The Impact of New Product Announcements on Quick Service Restaurant Companies' Stock Returns

The Honors Program
Senior Capstone Project
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<u>Table of Contents</u>

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ABSTRACT

This study seeks to answer two main questions: 1) Do product announcements impact quick service restaurant stock returns? 2) Do economic conditions impact the degree which product announcements impact quick service restaurant stock returns? 159 total product announcements were collected for 6 quick service companies: McDonald's Corp., YUM! Brands Inc., The Wendy's Co., AFC Enterprises Inc., Jack in the Box Inc., and Sonic Corp. 84 of these announcements were from 2005-2007 (Labeled "Pre-Recession"), and 75 were from 2009-2011 (Labeled "Post-Recession"). Using historical stock price data, an analysis of the overall trends of the mean-adjusted excess returns was conducted to determine whether or not product announcements impact the stock returns. Further analysis was conducted to determine whether the "Pre-Recession" results had different results from the "Post-Recession" results, demonstrating a difference between two different economic periods. The results showed that on average, the day following the product announcement had negative excess returns. In addition, there was a noticeable difference between "Pre-Recession" and "Post-Recession" post-announcement returns behavior. "Pre-Recession" results, on average, had positive excess returns in the 10 days following the product announcement, while "Post-Recession" results had negative excess returns in the 10 days following the product announcement.

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INTRODUCTION

The restaurant industry is divided into a few key segments. Full service, quick service, and fast casual make up the majority of the industry's revenue. The quick service restaurant segment, commonly known as fast food, is comprised of more than 200,000 restaurant locations earning combined revenues of about $190 billion annually ("Fast Food and Quick Service Restaurants"). A few companies dominate this segment, including McDonald's, YUM! Brands, and Wendy's. All of these companies are publicly traded, meaning that managerial decisions are judged by shareholders. As the industry continues to develop, it is becoming more fragmented. The 50 largest fast food companies only contribute for about 20% of the market share ("Fast Food and Quick Service Restaurants"). The industry is well known for quickly providing a large volume of food at low prices. Therefore, as the industry becomes more competitive, companies seek to differentiate themselves.

Since many of the companies in the industry offer inexpensive food within minutes, one of the common ways for quick service restaurant companies to differentiate themselves is through the introduction of new products. These products may vary depending on the company's strategic goals. For example, a company seeking to gain market share by getting more customers to come in the morning, it may introduce new breakfast-related food items. Another example of a product change is if a company is looking to gain customers during a particular season. This can be influenced by the introduction of a limited offering of a specific product, often reflecting the season that it is released in.

Although these product introductions are significant to companies' strategies, investors should know whether these introductions impact the companies' stock returns. This paper looks to address this issue, by answering two questions:

1) Do ***product announcements*** impact quick service restaurants' stock returns?

2) Do ***economic conditions*** influence ***the degree*** which product announcements impact quick service restaurants' stock returns?

In order to answer these questions, an event-study was conducted using stock return data from ten trading days prior through ten trading after each product announcement. This process is outlined in more detail in the methodology section. The hypotheses driving this event-study were:

- Product announcements have a quantifiable impact on quick service restaurants' stock returns over the long-term

- During a recession a product announcement will have a larger impact on companies' stock returns than during an expansion.

There are a few explanations for why these results were expected. Perhaps shareholders perceive product announcements as new opportunities for quick service restaurants to appeal to current and prospective customers. Since food is a frequently purchased product, companies need to constantly consider the requirements of its customers. In addition, announcements during recessions may have a greater impact on returns because shareholders will perceive product announcements as more influential to increasing the number of customers than during an expansionary period.

Currently, research demonstrates that company product announcements impact the respective company's stock returns. As seen in Eric Platt's (2012) research, when Apple announces new products, typically the company's stock returns will be impacted. What makes the restaurant industry unique to observe, however, is that its new products are usually substitutes for existing products. In other words, if McDonald's announces a new chicken sandwich, the consumer will decide whether to purchase this new sandwich over the previous selection that is still on the menu. In contrast, when Apple introduces a product such as the iPad, it is not seen as a direct substitute to the iPhone. Similarly, a new product by a restaurant is not necessarily revolutionary to the way that we eat. In contrast, companies like Apple often introduce new, groundbreaking products to attract new customers. Furthermore, consumers do not frequently purchase Apple products, whereas fast food is purchased very often. These factors may ultimately contribute to the causes behind this capstone's results.

If there is a relationship between product announcements and stock returns, this information will be useful for investors determining whether they should acquire shares of companies that frequently change product offerings. For example, if there is a positive reaction to announcements, where mean-adjusted excess return increases with every product announcement, then it would be beneficial to invest in companies with frequent product announcements, as each announcement should deliver a positive return. Similarly, a negative reaction would demonstrate to investors that it is safer to invest in companies with infrequent product announcements.

The remainder of this paper is outlined as follows. The first section covers an extensive literature review which provided background and guidance for this research. The second section covers the research methodology. This is followed by the results, implications, and limitations sections. Finally, the paper concludes with closing thoughts and suggestions for further research on the topic.

LITERATURE REVIEW

This study is based on the efficient market hypothesis. The efficient market hypothesis states that in an efficient market, prices "fully reflect" available information. Eugene Fama thoroughly tests the efficient market hypothesis and presented his results in "Efficient Capital Markets: A Review of Theory and Empirical Work," (1970). These tests are divided into the three forms of market efficiency: weak, semi-strong, and strong.

This hypothesis has been thoroughly tested because the more people discover results related to the hypothesis, the more people understand the way the capital markets function in relation to information availability. In "Market and Industry Factors in Stock Price Behavior," (King, 1966), the concept of a "random walk" is discussed and applied. "The essential feature of the random-walk position, as in a coin-tossing experiment, is that knowledge of the sequence of values of the random variable during the past and present tells one nothing about its value at the end of the next time period." This concept opposes the belief that there are predictable trends in the capital markets.

King's analysis takes a look at whether stocks are divided into "clusters", in that their price changes tend to move as a homogenous group. This study's results ultimately improve on the writings of Miller and Modigliani (1958; 1961), which assume that firms in the same class have perfectly correlated returns. Although the results of this study are more significant in determining portfolio allocation, it still relates to this capstone in that it tests some of the elements of the efficient market hypothesis.

Furthermore, some people believe that capital markets have evolved, so price movement is no longer a random walk. This predictability could allow for technical analysis to be a successful way of approaching investing. In "The Efficient Market Hypothesis and Its Critics," (2003) Burton Malkiel discusses theories around the predictability of the markets. Malkiel provides his insight on other people's theories in which markets have predictable patterns, to which he doubts they could allow investors to consistently earn excess returns. Despite a thorough discussion of theories suspecting that markets are completely efficient, Malkiel ultimately concludes that "the market cannot be perfectly efficient, or there would be no incentive for professionals to uncover the information that gets so quickly reflected in market prices."

The efficient market hypothesis has been applied to many studies similar to this capstone by testing the market's response to product announcements. One of these publications is "The Impact of New Product Introductions on the Market Value of Firms" by Chaney, Devinney, and Winer (1991). This publication discusses the role that new products have on the valuation of firms in the marketplace. The article references another publication, "New product announcements and stock prices" by Eddy and Saunders (1980), which concludes that product announcements do not impact company stock returns. However, as Chaney, Devinney, and Winer state, the study is seriously limited because of its use of monthly returns rather than daily returns. In addition, Chaney et al. address the study "New Products and Security Returns" by Wittink, Ryans, and Burrus (1982). This study concludes that returns are positively impacted on the announcement day and the following day. One of the limitations of this study is that it focuses on computer and office machine companies, so the results cannot be generalized across the entire marketplace. Chaney et al., however, conduct an event-study that concludes the impact of product announcements varies by industry.

Chaney et al. compile 1,685 announcements made by 631 different firms. This sample is reduced to 1,101 announcements by 231 firms to use for the analysis. 584 announcements are removed because they come from firms which were not listed on the AMEX or NYSE at the time of the announcement, and NASDAQ data was unavailable at the time of the study. There are four industries that make up the majority of the announcements used: computers (27.89%), chemicals and pharmaceuticals (17.88%), photographic equipment (14.91%), and electrical equipment and appliances (12.98%). The event-study in this article uses four separate date ranges to observe abnormal returns: 1 day before to 1 day after the announcement, 3 days before to 3 days after the announcement, 5 days before to 1 day after the announcement, and 5 days before to 5 days after the announcement. The days before the announcement are used to observe results from potentially leaked information. The results from this study show that the wider the window, the smaller the impact on the stock's return. For example, the smallest window of 1 day prior to 1 day after had an average daily excess return of 0.25%, while the widest window of 5 days prior to 5 days after had no excess return. These results were taken into consideration when the methodology for this capstone was designed.

Furthermore, the study by Chaney et al. addresses whether there is a difference in reactions to several new products, versus single-product updates. The article concludes that there is a greater return resulting from an announcement of a completely new product, while products that are only changed receive minimal reaction. This information was taken into consideration in the development of this capstone to decide whether to use announcements that were new menu items, reintroduced menu items, or slightly altered menu items. As the study by Chaney et al. suggests, the differences in these announcements would alter the results if they are not separated. As a result, it was determined to only use new menu items for this study.

