results, the returns for the negative announcements were not significantly different from zero for the firms who either breakup or terminate alliances, decrease expansion plans or funding to projects. The only reason for these results is that while firms may keep information on forthcoming joint ventures under wraps, investors have other indicators of the forthcoming negative events, such as the dissolution of existing joint ventures before the actual formal announcement.

Lee et al (2000), examined shareholder return by exploring the new product performance consequences. Also they believe the performance of the shareholder returns are based on the actual timing. Furthermore, when they did the regression analysis, they found the importance of move timing and order depends on the timing, which means the faster and earlier a firm makes a new product announcement, the greater the shareholders' wealth effect. Moreover, they also found there are limitations that negatively impact on the timing effect on the durability of shareholders wealth, while giving some advantages for shareholders.

In their analysis, they make hypotheses that at the time of new product imitations, the abnormal returns will be negative for the first movers and the faster a firm imitates, the greater the negative abnormal returns for the first mover. Based on their report, they found the relationship between timing and the wealth of shareholders. Also they examined the effect of the speed of imitation on the durability of the first mover



advantage by correlation analysis, and this does not significantly influence the durability of shareholder wealth of the first movers and does not support hypothesis.

There are other dummy variables that can affect the industry context, which was captured for each industry and by independent variables, including industry concentration, such as sales growth, and profitability etc. Although the industry dummies were not significant, the regression analysis demonstrates the influence of industry sales growth. Therefore, the effects on the shareholders' wealth are dependent on timing, dummy variables and different industries.

Zantout and Chaganti (1996), found the impacts of the announcement of new products on stock price are determined by the first-movers, because they can gain long-term competitive advantages. Moreover, they analyse 108 new products that generate statistically significant positive abnormal returns at the announcement date while their rivals suffer statistically significant negative abnormal return. Also the cross-sectional regression analyses of the abnormal returns depend on the magnitude and durability of first-mover advantages. In a sample of 1481 announcements, they agreed with Chaney and Devinney (1992) that a significant cumulative average abnormal return of 0.6% over a three-day period centered on the product announcement date. Similarly, Woolridge and Snow (1990) document a significant two-day abnormal return of 0.69% in a sample of 241 announcements. They found that the new product announcements can generate positive, negative or zero abnormal returns.

In addition, they found the firms can realize a significant two-day abnormal return of 1.15% when the competitors suffer a statistically significant two day abnormal return of -0.454%. Their results will support the competitive advantages of the first-mover, and usually indicate the markets of new product announcement are profitable. On the other hand, the cross-sectional analysis results indicate that the first-mover has an advantage to exploit more information on product, firm, and industry-specific characteristics. They also found the indication of the first-mover advantages is more obvious in high-technology industries.

Chaney, et al (1991), in their report on the impact of new product introduction on the market value of the firms, used an event methodology and found that the aggregate impact of announcement can generate approximately 0.75% over a 3-day period, although this varied by industry. On the other hand, the impact of new product announcements varied negatively over the 10-year period time. In addition, they report on the relationship between excess return and the release of information through timing and market strategies.

## **Chapter 3 Methodology**

### **3.1 The Objective of the Test**

The purpose of this paper is to test there is any impact of new product announcements on stock prices and whether they can increase or decrease the share price. In this part, this paper will examine whether the new product announcement can lead to an increase in value to shareholders thus generate abnormal return. This means to test the significance between new product announcement and share price.

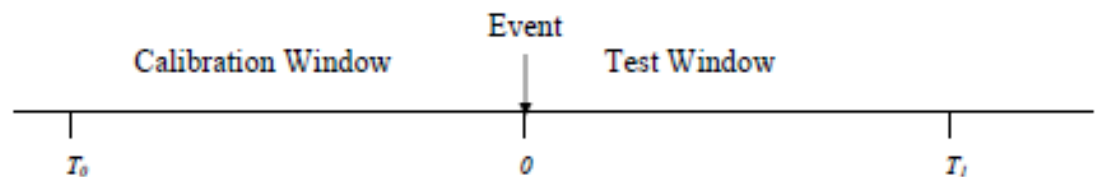
### **3.2 Data Sources**

Generally, technology firms often announce new products linked to perceived consumer demand. There are many high technology companies that we can see in North America, such as Apple, Samsung, LG etc. In this paper, there are 6 popular products that people are widely using in North America, which are Samsung, LG, Motorola, Sony Erricson, Apple, and HTC. In order to make their data more accurate, we found that there were 51 new product announcement events since 2007-2012 that were associated with these 6 firms. This paper will focus on the data during this time period.

