MEASURING THE SHORT-TERM STOCK VOLATILITY FOLLOWING AN EXECUTIVE LEADERSHIP CHANGE IN FORTUNE 1000 COMPANIES

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Abstract

When an executive leadership change occurs in an organization, it can be a time of real and perceived volatility for employees, managers, and shareholders. This paper explored the short-term (3 month) volatility following executive leadership changes of Fortune 1000 companies that occurred in 2012 and 2013. The study then compared the average volatility rate across industrial sectors as set forth by the Industry Classification Benchmark standards. The results of this study indicate that there is no significant change in any industry for short-term stock volatility rates following an executive leadership change compared to the prior short-term volatility rates. The study did find that some industries experienced higher levels of volatility during the selected time range of 2012-2013. The results of the study do have practical and academic implications for the fields of management and finance.

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CHAPTER ONE

When leadership changes occur in organizations, there are typically changes within the organization and with external stakeholders. The scope and impact of these changes are dependent on a variety of variables including company size, organizational focus, general economic conditions, and the reason for executive leadership departure. One potential effect of an executive leadership change is the possibility that a company's stock will experience a period of short-term volatility following the change. This paper will examine some of the effects of an executive leadership change on an organization's short-term stock volatility.

Topic Overview/Background of the Problem

Leadership changes can have a tremendous impact on an organization. An organization's strategy, mission, structure, operation and profit (King & Cunningham, 2012) can be affected by a leadership change. Day and Lord (1988) hypothesize that executive leadership strategies can explain as much as 45% of an organization's performance. The perception of an organization's performance may be influenced by the organization's stock price. The expectations and predictions associated with stock prices are commonly based on empirical evidence such as financial ratios and quantitative financial analysis. Some examples of financial ratios used to determine stock prices include gross profit margin, return on assets, earnings per share, and debt-to-asset ratio.

However, Hudomiet (2011) assert that there are other factors, such as economic speculation, stockholder expectations, and government actions and regulations, that affect

the confidence level of investors, and therefore in turn, serve as the antecedent for rising or falling stock prices. According to Men (2012), leadership is a factor that determines this confidence level such that if a leader is perceived as competent, investors maybe more likely to invest, thus driving stock prices up. If a leader is perceived as incompetent, an opposite effect may occur. Prahalad and Hamel (1990) found that organizations that were perceived as possessing a portfolio of competencies grew exponentially in comparison to their competitors. The same companies mentioned in the study also saw solid stock performance during the time of growth.

However, stock prices may change, either favorably or unfavorably, as the result of a leadership change. In 2011, the news of Steve Jobs departure sent Apple shares falling nearly 3% at the start of trading on Wall Street, temporarily reducing the company's value by $10bn (Wearden, 2011). While this phenomenon may be due in part to Jobs very public persona, it may potentially be that the leadership change itself had effect on the organization's perceived value. These changes vary in magnitude due to a myriad of factors that will be explored in this paper.

Leadership changes may cause a stock's price to become volatile, meaning that it fluctuates greatly from day to day or week to week. Finance academicians widely agree that volatility should be measured in percent change in prices, or rates of return (Schwert, 1990). Volatility is measured by the Chicago Board of Options Exchange (CBOE), primarily through the CBOE Volatility Index (VIX). Volatility is statistically measured based on the dispersion of returns for a given security or market index. "The most commonly used measure of stock return volatility is standard deviation, a status which measures the dispersion of returns" (Schwert, 1990). Bittman (2013) explains standard

deviation as the average difference between each of the daily percentage changes and the mean percentage change over the time period.

This study will explore the short-term market volatility of a leadership change and compare it across ten industries. It will review the ten industries of the NYSE Industry Classification Benchmark (ICB) including: (a). 10 industries, (b). 18 super sectors, (c). 40 sectors and (d). 114 subsectors. This list provides accurate and globally accepted industry and sector classifications (NYSE, 2013). The companies analyzed will trade on on the NASDAQ. This research question for this study is: Does short-term market volatility differ across industries following a leadership change? To answer this research question, data was gathered from approximately 180 Fortune 1000 companies traded on the NASDAQ and analyzed to compare market volatility using a regression analysis tool that will use the standard deviation formula to determine volatility.

Problem Opportunity Statement

The problem is identifying which industries are more susceptible to short term equity volatility with a leadership change than others, thus shaking investor confidence and speculation, potentially having a negative impact on the organization's stock capital. Hudomiet (2011) argue that volatility has the potential to a significant impact on the confidence of investors, and in turn, a company's stock prices. Roll (1984) asserts that stock volatility is a measure for variation of price of a financial instrument over time. According to Schwert (2011), the academic finance profession widely agrees that volatility should be measured in percentage changes in price, or rates of return. Schwert (2011) explicitly states how volatility is measured using the standard deviation. "The

most commonly used measure of stock return volatility is standard deviation. This statistic measures the dispersion of returns. Financial economists find the standard deviation to be useful because it summarizes the probability of seeing extreme values in returns. When the standard deviation is large, the chance of a large positive or negative return is large" (Schwert, 2011, p. 5).

Zhang (2010) points out that volatility may not only affect the confidence of investors, but also the high frequency trading (HFT) algorithms commonly used in computerized stock trading. Ma (2010) found that the volatility of financial markets may cause substantial emotional and physical stress among investors. Ma's (2010) study found a correlation between a volatile Chinese market in the years 2006-2008 and the incidence of cardiovascular disease among investors and traders.

There are two major ways commonly used to measure volatility: historical and implied. Roll explains that historic volatility is derived from time series of past market prices while implied volatility is derived from the market price of a market-traded derivative (in particular an option). Schwert (2011) identifies several times throughout history when stocks have been the most volatile and demonstrates how they correlate to turbulent economic times such as the Great Depression of the 1930's and the recession of 2008-2009. This paper will use historical volatility as a means to assess the problem.

Purpose Statement

The purpose of this study was to identify which industries are more susceptible to equity volatility as a result of a leadership change than others. Tseng, Cheng, and Wang (2009) point out that volatility is an important concept to investors and other finance

experts. Modeling and forecasting stock market volatility have received considerable attention by practitioners and academics alike (Tseng, Cheng, &Wang, 2009). This study used historical stock data in hopes of potentially helping investors understand one of the many potential causes of stock volatility. By observing what happened in the past across industries, investors might be better prepared to anticipate strategies that will assist them during times of high volatility trading. Gu and Zhou (2009) point out that historical models are useful in predicting future market performance. They argue that such a model, based on empirical evidence outperforms other models, such as models that solely try to predict behavior, can be adapted to many kinds of companies and situations and reproduce stylized facts. The purpose of this study is to use this historical data to create a model that may help understand the effects of an executive leadership change on a stock's volatility. The study will be useful for both academics and practitioners in the field of finance.

Research Questions

The primary research question is: Does short-term market volatility differ between industries following an executive leadership change? To answer this research question, data was gathered from approximately 160 companies, all traded on the NASDAQ, and analyzed to compare market volatility using a spreadsheet tool that calculates volatility using the standard deviation formula and a two-tailed T-test. In addition to the primary research questions, the explored: (a). the industry that experienced the most volatility during an executive leadership change and (b). the industry that experienced the least volatility during a leadership change.

Hypotheses

In measuring the effect of an executive leadership change on an industry's short-term stock volatility, the following hypothesis was tested. H_0: There will be no significant difference between the overall short-term volatility rate of industries following executive leadership changes. H_1: There will be a significant difference between the overall short-term volatility rate of industries following executive leadership changes.

Researcher's Assumptions/Bias

All research is accompanied by assumptions held by the researcher. The assumptions may arise from past experience or previous knowledge. The assumptions may also be based in existing theory. The primary assumptions that the researcher will have to suspend are the ideas that she has heard from speculative sources such as the mainstream media as well as the results of past studies regarding stock volatility and executive leadership changes.

Significance of the Study

This study is significant to upper management and stockholders alike due to its ability to hopefully address any major trends in short-term market volatility following a management change and comparing the rates by industry. It will be useful as changes in stock price are one factor indicative of an organization's overall health and industry changes are useful as economists measure the world's macroeconomic system, which is largely composed of publicly traded companies (NASDAQ, 2013). This study can help industry experts understand what potential short term effects leadership changes may have on their organization based on historical data of other organizations in similar

industries. If a CEO change means that the company's stock capital becomes volatile, it puts more pressure on the CEO to deal with the speculators through PR campaigns and takes away from the time he or she should be handling organizational operational matters. The volatility also unnerves employees, who may see a drop in stock prices as a sign that the company is in poor health, thus affecting their productivity and morale levels.

General Overview of Research Design

This study will be a quantitative study, relying primarily on quantitative data collection, which, according to Leman (2011), includes the process of collecting historical data through written records and regression analysis. According to Stake (2010), quantitative thinking relies heavily on linear attributes, measurement, and statistical analysis. For this reason, pure quantitative studies often involve making inferences and deductions strictly based on numerical data, such as sales figures or close-ended survey results. Furthermore, Stake (2010) stated qualitative, on the other hand, relies primarily on human perception and understanding.

Theoretical Framework

When approaching such a study in the social sciences, it is important to understand the philosophical underpinnings that set the tone of the study (Ilisko, 2013). Feast and Melles (2010) frame the research process as composed of four basic elements: epistemology, theoretical perspective, methodology, and methods. Epistemology is "the theory of knowledge that defines what kind of knowledge is possible and legitimate" (Feast & Melles, 2010). For this study, a rationalist epistemological position will be taken.

According to Bernard (2012), rationalist theory dictates that since it is not possible experience all knowledge firsthand and therefore must make inferences and deductions based on logic and reasoning. From this perspective, there are a priori truths that if we prepare our minds adequately, will become evident to us (Bernard, 2012) through the process of deduction. Markie (2013) asserts that deduction is a process in which we derive conclusions from intuited premises through valid arguments, ones in which the conclusion must be true if the premises are true. We intuit, for example, that the number three is prime and that it is greater than two. We then deduce from this knowledge that there is a prime number greater than two. Intuition and deduction thus provide us with knowledge *a priori*, which is to say knowledge gained independently of sense experience (Markie, 2013).

Theoretical perspective is defined as the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria (Feast & Melles, 2010). There are several theoretical frameworks involving the role of a leader and leadership effects on an organization (Bass & Bass, 2009; Robbins & Coulter, 2010; Huang, Kahai & Jestice, 2010; O'Reilly et al, 2010; Hanay, 2009). The two largely competing frameworks as described by Robbins and Coulter (2010) and Hanay (2009) are symbolic vs. omnipotent. The omnipotent view of management states that managers are directly responsible for an organization's success or failure. However, the symbolic view of management believes that much of an organization's success or failure is due to external forces outside managers' control. Hanay (2009) asserts that if employees view a leader as omnipotent and unquestioningly correct in all things, it is unlikely that they will provide an opinion, let alone challenge a leader's position. These

two competing frameworks are not exclusive to management. According to Robbins and Coulter (2010), many professional sports coaches and political leaders are also judged by these standards. Despite empirical evidence indicating otherwise, many, including shareholders, still hold an omnipotent view of management. A change can cause a shift in confidence in the shareholders, thus affecting the equity volatility of the organization (Zweig, 2003). Another theoretical focus lies in the causational theory of conditionals as it relates to financial performance and possible outcomes of events. The events are considered antecedents (A), or the causes, while the effects are the consequents (C). By using basic subjunctive reasoning, if A, then C, one can employ principles of logic and conditional probability in conjunction with knowledge of industrial factors to best determine possible outcomes with regard to the effect of leadership changes (Bennett, 2003).

Scope

This study will examine approximately 162 publicly traded Fortune 1000 companies in the years of 2012 and 2013 that have had executive leadership changes. In this study, executive leaders will be defined as either the CEO or the president of a qualifying organization. It will examine the impact on stock performance for the three months prior to the executive leadership change as well as the three months following the executive leadership change. It will then compare the volatility rates across the industries of the Industry Benchmark Classification (ICB) standards.

Limitations

There are several limitations for this study. A primary limitation will be that other factors might have occurred simultaneously with a leadership change (i.e. general economic recession, elections, terrorist activities, etc.). These will be controlled for as much as possible. Another limitation is that some of the industries have not experienced as many leadership changes, so there may be less historical data and therefore a smaller population. Another limitation is that high frequency trading (HFT) will have an impact on the volatility as well. Another limitation is the possibility that two leadership changes might have occurred within three months.

Delimitations

Delimitations are the boundaries set forth by the researcher. In this study, the main delimitation was only researching U.S.-based organizations on the Fortune 1000 list and only examining data from 2012. The reasoning behind this was to get the most timely and relevant data. Due to the time constraints and time needed for analysis, analyzing data for more than a year was not feasible for this study. As for the HFT limitation, according to Zheng's (2010) research, HFT occurs at about the same rate in all industries and has been occurring at about the same rate for the last several years, so this should not significantly impact the volatility difference between three months prior and three months following a change. In the event that two executive leadership changes occurred within three months, these cases will probably be eliminated from the population.

Definition of Terms

CEO: “Chief Executive Officer” (Robbins & Coulter, 2010, p.56).

Common Stock: “Shares entitling their holder to dividends that vary in amount and may even be missed, depending on the fortunes of the company” (Robbins & Coulter, 2010, p.128).

NASDAQ: “National Association of Securities Dealers Automated Quotations, the second-largest stock exchange in the world by market capitalization, after the New York Stock Exchange” (NASDAQ, 2013, para. 1)

NYSE: “New York Stock Exchange, the world’s largest stock exchange, located in New York City” (NYSE, 2013, para. 1).

Preferred Stock: “Stock that entitles the holder to a fixed dividend, whose payment takes priority over that of common-stock dividends” (Robbins & Coulter, 2010, p. 132).

Stock: “The capital raised by a business or corporation through the issue and subscription of shares” (Robbins & Coulter, 2010, p. 125).

Stock Market: “The market in which shares of publicly held companies are issued and traded either through exchanges or over-the-counter markets” (NYSE, 2013).

Stock volatility: “A statistical measure of the dispersion of returns for a given security or market index” (Kritzman, 2013).

General Overview of the Research Design

The research is designed in such a way that chapters one and two will provide a general background of the problem in an effort to educate the reader and provide information from a variety of managerial and academic perspectives. Chapter three will introduce some of the formulas that will be used and explain the importance of relative standard deviation (RSD). This will be vital in understanding the results, which will compare RSD and be presented in the fourth chapter. The final chapter will address the implications of these results.

Summary

Executive leadership changes have a significant effect not only within an organization, but for internal and external stakeholders as well. These changes have the potential to cause shifts in confidence in the shareholders, thus affecting the organization's stock prices. Since stock prices are indicative of investor's confidence in an organization, they are sometimes indicative of an organization's health. This chapter explored the concept of stock volatility, the statement of the problem, the hypothesis and null hypothesis, as well as how the study can be used by practitioners and academics alike, and most importantly, how this study will contribute to the study of management and leadership.

Organization of Dissertation

Although the research design will be covered in depth in Chapter Three, this chapter provided a general outline of the research topic as well as the main questions and the hypothesis, Chapter Two will discuss some of the background literature regarding

stock volatility and executive leadership changes in greater detail. Chapter Three will present the methodologies and tools used to answer the research questions and prove or disprove the hypothesis. Chapter Four will present the results and Chapter Five will analyze the results and provide suggestions for future research.

CHAPTER TWO

Leadership is a very ambiguous concept. In every organization, there are different levels of leaders. Some, such as executive leaders, make decisions that are more conceptual and directional in nature than that of their mid-level counterparts who tend to make decisions that are more procedural and operational in nature. This statement begs the question: who is more influential in an organization's performance? While such a complex question will never have a clear answer, Dalton and Dalton (2011) found evidence that analysts and practitioners attribute ultimate responsibility and direction to executive leadership, typically a president or CEO. These upper level executives are typically responsible not only for handling internal and external change, but are also sometimes the cause of change.

One type of significant change in an organization is a change in leadership. Changes in leadership are often thought to primarily affect companies from an internal sense. A leadership change could mean significant restructuring, changes in product focus and marketing techniques, research and development modifications and alterations to an organization's business strategy. Tidd and Bessant (2011) postulate that changing leadership styles is both possible and likely to result in changes in subordinates' motivation, attitudes, and performance levels. However, a leadership change often affects external shareholder's perspectives of the organization as well, and sometimes, by correlation, the direction in which it is headed. Day and Lord (1988) stated that when other variables are controlled for, it is evident that executive leadership can explain as much as 45% of an organization's performance. Boyne (2011) support the popular view that high-performing organizations should attempt to retain members of their senior

management team, whereas low performers should seek to replace them. Pan (2013) defines top management change as any change in the set of individuals holding the title of chief executive officer (CEO) or president. The common hypothesis in many studies (Pan, 2013) is that when a leadership change occurs, it has an inverse reaction on stock price. However, multiple studies have shown that this paradigm is not always the case.