Chaney et al. are referenced in a publication by Jones and Danbolt (2005). In their article "Empirical evidence on the determinants of the stock market reaction to product and market diversification announcements," Jones and Danbolt conduct an event-study that shows significant positive abnormal returns of 1.1% on the day of the announcement. This study notes, however, that returns are greater for companies with high growth opportunities. This is an interesting observation that could impact this project. Although the six companies used in this

capstone are well established, they each have opportunities for growth. For example, Wendy's is looking to introduce more breakfast items in order to compete more with McDonald's. As a result, breakfast announcements may impact Wendy's stock returns more than McDonald's because it shows opportunity for growth.

The key difference in Jones and Danbolt's study, however, is that each product announcement addresses diversification. Unlike previous studies, in which it merely needs to be an announcement about a new or modified product, this study addresses only announcements that state the primary purpose of the project is diversification. Furthermore, this study includes new market projects, a topic which this capstone project does not address. Nevertheless, the study does separate the two announcements, demonstrating that new product announcements results in higher excess returns (Mean abnormal return is 1.7%) than entry into new markets (Mean abnormal return is 0.4%). The 1.7% return helps support the hypothesis for this capstone that the quick service product announcements will impact the companies' stock returns.

In "An Observational Study of Consumers' Accessing of Nutrition Information in Chain Restaurants" (Agnew, Brownell, & Roberto, 2009), the researchers seek answers to whether providing nutritional info is an effective way to impact customers' eating decisions at fast food restaurants. This study observes the impact of customers reading nutritional information posted in fast food restaurants, such as posters displayed in McDonald's and Burger King. Of the 4,311 people observed making purchases at the restaurants, only 6 (0.1%), are noted for accessing the nutritional information prior to their visit. The authors of the study conclude that their results prove that more action needs to be taken than posting nutritional information in order to influence customers' decisions. One issue with this study, however, is that it assumes that customers who enter a fast food restaurant are coming without a predetermined decision of what they will buy.

In fact, another study, "Calorie Labeling and Food Choices: A First Look at the Effects on Low-Income People in New York City," (Brescoll, Dixon, Elbel, & Kersh, 2009) states that "Little scientific evidence exists evaluating the influence of menu labeling on fast-food choices." This study is conducted more thoroughly than the one by Agnew, Brownell, and Roberto, as it includes surveys. Furthermore, it utilizes their actual purchase receipts, rather than relying on

observation. The study they conducted finds that only 27.7% of people who see calorie labeling information influence their choices. While 27.7% is a large percent to show that some customers may be impacted by the availability of nutritional information, the remaining may be influenced more by other factors. One of these factors could be that fast food customers may enter the restaurants with a purchasing decision already in mind.

If customers are entering fast food restaurants with their purchasing decision already made, then that means there are forces outside of the restaurant that are convincing the customer to purchase that specific item, not just food in general. This could prove to be significant in understanding customers' reactions to new product announcements, particularly those that are nutritional products. If fast food patrons are impacted more by external forces, then a nutritional product announcement may be more effective in driving customers to purchase nutritional food at the restaurants than a nutritional sign inside the store. Nevertheless, this study by Brescoll et al. was significant to help better understand fast food patrons' behavior inside the restaurants.

Another study that may provide insight to an impact that nutritional food announcements may have is "Bottomless Bowls: Why Visual Cues of Portion Size May Influence Intake," (North, Painter, & Wansink, 2005). Even though it discusses how people's eating habits are influenced by the size of the portions provided, there may be a point that can be related to people's reactions to healthy food. The study states, "…the amount of food on a plate or in a bowl may implicitly suggest what might be construed as a 'normal' or appropriate' amount to consume." To prove this, the authors conduct a study in which participants consume bowls of soup that are either in a "self-refilling" bowl (a slow but constant flow of soup), or a normal bowl (no constant flow of soup). Using the results of fifty-four participants, the authors conclude that many people visualize their plate empty, no matter how much food is on it at first. This causes people to eat variable amounts, as the actual portion size may vary, yet people strive to eat all of it. While this topic is generally unrelated to the research for this capstone project, there may be some insight that is transferable. If people have difficulty perceiving portions, then perhaps they have difficulty perceiving calorie intake based on what the food is. For example, do people consider salads inherently healthier merely because it is labeled as a "salad"? If this is the case, then there

may be reasoning behind why nutritional food announcements could be perceived differently than others, thus causing a difference in excess returns.

"What People Buy From Fast-Food Restaurants: Caloric Content and Menu Item Selection, New York City 2007" by Bassett, Dumanovsky, Huang, Nonas, & Silver (2009) was beneficial to better understand the current customer-base's consumption behavior. In this study, the authors collect receipts and conduct a supplementary survey to understand purchasing behavior. Of the 7,318 receipts analyzed, an average of 961 calories was consumed per customer, excluding "single-item purchases". These 961 calories can be compared to a recommended target of 750 calories per meal when eating out. While it is not surprising to see that fast food is unhealthier than what people should be eating, it is somewhat surprising that the average customer at fast food restaurants surpasses that target mark. As a result, the addition of healthier products may introduce fast food companies to a new target market of health conscious consumers, rather than change the behavior of current customers. The reasoning for this conclusion is that if there are already health conscious customers eating at fast food restaurants, they would recognize the excessive calorie intake.

METHODOLOGY

Announcement Collection Procedure

Six companies were used to conduct the analysis: McDonald's Corp. (MCD), YUM! Brands Inc. (YUM), The Wendy's Co. (WEN), AFC Enterprises Inc. (AFCE), Jack in the Box Inc. (JACK), and Sonic Corp. (SONC). All six of these companies operate in the quick-service, or fast food, restaurant industry. The product announcements were collected using FactSet, a financial data and software program. The program allows one to search through a company's historical announcements, citing where the announcements information was retrieved. The announcement information typically came from each company's press.

Product announcements from January 2005 through December 2007 and January 2009 to December 2011 were collected. The year 2008 was excluded because of the stock market's erratic behavior relating to the financial crisis. An announcement was selected if the company announced a new food item, including beverages, to be listed on its menu. Furthermore, only

unique, national product announcements were used. This excluded items released to a select region, and items that have previously premiered. The dates used for the analysis were the same dates that FactSet cites for the release of the announcement. 159 total announcement dates were used for the analysis: 84 from 2005-2007 (Pre-Recession), and 75 from 2009-2011 (Post-Recession).

Once the announcement dates were collected, three separate analyses were conducted:

- Excess Return

- Average Volume

- Excess Volume

Excess Daily Return Procedure

Daily adjusted closing prices and dividend data from 1/05/2004-11/20/2012 were retrieved from Yahoo! Finance for each of the six companies. This data was then converted to daily holding period returns for the entire period. 21 groupings were created, each grouping representing a day in relation to the announcement date. The first grouping (D_{-10}) represents 10 trading days before the product was announced. The second grouping (D_{-9}) represents 9 trading days before the product was announced. This continues through D_{+10}, which represents 10 trading days after the product was announced.

For each of these 21 groupings, the excess return of the company which made an announcement was calculated. For example, an announcement by McDonald's on February 9, 2005 had excess returns calculated for each of the ten trading days before, each of the ten trading days after, and the one announcement date. Therefore, excess returns for McDonald's relating to that one announcement were calculated on each of the trading days from January 26, 2005 to February 24, 2005.

The excess return was then calculated for each of those days by subtracting from the return on that date, the average return over 10 days before the range ($D_{-20}:D_{-11}$) and 10 days after the range ($D_{+11}:D_{+20}$). For example, the excess return on D_{-7} was calculated by subtracting the daily return

on D_{-7} by the average of $D_{-20}:D_{-11}, D_{+11}:D_{+20}$. This process yielded an excess return that demonstrates how the company's return on that date differed from that company's typical return daily. This approach assumes that the process generating returns for the companies is stable over the 41-day period.

After each company's excess returns were retrieved for the 21 groupings, an analysis was conducted. Two different approaches were done: 1) an average of the entire collection of 159 announcements, and 2) Pre-recession and Post-recession return data were averaged separately. The first approach was done by averaging the daily excess return for each announcement on each grouping. The second approach was done by averaging the daily excess return for each announcement before 2008, and averaging the daily excess return for each announcement after 2008. T-tests were conducted on each of the 21 groupings for both approaches by dividing the standard deviation of the excess returns by the square root of number announcements used. That number was then divided from the average return to achieve the t-score.

Average Daily Volume Procedure

The second analysis process was conducted in a similar fashion to the excess returns process. 21 groupings were made, from $D_{-10}:D_{+10}$ in relation to the announcement date. The foundation of this analysis, however, is the use of daily volume data. For each company, daily volume data from 1/05/2004-11/20/2012 was retrieved from Yahoo! Finance. Rather than calculating an excess, this approach merely listed the volume data on each day in relation to the announcement. For example, the volume on D_{+3} presents the volume 3 days after a product announcement.

After each company's daily volumes were retrieved for each of the 21 groupings, an analysis was conducted to help drive conclusions. Like the excess return approach, two different approaches were completed: 1) an average of the entire collection of 159 announcements, and 2) Pre-recession and Post-recession return data were averaged separately. The first approach was done by averaging the daily volume for each announcement in each grouping. The second approach was done by averaging the daily volume for each announcement before 2008, and averaging the daily volume for each announcement after 2008.