### 3.3 The Model

This paper will use an event study for the main research methodology. The essential idea of an event study is to generate the abnormal returns that are associated with a specific event by comparing the performance with the event and without the event. Event study methodology was developed by Fama et al. (1969), and this is a very useful tool to measure the effects of various economic announcements or events on the market value of the firm.

For the estimation period, we use 90 days before the event and 60 days in the event period to see if the firm can generate abnormal return. The event date counts as day 0, and the calibration window is the period that was tracked to see how a stock normally relates to the market. The test window is the period over which for the abnormal returns are estimated. By generating the changes of daily stock return, we use the T-test to test if the returns of the new announcement event are significant or not.



In this paper, I will use the Capital Asset Pricing Model to test whether the firm can generate abnormal return to increase share price or the firm value.

$$E(R(i, t)) = \alpha(i) + \beta(i) R(m, t) + e(i, t) \quad (3.1)$$

$i$  is the index stocks

$t$  is denotes time

$\alpha(i)$  is the average return of stock  $i$

$R(m, t)$  is the market return of the portfolio

$\beta(i)$  is the stock's sensitivity to the market return

$e(i, t)$  is the stock's return resulting from idiosyncratic random shocks (error term)

According to Suh (2009), the Capital Asset Pricing Model provides estimates for the expected returns of an investment, a critical factor in the determination of an asset or portfolio value. Therefore, by using the Capital Asset Pricing Model, we can generate the returns for one period with assumptions of rasion expectation, same investment opportunities, homogenous information on investment opportunities, and same interpretation on investment returns.

After measuring the normal component of a stock's return, we should define the abnormal return if the firm announced the new products. It is the difference between actual return and new project returns from Equation (3.2).

$$\text{Abnormal Return}(i, t) = R(i, t) - E(R(i, t)) \quad (3.2)$$

$AR(i, t)$  is abnormal return for stock  $i$  on day  $t$

$R(i, t)$  is actual return for stock  $i$  on day  $t$

$E(R(i, t))$  is expected return for stock  $i$  on day  $t$  predicted by equation 3.3

Abnormal return measures the impact of information that is released over the given time period. On the other hand, cumulative abnormal return measures the sum of all abnormal returns over the time period of interest, which is a better indicator of the full impact of the information release.

$$\text{Cumulative AR ( i, t)} = \sum \text{AR} \quad (3.3)$$

If the abnormal returns of the new product announcement of stocks are statistically related to any event that is common to that portfolio, we can conclude that new product announcement event was the cause of the abnormal return.

### **3.4 Hypothesis**

To test the hypothesis, we make two hypotheses related to the new product announcement event.

H0 : There is no abnormal return of new products announcement on stock price return

H1 : There is abnormal return of new products announcement on stock price return

The tests described above use the OLS model. For example, we test the significance of the new product announcement in terms of changing the share price, or if the stock price has significantly changed after the firm announce new products, we can conclude that there is an abnormal return of new products announcement on stock

price return. Therefore, the null hypothesis ( $H_0$ ) will be rejected. In addition, applying t-test to residuals, this paper tests  $p=0.1$  deviations from zero.

## Chapter 4 Results and Analysis

### 4.1 Summary Results of the Model

Using the regression model in the Stata program, the results show that cumulative abnormal return has a negative value of  $-0.2462774$  at a significant level of 10%. For this negative coefficient, this means the market reacts negatively to the new product announcement, which means when the firm issue the new product into the market, they do not reach the market expectations and the share price falls.

Figure 4.1 gives an example of relationship between the Apple stock price and their new product announcements.