Prior studies that have been conducted regarding executive leadership changes and stock prices have had differing results. Warner, Watts, and Wruck (1988) found a significant association between poor stock performance and the frequency of management turnover, but found no excess returns to shareholders at the announcement of management change. Reingaunum and Borstadt (1985) also found that no significant changes except in some specific and isolated cases related to special circumstances, such as firm size, executive title, or origin of successor. Beatty and Zajac (1985) found an insignificant negative return as a result of management change announcements while Furtado and Rozeff (1987) reported significantly positive returns following the change of management announcement.

The type of stock return after a leadership change is highly contingent on a variety of situational and organization-specific factors. As Cameron and Green (2012) point out, leadership changes do not occur in identical situations or circumstances; therefore it is difficult to make blanket assumptions regarding the effects of a leadership change on organizational performance. According to Schwert (2011), one of the factors that plays a significant role in stock performance and volatility is industry. This study will classify organizations based on industry standard classification benchmarks in an attempt to

compare the result of leadership changes on short-term equity volatility across industry sectors.

The Impact of Management on an Organization

The classic theorists of management have long examined the various spheres of influence that a manager has by identifying some key principles of management. Fayol (1916) identifies the key principles of management as "division of work, authority and responsibility, discipline, unity of command, unity of direction, subordination of individual interest, remuneration of personnel, centralization, scalar chain, order, equity, stability of tenure of personnel, initiative, and esprit de corps" (Fayol, 1916, p. 19). Gulick (1937) portrays a manager as "one master," and hypothesizes that orders from the highest master (i.e. executive leadership) should issue orders that are methodical, efficient, and responsible.

However, today's top managers are executives who operate in very complex organizational contexts. Upper management operates within a larger organizational context, which encompasses an organization's performance, culture, and strategy. Organizational context is said by some omnipotent theorists to be largely molded by managers, but is also comprised of many variables including, but not limited to, a manager's motivational strategies, an organization's structure and design, system design, level of bureaucracy, and mission. The differences between management's roles in different industries will be discussed later.

Organizational design, which encompasses organizational elements such as company mission, vision, structure, strategy, processes, systems, culture and history can

be referred to quite simply as how the company is structured and managed. Jones (2010) defines organizational design more formally as the process by which managers select and manage aspects of structure and culture so an organization can control the activities necessary to achieve its goals. Organizational design dictates how and why the organization is designed a certain way, which is why if upper management has a lot of leeway over changing or modifying the overall design; it could have a tremendous impact on the internal and external organizational stakeholders. Many other organizational elements are all contingent upon this design, so a major change would cause a rippling effect throughout the company.

Brown (2011) states that there is no uniform organizational design; each organization is designed to their unique needs and challenges. There are several competing theories of organizational design. Organizational structure is how an organization is structured. The system theory (open or closed) and the hierarchal design are two of the most simplistic theories of organizational design. The two general systems theories are open and closed system theories, although today many organizations have a more complex and sometimes hybrid system of design.

The closed system theory is a bit more archaic than the open systems theory as proponents of this theory see an organization as self-sufficient and is not impacted by external factors. A closed system is said to be more hierarchal in that the organization is shaped like a pyramid in which upper management dictates decisions downward, with employees at the bottom carrying out the orders. This design was based on the theories of classical management theorist Henry Fayol, who stated that "for any action whatsoever, an employee should receive orders from one superior only" (Fayol, 1916). The primary

tenet of classical management theory states that organizations exist primarily to accomplish a goal. Proponents of this hierarchal, classical, structure, emphasize job division and specialization of labor as a means for maximizing production, and people act in accordance with rational economic principles. Leaders who embrace classical hierarchal management theories tend to focus on stability and output, rather than embracing and adapting to change.

An open system relies heavily on external interaction with the environment, and embraces change as a fluid component of the system. External forces such as the legal, political, economic, and social systems all impact an open system. Internally, open systems theories are said to be more flat in nature. Flat theory states that all employees should have some equal say and voice in the organization. There are less supervisors and middle managers and layers between upper management and the general employees. However, these explanations are a bit simplistic for the large, complex, and often global publicly traded companies being studied in this paper. Some organizations are limited to certain regions within the U.S. and some are multinational conglomerations. Their size, industry, mission, and goals are just a few of the factors that determine organizational structure.

Organizational structure is a large part of the organizational context in which a manager operates. Organizational structure is defined as the formal system of task and authority relationships that control how people coordinate their actions and use resources to achieve organizational goals (Jones, 2010). There are several kinds of organizational structures. While this list is not exhaustive, the main five are functional departmentalization, geographical departmentalization, product departmentalization,

process departmentalization, and customer departmentalization, as well as specialized designs, such as the matrix model. If a manager has the authority to change or reorganize the existing structure, it could have an effect on the output and production level of the organization, as well as the organization's shift in emphasis from one product or service to another. A change in management may preclude a change in not only organizational structure and a shift in strategic focus, but also a change in the workforce. For a leader, downsizing might serve as a means to reduce labor costs and eliminate unnecessary levels of hierarchy (Goins & Gruca, 2008). However, for many employees, talk of restructuring may imply layoffs, or even the threat of layoffs, which could lead to a dramatic shift in employee morale and overall organizational culture.

A leadership change has significant effect on an organization's culture. Organizational culture, as defined by Schein, is commonly regarded as a set of assumptions, beliefs, values, customs, structures, norms, rules, traditions, and artifacts (Schein, 2012). Cameron and Quinn (2011) postulate that the major distinguishing features in powerful and successful companies- their most important competitive advantage, the most powerful factor they all highlight as a key ingredient in their success- is their organizational culture. The elements of organizational culture, which in a large part, are dictated by the actions and words of executive management. The upper echelon theory of culture supports the belief that: a) organizational outcomes, b) strategic choices, and c) performance levels, are partially predicted by managerial background characteristics (Hambrick & Mason, 1984). Smollan and Sayers (2009) state that change in culture can be the goal of management and but could occur indirectly as a result of strategic, tactical or operational changes. Therefore, change by way of leadership can be

intentional or unintentional. May (2011) supports this theory as he asserts that societal norms are shaped through organizational action and change.

Leaders often act as intentional change agents and launch major new sustainability initiatives on a daily basis. These range from publicity campaigns aimed at changing consumer behavior to multi-stakeholder platforms that drive market transformation to comprehensive educational system reform (Brown, 2011). Organizational change has the potential to trigger positive and negative emotions and moods in the employee that depend on a range of factors. These include the perceived valence of the outcomes, the change processes that are used, the speed, timing and frequency of change, the nature of leadership and the employee's personality and emotional intelligence. The culture of the organization can also play an important role in both generating emotions during change and influencing their expression or suppression. (Smollan & Sayers, 2009) The organizational culture also has an indirect impact on the financial performance of an organization. Barney (1986) found a positive correlation between corporate culture and competitive advantage. A summarization of the study found that when employees and managers perceive their organization as positive, the company is better positioned for financial gain when compared to its competitors. In another study, financially successful companies were rated higher in the area of perceived corporate culture as measured by orientation toward customer service, justice, and safety (Luria 2008) than their competitors whose culture based on these standards were not as strong. (Chatman, 2013)

Gordon (1992) found that companies in highly dynamic industries were characterized by cultural values that enhanced adaptability, whereas utilities were

characterized by cultural values that enhanced stability. He further found that the same values differentiated the fastest growing and most profitable companies within each type of industry from the less successful ones. As evidenced by Gordon's (1992) analysis, an organization's structure often dictates its culture. An open-systems culture may facilitate a dynamic culture, more adept at adapting to change. A closed systems culture may value stability and consistency with regard to organizational culture.

According to Bass and Bass (2009), leadership contributes to social order, the introduction of major changes, giving meaning and purpose to an organization, empowering followers, and infusing organizations with ideologies. A leader's competence is deeply entwined with organizational culture. Kaplan and Sorensen (2012) found that companies with higher financial performance had CEOs who were perceived as scoring high in their general ability to run an organization as well as possessed strong communication and interpersonal and execution skills. Espedal (2012) discovered a positive relationship between CEO cooperative behavior and organizational performance. This relationship was based on a CEO's perceived legitimacy and managerial discretion.

Other intangible assets such as corporate and CEO reputation and credibility, and customer relationships affect customer satisfaction and loyalty. Many company managers have recognized the significance of these factors in attempting to attract and retain customers in long-term relationships. CEO and corporate reputation, leadership, relationships and communication are inextricably related because they contribute to a CEO's ability to direct and responsibly control desired outcomes. Customer satisfaction and corporate credibility play important roles when creating good relationships and maintaining customer loyalty to a company as well as public faith (Jin & Yeo, 2011).

This study also analyzed how executive leadership was perceived as capable or not of handling problems and issues. Issue management is the process of identifying, organizing, and monitoring a set of issues so their evolution, and possible resolution, are recognized and can be integrated into an organization's management structure (King, 2002). With regard to handling major problems and situations that would result in negative news stories, the perception of a leader‘s competence can drastically alter the actions of external relationships, such as those with investors.

In addition to competence, a leader is oftentimes judged on his or her perceived personal code of ethics. A leader’s ethical or unethical behavior is also grounds for how he or she is judged by stakeholders. According to Svara (2007), ethics refers to standards of right and wrong that prescribe what humans ought to do, usually in terms of duties, principles, specific virtues, or benefits to society. More specifically, administrative ethics refers to the ethical behavior of anyone who occupies a leadership position within an organization. Since today’s leaders are highly visible, their ethics are often seen as a reflection of the organization’s ethics.

Ethical behavior on a sizeable organizational level is often correlated with a firm’s perceived level of corporate social responsibility. Corporate social responsibility (CSR) can be generally defined as any socially or ecologically beneficial activities that companies undertake to benefit communities or society”(May, 2011). Several recent studies analyzing relationships between financial performance and perceptions of firms’ corporate social responsibility found a positive correlation between an organization’s perceived CSR and financial performance (Nelling & Webb, 2009). The positive correlation between perceived corporate social responsibility and financial performance

ought to be enough to persuade even the biggest skeptics of the need for more sustainable policies and practices. Based on this evidence, a logical deduction can be made with regard to an executive leader's perceived ethical level and investor confidence and trust. If a leader is known as ethical or trustworthy, or if they have a proven track record of encouraging corporate social responsibility, investors may feel more confident in their capabilities and therefore vote with their dollars.

However, ethical behavior isn't usually enough to instill investor confidence in an individual. More importantly, investors want to know that a CEO is competent and capable of performing the job duties required of them. Knowledge of the industry dynamics and a firm grasp of the company's challenges and opportunities are crucial for new CEOs, according to investors (Roady & McCoun, 2011). In summation of these concepts, one can surmise that a strong leader is typically one who not only embodies strong ethical principles, but is also competent within his or her industry and specific organization.

Management in Different Industries

While there are some universal characteristics sought after in leaders, most sociologists and economists are in agreement that there is not a standardized best practice with regard to management across industries. While an open-systems theory might work well in one industry or organization, a more classical approach with specialized job functions might be more applicable in a different industry or organization. The theoretical approach to management utilized in an organization is based on many factors including industry, size, economic output, and top leadership preference. Cooke-Daviess (2003)

discovered that one of the differences is the extent to which individual expertise, knowledge and judgment are brought into play.

The specific organizational development of a company will also dictate how much control a leader has within the organization. Leadership performance is often determined by how much control a leader possesses. For example, a manager in a smaller, more open-systems organization may have more control over day to day operations and creative direction than the manager of a company with more rigid and established protocol, structure, and procedures. A leader's span of control is oftentimes industry-dependent.

Each industry has distinctive features that limit the options of its company's leaders (Lieberson & O'Connor, 1972.) A study of General Motors, for example, found that heavy bounds were placed on the chairman's options. He also was required to get executive approval for spending more than $250,000 on a project. The chairman described his role as one whose job it was to reconcile different viewpoints and arrive at a consensus occasionally making individual decisions (Lieberson & O'Connor, 1972). However, in more consumer-oriented industries, studies have found that management has more control over decisions about advertising styles, product research and development, and marketing. In the same study (Lieberson & O'Connor, 1972) as General Motors, leadership changes the soap industry, for example, accounted for nearly 70 percent of the unexplained profit margin variance. In the shipbuilding and clay products industry, much like the automobile industry, leadership changes accounted for only 15% variance (Lieberson & O'Connor, 1972). Every organization is classified according to the Industry Classification Benchmark, shown in Appendix A.

Management Changes

In recent years, CEO turnover has become a somewhat common, and often highly publicized, occurrence. Because of increased demands from institutional investors for improved management practices and greater pressure for corporate accountability from the general public, corporate directors are frequently responding to percieved downturns in performance by replacing the chief Executive Officer (Rhim, Peluchette, & Song, 2006). Among companies with capitalizations in excess of $10 billion, nearly a third (31%) announced a CEO transition between July 1, 2007 to June 30, 2010 (Roady & McCoun, 2011).

Top management changes occur for many reasons. According to McIntosh (1994), some changes may have no relation to prior performance, or may follow good performance. Distressed firms are more likely than non-distressed firms to undergo signicficant leadership realignmant than those in solid financial standing. In any given year, 52% of sampled firms experience turnover if they are either in default on their debt, bankrupt, or privately restructuring their debt to avoid bankruptcy. A significant number of changes are initiated by firms' bank lenders (Bonner & Bruner, 1989). There are many management changes where the reasons behind a leader’s resignation are unclear. For example, many companies allow CEOs and other board members to resign or retire, rather than admit that the board or other external entity forced the resignation. Denis and Denis (1995) documented that forced resignations of top managers are preceded by large and significant declines in operating performance and followed by large improvements in performance. However, forced resignations were found to be rare and due more often to external factors (block holder pressure, takeover attempts, etc.) rather than to normal

board monitoring. Other reasons for leadership resignation include severe illness, as in the case of Steve Jobs, or unexpected death. According to the firm Challenger, Gray, and Christmas, a leader in global industry statistics, the reasons for CEO departures in 2012 are shown in Table 1.

Table 1

2013 CEO Departures by Reason as of July, 2013

Resigned	172
Retired	121
Stepped Down	111
Accepted position in another company	88
Temporary interim period ended	45
Merger/acquisition	13
Ousted	12
Contract Dispute/Expiration	7
Scandal	4
Health	3
Died	3
Other	6

Source: Pederson, J. & Madden, C. (2013). CEO Turnover Slows in June. *Challenger, Gray, and Christmas.*

According to statistics, CEO changes tend to occur during periods of poor economic conditions such as a recession. Based on statistics shown in Table 2, CEO turnover was the highest in 2008, coinciding with the national recession that occurred that same year. In the years since, CEO turnover has remained relatively stable.

Table 2

Chief Executive Departures 2007-June 2013

2007	2008	2009	2010	2011	2012	2013
1,356	1,484	1,227	1,234	1,178	1,214	601

Source: Pederson, J. & Madden, C. (2013). CEO Turnover Slows in June. *Challenger, Gray and Christmas.*

According to Challenger, Gray and Christmas, the highest turnover occurred in the healthcare industry with 117 changes occuring in the healthcare industry. Changes resulting from health care reform law, coupled with sequestration, which are resulting in funding cuts and lower Medicare reimbursements, could be the catalyst for leadership changes (Pederson and Madden, 2013). According to Bosagave (2013), "While health care providers and government and non-profit agencies continue to see the highest turnover, both have experienced a decline in the number of departures since 2010. At the same time, CEO turnover has increased in both the tech sector and in financial services. This is no coincidence. Until the recent slowdown, tech and finance were the fastest out of the gate as the recession made the transition to recovery." In other cases, CEOs left as a result of bad publicity or tragic events. Some notable departures include the resignation of Micky Arison of Carnival Corp after cruise ship disasters in 2012 and 2013 (Khouri, 2013) and Tony Hayward of BP after the Deep Horizon oil spill in 2010 (Wray, 2010).

The Stock Market as an Economic Indicator of an Organization's Health

The stock market is a complex and intricate life form of it's own, affected by many variables. The stock market's performance as a whole has an effect on the stock prices of various companies and vice versa. Warren Buffet explains that, "a stock is not

just a ticker symbol or an electronic blip; it is an ownership interest in an actual business, with an underlying value that does not depend on it's share price" (Buffet, 2003, p. 8). In essence, stocks are shares of a company owned by individuals or corporations. Stocks are one of the many sources of capital that an organization possesses. According to Baumol and Blinder (2010), along with other capital, such as plant, equipment, and other productive resources held by a business firm, capital stock is necessary for a company's productivity levels and output.