Excess Daily Volume Procedure

The third analysis process was also conducted in a similar fashion to the excess returns process. 21 groupings were made, from D_{-10}:D_{+10} in relation to the announcement date. Like the last approach, this process also used historical daily volume data. For each company, daily volume data from 1/05/2004-11/20/2012 was retrieved from Yahoo! Finance. An excess volume analysis was conducted similar to the excess return analysis by subtracting the volume on that date by the average volume over 10 days before the range (D_{-20}:D_{-11}) and 10 days after the range (D_{+11}:D_{+20}). For example, the excess volume on D_{+9} was calculated by subtracting the daily volume on D_{+9} by the average of D_{-20}:D_{-11},D_{+11}:D_{+20}. This process yielded an excess volume that demonstrates how the company's volume on that date differed from that company's typical daily volume.

After each company's excess daily volumes were retrieved for each of the 21 groupings, an analysis was conducted to help reach conclusions. Like the excess return approach, two different approaches were completed: 1) an average of the entire collection of 159 announcements, and 2) Pre-recession and Post-recession return data were averaged separately. The first approach was done by averaging the excess daily volume for each announcement in each grouping. The second approach was done by averaging the excess daily volume for each announcement before 2008, and averaging the daily volume for each announcement after 2008. T-tests were conducted on each of the 21 groupings for both approaches by dividing the standard deviation of the excess volumes by the square root of number announcements used. That number was then divided from the average excess volume to achieve the t-score.

RESULTS

The results from the three analyses, Excess Return, Average Volume, and Excess Volume all present interesting findings. Below, each study will be discussed in detail, with results from both the entire data set, and results separated into "Pre-Recession" and "Post-Recession".

Excess Return

Entire Data Set

Summing the excess returns helps show certain trends. 10 days before the product is announced, D_{-10}, there are positive excess returns. This trend continues through D_{-8}, at which point the cumulative excess return reverts back towards 0%. It remains at this level leading up to the announcement date, D_0 (See Figure 1). The announcement date then shows a positive excess return of 0.06% (See Figure 2). The day following the announcement, D_1, shows a negative excess return of -0.36%, with a statistical significance found from the t-score of -2.31. After this date, the excess returns fluctuate between positive and negative. Looking at the cumulative excess return leading to 10 days after the announcement, D_{10}, the trend moves around 0% and a low-point of -0.33% (See Figure 3). As a result, an investment from the announcement date to 10 days after (D_0 to D_{10}) would have led to a -0.26% excess return. Similarly, an investment from the entire 21-day period, D_{-10} to D_{10} would have led to a -0.24% excess return (See Figure 4).

Pre-Recession vs. Post-Recession

By summing excess returns, noticeable trends were presented. Contrasting trends were found between the two data sets. Prior to the product announcement, the Pre-Recession results show an increasing cumulative excess return from days D_{-9} to D_{-7}, while Post-Recession results show a decreasing cumulative excess return from Days D_{-9} to D_{-6} (See Figure 5). After these points, both Pre-Recession and Post-Recession show a reversion towards a cumulative excess return of 0 leading up to two days before the announcement date, D_{-2}. The day before the announcement, D_{-1}, this trend reverses back in the direction noted before. Pre-Recession cumulative excess return increases, while Post-Recession cumulative excess return decreases. This trend continues onto the announcement date, D_0. The average excess return in the Pre-Recession results is 0.16%, while the average excess return in the Post-Recession results is -0.05% (See Figure 6).

One commonality between the two data sets is that both decline on the date after the announcement, D_1. In the Pre-Recession period, the average excess return is -0.15% with no statistical significance shown from the t-score of -0.79. In the Post-Recession period, the average excess return is -0.59% with statistical significance shown from the t-score of -2.41 (See Figure 6).

The remaining periods after the announcement, D_2 to D_{10}, present the same contrasting trends noticed before the announcement. The majority of the Pre-Recession results have positive excess returns, while the majority of the Post-Recession results have negative excess returns. In the cumulative analysis, an investment from the announcement date to 10 days after (D_0 to D_{10}) would have led to cumulative excess returns of 0.77% during the Pre-Recession Period, while it would have led to cumulative excess returns of -1.41% during the Post-Recession Period (See Figure 7). Similarly, an investment beginning 10 days before the announcement to 10 days after the announcement (D_{-10} to D_{10}) shows the drastic difference between Pre-Recession and Post-Recession returns. The average investment during a Pre-Recession 21-day period would have led to a cumulative excess return of 0.99%, while the average investment during a Post-Recession 21-day period would have led to a cumulative excess return of -1.63% (See Figure 8).

Volume

Entire Data Set

When looking at all of the data used, the trading volume over these 21-day periods remains relatively unchanged (See Figure 9). The average volume begins at 2,064,162 10 days before the announcement, D_{-10}, and remains around 2 million until D_{-6}. On this date, the volume declines to 1,721,866, but reverses over the next two days. It peaks at D_{-4} with a trading volume of 2,208,924, and then returns to the original steady level of about 2 million. This steady trend continues through the announcement date until 5 days after (D_5). On this date it declines to 1,779,575, but again returns back to the roughly 2 million-level over the next 2 days. The remaining 3 days slowly decline, ending the period at 1,799,040.

Pre-Recession vs. Post-Recession

When separated into Pre-Recession and Post-Recession, the volume results show two more volatile trends than the entire data set showed. The most notable differences between the Pre-Recession Period and the Post-Recession Period are what occur on and soon after the announcement date (See Figures 15, 16, and 17). While both show a decline in trading volume leading up to the announcement, Pre-Recession results continue to decline on the announcement date, D_0, while Post-Recession results increase slightly. Furthermore, the Pre-Recession results

show a continued decline the day following the announcement, D_{-1}, while Post-Recession results show an increase from 2,564,383 to 2,988,476. The Pre-Recession period then slowly returns to a similar level that it began at, while the Post-Recession period remains heightened around 3 million for one more day before slowly declining through D_{-10}.

Excess Volume

Entire Data Set

Beginning 10 days before the product is announced there is minimal excess volume (See Figure 11). It isn't until 6 days before the announcement, D_{-6} that a noticeable excess volume is seen. Excess volume is negative on D_{-6}, however, the effects are not long-lasting. 4 days before the product announcement, D_{-4}, positive excess volume occurs. Excess volume is then seen until the day before the announcement.

On the announcement date, there is positive excess volume. This positive excess volume continues through 4 days after the products announcement. For the remaining days leading up to D_{10}, the daily excess volume fluctuates between about -160,000 and 140,000. On average, the cumulative amount of excess volume from the announcement date to 10 days after is almost 300,000 (See Figure 12). In comparison, the cumulative amount of excess volume from 10 days before the announcement to 10 days after is about 640,000. This shows there is a similar amount of excess volume before the announcement as there is after the announcement.

Pre-Recession vs. Post-Recession

Both the Pre-Recession and Post-Recession results show daily fluctuations of excess volume (See Figure 13). As a result, it is easier to see the drastic difference between Pre-Recession and Post-Recession excess volume through the cumulative analysis (See Figure 14). Pre-Recession results show a collective increase in excess volume leading up to the announcement, while Post-Recession results alternate between slightly positive and slightly negative excess volume. On the announcement date, Pre-Recession results show slightly negative excess volume, while Post-Recession has a noticeably large excess volume of more than 300,000. Furthermore, there is barely any excess volume following the announcement date in the Pre-Recession Period, but the

Post-Recession Period peaks at a total excess of more than 1.3 million at D_4. After this date, excess volume subsides. Both the Pre-recession and Post-Recession's daily excess volumes return closer to 0. The Post-Recession Period does have 2 days of very negative excess volume: D_5 and D_{10}.

Key Takeaways

In review, the three studies, Excess Return, Average Volume, and Excess Volume all present significant results. The following are key points to take away from the results.

- The studies involving all data, from 2005-2007 and 2009-2011, can be deceiving because of the noticeable differences between those two periods' results. Therefore, it is more beneficial to look at the results with each of those periods separated.

- Excess Return declines on the day after the announcement date in both Pre-Recession and Post-Recession periods.

- Cumulative Excess Return is positive for the Pre-Recession period, but a negative for the Post-Recession period.

- Trading volume declined on and after the announcement date during the Pre-Recession period, but increased following the announcement date during the Post-Recession period

- The Post-Recession period shows significantly positive excess volume on the announcement date. This continues for a few days after the announcement.

- The Post-Recession period has a larger amount of cumulative excess volume over the 10 days following the announcement than the Pre-Recession period.

IMPLICATIONS FROM RESULTS

The results leave an interesting finding with undetermined causes. Something changed between the Pre-Recession and Post-Recession Period that made shareholders perceive product announcements differently. When a quick service restaurant company announces a new addition

to its menu, it is no longer perceived as a positive event. In fact, as the results section describes, the effect of the announcement appears to carry through a 2 week trading period following the announcement. Moving forward, further research must be done to determine the cause of this deviation. If it is better understood, then not only will shareholders have a better understanding of what causes movement to the quick service industry's stock returns, but more importantly, companies in the quick service industry may better understand how to create value in the eyes of shareholders.