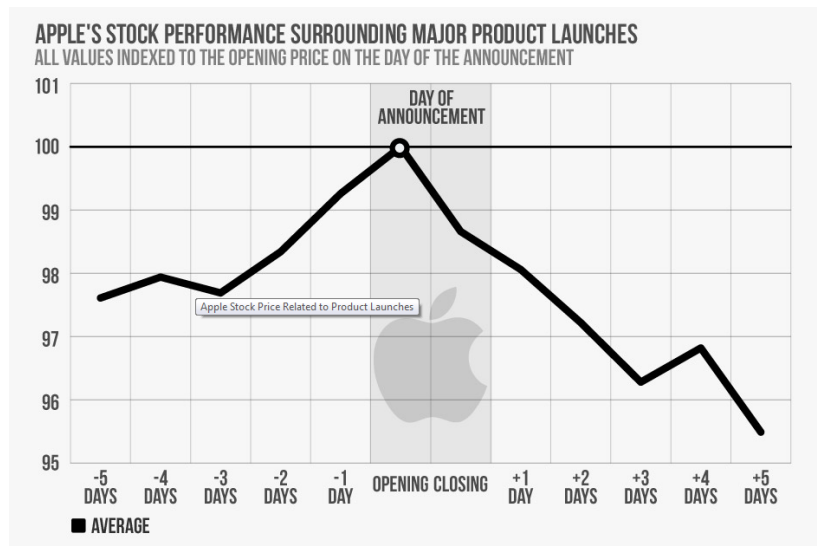


Figure 4.1

Based on the market reaction, the share price goes down after the firms announce the new product. The following table shows the test results of the cumulative abnormal



return.

Table 4.1

Day 35 to 40

```

. reg cumulative_abnormal_return if diff=40

```

Source	SS	df	MS			
Model	0	0	.	Number of obs =	36	
Residual	24.5164111	35	.700468889	F( 0, 35) =	0.00	
Total	24.5164111	35	.700468889	Prob > F =	.	
				R-squared =	0.0000	
				Adj R-squared =	0.0000	
				Root MSE =	.83694	

cumulative~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.2462774	.13949	-1.77	0.086	-.5294573	.0369024

Even though the results show a coefficient to -0.2462774, it cannot show the significance of the new product announcement and its effect on the share price between day 35 to 45. On the other hand, the p value was 0.086, which means for all the observations in this regression model, there were 91.4% which were correct.

Table 4.2

Day 0 to 5

```

. reg cumulative_abnormal_return if diff=0

```

Source	SS	df	MS			
Model	0	0	.	Number of obs =	38	
Residual	17.7388289	37	.479427809	F( 0, 37) =	0.00	
Total	17.7388289	37	.479427809	Prob > F =	.	
				R-squared =	0.0000	
				Adj R-squared =	0.0000	
				Root MSE =	.69241	

cumulative~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.1251742	.1123233	-1.11	0.272	-.3527628	.1024144

For day 0 to 5, since the p value is 0.272, which is greater than the 10% significant

level, there is no significant result that the new product announcement can have an effect on share price, which means the null hypothesis will be rejected, and there is no abnormal return for shareholders in 5 days after the firm announced the new product.

Table 4.3

Day 5 to 10

```

. reg cumulative_abnormal_return if diff==10

```

Source	SS	df	MS			
Model	0	0	.	Number of obs =	38	
Residual	18.4536149	37	.498746348	F( 0, 37) =	0.00	
Total	18.4536149	37	.498746348	Prob > F =	.	
				R-squared =	0.0000	
				Adj R-squared =	0.0000	
				Root MSE =	.70622	

cumulative~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.1463962	.114564	-1.28	0.209	-.3785248	.0857325

For Day 5 to 10, even the coefficient is -0.1463962, the p value is 0.209 greater than the 10% significant level, which means the new product announcement is not significant for shareholders to generate abnormal returns in the period of day 5 to 10.

Table 4.4

Day 0 to 10

```

. reg cumulative_abnormal_return if diff==10

```

Source	SS	df	MS			
Model	0	0	.	Number of obs =	38	
Residual	57.7182964	37	1.55995396	F( 0, 37) =	0.00	
Total	57.7182964	37	1.55995396	Prob > F =	.	
				R-squared =	0.0000	
				Adj R-squared =	0.0000	
				Root MSE =	1.249	

cumulative~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.2363918	.2026115	-1.17	0.251	-.6469217	.1741381

The coefficient from Day 0 to 10 is -0.2363918 which means the market reacts negatively to the new product announcement, but the p value is 0.251 which is still greater than the 10% significant level. Therefore, from Day 0 to 10 after the firms announce the new product, there is not statistically significant effect so the null hypothesis (H0) should be rejected which means shareholders cannot generate abnormal returns for new product announcements.