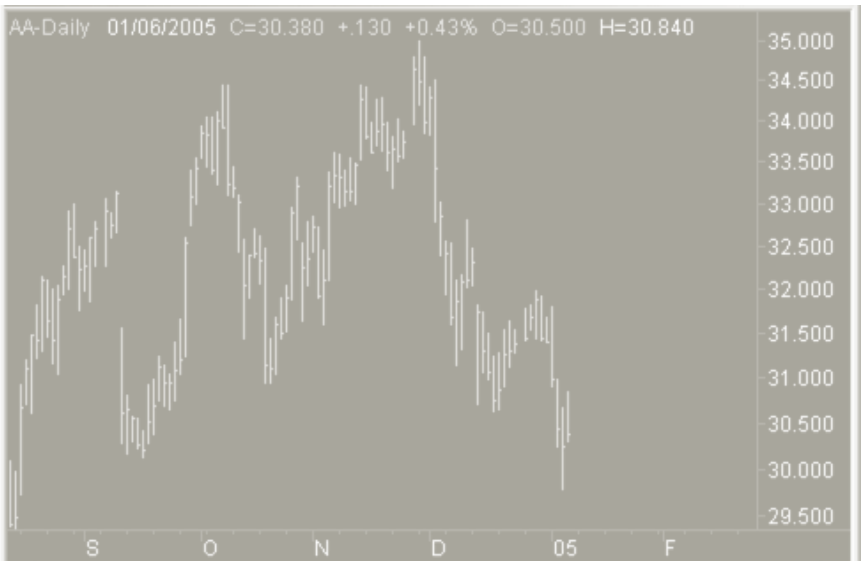
Stock prices are driven by expectations of corporate earnings. If the stock traders feel that the company's profits are going to increase, the stock prices go up. If they feel that the company will do poorly, stock prices drop. The principles of supply and demand also factor into the price of a stock. As more people try to buy a stock, its price will be driven up. On the other hand, if there are many excess shares that not many are willing to buy, prices will drop. There are two types of stock: common and preferred. This study will focus on common stocks, which represent a partial ownership of a corporation. Based on the number of stocks held, shareholders are entitled to a certain percent of the company's dividends, or the corporation's annual payments to stockholders. (Baumol & Blinder, 2010) According to Zweig (2003), the stock market's performance is dependent upon three factors: a) real growth, b) inflationary growth, and c) speculative growth – or decline.

Traditionally, financial analysts have used 23 key ratios analyzing figures from an organization's financial documents in an attempt to predict future corporate performance. However, these ratios have proven to be very static and do not take into account external forces and variables, such as general economic conditions, leadership changes, and

natural disasters or global crisis, such as terrorist events. “Various simple-efficient market models of financial markets imply that these ratios should be useful in indicating future dividend growth, future earnings growth, or future productivity growth. We conclude that, overall, the ratios do poorly in forecasting any of these” (Campbell and Shiller, 2001, p. 661). For this reason, a combination of ratio formulas and probability theorems must be explored to truly analyze an organization’s future performance.

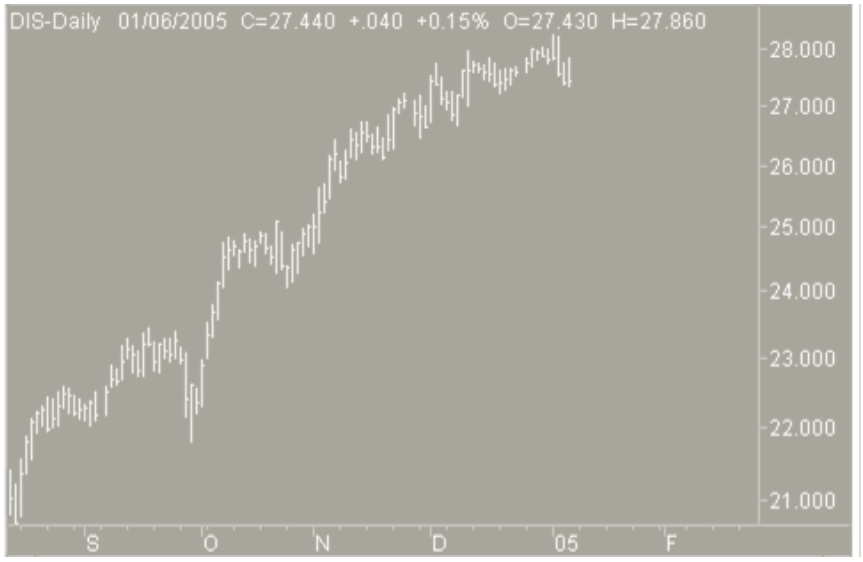
One thing that ratios typically do not predict is volatility. The importance of volatility is central to financial economics. Equilibrium prices, obtained from asset pricing models, are affected by changes in volatility, investment management lies upon the mean variance theory, while derivatives valuation hinges upon reliable volatility forecasts (Kalotychou & Staikouras, 2009). Therefore, volatility mirrors market expectations. With volatility, it is the percentage change that matters, not the direction. This means that a one percent price rise is equal in volatility terms to a one percent price decline. Also, one price change is not important. Rather, the volatility of a stock's price action is calculated from a series of price changes over several time periods. (Bittman, 2013) From 1997-2002, the standard deviation of daily returns was 1.3% for the S&P 500 Index, 2.2% for the NASDAQ, and 1.3% for the Dow Jones Industrial Average.

Volatility can also be measured for individual companies. Figures 1 and 2 show the volatilities of two companies for the second half of 2005. The first, Alcoa (AA) is a highly volatile stock, as evidenced by the arbitrary peaks and valleys in the graph. The second, Walt Disney Co. (DIS) is less volatile, as measured by a steady upward climb.



Source: Adapted from *NASDAQ*. (2013)

Figure 1. Highly volatile stock



Source: Adapted from *NASDAQ*. (2013)

Figure 2. Less volatile stock

A stock's volatility can be visually represented in charts, as seen previously in this paper. However, when analyzing charts, many experts look for patterns in the somewhat randomness of volatility. These patterns may indicate behavioral patterns such as trends or a trend reversals. As Schwager (1999) asserts, it is important to understand the patterns

in the charts as they reveal not only interactions between buyers and sellers, but also can be used as a guide for future price performance analysis.

Trends can be analyzed for any given time period whether it is a week, month, quarter or year. Generally speaking, the longer a trend is measured, the more indicative it is of actual performance and not just short-term volatility. Trends are normally measured using moving averages, Moving averages are used in technical financial analysis to measure the average value of a stock over a set amount of time. They are called moving averages because the chart moves along a timeline, from January to December, for example. These historical moving averages help forecast present value of future dividends. For each year, roughly a weighted average of moving-average earnings and current real price, with between two thirds and three fourths of the weight on the earnings measure (Campbell and Shiller, 1988).

An uptrend moving average line is indicated by a generally increasing closing price. Figure 4 is a good example of an uptrend line. Although it has moments when the price drops, it tends to be on an uptrend for the entire period measured in the chart. A downtrend line would be the exact opposite in which the closing price generally decreases over a given period of time. There is a general downtrend in Figure 3 between the end of November 2004 and the beginning of 2005.

A sideways market is the type of market in which prices oscillate between high and low prices with no general upward or downward trend. In choppy markets, moving averages tend to oscillate in a sideways direction and can also indicate buy signals and sell signals, points at which the moving average turned upwards by a certain amount of ticks, and downwards by the same amount of ticks, respectively (Schwager, 1999). An

example of a sideways market is shown in Figure 3. The larger the differences between the high and low points, the more volatile a stock is.

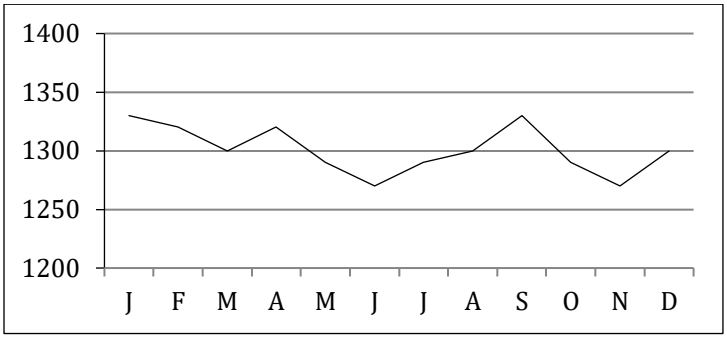


Figure 3. Sideways market

In Figure 3, for example, the ceiling seems to be somewhere just below 1350 and the floor seems to be somewhere above 1250. When either of these changes, for the better or for the worse, it is called a price breakout. This can be due to a myriad of factors, either contingent to the specific stock or as a general part of a larger market trend.

Stocks are analyzed using the stated volatility percentage. According to Bittman (2013), calculations are made over a series of time to determine the standard deviation of a stock. Obviously a stock trading at 25% volatility is more volatile than one with a 20% volatility rate. Again, for a more comprehensive picture, it is important to measure a stock for as long as possible to get the most comprehensive performance analysis.

Baker and Bloom (2011) and other researchers have sought to analyze the relative importance of economy-wide factors, industry-specific factors, and firm-specific factors with regard to a stock's volatility. This approach borrows from modern asset pricing theory and its emphasis on so-called factor models, or models that assume a firm's stock return is governed by factors such as the overall market return, the return on a portfolio of

firms sampled from the same industry, or even changes in economic factors such as inflation, changes in oil prices, or growth in industrial production. Zussman, Zussman, and Nielsen (2008) and others have found strong effects of political shocks on markets and asset prices. Baker and Bloom (2011) also found that natural and man-made disasters caused uncertainty, and resulting volatility, in the stock market as a whole.

Many financial experts report that volatility can also be attributed to other factors. To explain for a large amount of volatility in April of 2013, Bittman (2013) asserted that many investors like to invest their money in stocks at the beginning of a quarter, such as the first week in April. This means that lots of new money is entering the market. However, April 15, tax day, was two weeks later. Many individuals and corporations sold off their stock in order to pay tax debts. Elections also have an impact on the stock market's volatility in general. Historically, regardless of which party has won the U.S. presidency, stocks have tended to become more volatile right before election time.

Positive reports of consumer spending can also cause stocks to become more volatile. Traders and analysts may interpret this as a positive economic indicator, leading to speculation of inflation and interest rate hikes, both of which could have a potentially negative impact on trading. However, some believe that volatility is more dependent on a herd mentality with the public following the spectators, or media-labeled experts, than on underlying economic or financial events. In fact, psychological issues on stock prices are one of the most important factors in determining the volatility of the market. "When you have 500- to 600-point swings in a single day, something is wrong," says Jack Ablin, Chief Investment Officer at Harris Private Bank. "It suggests emotions are playing a big factor in the moves" (Ablin, 2013). In fact, one of the biggest human

motivations is uncertainty. Humans are oftentimes more likely to sell when they are uncertain, causing a stock's price to plummet, at least in the short term. Compound this with the 24-hour news cycle in which investors are continually bombarded with information overload, some of it reliable, and some pure speculation.

Tetlock (2007) discovered a correlation between short-term volatility and the media's role in increasing speculation. He found that much of the common investor psychology and sociology was contingent upon the media's role, especially that of the Wall Street Journal and other reputable investor publications. A media company that owns multiple publications may have the tendency to print the same information in more than one publication, thus possibly leading investors to believe that the data or information originated from multiple sources, when in fact, it was just one. If the media pessimism measure is a predictor of investor sentiment, it may likely predict low short-horizon returns followed by high long-horizon returns of approximately equal magnitude. If the media pessimism measure follows past investor sentiment, it may likely predict low short-horizon returns followed by high long-horizon returns of greater magnitude than the short-horizon returns. These conclusions have been drawn by analyzing historical volatility.

It is important to differentiate between historical volatility and implied volatility. Historical volatility analyzes a stock's volatility over a certain time period in the past, whether it be a day, week, month, quarter, or year. Implied volatility calculates the future volatility of a stock and involves the use of the Black Scholes option pricing model. This paper will focus on historical volatility. According to Kritzman (2013), historical volatility is a continuous, unbroken data series looking backwards and analyzing past

data and is best suitable for testing purposes and measuring correlations. In their study analyzing volatility following a leadership change, Pan et al (2013) measured the monthly volatility of the residual stock return of the following Fama-French three-factor model, shown in Figure 4.

$$r_t^i = \alpha^i + \beta_{MKT}^i MKT_t + \beta_{SMB}^i SMB_t + \beta_{HML}^i HML_t + \varepsilon_t^i .$$

Figure 4. Fama-French three-factor model

Here, "*Idiosyncratic Return Volatility*" was defined as $\sqrt{Var(\varepsilon_t^i)}$ from the above equation. A stock's volatility is very important in making predictions based on probability theorems. If a stock's historical volatility is shown to fluctuate on average 2% per day, based on that historical volatility, one can assume that a stock that traded at $100 today will trade between $98 and $102 tomorrow. A low volatility stock will show a narrower range of movement, as shown in Figure 4, whereas a higher volatility stock will have a larger range of movement, as shown in Figure 3. This kind of information is important as investors try to use probability to calculate their risk. Kritzman (2013) asserts that understanding, and possibly being able to predict volatility is important to investors because rather than adhere to fixed asset weights that deliver highly variable risk profiles, periodically change the portfolio weights in anticipation of volatility shifts to stabilize the portfolio's risk profile.

Market Volatility in Industries

The NYSE, NASDAQ, and AMEX all categorize companies based on their service or industry classification. They are categorized following the Industry

Classification Benchmarks (See Appendix A), which is an important indicator in segmenting the various sectors of the world's macroeconomic system into one centralized database, thus eliminating redundancy and confusion within markets. It provides a standardized basis for analysis, stock selection and performance measurement. It aligns with investment research and analysis, numerous exchange-traded products, and services developed by analytical data vendors (ICB, 2013). The ICB is relevant to investors and stockbrokers because it facilitates sector-based investment strategies as well as measures the overall market volatility of the various sectors. Each market has its own slight variation of the ICB. For continuity purposes, the nine industries of the NASDAQ will be used, since the NASDAQ classifies all companies, even ones that trade on the AMEX or NYSE. The communications sector is absorbed by other sectors.

Schwert (1999) states that stock market volatility also is positively related to volatility in economic variables, such as inflation, industrial production, and debt levels in the corporate sector. This tends to vary from industry to industry. Some industries are traditionally more stable than others with regard to leadership. An energy company, for example, is much more concerned with government regulation than who is in charge. This is partly due to the constraints put on the CEO with regard to expansion and mission. An energy company is very unlikely to change its core functions whereas a technology company may need to frequently change its focus and functions.

Kritzman, however, believes that volatility has the potential to affect all industries through a ripple effect in what he refers to as the absorption ratio. Many times investors have their money spread out in a diversified portfolio in which their investments are not all in the same industry. The ratio equals the fraction of the total variance of a set of

assets explained or absorbed by a finite number of eigenvectors. The higher the ratio, the more tightly coupled the assets are and the greater the impact a negative shock will have on that of a lower absorption ratio which is resilient to a negative event or severe price drop. The formula for Kritzman's absorption ratio is shown in Figure 5.

$$AR = \frac{\sum_{i=1}^{n} \sigma_{E_i}^2}{\sum_{j=1}^{N} \sigma_{A_j}^2}$$

AR: Absorption ratio

N: number of assets

n: number of eigenvectors used to calculate AR

$\sigma_{E_i}^2$: variance of the i-th eigenvector, sometimes called eigenportfolio

$\sigma_{A_j}^2$: variance of the j-th asset

Source: Kritzman, M. (2013). Risk Disparity. Massachusetts Institute of Technology.

Figure 5. Absorption Ratio

For this reason, it is imperative that investors and leaders alike understand that the change that occurs within one organization not only impacts their particular organization, but others in the market as well. An organizational change also has the potential to affect relationships with other businesses, vendors, suppliers, and other external parties (Robbins & Coulter, 2010).

Historically, the sectors that have been the most volatile have largely varied from year to year. In the late 1990s, the technology sector was more volatile while in recent years the basic materials and finance sectors have become more volatile (NASDAQ, 2014). According to Reeves and Delmer (2013), many factors affect an industry's overall volatility. Stocks rise, fall, or disappear altogether as companies enter the market, adapt, fail to adapt, or die. Major factors that affect the industry include regulation, mergers,

competitors entering the market, demographic changes, and international events. According to Reeves and Delmer (20130, some events that caused industry-wide volatility include the collapse of the USSR in which there was an influx of aluminum in the market, thus affecting manufacturing companies, the AOL and Time Warner merger effectively dominating the telecommunications market for a while, and the period in the 1990s, when healthcare costs increased at double the rate of inflation, impacting healthcare. Based on a 2012 report, the most volatile industries are shown in Table 3.