The key questions moving forward should be:

1) Why were product announcements positive indications of a company's success?

2) Why are announcements now negative indications of a company's success?

Based on research conducted in the development of this report, there are some possible explanations. In general, there has been an increase in awareness of healthy eating in American society. Quick service restaurants, meanwhile, are notorious for their negative effects on people's health. As people become more health conscious, perhaps menu introductions by quick service companies do not reflect the same mindset. In other words, fast food companies may not be keeping up with a cultural shift towards healthy food. Therefore, every unhealthy product that is introduced would show another step towards losing customers.

An alternative but related, hypothesis is that quick service companies may, in fact, be targeting this "healthy" consumer segment. If that is the case, then maybe these companies are still struggling to gain customers from this segment simply because "fast food" isn't part of that customer segment's lifestyle. This would mean that every product announcement for healthy food is a step towards a customer segment that appears out of the industry's reach.

Although these may explain the cause of the change in perception towards product announcements, a complete statistical analysis will need to be conducted in order to determine whether or not they are actually the causes.

LIMITATIONS

While this research found some distinctive results, there are some areas of the methodology which could be altered in order to enhance the study. Below are descriptions of some of this study's limitations

Daily Closing Prices

While the use of daily closing prices allows for a solid analysis of changes in the four-week period surrounding the product announcements, it would be beneficial to use trading data down to the second rather than day. If the exact time that the announcements were made could be retrieved and this specific trading data could be retrieved, then a more specific analysis could be conducted. For example, if there is a noticeable immediate change in the trading price of the company that makes the announcement, then stronger conclusions could be made about the immediate impact of the announcement on returns.

Number of Companies Used

As the methodology section describes, 6 companies were used for this event-study. As a result, it may be unreasonable to declare the results a reflection of the entire quick service restaurant industry. The companies were chosen for this study based on the accessibility of product announcements and trading data. Companies like Burger King Worldwide (NYSE: BKW) would have been ideal for this study if the company was publicly traded from 2005-2007 and 2009-2011.

Furthermore, the use of 6 companies with an unequal number of announcements from each company allows for certain companies to more strongly impact the results. For example, 58 out of the 159 announcements were from Jack-in-the-Box. As a result, Jack-in-the-Box impacts the results more than any other company. In general, conclusions about the impact of product announcements in the entire industry can be strengthened if more companies and an equal number of announcements are used.

Heterogeneous Announcements

Similarly, there is no distinction between types of product announcements. While a blend of all product announcements allows for more general conclusions, they do not distinguish the difference between one type of menu change versus another. For example, does a dessert item have a different impact from a beverage item? Distinctions like these may lead to more sound conclusions about the results. As the implications section of this report describes, a distinction between nutritious and innutritious items may lead to a conclusion that shareholders are watching menu changes closely for how companies handle a changing culture towards healthier diets.

CONCLUSION

Research prior to this event-study shows that, depending on the industry, product announcements impact companies' stock returns. This suggests a weaker form of market efficiency that allows for proper fundamental analysis to achieve superior returns. Results from this event-study indicate that product announcements impact quick service restaurant companies' stock returns. Furthermore, the excess return changed over time, so what used to be a positive event from 2005-2007 became a negative in 2009-2011.

As further research is done on this subject, there are many areas that could be touched upon to better understand the results. One of the most significant studies would be to look into the profitability of new products in the quick service restaurant industry. Is there any proof that changing menu items contributes to profitability? If they do not play a factor in profitability, then what is the motivation for companies to change the product offerings?

Furthermore, as the implications section describes, is the change in excess returns a result of a cultural change that reflects different eating habits? Research described in the literature review show that the current fast food consumer does not necessarily seek out nutritional information. This may be enough insight to indicate that the consumer already understands that it is not going to fast food restaurants to consume a well-balanced meal. Instead they are seeking a quick meal. What this implies is that the fast food consumer may not overlap with people with healthy diets. Future research should seek out answers to questions surrounding the fast food customer demographics. If the demographics' preferences are better understand, then the responses to

specific product announcements can be better understood. A nutritional product announcement could then be perceived as either an attempt to introduce a product that is unappealing to its current market, or an attempt to obtain more consumers from an untapped market.

While the results of this event-study address the questions outlined at the beginning of the report, they don't necessarily provide clarity to the complex intricacies of financial markets. The results show interesting trends that introduce new questions. These questions seek to find the causes of these results, which are perhaps more important than the results themselves. Perhaps once these causes are determined, whether they are qualitative or quantitative, stronger conclusions about the impact of product announcements on this industry and other industries can be better understood. Until then, we are merely left with the results outlined in this paper.

APPENDIX

Excess Returns - All Announcements				
Day in Relation to Announcement	**Average Excess Return**	**Standard Deviation**	**T-score**	**Significant?**
-10	0.12%	1.94%	0.76	
-9	0.15%	1.98%	0.96	
-8	0.12%	2.87%	0.53	
-7	-0.04%	2.30%	-0.23	
-6	-0.18%	2.17%	-1.04	
-5	0.08%	2.32%	0.41	
-4	-0.36%	2.19%	**-2.07**	**Yes**
-3	0.15%	2.62%	0.75	
-2	-0.03%	1.89%	-0.20	
-1	0.01%	1.96%	0.05	
Product Announcement, Day 0	**0.06%**	**2.30%**	**0.32**	
1	-0.36%	1.96%	**-2.31**	**Yes**
2	0.08%	2.17%	0.45	
3	0.08%	2.28%	0.45	
4	0.02%	1.93%	0.15	
5	-0.15%	2.09%	-0.92	
6	-0.06%	2.04%	-0.38	
7	0.15%	2.27%	0.85	
8	0.29%	2.69%	1.34	
9	-0.21%	2.07%	-1.28	
10	-0.16%	2.26%	-0.87	

Table 1 – Statistical significance 4 days before and 1 day after the product announcement

Excess Returns - 2005-2007				
Day in Relation to Announcement	**Average Excess Return**	**Standard Deviation**	**T-score**	**Significant?**
-10	0.04%	1.62%	0.20	
-9	0.12%	1.58%	0.68	
-8	0.44%	2.92%	1.38	
-7	0.10%	1.80%	0.53	
-6	-0.08%	1.49%	-0.49	
-5	-0.15%	1.60%	-0.85	
-4	-0.29%	1.85%	-1.41	
-3	0.05%	2.77%	0.16	
-2	-0.12%	1.80%	-0.59	
-1	0.10%	1.71%	0.55	
Product Announcement, Day 0	**0.16%**	**2.10%**	**0.70**	
1	-0.15%	1.79%	-0.79	
2	0.22%	2.02%	1.00	
3	-0.06%	2.06%	-0.25	
4	0.32%	1.70%	1.71	
5	0.10%	1.56%	0.59	
6	-0.07%	1.62%	-0.38	
7	0.26%	1.93%	1.21	
8	0.22%	3.13%	0.63	
9	-0.18%	1.55%	-1.07	
10	-0.04%	2.04%	-0.18	

Table 2

Excess Returns - 2009-2011				
Day in Relation to Announcement	**Average Excess Return**	**Standard Deviation**	**T-score**	**Significant?**
-10	0.21%	2.25%	0.80	
-9	0.19%	2.35%	0.69	
-8	-0.24%	2.77%	-0.74	
-7	-0.20%	2.77%	-0.64	
-6	-0.29%	2.74%	-0.91	
-5	0.33%	2.92%	0.97	
-4	-0.44%	2.52%	-1.52	
-3	0.27%	2.45%	0.97	
-2	0.07%	2.00%	0.28	
-1	-0.10%	2.21%	-0.39	
Product Announcement, Day 0	**-0.05%**	**2.52%**	**-0.19**	
1	-0.59%	2.11%	**-2.41**	**Yes**
2	-0.08%	2.34%	-0.30	
3	0.24%	2.52%	0.81	
4	-0.31%	2.13%	-1.25	
5	-0.44%	2.54%	-1.49	
6	-0.06%	2.44%	-0.20	
7	0.04%	2.61%	0.13	
8	0.36%	2.10%	1.49	
9	-0.24%	2.55%	-0.83	
10	-0.28%	2.48%	-0.99	

Table 3 – Statistical significance on the day after the product announcement

Excess Volume - All Announcements				
Day in Relation to Announcement	**Average Excess Volume**	**Standard Deviation**	**T-score**	**Significant?**
-10	125,201	2,074,357	0.76	
-9	22,773	1,677,221	0.17	
-8	9,582	1,359,913	0.09	
-7	14,421	1,218,034	0.15	
-6	-217,094	933,922	**-2.93**	**Yes**
-5	-58,157	1,474,104	-0.50	
-4	269,963	3,413,570	1.00	
-3	90,674	1,478,228	0.77	
-2	127,697	1,703,182	0.95	
-1	-44,253	1,186,504	-0.47	
Product Announcement, Day 0	**-94,809**	**976,350**	**-1.22**	
1	66,496	2,562,678	0.33	
2	110,597	2,418,506	0.58	
3	35,317	1,345,429	0.33	
4	122,230	1,555,885	0.99	
5	-159,386	1,192,849	-1.68	
6	17,795	1,084,873	0.21	
7	137,447	1,543,660	1.12	
8	21,956	1,183,284	0.23	
9	-23,838	1,436,125	-0.21	
10	-139,921	922,448	-1.91	