Table 4.5

Day 0 to 30

```
. reg cumulative_abnormal_return if diff==10
```

Source	SS	df	MS			
Model	0	0	.	Number of obs =	38	
Residual	477.776294	37	12.9128728	F( 0, 37) =	0.00	
Total	477.776294	37	12.9128728	Prob > F =	.	
				R-squared =	0.0000	
				Adj R-squared =	0.0000	
				Root MSE =	3.5934	

cumulative~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.694189	.5829343	-1.19	0.241	-1.875326	.4869481

In the period of 0 to 30, the p value is 0.241, which means the new product announcement was not significant for the change of share price. Therefore the null hypothesis H0 should be rejected, and there is no abnormal return for shareholders to generate.

From the testing above, there is no significant impact for shareholders in the short-term period. However, from Day 35 to 40, shareholders do realize a change of share price, although it is negative.

## **Chapter 5 Conclusion and Recommendations**

Technology products are becoming the main driver in the modern world particularly for households. Many firms announce new products to grab attention from customers or for shareholders to generate abnormal returns. From the testing in Chapter 4, I found that there is no significant impact in the short-term after the firms announce new products. On the other hand, for the longer period, from day 35 to 40 after the firms announcement, share prices change negatively.

Market expectations are the main issue that drives the share price down. When firms are planning to announce new products into the market, consumers usually have high expectations for them, which increases the willingness to purchase the new product. However, many consumers are expecting too much from the new products and this will drive the revenue of the new product negatively, and consumers take more time to accept the new products.

When firms make the announcement, investors can hold the shares for a short time to see if they can recognize abnormal return or not, and then sell. From the point of view of the technology market, firms should keep their information more confidential, which will attract more customers after they actually announce the new product. Moreover, there are already a lot of technology firms in the market and firms can

choose better dates to announce their product to maximize the attractions from consumers.

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## Appendix A: List of New Product Announcements

<b>Samsung</b>			<b>Release date</b>
Behold II			2009/11/18
i5500			2010/6/15
Acclaim			2010/7/9
Moment II			2010/7/11
Transform			2010/10/10
i9020t			2010/12/16
Driod Charge			2011/5/14
Infuse 4G			2011/5/15
Epic Touch 4G			2011/9/16
Galaxy S			2011/10/2
Galaxy Nexus			2011/11/17
Galaxy S III			2012/5/29

<b>LG</b>			
GW 620 Eve			2009/11/5
KH 5200			2010/3/1
VS 740			2010/5/20
GT 540 Optimus			2010/5/31
LU 2300 Optimus Q			2010/6/5
P 509 Optimus T			2010/11/3
LS 670 Optimus S			2010/11/7
VM 670 Optimus V			2011/2/1
G2X			2011/4/15

<b>Motorola</b>			
MB 501			2010/3/17
Droid X			2010/7/15
Droid 2			2010/8/12
Droid Pro			2010/11/19
Atrix 4G			2011/2/22
Xoom			2011/2/24
Droid X2			2011/6/19
Droid 3			2011/7/14
Droid Bionic			2011/9/8

<b>Sony Erricson</b>			
Xperia X10			2010/3/22
Xperia X10 Mini Pro			2010/5/24
Xperia X8			2010/9/1
Xperia Acro IS11S			2011/6/24
Xperia Acro So-02C			2011/7/9

<b>Apple</b>			
iPhone			2007/6/29
iPhone 3G			2008/7/11
iPhone 3GS			2009/6/19
iPad			2010/4/3
iPhone 4			2010/6/24
iPad 2			2011/3/11
iPhone 4S			2011/10/14
New iPad			2012/3/7

<b>HTC</b>			
Dream			2009/6/2
Hero			2009/10/18
Evo 4G			2010/6/4
Desire HD			2010/9/15
7 Surround			2010/11/8
Evo 3D			2011/6/24
One X			2012/4/2
One S			2012/6/15