Table 3.

Standard deviation percentage by industry

Industry:	Volatility:
Basic Materials	19.00%
Technology	17.00%
Financial	16.00%
Energy	14.00%
Consumer Services	12.00%
Industrials	11.00%
Healthcare	10.00%
Utilities	9.00%
Consumer Goods	8.00%

Source: Adapted from NASDAQ, 2014

Theories of Management and Market Volatility

According to Barrett (2013), "the departure of the CEO, whether planned or unplanned, is always a significant event for the corporation. Many chief executive transitions go smoothly, leaving the company's performance unaffected. At other firms, however, CEO departures can cause a significant amount of distraction for the management team, stealing attention from strategic issues that increase firm value." While empirical studies have shown that the amount of distraction can have a significant

impact on production and operations, other studies evaluate the collective perception of a CEO's departure on an organization. Boyne (2011) found that while senior management does indeed matter, the results are inconclusive with regard to leadership changes and the outcomes.

Looking at a cross-sectional sample of Fortune 500 companies, Davidson, Worrell, and Cheng (1990) find that turnover at the top is associated with positive market reactions. However, other evidence suggests the opposite. Kacmar (2006) found that increases in managerial turnover in a fast food chain are related to reductions in performance (both directly and through concomitant increases in staff turnover) because of the learning costs of the new managers, though it should be noted that this refers to operational rather than top managers.

Graffin, Bovie, and Carpenter (2012) may support the assertion that a CEO is not as omnipotent as popularly believed. "Further contributing to the uncertainty associated with assessments of how well a CEO is performing is that their ability to influence firm outcomes can vary based on a number of factors that are not totally under their control. Bok (1993) states that firm performance may be loosely coupled with executive characteristics and decisions (e.g.). Indeed, strong performance may partially be driven by favorable industry or macro-environmental factors, while poor performance may be caused by a significant economic downturn" (Graffin, Bovie & Carpenter, 2012).

The strategy of an organization can often shift depending upon the leadership. The three main strategies, as described by Robbins and Coulter (2010) tend to be growth, stability, and renewal. A growth strategy is typically used when an organization wants to expand the number of markets served or products offered, through either its current

business or new business.A stability strategy is a corporate strategy in which an organization continues to do what it is currently doing. Finally, a renewal strategy addresses declining performance. (Robbins & Coulter, 2010) A leader's change in human resource policy can also impact the organization's performance. Husleid (1995) indicates human resource policies, can, if properly configured, provide a direct and economically significant contribution to firm performance. Rhim, Peluchette, & Song (2006) postulate that because the CEO plays such a key role in determining a strategy, design, performance, and corporate culture, both internal and external constituents are likely to view succession as an indication of the future.

Leadership changes do not occur in identical situations in nature; hence it is hard to infer the degree to which organizational outcomes reflect a leadership effect as opposed to forces outside a leader's control (Lieberson & O'Connor, 1972). For this reason, again, financial experts beg the question: is volatility influenced by the mere speculation of a leader's ability to change a company? The next section will analyze the intricate relationship between a change in an organization's upper management and changes in stock prices.

The Role of Performance

Dalton and Kesner (1985) conducted an empirical assessment of 96 publicly traded companies on the NYSE investigating organizational performance as an antecedent of chief executive succession. They wished to explore the validity of two commonly accepted theorems of management:

Theorem 1: *If organizational performance were lagging, then the leadership*

change would more likely be external (i.e. the new leader would be an outsider)

Theorem 2: *If organizational performance were strong, then the leadership change would more likely be internal (i.e. the new leader would be an insider)*

Their study actually revealed the misconceptions and simplicity of these basic theorems. Although the authors believe that the decision to hire an insider or outsider is critical in determining a firm's subsequent stock performance, the decision to hire from outside or within the company was dependent upon a myriad of complex factors including constraints on finances, a limited candidate pool, and further potential disruptions of an already volatile organization. According to Dalton and Kesner (1985), some theorists believe that the decision to hire an outsider would show weakness on the part of an organization. Others felt that it would be difficult to recruit someone to lead an organization that had a history or poor performance. It would be difficult to recruit someone to captain a sinking ship, so to speak. Their theorems were generally proved to be true, however, not with the universal applicability some theorists believed. DeAngelo (1988) asserted that an improvement in financial performance after a CEO change may not be a true measure of the CEO's ability since they in the case of an underperforming firm, they were starting at an operating loss.

Antecedents and consequents are not independent of each other. In the previous example, organizational performance served as the antecedent. Once a new leader has been named, that becomes the antecedent and future organizational performance becomes the consequent. In many cases, just the opposite effect has occurred. This logic, while very applicable to predicting stock performance, does not necessarily specifically address what techniques are best used to analyze and classify variables as potential antecedents

and in turn identify consequents. For this reason, Multiple Discriminant Analysis (MDA) is often used. MDA is a statistical technique used to classify an observation into one of several a priori groupings dependent upon the observation's individual characteristics. It is used primarily to classify and/or make predictions in problems where the dependent variable appears in qualitative form, e.g., male or female, bankrupt or non-bankrupt. (Shafer and Vovk, 2005)

MDA attempts to classify a large amount of data into smaller, more manageable chunks. MDA assists in organizing the antecedents and consequents in a manageable manner. In practical application with regard to this topic, MDA could identify a leadership change as a specific antecedent. However, it would also be useful in identifying other events and variables that might act simultaneously as an antecedent. For example, if a leadership change was announced at noon and a terrorist attack or other catastrophic event occurred a few hours later, the stock price would not just reflect the leadership change, but probably a larger antecedent. When analyzing the data, this type of coincidence may cause an outlier. Using MDA, these outliers will be accounted for and controlled in the research. Schwager's method of historical chart analysis supports using some of the principles of MDA as he asserts that "one of the earmarks of a successful trader is an ability to synthesize the various components of the overall picture." (Schwager, 1999, 123). Bonnier and Bruner (1985) used hierarchal multiple regression analysis to examine the direct and interactive effects of size, title, and origin on excess returns when studying CEO changes in distressed firms.

Historical Review of Short Term Market Volatility in Response to Leadership Change

Kalotychou & Staikouras (2009) assert that in an efficient market, volatility should fade away rather quickly after all of the speculation is over. Schwager (1999), along with most financial experts, believes that when rumors, speculation and emotion drive trading, it results in overtrading, premature liquidation, and jumping the gun with regards to buying or selling a stock. Buffet also advises that with regard to stock trading, "What is needed is a sound intellectual framework for making decisions and the ability to keep emotions from corroding that framework." (Buffet, 2003, p.4) Stock price reaction at announcement of a management change can indicate whether the capital market considers the event significant. According to Pan (2013), when there is uncertainty about a CEO's quality, news about the firm may cause rational investors to update their expectation of the firm's profitability for two reasons: (a).updates occur because of the direct effect of the news, and (b). because the news can cause an updated assessment of the CEO's quality, affecting expectations of his ability to generate future cash flows.

However, speculation by analysts, the media, and the public in general often causes investors to question what effect a leadership change will have on an organization's stock performance. After all, if they have invested in the organization, or are thinking of investing, it is their money and emotion may very well take over. Lee (2002) postulate that sentiment is a systematic risk that is priced. Their study found that excess returns are contemporaneously positively correlated with shifts in sentiment. While their study identified that there were changes associated with shifts in sentiment, the percentage of change was not consistent across all cases studied.

Two high profile cases of management changes in recent years include that of Apple CEO Steve Jobs resignation, followed by the subsequent announcement of Tim Cook as Apple CEO, and Yahoo's announcement of Marissa Mayer as new CEO in 2012. In the case of Apple, as previously addressed in this paper, Apple's stocks fell by 3%. In the case of Yahoo, however, stocks increased from $15.60 per share to $15.70 per share (a 1% increase) following the announcement of Mayer as new CEO. (NASDAQ, 2013) The preexisting conditions for these announcements may have played as significant role, as many financial experts have hypothesized. While Steve Jobs had been very much a public figure at Apple over the last several years, Yahoo's organization was perceived by many to have less stability with regard to executive leadership longevity. As Efrati and Letzig (2012) point out, Ms. Mayer became Yahoo's sixth CEO in five years, including two interim CEOs. Mayer had been a very public figure at Google since the Internet company's start up almost two decades prior.

Corporate profitability, product quality, business strategy, interest rates, etc., should have a role to play in shaping the intensity of price fluctuations. At the same time, information about changes in fundamentals should spark market activity, changing the landscape of future prices. (Kalotychou & Staikouras, 2009, p. 33) Some analysts argue that there is a direct correlation between speculation and volatility and that it is the speculation that acts as an antecedent, not the actual event of a leadership change.

Many studies have shown that CEO turnover has an effect on stock prices, although the results are largely inconclusive. Presumptive evidence has shown that CEOs have significant effects on investors' perceptions that in turn affect the price and future fluctuations of their companies' common stock. (Dalton & Kasner, 1985, p. 749) Since

stock prices influence the ability of corporate management to raise capital from equity markets and thus represent a significant goal of corporations (Weiner & Mahogany, 1981, p. 456), the perception of the CEO is a mitigating factor in the decisions of investors. Bonnier and Bruner (1989) assert that the combination of real effects, that is tangible financial performance measures, and information effects, or the perception of amount of change, produce a wide range of results, varying in magnitude and individual effects.

Several studies have been conducted in hopes of measuring market volatility after a leadership change. Pan (2012) discovered a robust relation between CEO tenure and the firm's stock return volatility: Volatility increases around the time of CEO turnover, and then decreases subsequently. The magnitudes of the effects are substantial; idiosyncratic return volatility declines by 14% and total return volatility declines by 10% over the 36 months after the CEO took office.

Several studies found that the reason for a CEO's resignation had an impact on the stock's subsequent performance. Denis and Denis (1995), discovered that normal retirements of CEOs do not cause performance declines prior to a management change, but do show small performance improvements with such changes. For the firms with poor financial performance, dismissal announcements or signs of forced resignations of CEOs might send a positive signal to the stock market. (Rhim, Peluchette, & Song, 2006) However, whether the new CEO was internal or external also was a mitigating factor in performance. The results of internal/external successor studies have largely been inconclusive. On one hand, many feel that an external CEO may cause disruption to a firm that is performing well. On the other hand, an external CEO may develop the strategies necessary to turn around a failing organization. Internal succession is far more

common, especially in the cases of unanticipated CEO resignations. Friedman and Singh (1989) found that when CEO change was initiated by normal retirements or disabilities in health, successions were overwhelmingly from inside the firms. Rhim, Peluchette, and Song's (2006) hypothesis that the market would indeed react differently based on reason given for succession was supported by their data that showed a pre-announcement average daily abnormal return of .0044, an announcement day abnormal return of .2249, and a post-announcement average daily abnormal return of .0047, just slightly higher than the pre-announcement rate.

Several studies have indicated that the market tends to respond more favorably to a CEO change announcement if the industry was performing below average than that of other firms in its industry. Bonnier and Bruner's empirical evidence of management changes in distressed firms also supports this concept as their research found that shareholders of distressed firms appear to gain from a change in senior management. Bonnier and Bruner also found that in distressed firms, the announcement of an outsider succession had a positive effect as outsiders may be seen as agents of change, altering the mission, objectives, investment/production strategy, and internal organization. (Bonnier & Bruner, 1989) Overall, Bonnier and Bruner's research found that in distressed firms, changes in CEOs were associated with a significantly higher return by 2.4%.

Another factor that tends to have an impact on the firm's performance is the size of the organization. Reinganum (1985) asserts that since smaller firms have a less complex control structure, the effect of a change in an upper management position may be more meaningful than in a smaller firm. Smaller firms may also be less constricted by bureaucracy, regulation, and limitations placed on upper management by the Board of

Directors. Lubatkin (1986) found that CEO change has more favorable returns in larger, rather than smaller firms. In the case of Real Estate Investment Trusts (REITs), McIntosh (1994) discovered an inverse relationship between a management change and subsequent stock performance. The study's authors hypothesize that this is due to the unique nature of REITs in that mangers in REITs tend to have a lot more control over operations and dealings with external parties, such as real estate agents and brokers.

Davidson, Worrel, and Cheng (1990) found that other, more personal characteristics of the CEO tended to have an effect on stock performance. Their study found differences for successor's origin, position, and age at the time of appointment. Warner, Watts, and Wruck (1988) found that when a CEO obtained power through family connections, such as inheritance, or stock ownership, the result was also more favorable than general turnover results. Other studies found that CEO changes, among other factors, affect investor decisions, expectations and performance guidelines. One such study found that on average nearly a third of investment decisions are based on perception of the CEO. As a result, investors indicated that nearly a third (32%) of their investment decision, on average, is based on perception of the CEO. According to Roady and McCoun (2011), some factors investors use to "rate" a new CEO are track record of execution, industry experience, personal reputation, experience at the company, and experience at other companies. As discovered Roady and McCoun's study, the CEO's past performance, either in the organization, or in another organization, carries the most weight at 63%. Personal reputation follows at 18%. King and Cunningham (2013) assert that the qualities of humility, trust, and integrity are important to a CEO's successor. An online survey of 157 employees from a Fortune 500 company shows that CEO credibility

is positively associated with perceived organizational reputation and employee engagement (Men, 2012).

Tetlock (2007) elaborates on his previous discussion of the media's role in forming investor's perceptions by ascertaining that high levels of media pessimism robustly predict downward pressure on market prices, followed by a reversion to fundamentals. Second, unusually high or low values of media pessimism forecast high market trading volume. Third, low market returns lead to high media pessimism. These findings suggest that measures of media content serve as a proxy for investor sentiment or non-informational trading. Baker and Bloom (2011) found that when there were an increased number of news stories regarding a nation, region, or company (as measured by Google News Index), the event was considered important and therefore led to increased speculation and resulting stock volatility.

Current Issues of Stock Market Volatility and Leadership Changes

Kesner and Sebora (1994) state that little can be known conclusively because of mixed results, and the many dynamics that enter into an equation with regard to the antecedents and consequents do not indicate a universal answer. In firm foundation theory, a firm's fundamental value is based on expected growth rate, expected dividend payout, the market interest rate, and the degree of risk (Sornette, 2008). However, one of the most important issues today is that of speculation. A basic Internet search will turn up countless pages of speculation and assumption with regard to the stock market. Like all things on the Internet, some will be more reliable than others, yet human perception of what is reliable and what is not may tend to differ between individuals, and even

organizations. Sornette (2008) describes an alternative to the firm foundation theory- one that is based in human psychology and behavior and attempts to predict crowd-theory and group speculation as antecedents for market performance. Simsek (2013) studied traders' average portfolio risks and divided them into two components: "the uninsurable variance, defined as portfolio risks that would obtain without belief disagreements, and the speculative variance, defined as portfolio risks that result from speculation." His research showed that speculative variance tended to "increase average portfolio risks, decrease average portfolio comovements, and generate greater speculative trading volume relative to risk-sharing volume" (Simsek, 2013). Due to the vast amount of information available in books as well as on television and the Internet makes it easy for anyone to speculate on what may or may not happen as the result of a particular change. However, there are still some key stakeholder's who have more influence than the general public.

Pietroski and Roulstone (2004) discovered that three parties (financial analysts, institutional investors, and insiders influence the firm's information environment, but the type of price-relevant information conveyed by their activities depends on each party's relative information advantage. This being said, it is difficult for the average investor to clearly differentiate between which expert has the most accurate information. There are many people who get their information from less-than-reliable sources such as Internet blogs proclaiming to have inside information. Zweig (2003) agrees that speculation will always be a part of stock trading and investing, but cautions against acting irrationally or taking actions based on hearsay and emotion. He believes, like many experts, that stock analysis ought to be based in logic, reasoning, and careful analysis.

One field in which reactions to executive management changes are of particular

interest is prospect theory applications. Prospect theory applications, which tries to mathematically calculate risks and behaviors associated with trading wishes to use these mathematical formulas to try to address the disposition effect and other trading phenomena (Barberis, 2011). As better technology and data becomes available, scholars, financial analysts, and investors are all looking to discover ways to use historical data to predict current trends and future behavior.

Gap in Research

While the studies were thorough with regard to leadership changes and stock prices, none of the studies broke the statistics down by industry. Also, many of the studies were performed many years before information technology and e-commerce were considered major industries. This study will be timelier and provide valuable information with regard to leadership changes in the last five years. There is little data available even showing how many executive leadership changes have taken place between 2008 and 2013. This study will quantify those changes and categorize them based on industry in hopes of answering the research question.