Table 4 - Statistical significance 6 days before the product announcement

Excess Volume - 2005-2007				
Day in Relation to Announcement	Average Excess Volume	Standard Deviation	T-score	Significant?
-10	-44,853	1,049,061	-0.39	
-9	54,677	1,558,816	0.32	
-8	173,539	1,230,223	1.29	
-7	39,172	819,760	0.44	
-6	-89,072	535,276	-1.53	
-5	2,381	850,497	0.03	
-4	82,570	1,426,456	0.53	
-3	98,967	1,089,951	0.83	
-2	266,820	1,543,297	1.58	
-1	18,916	867,249	0.20	
Product Announcement, Day 0	**-85,980**	**684,968**	**-1.15**	
1	-159,308	563,740	-2.59	**Yes**
2	-91,728	675,117	-1.25	
3	-10,297	693,973	-0.14	
4	47,698	1,064,954	0.41	
5	-29,187	863,237	-0.31	
6	13,151	813,142	0.15	
7	115,978	1,243,833	0.85	
8	55,536	868,300	0.59	
9	5,756	947,645	0.06	
10	-10,852	656,365	-0.15	

Table 5 - Statistical significance 1 day after the product announcement

Excess Volume from 2009-2011				
Day in Relation to Announcement	Average Excess Volume	Standard Deviation	T-score	Significant?
-10	315,662	2,807,744	0.97	
-9	-12,960	1,810,634	-0.06	
-8	-174,049	1,478,659	-1.02	
-7	-13,300	1,553,219	-0.07	
-6	-360,480	1,225,348	**-2.55**	**Yes**
-5	-125,960	1,954,347	-0.56	
-4	479,844	4,744,768	0.88	
-3	81,386	1,825,641	0.39	
-2	-28,121	1,864,309	-0.13	
-1	-115,004	1,467,183	-0.68	
Product Announcement, Day 0	**-104,698**	**1,228,375**	**-0.74**	
1	319,395	3,680,075	0.75	
2	337,200	3,446,599	0.85	
3	86,404	1,822,032	0.41	
4	205,706	1,970,598	0.90	
5	-305,208	1,470,191	-1.80	
6	22,996	1,330,894	0.15	
7	161,492	1,830,681	0.76	
8	-15,654	1,463,277	-0.09	
9	-56,984	1,842,353	-0.27	
10	-284,478	1,137,325	**-2.17**	**Yes**

Table 6 - Statistical significance 6 days before and 10 days after the product announcement
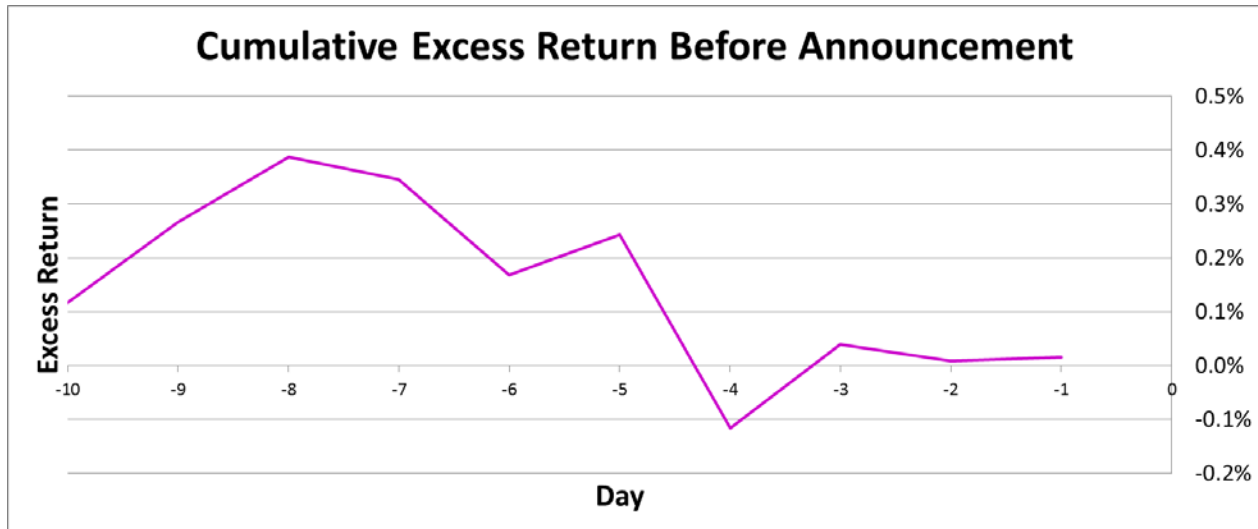
Figure 1 - The cumulative analysis adds the excess return on that day to the sum of the excess returns from the days before it. This figure shows that 10 days before the product is announced, D_{-10}, there are positive excess returns. This trend continues through D_{-8}, at which point the cumulative excess return reverts back towards 0%. It remains at this level leading up to the announcement date, D_0.
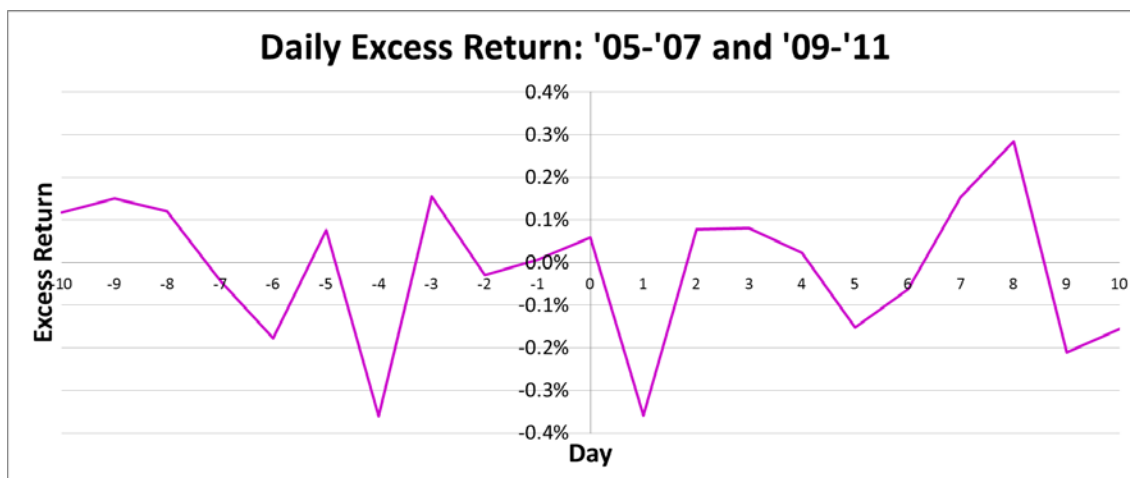

Figure 2 - The announcement date shows a positive excess return of 0.06%. The day following the announcement, D_1, shows a negative excess return of -0.36%, with a statistical significance found from the t-score of -2.31.
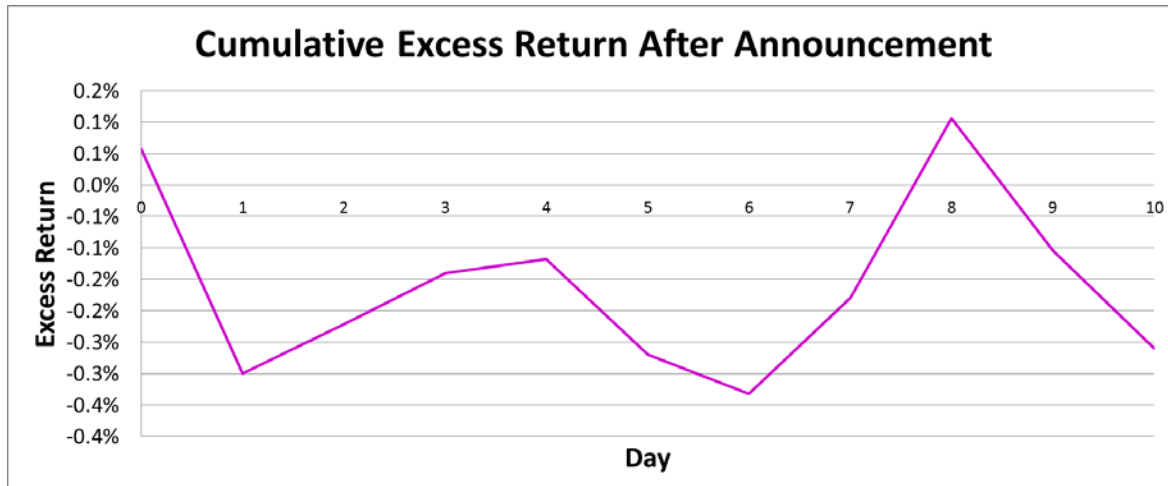
Figure 3 – During the 10 days after the announcement, the cumulative excess return moves around 0%, with a low-point of -0.33%. There was a -0.24% excess return over the 10-day period following the announcement.
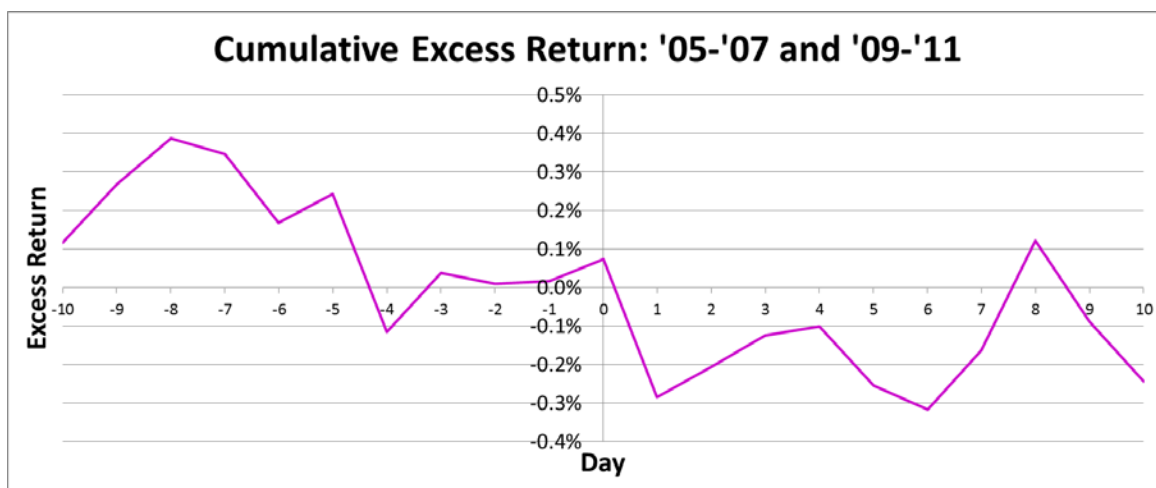
Figure 4 - On average, there was a -0.24% excess return over the entire 21-day period.
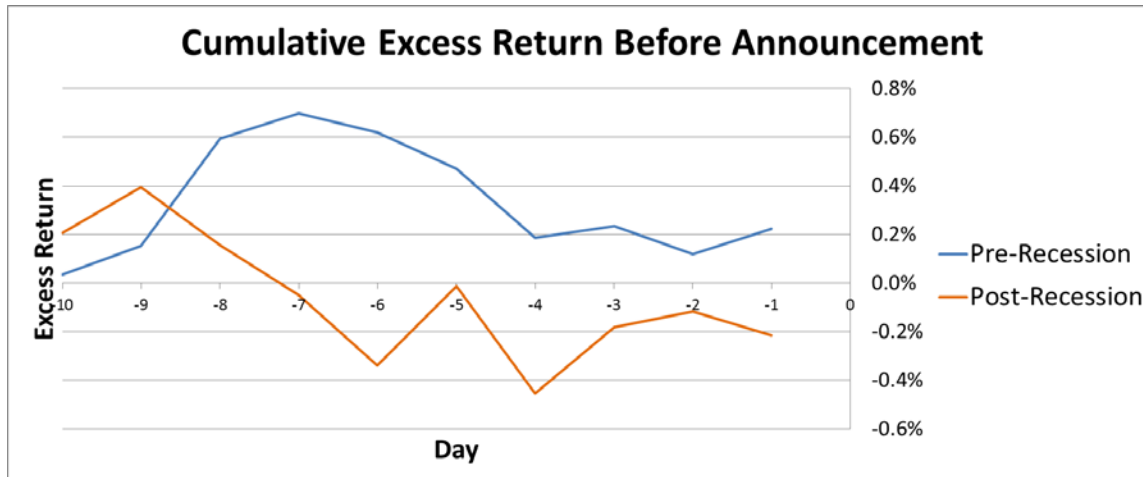
Figure 5 - Pre-Recession results show an increasing cumulative excess return from days D_{-9} to $D_{-7,}$ while Post-Recession results show a decreasing cumulative excess return from Days D_{-9} to D_{-6}. After these dates, both Pre-Recession and Post-Recession revert towards a cumulative excess return of nearly 0% leading up to two days before the announcement date, D_{-2}.
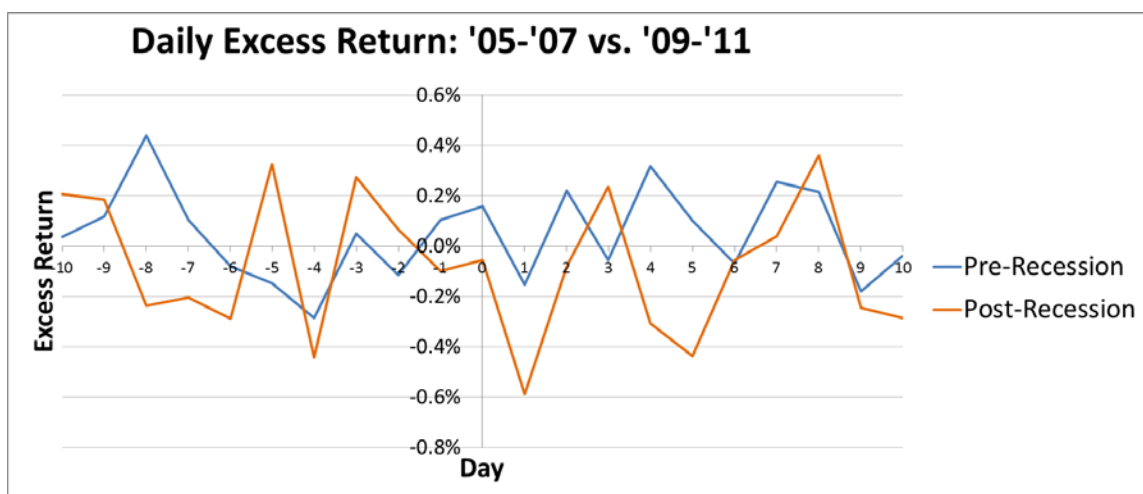
Figure 6 – On the announcement date, the average excess return in the Pre-Recession period is 0.16%, while the average excess return in the Post-Recession period is -0.05%. However, on the day following the announcement, D_1, both periods' excess return declines. In the Pre-Recession period, the average excess return on D_1 is -0.15% with no statistical significance shown from the t-score of -0.79. In the Post-Recession period, the average excess return on D_1 is -0.59% with statistical significance shown from the t-score of -2.41. Furthermore, the majority of the Pre-Recession results have positive excess returns, while the majority of the Post-Recession results have negative excess returns.
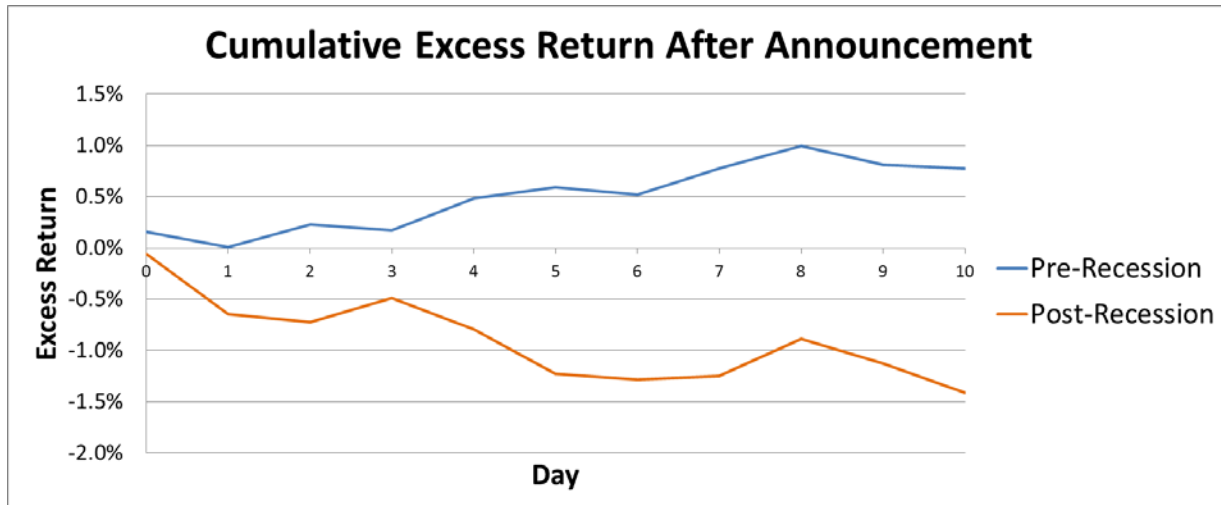
Figure 7- Over the 10 days after the announcement, the Pre-Recession Period has a cumulative excess return of 0.77%, while the Post-Recession Period has a cumulative excess return of -1.41%.
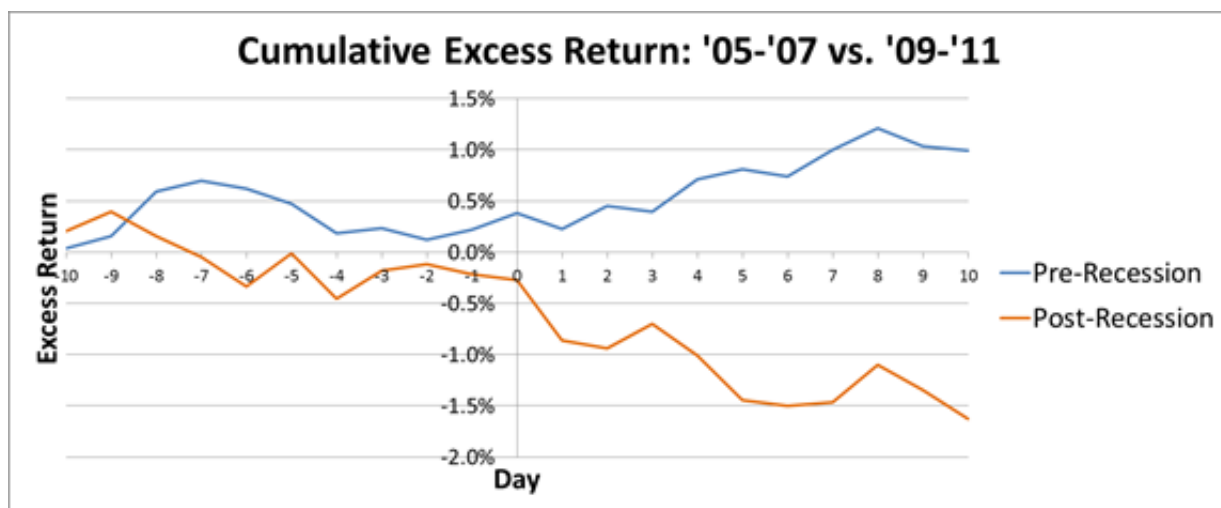