Summary of Chapter Two

As discussed in this chapter, organizational change is a complex concept, affected by multiple variables and situational dynamics. This chapter discussed the stock market as an economic indicator of an organization's health and the economy in general. It also analyzed the impact of executive management on organizations, and potential effects of executive level changes. It also discussed how management varies in different industries, and the presented information about the number of executive leadership changes in recent

years. Finally, it presented some theories of market volatility and discussed how speculation plays a role in affecting stock volatility. The next chapter will use the information gathered in the literature review to demonstrate what measurement and analysis tools will be used to answer the research questions as well as address reliability and validity measures as well as informed consent and privacy issues.

CHAPTER THREE

Methodology is defined as the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes, whereas methods are the techniques or procedures used to gather and analyze data related to some research question or hypothesis (Feast & Melles, 2010). The three main types of methodology, according to Creswell (2010), are quantitative, qualitative, and mixed-methods methodologies. Quantitative studies tend to be data-driven and use numbers, facts, and figures. According to Stake (2010), quantitative thinking relies heavily on linear attributes, measurement, and statistical analysis. For this reason, pure quantitative studies often involve making inferences and deductions strictly based on numerical data, such as sales figures or close-ended survey results.

Research Traditions

According to Meir et al (2010), quantitative studies tend to analyze data through statistical analysis including, but not limited to, regression analysis, Chi Square tests, t-tests, hypothesis testing, and probability testing. Qualitative research pursues complex answers to intricate research questions that cannot be addressed from a numerical, or quantitative, perspective. According to Ilisko (2013), qualitative research is typically undertaken in an effort to better understand a human condition, phenomena, or cultural perspective. Common techniques for quantitative research include observation, interviews (either in-person or via telephone or email), or in the case of historical

analysis, through the use of historical data such as archived information or written testimony. The opportunities and limitations with regard to methodology largely dictate the qualitative approach a researcher will take. Once the technique is developed, a data instrument, such as a survey, is created. The data is then analyzed, interpreted, and presented. The means by which this latter portion occurs is contingent upon the approach being used.

Mack (2005) stated that qualitative research is a systematic use of a set of procedures and questions that collects evidence, and produces findings. In some situations, qualitative and quantitative methods can be combined for a mixed methods research approach by which the findings from the qualitative phase lead to the development of a quantitative research tool, or vice versa. These are called sequential mixed methods studies. In an embedded mixed methods study, a qualitative study takes place within a quantitative study, or vice versa. Finally, when two studies are conducted simultaneously, it is referred to as a concurrent mixed methods study.

The research approach and methodology are largely dictated by the subject matter and research question. The purpose of this quantitative study was to examine an organization's short-term stock volatility as the effect of a leadership change and comparing it across the ten industries as classified in the Industry Classification Benchmarks (ICB). The focus was on an organization's stock volatility over the six month following a leadership change. Chapter 3 includes descriptions of the data sources that was used, sampling and population, research design, instrumentation, data measurement procedures, and ethical considerations. Since this study relied only on numerical data and statistical analysis, a pure quantitative methodology was used.

Research Questions

The primary research question was: Does short-term market volatility differ between industries following an executive leadership change? To answer this research question, data was gathered from approximately 700 companies on the NYSE firms and analyzed to compare market volatility using a spreadsheet tool that calculated volatility using the standard deviation formula and a two-tailed T-test. In addition to the primary research questions, the study explored: (a). the industry that experienced the most volatility during an executive leadership change and (b). the industry that experienced the least volatility during a leadership change.

Hypotheses

In measuring the effect of an executive leadership change on an industry's short-term stock volatility, the following hypothesis was tested. H_0: There will be no significant difference between the overall short-term volatility rate of industries following executive leadership changes. H_1: There will be a significant difference between the overall short-term volatility rate of industries following executive leadership changes.

Research Design Appropriateness

The research design was quantitative in nature. This quantitative approach guided the study, and enabled the researcher to obtain stock prices and calculate the standard deviation of volatility using historical stock prices. Organizations were also grouped into industries based on their existing classification in the ICB. This approach was appropriate

because the facts and figures are objective and reliable based on source data (NASDAQ, NYSE).

Population and Sample

The population of this study included all publicly traded U.S.-based organizations that were traded on the NASDAQ or NYSE. It examined short-term (three month) stock volatility preceding and following an executive leadership change during 2012 and 2013. Executive leadership was defined as a Chief Executive Officer (CEO) or president. The selection of participants involved all executive leadership changes during 2012 and 2013.

Sampling Procedures

The researcher first obtained a list of every executive leadership change over the years of 2012 and 2013 within the scope of the study. The researcher downloaded the information from either the NYSE or NASDAQ websites. Both websites allowed the data to be downloaded in Excel spreadsheet format. This study used a sampling technique by which the entire population was divided into clusters based on ICB classification, and all eligible members of the population were included in the study. The researcher first identified all executive leadership changes during the years 2012 and 2013 that occurred in publicly traded Fortune 1000 U.S. companies. She then calculated prior three month volatility rates, then the volatility rates of the next three months following an executive leadership change. Once this data was analyzed, she answered the questions, listed in this section, using information obtained in the results.

Instrumentation

The study involved a spreadsheet formula used to measure volatility. This formula is the standard universal formula used by the NASDAQ to calculate volatility. This was appropriate because the formula is accurate and is the universal formula used in stock analysis. The instrumentation was also reliable because it is objective and there was little or no room for researcher bias. Stock volatility is always measured using the standard deviation formula. According to Roll (1984), "The symbol σ is used for volatility, and corresponds to standard deviation." The standard deviation formula measures how far above or below the mean figures within a given time period fall.

Instrument Reliability

Findings from research are dependable only if the data collection instrument is reliable and valid. The instrument was reliable because the data was verified due to the nature by which it was obtained (NASDAQ and NYSE websites). The measurement and analysis tool was reliable because it is the universal standard by which volatility is calculated according to NASDAQ and NYSE. The researcher will also use reliability measures. The tool relies almost primarily on the standard deviation formula, which has been used in similar studies and according to Meier et al (2010), is the exclusive measurement for measuring volatility.

Assessment of Internal and External Validity

Validity is the extent to which a test measures what it is supposed to measure and that it measures the population that it is supposed to measure, in this case stock volatility and Fortune 1000 companies who have had an executive leadership change. According to

Craig (2013), the types of validity are categorized as content validity, face validity, predictive validity, concurrent validity, and construct validity. Craig asserts that content validity and face validity ensure that the study measured what it was supposed to, in this case stock prices. Since the study looked at officially reported stock prices, and not another document like the balance sheet or financial statements, this measurement will measure the correct content.

Basically, face validity refers to the degree to which a test appears to measure what it purports to measure. The criterion-oriented or predictive validity provides an empirical check for the value of a particular test. Craig explains it as such, "When you are expecting a future performance based on the scores obtained currently by the measure, correlate the scores obtained with the performance. The later performance is called the criterion and the current score is the prediction." For this reason, it is important to identify the correlation coefficient, which is a "statistical summary of the relation between two variables" (Cronbach, 1990). The correlation coefficient in this project used the t-test and double checking for correct standard deviation formulas.

Although concurrent validity was not used in this project as it is not an improvement on an older process, it is only useful to discuss it as one of the many constructs of overall validity. Concurrent validity addresses whether or not results can be duplicated from one test to another, often in the case of a more efficient procedure replacing an older, cumbersome one. On the other hand, **"**construct validity is the degree to which a test measures an intended hypothetical construct" (Craig, 2013). This validity measure identifies how well the test correlates to the more abstract themes behind the research project, in this case, stockholder perception of an executive leadership change.

Reliability Measures

Although they complement each other, reliability and validity are two separate concepts that each support the accuracy of the findings. Carlson (2009) posits that in terms of accuracy and precision, reliability is a more accurate way of describing precision, while validity is a more precise way of describing accuracy. While validity ensures that the researcher is using the tools, procedures, and measurement tests to most accurately answer the research questions and hypotheses, reliability measures ensure that the data is being measured accurately. In quantitative studies, data is more reliably than in studies where human subjects are involved, as data is not affected by external factors such as emotion or fatigue. However, the researcher calculated the standard error of the mean, "which identifies the range of mean estimates" (Meier et al, 2010). This is highly dependent on the sample population size. The formula is:

$$s.e. = o/n$$

In this formula, o is the standard deviation and n is the population. This was calculated in Excel and SPSS as well.

To further ensure reliability, the data was entered directly from the source in SPSS statistical analysis software. The results confirmed the previous findings in Excel. Any discrepancies were checked by the researcher and re-run in both programs as well as manually. To validate the reliability of the findings, the data was double-checked by the researcher. In the case of extreme outliers, the researcher checked carefully for error in calculations.

Data Collection

The data was obtained from information that is publicly available on the NASDAQ and NYSE websites. Supplemental information was obtained from external websites, such as an organization's official website. "The New York Stock Exchange (NYSE) is the world's largest stock exchange by market capitalization of its listed companies at US$16.613 trillion as of May 2013" (NYSE, 2013). The National Association of Securities Dealers Automated Quotations (NASDAQ) is the second-largest stock exchange in the world by market capitalization, after the New York Stock Exchange. "To qualify for listing on the exchange, a company must be registered with the United States Securities and Exchange Commission (SEC), have at least three market makers (financial firms that act as brokers or dealers for specific securities) and meet minimum requirements for assets, capital, public shares, and shareholders" (NASDAQ, 2013). According to Renshaw (2002), the National Bureau of Economic Research has classified common stocks as a leading indicator of business cycles and uses the NASDAQ and NYSE as primary sources of material. All sources of information were reliable due to the stringent regulations and oversight from the U.S. government as well as continual audits and monitoring from reputable financial firms

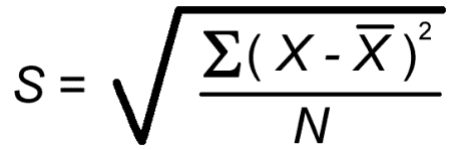
Quantitative methodology measures numerical data and therefore, any questions asked must be able to be answered using strictly numerical data obtained from the aforementioned sources. According to Dillman (2000), by following the tailored design method by which the available data will directly answer the research questions, the researcher obtained more reliable information and therefore formed a better analysis. The questions were created because they directly answered the research question using

the available data. The questions were created after reviewing similar studies such as that of Day and Lord (1988), Davidson et al (1990), Dalton and Dalton (2011), and Pan et al (2013).

1. What was the stock price volatility preceding each executive leadership change?
2. What was the stock price volatility following each executive leadership change?
3. In which industry did each of the changes occur?
4. What is the average volatility for each of the industries?

Data Analysis

Once the data was downloaded from the NASDAQ or NYSE website, the researcher then used a spreadsheet formula used to calculate standard deviation for stock volatility by entering the historical data for three months prior and three months following the executive leadership change. Once all of the volatility figures were obtained, each change was placed into its respective ICB category. Average volatility was then calculated for each of the ten industries. Data was analyzed using the universal standard for calculating standard deviation, which is shown in Figure 6.



$$S = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N}}$$

where S = the standard deviation of a sample,
Σ means "sum of,"
X = each value in the data set,
$\overline{X}$ = mean of all values in the data set,
N = number of values in the data set.

Source: Meier, K., Brudney, J., & Bohte, J. (2010). *Applied Statistics for Public and Nonprofit Administration*. (8th ed.). Boston, MA: Wadsworth.

Figure 6. Standard Deviation

Once a list of changes was compiled, the researcher obtained daily historical stock data for the three months preceding and the three months following an executive leadership change. In the event that data was unavailable due to a merger, acquisition, or other event that rendered data unavailable, the change was disqualified from the study. The researcher then put the data in a spreadsheet, calculating the mean of the prior three months and the mean of the following three months, and then using the standard deviation formula, calculated the volatility for each change. The changes were then categorized based upon in which industry they occurred. The volatility figures were then calculated for each industry to come up with an industry average of short-term volatility following an executive leadership change.

The steps for analysis were as follows.

1. Identify executive leadership changes. (In this example, we will use Steve Jobs retirement on August 24, 2011)

2. Obtain historical stock prices for the three months preceding the transition and the three months following the transition. This is available on NASDAQ's website and is shown in Figures 7 and 8.

Start Date: May 23 2011 Eg. Jan 1, 2010
End Date: Aug 23 2011
Get Prices

Daily
Weekly
Monthly
Dividends Only

First | Previous | Next | Last

Prices

Date	Open	High	Low	Close	Volume	Adj Close*
Aug 23, 2011	360.30	373.64	357.00	373.60	23,458,400	363.35
Aug 22, 2011	364.51	364.88	355.09	356.44	19,118,400	346.66
Aug 19, 2011	362.17	367.00	356.00	356.03	27,710,300	346.26
Aug 18, 2011	370.84	372.65	361.37	366.05	30,408,400	356.00
Aug 17, 2011	382.31	384.52	378.00	380.44	15,787,900	370.00
Aug 16, 2011	381.52	383.37	376.06	380.48	17,812,500	370.04
Aug 15, 2011	379.63	384.97	378.09	383.41	16,448,000	372.89
Aug 12, 2011	378.07	379.64	374.23	376.99	18,892,000	366.64
Aug 11, 2011	370.52	375.45	364.72	373.70	26,498,900	363.44
Aug 10, 2011	371.15	374.65	362.50	363.69	31,380,600	353.71
Aug 9, 2011	361.30	374.61	355.00	374.01	38,663,700	363.74

Figure 7. Historical stock prices for Apple Inc. three months prior to Jobs' retirement

Set Date Range

Start Date: Aug 24 2011 Eg. Jan 1, 2010

End Date: Nov 24 2011

(•) Daily
( ) Weekly
( ) Monthly
( ) Dividends Only

Get Prices

First | Previous | Next | Last

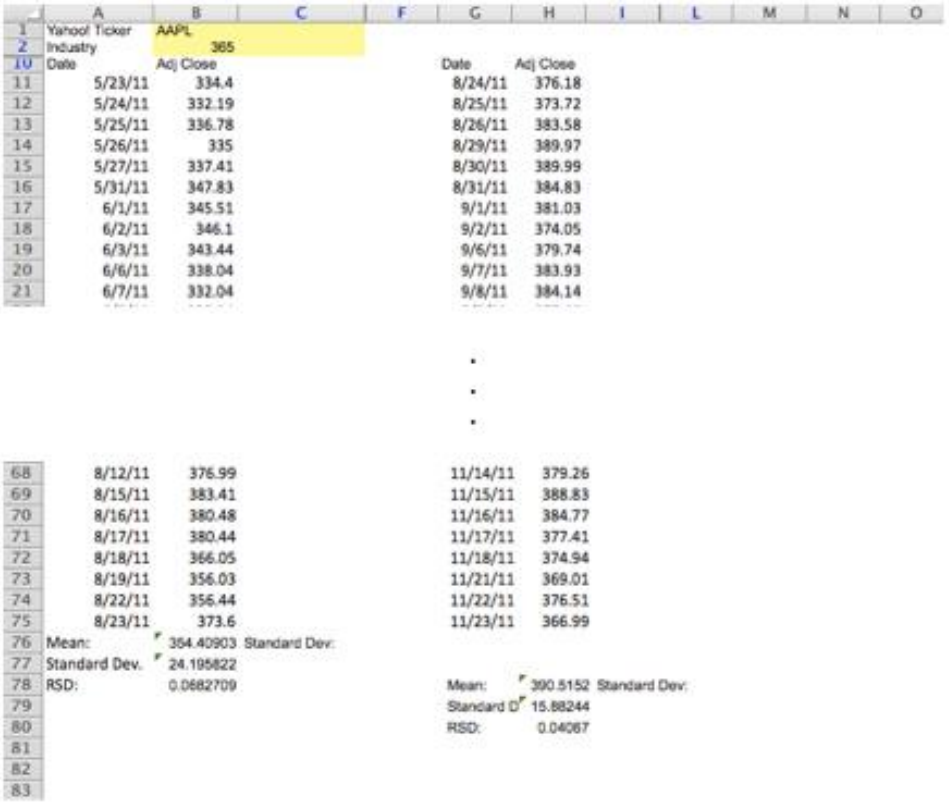
Prices

Date	Open	High	Low	Close	Volume	Adj Close*
Nov 23, 2011	374.51	375.84	366.88	366.99	15,295,400	354.85
Nov 22, 2011	371.02	377.93	370.94	376.51	14,607,900	364.05
Nov 21, 2011	370.40	371.68	365.91	369.01	15,999,300	356.80
Nov 18, 2011	378.92	379.99	374.88	374.94	13,283,500	362.53
Nov 17, 2011	383.98	384.58	375.50	377.41	17,139,300	364.92
Nov 16, 2011	389.25	391.14	384.32	384.77	12,471,800	372.04
Nov 15, 2011	380.80	389.50	379.45	388.83	15,386,100	375.96

Figure 8. Historical stock prices for Apple Inc. three months following Jobs' retirement

3. Enter data into the spreadsheet. This simply involved copying the dates and closing prices into the volatility calculator.
4. Calculated prior three months mean using the mean formula in Excel. The mean formula totals all of the prices in the given time period and then divides it by the number of days that were entered. The mean formula is:

   MEAN=SUM(DAY1:DAY90)/Total days
5. The mean was then used to calculate the historical volatility using the volatility function in the Excel spreadsheet. The calculator calculates the day-to-day change after the first day. It begins to calculate volatility after month's worth of data is available. Volatility was calculated using a standard deviation formula. This calculator is shown in Figure 9.



	A	B	C	F	G	H	I	L	M	N	O
1	Yahoo! Ticker	AAPL									
2	Industry	365									
10	Date	Adj Close			Date	Adj Close					
11	5/23/11	334.4			8/24/11	376.18					
12	5/24/11	332.19			8/25/11	373.72					
13	5/25/11	336.78			8/26/11	383.58					
14	5/26/11	335			8/29/11	389.97					
15	5/27/11	337.41			8/30/11	389.99					
16	5/31/11	347.83			8/31/11	384.83					
17	6/1/11	345.51			9/1/11	381.03					
18	6/2/11	346.1			9/2/11	374.05					
19	6/3/11	343.44			9/6/11	379.74					
20	6/6/11	338.04			9/7/11	383.93					
21	6/7/11	332.04			9/8/11	384.14					
68	8/12/11	376.99			11/14/11	379.26					
69	8/15/11	383.41			11/15/11	388.83					
70	8/16/11	380.48			11/16/11	384.77					
71	8/17/11	380.44			11/17/11	377.41					
72	8/18/11	366.05			11/18/11	374.94					
73	8/19/11	356.03			11/21/11	369.01					
74	8/22/11	356.44			11/22/11	376.51					
75	8/23/11	373.6			11/23/11	366.99					
76	Mean:	354.40903	Standard Dev:								
77	Standard Dev.	24.195822									
78	RSD:	0.0682709			Mean:	390.5152	Standard Dev:				
79					Standard D	15.88244					
80					RSD:	0.04067					
81											
82											
83											

Figure 9. Volatility spreadsheet

6. Calculated average volatility at the end of each three-month period using the average function in Excel as shown in Figure 6.
7. Calculated the relative standard deviation (RSD) is often times more convenient. It is expressed in percent and is obtained by multiplying the standard deviation by 100 and dividing this product by the average. The relative standard deviation formula is: RSD = 100S / x.
8. Enter company name, stock symbol, ICB sector, and average volatility was placed in a separate spreadsheet as shown in Figure 10. Each ICB sector had a separate tab in the spreadsheet.

	A	B	C	D	E
1	Company	Stock Symbol	ICB Sector	Three month prior RSD	Three month following RSD
2	Apple	AAPL	Consumer Goods	0.0682	0.0406
3					
4					
5					
6					

Figure 10. Spreadsheet used for total volatility calculations

9. Calculated average relative standard volatilities for each of the ten industries using the Average formula in Excel.
10. Calculated total three months prior and three months following rates to test hypothesis using a one-tailed t-test of normal distribution. In this case, the variables were interval/ratio, and the population standard deviation of difference is not known. A one-tailed test would only allow one to calculate the RSD above the mean, so a two-tailed t-test was used. This was necessary because the hypothesis stated that the following months would be at least 5% more volatile, but it did not specify direction. Reports in both SPSS and Excel were presented in tables showing individual volatility of organizations, volatility clustered by industries, and total volatility preceding and following executive leadership changes.
11. The last step was to use the data to test the hypothesis. According to Meir et al (2011), "the general rule is that the t score obtained in testing the hypothesis must be larger than the t score associated with the alpha, which is the probability used for rejecting the null hypothesis." In this case, it was 10%, or .10.

Informed Consent

In accordance with the procedures of Colorado Technical University's Institutional Review Board (IRB), the researcher followed all regulations and policies set

forth in the IRB. Since the information obtained was available in the public domain, informed consent for each organization was not needed “The federal regulations include a very specific definition for what constitutes “research” (45 CFR 46.102(d)) and for what is meant by a “human subject” (45 CFR 46.102(f)). Often investigators will require that a formal determination from the IRB be made that their project either is not research and/or does not involve human subjects (e.g., as may be required by a student’s doctoral dissertation committee, a funding agency, or a journal editor)” (Institutional Review Board, 2013). . The researcher was granted an IRB exemption due to lack of human participants. The researcher has a current CITI certification.

Confidentiality

Research must take place in accordance with ethical guidelines ensuring the confidentiality of participants. Since all of the information gathered was available in the public domain, confidentiality will be a minor issue. However, the electronic data was stored on a password-protected computer in password-protected files with passwords available only to the researcher. This computer and any physical, printed data was locked in the researcher’s personal residence in a gated residential apartment community.

Ethical Considerations

While this dissertation did not involve the use of human subjects, the researcher abided by all Federal, state, and local laws, as well as the guidelines established by the Institutional Review Board (IRB). The main ethical consideration was to state that any conclusions stated in the research are only meant to be taken as one possible variable that affects stock prices. In no way should investors or common stockholders use this data

exclusively to make stock purchases or sales. The researcher denies any accountability for financial decisions that others make based up on the research presented in this dissertation.

Geographic Location

The research took place in Colorado Springs, CO using data from U.S.-based organizations. The information was also obtained from the following organizations' publicly available data:

NASDAQ
165 Broadway One Liberty Plaza
New York, NY 10006
http://www.nasdaq.com/http://www.nasdaq.com/

NYSE
11 Wall St,
New York, NY 10006
https://nyse.nyx.com/

Summary of Chapter Three

While these methods may seem tedious, they were by far the most thorough way to accurately employ quantitative methodology to this study. They also ensured that the data was accurate as each day was measured, thus being as specific as possible. By organizing the data into ICB sectors, it was easier to identify trends and notice any outliers or possible discrepancies and re-evaluate that data. This chapter identified the methodology rationale, research approach, sampling procedures, analysis process, means of measurement and analysis, and reliability measures. It also addressed how the research was conducted so that it was in compliance with IRB rules and regulations.

CHAPTER FOUR

This chapter will present the findings of the study organized as total short term stock volatility as measured by RSD, both immediately preceding and immediately following the executive leadership change. This paper will introduce the number of companies involved in the study, the industry of each company, the overall total volatility and statistical significance of all companies, and a breakdown of volatility and statistical significance by each industry of the Industry Classification Benchmark standards.

Participant Demographics

The study contained 132 Fortune 1000 companies, all of which announced their executive leadership changes in 2012 or 2013, meaning the company announced a change in CEO or president of the company. While there were originally 163 leadership changes, eight companies were privately held, and therefore ineligible for the study. The other 13 changes involved companies who underwent mergers, de-mergers, or were acquired by other companies, thus rendering their data invalid due to additional influencing variables or lack of available data. Of the eligible changes, 80 took place in 2012 and 52 took place in 2013.

The number of changes was not distributed equally amongst the industries. Table 4 provides a breakdown of how many leadership change announcements occurred in each industry during the given time period.

Table 4

Executive Leadership Changes by Industry

Industry	Number of Leadership Change Announcements
Basic Materials	18
Consumer Goods	18
Consumer Services	32
Energy	1
Financial	18
Healthcare	10
Industrials	12
Technology	17
Utilities	6

Figures 11 and 12 show the proportion of companies in each sector that are publicly traded on the NASDAQ and NYSE stock exchanges. The amount of changes appear to be fairly proportional to the overall composition of companies within each industry.

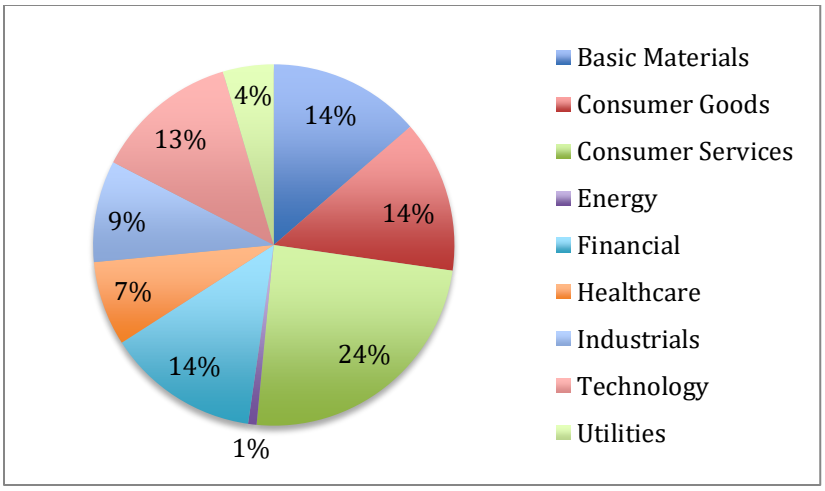


Figure 11. 2012-2013 Executive Leadership Announcements by Industry

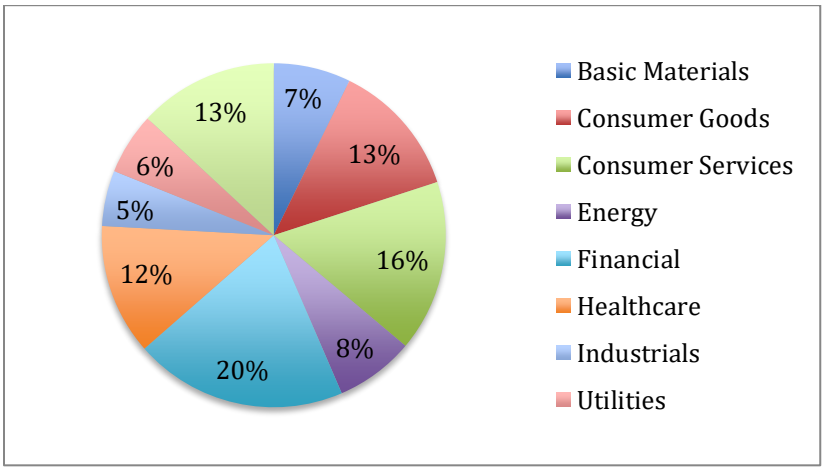


Figure 12. Overall proportion of publicly traded companies by industry.

Presentation of the Data

The adjusted closing price for approximately three months prior and three months following an executive leadership change was collected. For each company, the mean, standard deviation, and RSD were calculated. A paired two-tailed t-test of significance using the RSD values for all companies used the t-value, degrees of freedom, SEM,

standard deviation, and p-values to determine statistical significance. The same values were then used to determine statistical significance for each industry.

Presentation and Discussion of Findings

The data was obtained from information that is publicly available on the NASDAQ, AMEX, and NYSE websites. Supplemental information was obtained from some other external websites, typically an organization's official website. All sources of information were considered reliable due to the stringent regulations and oversight from the U.S. government as well as continual audits and monitoring from reputable financial firms.

This study used a quantitative methodological approach, as all data retrieved was numeric and would therefore directly answer the research question using the available data. The research questions were:

1. What was the stock price volatility preceding each executive leadership change as measured by RSD?
2. What was the stock price volatility following each executive leadership change as measured by RSD?
3. In which industry did each of the changes occur?
4. What is the average volatility for each of the industries as measured by RSD?

Once the data was downloaded from the NASDAQ, AMEX, and/or NYSE website, the data was entered into a spreadsheet formula which then calculated the standard deviation and RSD for stock volatility by entering the historical data for the three months prior and three months following the executive leadership change. Once all

of the volatility figures were obtained, each change was placed into its respective ICB category. Any companies that were ineligible due to private ownership, merger, de-merger, or acquisition activity were eliminated from the study. Average volatility was then calculated for each of the industries. The volatility figures were then calculated for each industry to come up with an industry average of short-term volatility preceding and following an executive leadership change for each industry.

The researcher then performed a two-tailed paired t-test for significance, which found the standard deviation, mean, SEM, p-value, and t-value for each industry as well as the a combined total value for all changes in all industries.

Table 5 shows the average volatility in each industry for the three months preceding and the three months following the executive leadership change as well as the total volatility for all industries. A comprehensive list of all changes with company names redacted can be found in Appendix B.

Table 5

Average volatility by industry

Industry	Three Months Prior Average RSD	Three Months Following Average RSD
Basic Materials	0.08790	0.07480
Consumer Goods	0.07500	0.06510
Consumer Services	0.08260	0.06430
Energy	0.02400	0.03600
Financial	0.12520	0.08840
Healthcare	0.03800	0.07460
Industrials	0.11430	0.07460
Technology	0.08000	0.05320
Utilities	0.07735	0.06518
All Industries Total	0.07826	0.06624

This data provides a wealth of data regarding executive leadership changes. First, the financial industry experienced the most volatility, followed by industrials, then basic materials. Although it appears that the energy sector experienced the least amount of volatility, it would be worth it to note that there was only one company eligible, and therefore the data might possibly be skewed. The financial sector's higher volatility seems to be commensurate with the previous literature on industry volatility, which indicates that this industry has experienced higher volatility in recent years. However, the technology volatility is not as high as one would expect based on prior literature. The volatility in the consumer goods industry for companies that experienced a leadership change is also higher than previous data would normally suggest. Despite the prominent media coverage of potential healthcare changes and regulation, healthcare volatility has remained relatively low, both overall and in the companies that experienced leadership changes in 2012 and 2013. This figure seems to be similar with regard to overall volatility as Figure 7.

The main research question sought to explore whether or not the announcement of an executive leadership change had a significant effect on the short-term volatility following the announcement. A two-tailed paired t-test of significance was conducted for each industry as well as the combined volatility for all companies in the study. The t-test found no significant differences for any of the industries, or for the combined average RSD values of all companies who experienced a change. A two-tailed test was used as we wished to find out if there were changes in either direction afterwards, meaning the volatility could have increased or decreased. According to Bruin (2006), "a two-tailed test allots half of the alpha to testing the statistical significance in one direction and half

of the alpha to testing statistical significance in the other direction. This means that .025 is in each tail of the distribution of the test statistic. When using a two-tailed test, regardless of the direction of the relationship you hypothesize, you are testing for the possibility of the relationship in both directions." The findings are presented in Tables 6-14. Due to a lack of data, the two-tailed test of significance could not be used for the energy sector.

A two-tailed t test showed that the difference for all companies between the three months prior group (N = 9, M = 0.078, SD = 0.0342) and the three months following group (N = 9, M = 0.0662, SD = 0.0149783) were not statistically significant, $t(8) = 1.3262$, p = 0.2264, 95% CI [-0.0093954, 0.0333954], d = 0.009 .

Table 6

All Companies Two-Tailed Paired T-Test for Significance

All companies paired *t*-test results		
$t(8) = 1.3262$, p = 0.2264.		
Confidence interval:		
The mean of Group One minus Group Two equals 0.0120000		
95% confidence interval of this difference: From -0.0093954 to 0.0333954		
Standard error of difference = 0.009		
Group	*Group One*	*Group Two*
Mean	0.0783750	0.0662422
SD	0.0342106	0.0149783
SEM	0.0120953	0.0049928
N	9	9
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for consumer goods companies between the three months prior group (N = 18, M = 0.0750, SD = 0.0373) and the three months following group (N = 18, M = 0.065167, SD = 0.042604) were not statistically

significant, $t(17) = 0.8260$, $p = 0.4203$, 95% CI [-0.015285, 0.034952], $d = 0.012$.

Table 7

Consumer Goods Two-Tailed Paired T-Test for Significance

Consumer Goods paired *t*-test results		
$t(17) = 0.8260$, $p = 0.4203$.		
Confidence interval:		
The mean of Group One minus Group Two equals 0.009833		
95% confidence interval of this difference: From -0.015285 to 0.034952		
Standard error of difference = 0.012		
Group	*Group One*	*Group Two*
Mean	0.075000	0.065167
SD	0.037300	0.042604
SEM	0.008792	0.010042
N	18	18
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for consumer services companies between the three months prior group (N = 32, M = 0.082563, SD = 0.066341) and the three months following group (N = 32, M = 0.064313, SD = 0.049360) were not statistically significant, $t(31) = 1.8166$, $p = 0.0790$, 95% CI [-0.0022, 0.0387], $d = 0.010$.

Table 8

Consumer Services Two-Tailed Paired T-Test for Significance

Consumer Services paired *t*-test results		
$t(31) = 1.8166$, $p = 0.0790$		
Confidence interval:		
The mean of Group One minus Group Two equals 0.018250		
95% confidence interval of this difference: From -0.002240 to 0.038740		
Standard error of difference = 0.010		
Group	*Group One*	*Group Two*
Mean	0.082563	0.064313
SD	0.066341	0.049360
SEM	0.011728	0.008726
N	32	32
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for financial companies between the

three months prior group (N = 17, M = 0.125167, SD = 0.179022) and the three months following group (N = 17, M = 0.088389, SD = 0.113223) were not statistically significant, $t(17) = 1.8468$, p = 0.0823, 95% CI [-0.005237, 0.078793], d = 0.020.