Figure 8 – There is a drastic difference between Pre-Recession and Post-Recession returns over the 21-day period surrounding the announcement date. The Pre-Recession 21-day period has a cumulative excess return of 0.99%, while the Post-Recession 21-day period has a cumulative excess return of -1.63%.
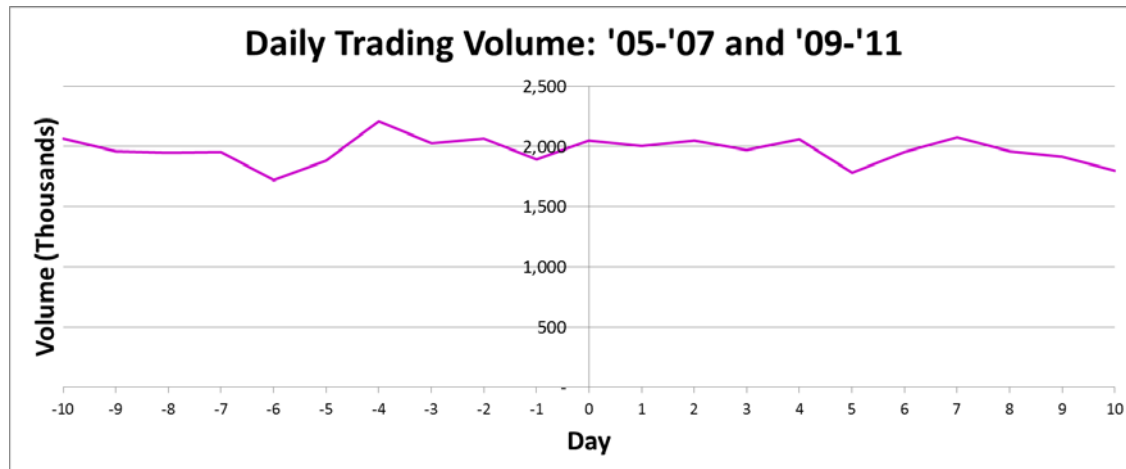
Figure 9 - The trading volume over the entire 21-day period remains relatively unchanged.
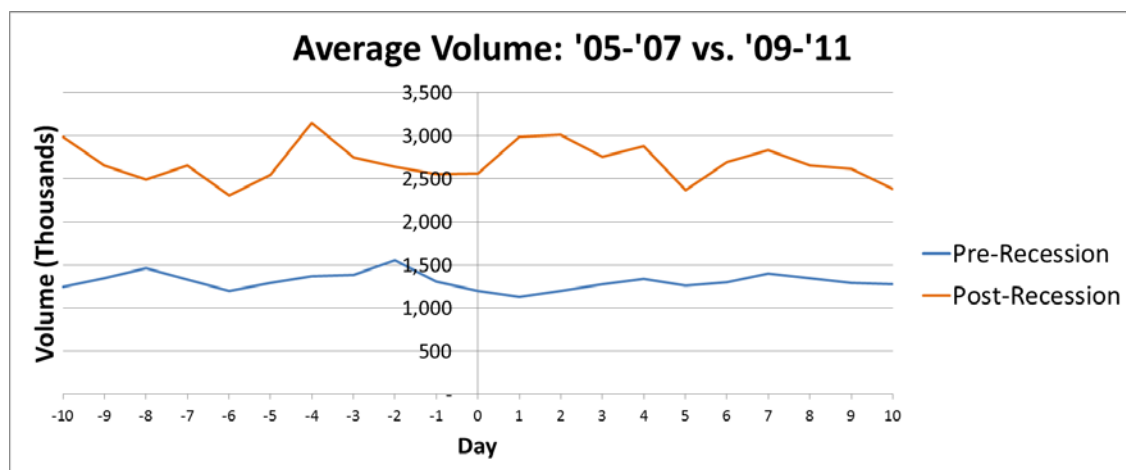
Figure 10 – Both Pre-Recession and Post-Recession show a decline in trading volume leading up to the announcement. However, Pre-Recession continues to decline on the announcement date, D_0, while Post-Recession volume increases slightly. Furthermore, the Pre-Recession volume continues to decline the day following the announcement, D_{-1}, while Post-Recession volume increase. Pre-Recession then slowly returns to a level similar to before the announcement, while Post-Recession remains heightened for one more day before slowly declining through D_{-10}.
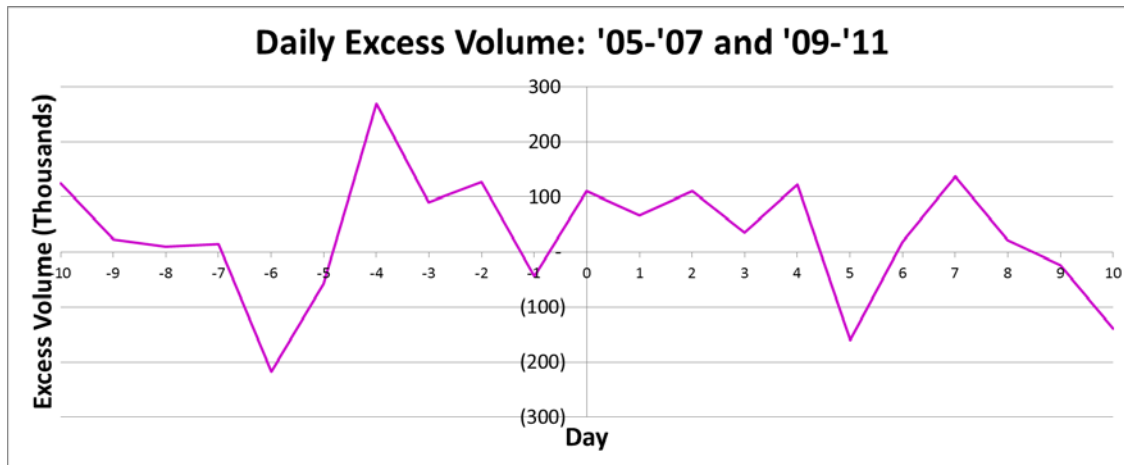
Figure 11 - 6 days before the announcement, D_{-6} a noticeably negative excess volume is seen. However, the effects are not long-lasting. 4 days before the product announcement, D_{-4}, positive excess volume occurs. Excess volume is then seen until the day before the announcement. There is positive excess volume on the announcement date. This positive excess volume continues through 4 days after the products announcement. For the remaining days leading up to D_{10}, the daily excess volume fluctuates.
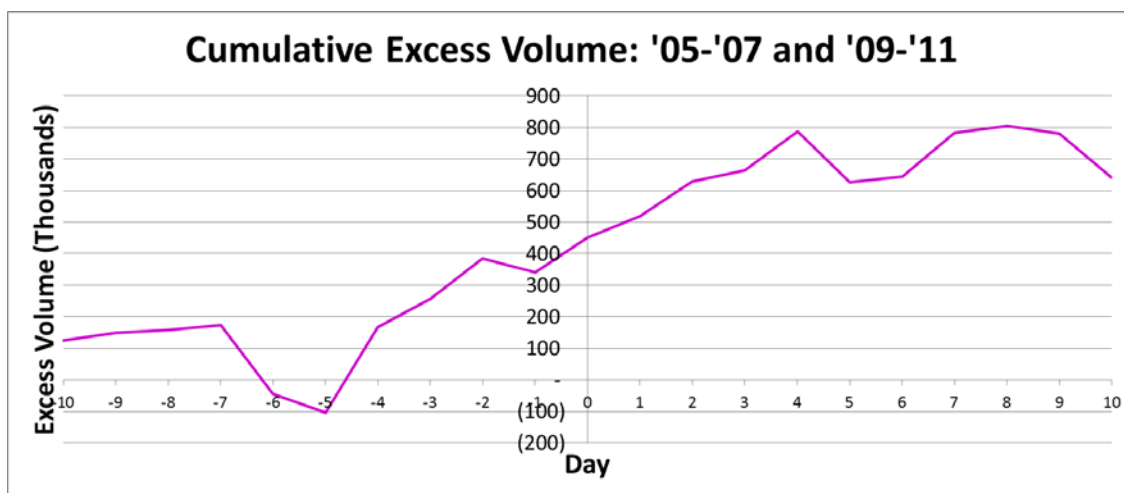

Figure 12 – The average amount of cumulative excess volume from the announcement date to 10 days after is almost 300,000. In comparison, the cumulative amount of excess volume from 10 days before the announcement to 10 days after is about 640,000. This shows there is a similar amount of excess volume before the announcement as there is after the announcement.
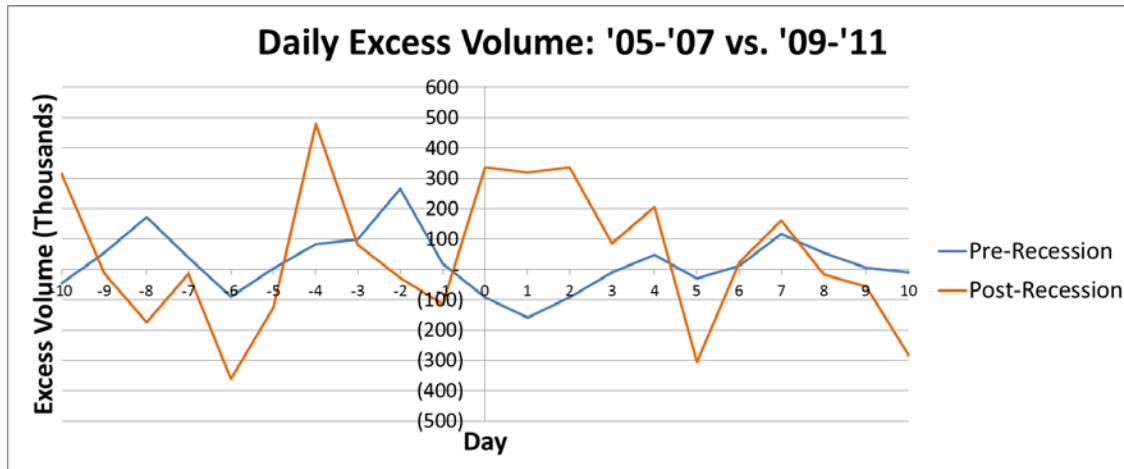
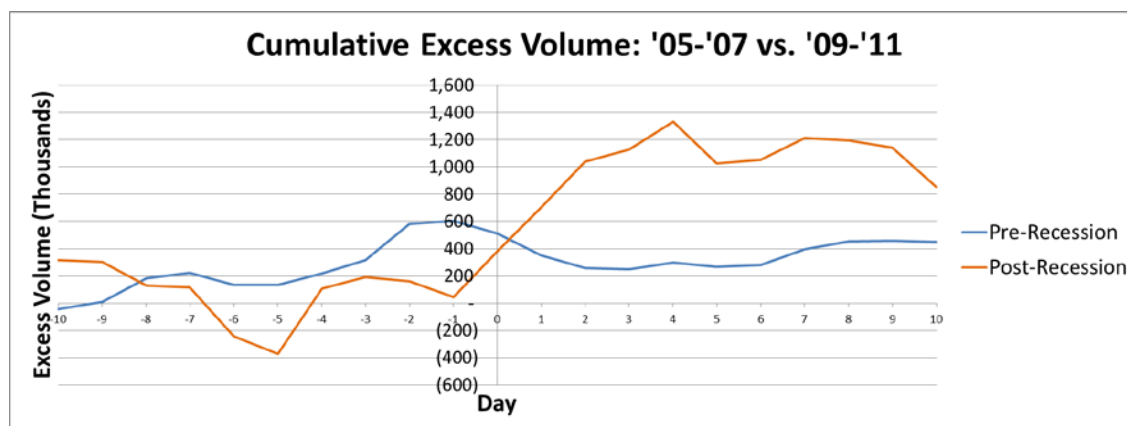*Figure 13 -* Both the Pre-Recession and Post-Recession results show daily fluctuations of excess volume.

Figure 14 - Pre-Recession results shows a collective increase in excess volume leading up to the announcement, while Post-Recession results alternate between slightly positive and slightly negative excess volume. On the announcement date, Pre-Recession results show slightly negative excess volume, while Post-Recession has a noticeably large excess volume of more than 300,000. Furthermore, there is barely any excess volume following the announcement date in the Pre-Recession Period, but the Post-Recession Period peaks at a total excess of more than 1.3 million at D4. After this date, excess volume subsides. Both the Pre-recession and Post-Recession results return to daily excess volumes closer to 0. The Post-Recession Period does have 2 days of very negative excess volume: D5 and D10.

REFERENCES

Agnew, H., Brownell, K. D., & Roberto, C. A. (May 2009). An Observational Study of Consumers' Accessing of Nutrition Information in Chain Restaurants. *American Journal of Public Health, 99*(5).

Bassett, M. T., Dumanovsky, T., Huang, C. Y., Nonas, C. A., & Silver, L. D. (2009, July). What People Buy From Fast-food Restaurants: Caloric Content and Menu Item Selection, New York City 2007. *Obesity Journal, 17*(7).

Brescoll, V. L., Dixon, L. B., Elbel, B., & Kersh, B. (2009, Oct 6). Calorie Labeling and Food Choices: A First Look at the Effects on Low-Income People in New York City. *Health Affairs, 28*(6).

Brown, S. J., & Warner, J. B. (1985). Using Daily Stock Returns: The Case of Event Studies. *Journal of Financial Economics, 14*, 3-31.

Campbell, J. Y., Lo, A. W., & MacKinlay, A. C. (1997). *The Econometrics of Financial Markets.* Princeton, NJ: Princeton University Press.

Chaney, P. K., Devinney, T. M., & Winer, R. S. (1991). The Impact of New Product Introductions on the Market Value of Firms. *The Journal of Business, 64* (4), 573-610.

Danbolt, K. & Jones, E. A. E. (2005). Empirical evidence on the determinants of the stock market reaction to product and market diversification announcements. *Applied Financial Economics, 15,* 623-629.

Eddy, A., and Saunders, G. (1980). New product announcements and stock prices. *Decision Sciences, 11*, 90-97.

FactSet. (2012). AFCE Company Releases. Retrieved November, 2012, from FactSet.

FactSet. (2012). JACK Company Releases. Retrieved November, 2012, from FactSet.

FactSet. (2012). MCD Company Releases. Retrieved November 2012, from FactSet.

FactSet. (2012). SONC Company Releases. Retrieved November 2012, from FactSet.

FactSet. (2012). WEN Company Releases. Retrieved November 2012, from FactSet.

FactSet. (2012). YUM Company Releases. Retrieved November 2012, from FactSet.

Fama, E. (1970, May). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance, 25*(2).

Fast Food and Quick Service Restaurants. *Hoover's.* Retrieved from http://0-subscriber.hoovers.com.helin.uri.edu/H/industry360/description.html?industryId=1444

King, B. F. (1966, Jan). Market and Industry Factors in Stock Price Behavior. *The Journal of Business, 39*(1).

Lorie, & Hamilton. (1973). *The Stock Market: Theories and Evidence*. Homewood, IL: Richard D. Irwin.

Malkiel, B. G. (2003). The Efficient Market Hypothesis and Its Critics. *Journal of Economic Perspectives, 17*(1).

Miller, M. H., and Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *Journal of Business*, *34*, 411-33.

Modigliani, F., and Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*, *47,* 261-97.

North, J., Painter, J. E., & Wansink, B. (2005, Jan 1). Bottomless Bowls: Why Visual Cues of Portion Size May Influence Intake. *Obesity Research, 13*(1).

Platt, E. (2012, Feb. 29). The Impact Of Major Product Announcements On Shares Of Apple. *Business Insider.* Retrieved from http://articles.businessinsider.com/2012-02-29/markets/31109760_1_announcement-3gs-iphone

Schweitzer, R. (1989, July/August). How Do Stock Returns React to Special Events? *Business Review, Federal Reserve Bank of Philadelphia*, 17-29.

Silverman, M. (2012, March 8). How Product Announcements Affect Apple's Stock Price [CHARTS]. Retrieved from http://mashable.com/2012/03/08/apple-product-stock-price/

Wittink, D., Ryans, A., and Burrus, N. (1982). *New products and security returns*. Ithaca, N.Y.: Cornell University.

Yahoo. (2012). AFCE Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=AFCE+Historical+Prices

Yahoo. (2012). JACK Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=JACK+Historical+Prices

Yahoo. (2012). MCD Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=MCD+Historical+Prices

Yahoo. (2012). SONC Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=SONC+Historical+Prices

Yahoo. (2012). WEN Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=WEN+Historical+Prices

Yahoo. (2012). YUM Historical Prices. Retrieved December, 2012, from Yahoo Finance:

http://finance.yahoo.com/q/hp?s=YUM+Historical+Prices