Table 9

Financial Sector Two-Tailed Paired T-Test for Significance

Financial paired *t*-test results		
$t(17) = 1.8468$, p = 0.0823		
Confidence interval:		
The mean of Group One minus Group Two equals 0.036778		
95% confidence interval of this difference: From -0.005237 to 0.078793		
Standard error of difference = 0.020		
Group	*Group One*	*Group Two*
Mean	0.125167	0.088389
SD	0.179022	0.113223
SEM	0.042196	0.026687
N	17	17
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for healthcare companies between the three months prior group (N = 10, M = 0.038000, SD = 0.021187) and the three months following group (N = 10, M = 0.044310, SD = 0.027498) were not statistically significant, $t(9) = 0.5781$, p = 0.5774, 95% CI [-0.031001, 0.018381], d = 0.011.

Table 10

Healthcare Sector Two-Tailed Paired T-Test for Significance

Healthcare paired t-test results		
$t(9) = 0.5781$, $p = 0.5774$.		
Confidence interval:		
The mean of Group One minus Group Two equals -0.006310		
95% confidence interval of this difference: From -0.031001 to 0.018381		
Standard error of difference = 0.011		
Group	*Group One*	*Group Two*
Mean	0.038000	0.044310
SD	0.021187	0.027498
SEM	0.006700	0.008696
N	10	10
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for industrial sector companies between the three months prior group (N = 12, M = 0.114250, SD = 0.198122) and the three months following group (N = 12, M = 0.074583, SD = 0.098772) were not statistically significant, $t(11) = 1.0458$, $p = 0.3181$, 95% CI [-0.043816, 0.123149], d = 0.038.

Table 11

Industrials Sector Two-Tailed Paired T-Test for Significance

Industrials paired *t*-test results		
$t(11) = 1.0458$, $p = 0.3181$.		
Confidence interval:		
The mean of Group One minus Group Two equals 0.039667		
95% confidence interval of this difference: From -0.043816 to 0.123149		
Standard error of difference = 0.038		
Group	*Group One*	*Group Two*
Mean	0.114250	0.074583
SD	0.198122	0.098772
SEM	0.057193	0.028513
N	12	12
By conventional criteria, this difference is considered to be **not statistically significant**.		

A two-tailed t test showed that the difference for technology sector companies between the three months prior group (N = 17, M = 0.0800, SD = 0.067952) and the three months following group (N = 17, M = 0.053176, SD = 0.027302) were not statistically significant, $t(16) = 1.8142$, p = 0.0884, 95% CI [-0.004519, 0.058166], d = 0.015.

Table 12

Technology Sector Two-Tailed Paired T-Test for Significance

Technology paired *t*-test results		
$t(16) = 1.8142$, p = 0.0884.		
Confidence interval:		
The mean of Group One minus Group Two equals 0.026824		
95% confidence interval of this difference: From -0.004519 to 0.058166		
Standard error of difference = 0.015		
Group	*Group One*	*Group Two*
Mean	0.080000	0.053176
SD	0.067952	0.027302
SEM	0.016481	0.006622
N	17	17
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for utilities sector companies between the three months prior group (N = 6, M = 0.029, SD = 0.0208) and the three months following group (N = 6, M = 0.0473, SD = 0.04718) were not statistically significant, $t(5) = 1.3904$, p = 0.2231, 95% CI [-0.05033, 0.01500], d = 0.013.

Table 13

Utilities Sector Two-Tailed Paired T-Test for Significance

Utilities paired *t*-test results		
$t(5) = 1.3904$, $p = 0.2231$.		
Confidence interval:		
The mean of Group One minus Group Two equals -0.01767		
95% confidence interval of this difference: From -0.05033 to 0.01500		
Standard error of difference = 0.013		
Group	*Group One*	*Group Two*
Mean	0.02967	0.04733
SD	0.02087	0.04718
SEM	0.00852	0.01926
N	6	6
By conventional criteria, this difference is considered to be not statistically significant.		

A two-tailed t test showed that the difference for basic materials sector companies between the three months prior group (N = 18, M = 0.0879, 0.0896) and the three months following group (N = 18, M = 0.07477, SD = 0.04377) were not statistically significant, $t(34) = 0.5615$, $p = 0.5782$, 95% CI [-0.034591, 0.061003], $d = 0.024$.

Table 14

Basic Materials Two-Tailed Paired T-Test for Significance

Basic Materials paired *t*-test results		
$t(34) = 0.5615$, $p = 0.5782$.		
Confidence interval:		
The mean of Group One minus Group Two equals 0.013206		
95% confidence interval of this difference: From -0.034591 to 0.061003		
Standard error of difference = 0.024		
Group	*Group One*	*Group Two*
Mean	0.087983	0.074778
SD	0.089668	0.043778
SEM	0.021135	0.010319
N	18	18
By conventional criteria, this difference is considered to be not statistically significant.		

None of the tests show any significant difference between the average volatility preceding the leadership change announcement and the average volatility following the leadership change announcement. Overall, the companies appear to be less volatile following an executive leadership change announcements, but based on the T-tests, not significantly so, as shown in Figure 13.

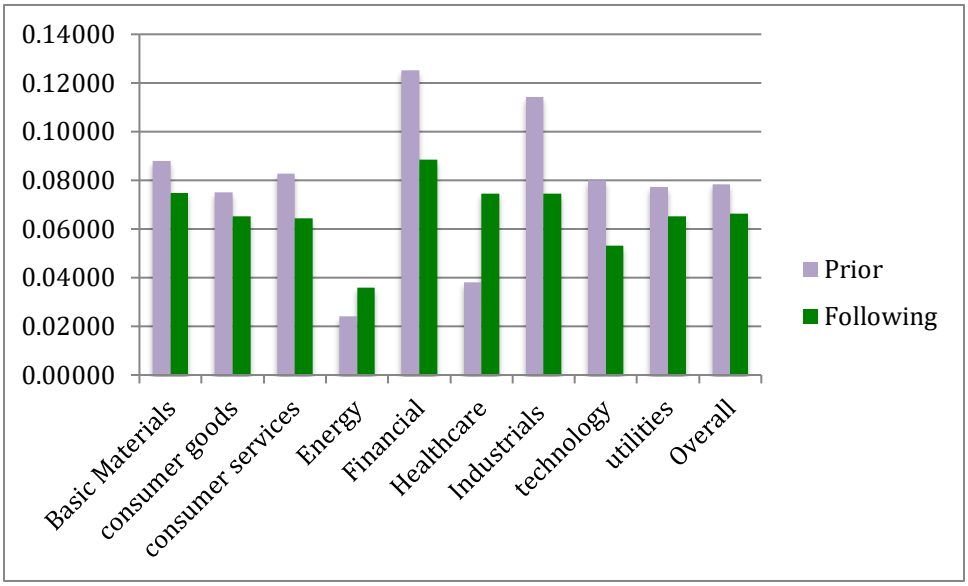


Figure 13. RSD by sector prior to, and following, an executive leadership change announcement

Although 2012 and 2013 were relatively similar years with regard to economic conditions, overall volatility for the six months surrounding the leadership changes seemed to decrease in 2013, perhaps indicating a return to a more stable nationwide economy. Comparatively, volatility was lower overall for companies who experienced a change announcement in 2013 as opposed to those who experienced a change in 2012, possibly indicating that the stock market as a whole experienced less volatility in 2013

than in 2012. However, stock data shows that the 2012 stock market was actually less volatile than the market in 2013, with 3.8% and 6.8% volatility respectively. The companies who experienced a change announcement in 2013 averaged 6% volatility while the companies who experienced a change announcement in 2012 averaged 6.5% volatility. However, more data would be needed to accurately assess this hypothesis. As of press time, there are no overall historical volatility figures by sector for 2013 available yet. Figure 14 shows the changes in volatility between 2012 and 2013 for the six months surrounding the leadership change. Every industry except the financial industry shows a decrease.

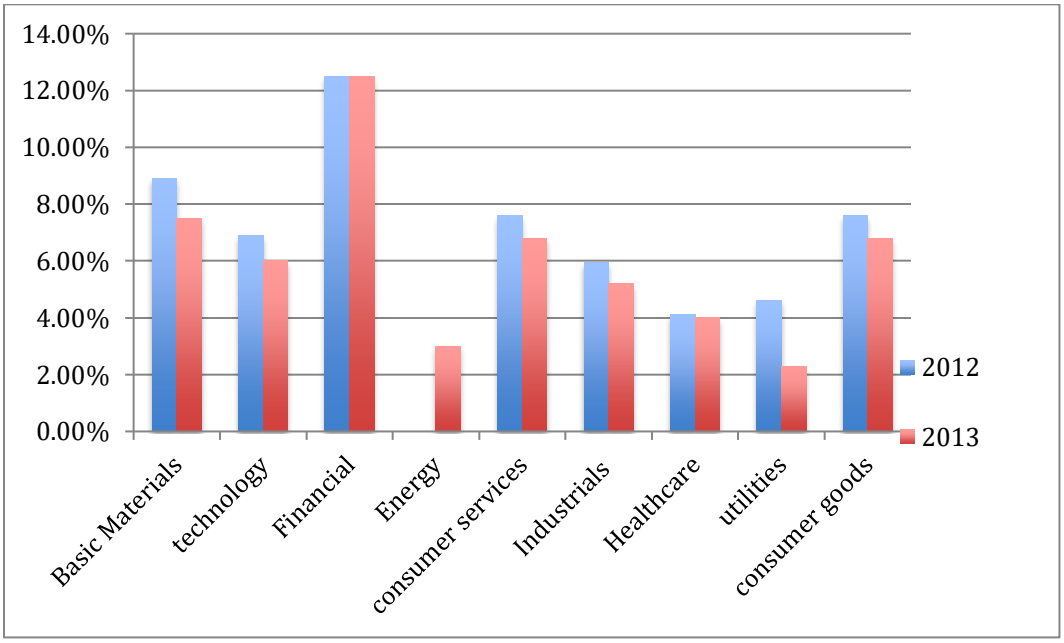


Figure 14. RSD by sector prior to, and following, an executive leadership change announcement by year

The top three companies that experienced the most significant change in volatility were in the industrials, basic materials, and financial sectors, respectively. The most volatile company was a company that has been in the news in recent years for its

problems with bankruptcy, strategic direction, and has been the target of many environmental groups, who believe the company's operations have had adverse effects on the environment. The second company seemed to struggle in recent years as it provided products central to the construction industry, one of the industries hit hardest by the recession. During 2012-2013, news reports emphasized that the company was struggling to recover from the hit that they took during the recession of 2008-2010. It is interesting to note that another leadership change took place in March of 2014, with a new CEO replacing the one who had only served a short time. The third company is a household name in the banking and finance industry and has experienced its share of problems over the last seven years. This particular company has deep ties with the U.S. government, many considered controversial by some. As the media has speculated greatly about what changes might occur with this company, this could possibly be another factor that might potentially explain some of the volatility. For all three companies, no explanation was given for the CEO's resignation other than that they were "stepping down." As of press time, none have been charged with being involved in any sort of illegal activity or associated in any way with a personal scandal.

The least three volatile companies had zero change, with one coming from the technology sector and two coming from the industrials sector. The technology company is a relatively unknown company that provides network services for data centers. Since it is a smaller company, it trades consistently at very low prices the stock exchange and has remained somewhat stable for quite some time. Both industrial companies are manufacturing companies whose primary client is the U.S. Department of Defense. One company is larger and more well-known than the other, as it handles more major

contracts, such as shipbuilding. However, the other company makes smaller parts such as engines and engine components for planes and automobiles. This is a very interesting phenomena and one possible explanation may be that government contracts typically last several years, thus guaranteeing a steady source of revenue, making companies such as these less subject to the whims of a free market. It is very interesting to not that of the two companies, the smaller one's executive leadership change took place right before the federal government shutdown of 2013, and the following three months encompass the weeks during which the shutdown occurred, yet despite this company's close ties with the government, prices remained relatively stable. Of the changes, the reason given by the technology company was that the CEO was "stepping down." The CEOs of the other two companies stated that they were retiring.

During the time period, five changes were the result of a death, or a leave of absence due to illness that ultimately resulted in death a short time later. Two changes were the result of an unexpected death, a heart attack and plane crash, respectively. The companies whose changes were the result of death were all in the less volatile half of total companies.

Summary of Chapter Four

The research presented in this chapter concludes that an executive leadership change does not cause a significant change in a company's short-term stock volatility, but it does raise some interesting questions and presents interesting data about the stock volatility of the major business sectors in the United States. The next chapter will discuss

the findings of the study with regard to the research questions, address study limitations, and present ideas for future research.

CHAPTER FIVE

This chapter will discuss the findings of the study with regard to the relevant existing literature. It will also address how the study answered the research questions and tested the hypothesis. Finally, this chapter will address study limitations, and present ideas for future research.

Findings and Conclusions

The research found that there was no statistically significant difference in stock volatility prior to an executive leadership change and following an executive leadership change. The study adequately answered all of the research questions as well as tested the hypothesis. The findings of the research will be discussed in regard to major financial and management concepts addressed in the literature review as well as provide guidance and direction for future research.

Research Questions

The first research question asked, “what was the stock price volatility preceding each executive leadership change as measured by RSD?” A comprehensive list of changes (with company names redacted) can be found in Appendix A while Table 5 shows an average pre-announcement volatility of 7.8% for all industries as well as a breakdown of pre-announcement volatility by sector. The second research question asked, “what was the stock price volatility following each executive leadership change as measured by RSD?” Again, a comprehensive list can be found in Appendix A while

Table 5 shows an average post-announcement volatility of 6.6% for all sectors as well as a breakdown of post- announcement volatility by sector.

The third research question asked, “in which industry did each of the changes occur?” Consumer services had the most changes with 32, while the basic materials, consumer goods, and financial sectors all experienced 18 changes. The technology sector experienced 17 changes followed by the healthcare sector with 10 changes. The utilities sector experienced six changes and one change occurred in the energy sector. This data is also presented in Table 2.

The final research question asked, “what is the average volatility for each of the industries as measured by RSD?” Overall, the financial sector was the most volatile with an average volatility of 10.7%, followed by industrials with 9.4%, basic materials at 8.1%, consumer services with 7.3%, utilities with 7.2%, consumer goods with 7%, technology with 6.7%, healthcare with 5.6%, and energy with 3%. Based on this data, the industry data is commensurate with national trends that indicate the financial and industrial sectors have generally been experiencing more volatility than others in recent years.

The hypothesis was as follows: H_0: There will be no significant difference between the overall short-term volatility rate of industries following executive leadership changes. H_1: There will be a significant difference between the overall short-term volatility rate of industries following executive leadership changes. Based on the significance levels as a result of the t-tests, the changes did not cause a significant difference in volatility and therefore the hypothesis is rejected.

While the research showed no stasis tidally significant difference between the volatility before and the volatility following an executive leadership change announcement, there is still much that can be learned from this study as well as much that can be contributed to the existing body of literature.

Discussion of Executive Leadership Changes

First of all, the prior literature presented mixed results as to what happened after an executive leadership change. This study seems to agree with prior studies in that there is no universal trend regarding historical volatility changes following an executive leadership change, as some organizations experienced an increase in volatility while others experienced a decrease. These results, combined with prior literature, can possibly rule out executive leadership changes as a reason for changes in volatility. However, it is important to note that executive leadership can make decisions that ultimately affect an organization's bottom line. Nakauchi and Wiersema (2011) argue, "scholars studying upper echelons have found that an organization's leadership is of primary strategic importance, and that executive succession can serve as an important adaptation mechanism by which a company can change its strategic course." Martin (2010) supports this assertion by stating that executive leaders exercise "control and authority over their business unit's resources, they operate at the nexus of firm-level strategy and strategy implementation through the development of business-unit-level strategy and tactics. Moreover, they play an essential role in adapting the organization by collectively sensing, seizing, and reconfiguring resources and thereby capturing product-market opportunities that emerge" (p. 118). Johnson and Leenders (2010) posit that executive leaders make

conceptual decisions that may alter an organization's supply chain operations and management, thus ultimately affecting a company's bottom line. However, this study seems to support the idea that investors are rarely sure what actions or decisions an executive leader will take, even based on prior performance within the company or at another company. How well an executive leader will perform in a given role at a given company is almost always based on speculation rather than hard evidence. The main idea, however, is that executive leaders do make decisions that have the potential to affect a company's bottom line, even if it was not reflected in the level of stock price volatility changes.

Discussion of Leadership Theory

Second, this study seems to support a figurative view of leadership as opposed to the omnipotent view. This is evident by the fact that the stocks did not experience a significant amount of volatility following a change, meaning that a CEO's sphere of influence might be overestimated in many cases. Speculation may also play a larger part in volatility than an executive leadership change, possibly supporting Hudomiet's position that other factors, including speculation, affect the confidence level of investors, and in turn, make a stock more volatile. The three companies with the largest change in volatility were already volatile before the change. All three companies were in the news frequently during the measured time periods. The stories were primarily negative in nature.

Discussion of Volatility Over Time

The prior literature also presented trends in overall industry volatility over the last several years. This study seems to support that literature in that some industries are

susceptible to more volatility than others. While this study only covered two years, a more comprehensive study would be needed to compare the volatility following an executive leadership change for a longer time range. A more comprehensive study could look at an organization's stock volatility for the total time that an executive leader was in power. In the case of the companies studied in this research, some executive leaders had been in their position for over 30 years while some had held their position for only a few months. At least three of the companies in the study would experience another executive leadership change in 2014.

Discussion of Extraneous Factors and Environment

As argued previously in the theory section, a leader is never completely omnipotent. There are many other extraneous factors and variables that affect an organization's stock volatility. According to Robins and Coulter (2010), these can be external or internal. First of all, the general economic climate has an impact on almost every company in every sector. Schwert's (2011) research, which studied periods of financial crisis at various times in American history found that the financial crisis in late 2008 was associated with historically high levels of stock market volatility, particularly among financial sector stocks, but the market did not expect volatility to remain high for long and it did not. However, the market did not perform the same way during the financial crisis of 2008 as it did during the financial crisis of the early 1980s or during the Great Depression, which experienced a more prolonged period of high volatility. Schwert's research also discovered that the crisis was not limited to just the U.S., but also Japan and other major industrialized nations. According to Robbins and Coulter, major world events such as natural disasters, acts of terrorism, or political unrest can also cause

stock volatility. Johnson and Leenders (2010) point out that this can become a significant issue if there is concern that an organization's supply chain might be affected by external events. Consumer taste as well as market supply and demand also play a part in stock volatility. Wright (2010) found that the volatility major grain prices and stock prices had significant market and economic implications and were the result of a complex dynamic between consumption, available supply, and policy. Tushman and O'Reilly (2013) point out how major retailers, such as JC Penney, experienced large periods of volatility due to changing consumer tastes and demographic shifts. Changes in consumer behavior also affect stock volatility, as was the case in the beginning of the 21st century. For example, in the late part of the twentieth century and early part of the 21st, Schwert (2002) found that the stock prices of technology firms fluctuated wildly at times when more traditional industrial firms were relatively stable. The after-market performance of many initial public offerings (IPOs) was also dramatic, with large positive returns followed later by equally large declines. However, that was during the time in which technology was just on the brink of a very large era of expansion and growth and little was known about the future of the industry. During the years in which this study was conducted, the financial industry experienced a greater collective uncertainty than other industries.

Another external factor that is not widely mentioned in the literature is the role of the press. We live in a constant state of the 24 hour news cycle and limitless information is available to us on the Internet- some of it accurate, some not. This may also play a role in influencing stock volatility. Internal factors also affect a company's stock volatility. Several authors (Hudomiet et al, 2011, Robbins & Coulter, 2010) posit that a company's size greatly influences its performance. The companies that were analyzed for this study

were all Fortune 1000 companies, possibly indicating that their size affected investor confidence. Some of these companies had also been in existence for over a century, possibly affecting investor confidence as well. Executives also play a key role in setting the tone for internal organizational culture. Holtz and Harold (2013) argue that executives not only lead by example, but also set forth policies and rules that could ultimately change a culture's explicit and implicit cultural practices. As executives make key decisions regarding operations, which may involved layoffs, role changes, or other modifications to the existing work structure, employees could develop attitudes of deviance, as addressed by Holtz and Harold (2013), and ultimately, affect production efficiency and output. These are possible avenues for further exploration in later studies.

Discussion of Executive Leadership with Regards to Globalization

While this study focused exclusively on U.S.-based companies, little research has been conducted about executive leadership changes in different countries. According to Nakauchi and Wiersema (2011), Japanese executive leaders are seen in a very different light than American executive leaders, possibly revealing cultural differences along the individualistic vs. collective thought spectrum. Daft (2010) found that cultural differences in global organizations affects the way that employees, managers, and leaders process and react to change. However, there were some limitations to these findings.

Limitations of the Study

The major limitation of this study was the lack of changes in some industries, possibly skewing the results. For example, the utilities sector only experienced six eligible changes and the energy sector only experienced one. This is too small of a

sample size to accurately assess much about these two industries. However, they were able to contribute to the overall volatility figures. Another limitation dealt with about 30 companies being eliminated from the study as they were not eligible due to a later merger, bankruptcy, or acquisition that rendered the data invalid due to extenuating variables.

Implications for Practice

This study is particularly relevant to practitioners and academics alike for a variety of reasons. First, this study appears to support the figurehead theory of upper management as opposed to the omnipotent. This might indicate that investors consider an individual to be just one part of a larger system and that the organization's design and strategy are more important than a person. Second, this study ought to be of interest for anyone in the finance industry as it seems to disprove any theories that despite the 24/7 news cycle and the many Internet outlets for speculation, a stock will typically right itself shortly after an executive leadership change. However, this same dynamic of information availability and Internet speculation might fuel overall volatility, as evidenced by the most volatile stocks' prominence in the news. This is yet another potential suggestion for future research. Another implication for practice is that this study might provide executive leaders with a greater understanding of how much symbolic power they do have, and how that affects not only shareholder confidence, but also internal company culture, climate, and morale.

Implications of Study and Recommendations for Future Research

While this study did not show any significant change, it is useful for many reasons. First, it can be used to draw attention to the topic of stock market volatility. Second, it contributes a great amount of research to the existing body of knowledge. Most importantly, it provides suggestions for future research. Some questions for future research might include:

1. How does the amount of media coverage affect an organization's stock volatility?
2. Does the size of an organization affect an organization's stock volatility?
3. How soon after an organization's stock price declines is the CEO replaced?
4. Is there a significantly higher mortality rate amongst CEOs than peers of their general age group? If so, why?
5. How do cultural differences in global organizations play a part in CEO succession effects?
6. How do executive leadership changes affect a company's long-term (one year or longer before and after) stock volatility rates?
7. How do executive leadership changes affect a company's long-term financial performance (as based on financial ratios using information from the balance sheet, income statement, statement of cash flow, etc.)?

Reflections

Although it is disappointing to find out that the research did not support my hypothesis, I think this study was useful because it shows that humans place more faith in a company than a single person. Perhaps this means that a group of people, including

everyone from the workers to the managers to the executive board, is responsible for creating and maintaining a successful company. However, not all is lost. The results show trends in the overall American economic climate during the years of 2012-2013, mostly showing a recovering financial sector and a generally strong and stable technology sector, perhaps demonstrating that in contrast to Schwert's research in the early part of the 21st century, investors consider technology to be a more stable part of the U.S. economy than in years past.

Conclusion

This study demonstrated that an executive leadership change did not affect short-term stock volatility for the years 2012 and 2013. This study used historical stock data in hopes of potentially helping investors understand one of the many potential causes of stock volatility. It found that there was no significant difference in any industry between the short-term stock volatility preceding an executive leadership change and the short term stock volatility following the change. It did, however, identify differences in overall volatility between industries for the given year range of 2012-2013.

By observing what happened in the past across industries, investors might be better prepared to anticipate strategies that will assist them during times of high volatility trading. This study proved that some industries are more volatile than others and that industrial volatility rates fluctuate as economic conditions dictate. The study identified other key external and internal variables that also had the potential to affect an organization's stock volatility. The research provided a description of ways that the decisions and actions of executive leaders both directly and indirectly have the potential

to affect an organization's bottom line. Most importantly, it provides suggestions for future research in the fields of management and/or finance.

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APPENDIX A

Industry Classification Benchmark

Industry	Supersector	Sector	Subsector
Basic Materials	Basic Resources	Forestry & Paper	Forestry
			Paper
		Industrial Metals	Aluminum
			Iron & Steel
			Nonferrous Metals
		Mining	Coal
			Diamonds & Gemstones
			General Mining
			Gold Mining
			Platinum & Precious Metals
	Chemicals	Chemicals	Commodity Chemicals
			Specialty Chemicals
Consumer Goods	Automobiles & Parts	Automobiles & Parts	Auto Parts
			Automobiles
			Tires
	Food & Beverage	Beverages	Brewers
			Distillers & Vintners
			Soft Drinks

		Food Producers	Farming & Fishing
			Food Products
	Personal &	Household Goods	Durable Household
	Household Goods		Products
			Furnishings
			Home Construction
			Nondurable Household
			Products
		Leisure Goods	Consumer Electronics
			Recreational Products
			Toys
		Personal Goods	Clothing & Accessories
			Footwear
			Personal Products
		Tobacco	Tobacco
Consumer Services	Media	Media	Broadcasting &
			Entertainment
			Media Agencies
			Publishing
	Retail	Food & Drug	Drug Retailers
		Retailers	
			Food Retailers &
			Wholesalers
		General Retailers	Apparel Retailers

			Broadline Retailers
			Home Improvement Retailers
			Specialized Consumer Services
			Specialty Retailers
	Travel & Leisure	Travel & Leisure	Airlines
			Gambling
			Hotels
			Recreational Services
			Restaurants & Bars
			Travel & Tourism
Financials	Banks	Banks	Banks
	Financial Services	Equity Investment Instruments	Equity Investment Instruments
		General Financial	Asset Managers
			Consumer Finance
			Investment Services
			Mortgage Finance
			Specialty Finance
		Nonequity Investment Instruments	Nonequity Investment Instruments

		Real Estate	Diversified Real Estate
			Investment Trusts
			Hotel & Lodging Real
			Estate Investment Trusts
			Industrial & Office Real
			Estate Investment Trusts
			Mortgage Real Estate
			Investment Trusts
			Real Estate Holding &
			Development
			Real Estate Services
			Residential Real Estate
			Investment Trusts
			Retail Real Estate
			Investment Trusts
			Specialty Real Estate
			Investment Trusts
	Insurance	Life Insurance	Life Insurance
		Nonlife Insurance	Full Line Insurance
			Insurance Brokers
			Property & Casualty
			Insurance
			Reinsurance

Health Care	Health Care	Health Care Equipment & Services	Health Care Providers
			Medical Equipment
			Medical Supplies
		Pharmaceuticals & Biotechnology	Biotechnology
			Pharmaceuticals
Industrials	Construction & Materials	Construction & Materials	Building Materials & Fixtures
			Heavy Construction
	Industrial Goods & Services	Aerospace & Defense	Aerospace
			Defense
		Electronic & Electrical Equipment	Electrical Components & Equipment
			Electronic Equipment
		General Industrials	Containers & Packaging
			Diversified Industrials
		Industrial Engineering	Commerical Vehicles & Trucks
			Industrial Machinery

		Industrial	Delivery Services
		Transportation	
			Marine Transportation
			Railroads
			Transportation Services
			Trucking
		Support Services	Business Support
			Services
			Business Training &
			Employment Agencies
			Financial Administration
			Industrial Suppliers
			Waste & Disposal
			Services
Oil & Gas	Oil & Gas	Alternative Energy	Alternative Fuels
			Renewable Energy
			Equipment
		Oil & Gas Producers	Exploration &
			Production
			Integrated Oil & Gas
		Oil Equipment,	Oil Equipment &
		Services &	Services
		Distribution	
			Pipelines

Technology	Technology	Software & Computer Services	Computer Services
			Internet Software
		Technology Hardware & Equipment	Computer Hardware
			Electronic Office Equipment
			Semiconductors
			Telecommunications Equipment
Telecommunications	Telecommunications	Fixed Line Telecommunications	Fixed Line Telecommunications
		Mobile Telecommunications	Mobile Telecommunications
Utilities	Utilities	Electricity	Alternative Electricity
			Conventional Electricity
		Gas, Water & Multiutilities	Gas Distribution
			Multiutilities
			Water

Source: Industry Classification Benchmark Standards (2013).

APPENDIX B

Full list of prior announcement volatility and post- announcement volatility

Sector	Prior RSD	Following RSD
Basic materials	0.178	0.17
Basic materials	0.053	0.159
Basic materials	0.104	0.129
Basic materials	0.047	0.102
Basic materials	0.037	0.101
Basic materials	0.131	0.085
Basic materials	0.0492	0.08
Basic materials	0.029	0.074
Basic materials	0.05	0.067
Basic materials	0.03	0.065
Basic materials	0.047	0.059
Basic materials	0.104	0.053
Basic materials	0.058	0.048
Basic materials	0.0525	0.041
Basic materials	0.091	0.04
Basic materials	0.41	0.037
Basic materials	0.03	0.025
Basic materials	0.083	0.011
Consumer goods	0.058	0.159
Consumer goods	0.057	0.145
Consumer goods	0.101	0.115
Consumer goods	0.101	0.109
Consumer goods	0.082	0.089
Consumer goods	0.116	0.083
Consumer goods	0.083	0.0670
Consumer goods	0.103	0.05
Consumer goods	0.04	0.049
Consumer goods	0.068	0.048
Consumer goods	0.073	0.039
Consumer goods	0.038	0.037
Consumer goods	0.017	0.03
Consumer goods	0.053	0.029
Consumer goods	0.061	0.024
Consumer goods	0.084	0.022
Consumer goods	0.036	0.021

Consumer goods	0.179	0.057
Consumer services	0.236	0.273
Consumer services	0.139	0.18
Consumer services	0.083	0.12
Consumer services	0.221	0.096
Consumer services	0.12	0.089
Consumer services	0.23	0.085
Consumer services	0.027	0.072
Consumer services	0.034	0.071
Consumer services	0.041	0.063
Consumer services	0.064	0.062
Consumer services	0.17	0.06
Consumer services	0.07	0.06
Consumer services	0.03	0.058
Consumer services	0.052	0.058
Consumer services	0.187	0.057
Consumer services	0.037	0.054
Consumer services	0.077	0.052
Consumer services	0.05	0.051
Consumer services	0.025	0.046
Consumer services	0.02	0.045
Consumer services	0.038	0.044
Consumer services	0.049	0.044
Consumer services	0.043	0.044
Consumer services	0.066	0.0420
Consumer services	0.114	0.0370
Consumer services	0.052	0.036
Consumer services	0.024	0.036
Consumer services	0.038	0.029
Consumer services	0.043	0.028
Consumer services	0.04	0.023
Consumer services	0.181	0.023
Consumer services	0.041	0.0200
Energy	0.024	0.036
Financial	0.721	0.462
Financial	0.427	0.305
Financial	0.046	0.105
Financial	0.105	0.099
Financial	0.056	0.078
Financial	0.046	0.061
Financial	0.125	0.059

Financial	0.048	0.058
Financial	0.058	0.0570
Financial	0.063	0.046
Financial	0.036	0.046
Financial	0.067	0.043
Financial	0.029	0.039
Financial	0.022	0.034
Financial	0.25	0.032
Financial	0.021	0.029
Financial	0.099	0.022
Financial	0.034	0.0160
Healthcare	0.032	0.084
Healthcare	0.035	0.077
Healthcare	0.043	0.068
Healthcare	0.052	0.0580
Healthcare	0.023	0.052
Healthcare	0.022	0.039
Healthcare	0.078	0.027
Healthcare	0.064	0.017
Healthcare	0.017	0.0111
Healthcare	0.014	0.0100
Industrials	0.105	0.06
Industrials	0.73	0.331
Industrials	0.063	0.226
Industrials	0.052	0.052
Industrials	0.051	0.05
Industrials	0.041	0.033
Industrials	0.048	0.028
Industrials	0.014	0.0270
Industrials	0.166	0.026
Industrials	0.035	0.024
Industrials	0.027	0.0240
Industrials	0.039	0.014
Technology	0.045	0.1230
Technology	0.132	0.095
Technology	0.303	0.08
Technology	0.074	0.068
Technology	0.121	0.062
Technology	0.134	0.06
Technology	0.043	0.051
Technology	0.081	0.0510

Technology	0.096	0.0490
Technology	0.025	0.0470
Technology	0.058	0.046
Technology	0.069	0.0450
Technology	0.03	0.033
Technology	0.054	0.028
Technology	0.041	0.0270
Technology	0.024	0.025
Technology	0.03	0.014
Utilities	0.067	0.14
Utilities	0.018	0.047
Utilities	0.02	0.033
Utilities	0.042	0.029
Utilities	0.016	0.028
Utilities	0.015	0.007