The expectations clock: a model for leadership, reversion, and over- and under-reaction

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The Expectations Clock:

A Model for Leadership, Reversion, and Over- and Under-Reaction

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Abstract

The expectations clock illustrates how expectations of future performance are driven by human biases tied to current and past changes in relative performance. The clock is a model of reversion and over- and under-reaction. Depending on initial expectations, disruptive events (or change events) may have different relationships with future performance. Leadership succession is utilized as a proxy for disruption and over- and under-reaction refer to reactions to negative circumstances. The interaction of expectations and disruption may be associated with a counterintuitive inverse relationship with future relative performance. When expectations are low, disruption may be related to over-reaction and when expectations are high disruption may reduce under-reaction. This occurs if expectations cycle, much like a clock, since the level of expectations is related to the level of inertia. Expectations appear to revert; although, the expectations clock exhibits "stickiness" at key points. Stickiness refers to how top and bottom performing institutions tend to rotate between improving and deteriorating performance but not cross over between the bottom and top halves, respectively. Disruption (or lack of disruption) at key points may influence reversion and stickiness. Contrary to prior studies, this research finds no relationship between initial expectations and the succession event itself.

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The paper is divided into several major chapters. First, the introduction highlights the research concepts behind the expectations clock that are derived from the literature review of empirical and theoretical research in chapters 2 through 4. The clock builds upon concepts from finance, management, and psychology. The second chapter reviews what finance has contributed to notions of momentum, reversion, and cycles. In the third chapter, management research on organizational learning is explained: theories of organization change, catalysts for change, and how the environment, in combination with succession, impacts learning are reviewed. In the next chapter, chapter 4, psychological factors linking performance with expectations are discussed. Chapter 5 brings all of these notions together into one framework, the expectations clock. In this chapter, hypotheses are presented and illustrative examples are provided to explain the research concepts. Chapter 6 discusses literature written about university presidents and introduces the variables and chapter 7 reviews the research methodology. Results of the empirical tests are discussed in chapter 8 and, finally, in chapter 9, research implications are reviewed.

Chapter 1: Introduction

This paper addresses three questions:

1. *Are expectations negatively associated with future changes in performance (do expectations revert)?*
2. *How is leadership succession associated with over- and under-reaction in different expectation settings?*
3. *Are expectations negatively associated with leadership succession?*

This research provides a model for expectations, the expectations clock, which illustrates how current expectations of future performance are related to current and past changes in performance. The above-stated questions are interrelated and their answers have important implications for policy regarding leadership turnover and running businesses during different environmental settings. The expectations clock suggests that expectations revert and is a model to explain how different levels of expectations and disruption (through succession) may be associated with over- *and* under-reaction *to negative* events. The relationship between expectations and leadership succession is also explored. This study does not differentiate between expectations of leaders and other constituents - customers, management, and government - because they probably all interact and are associated with actions that influence future performance.

Below, the implications of research from finance, management, and psychology are highlighted, which provide the logic behind the research hypotheses (also noted along with the results). If finance, management, psychology, and the expectations clock represent four runners in a relay race, then the first runner is finance (chapter 2), the second is management (chapter 3), the third is psychology (chapter 4), and the final runner (the "anchor" leg) is the expectations clock (chapter 5). Finance describes "what" happens with performance. Management describes "how" change (its influence on performance) and learning occur and "who" it impacts (leaders and those they lead). Psychology tells the story of "why" behaviors, change, and succession and learning are linked to performance. Finally, the expectations clock unifies concepts from these disciplines into one model.

Chapter 4 shows that peoples' expectations of the future are influenced by the environmental setting. Behavioral biases such as overconfidence, anchoring, confirmation bias, escalation of effort, prospect theory, self attribution, and herd mentality are associated with expectations and are tied to environmental conditions. These biases impact inertia, and thus peoples' reactions to events.

The American Heritage Dictionary (1985: 658) defines inertia as "The tendency of a body to resist acceleration, the tendency of a body at rest to remain at rest, and the tendency of a body in straight line motion to stay in motion in a straight line unless disturbed by an external force." It is also defined as "Resistance to motion, action, or change." To be inert involves being "unable to move or act," and "moving or acting very slowly; sluggish." This paper ties inertial tendencies to expectations derived from the environment and to leadership succession. Succession is utilized as a proxy for disruption, which can sometimes be a positive but most of the time a negative force for learning. The American Heritage Dictionary defines (1985: 719) *to lead* as "To play a principal or guiding role." To lead is also defined as "To guide or direct a course," "To serve as a route for," "To guide the action or opinion of," and "To show the way by going in advance." Consequently, common definitions of *to lead* imply that leaders and, therefore, leadership turnover events, influence outcomes. Huson, Parrino and Starks (2001: 2266) state that "the decision to replace a CEO is arguably among the most important decisions made by a board of directors. It has long-term implications for a firm's investment, operating, and financing decisions."

Chapter 4 shows that when performance is strong and has been improving, organizations are often slow to adapt (this is because expectations are high), and when performance is poor and deteriorating the opposite is the case. "Don't fix what is not broken," is a popular motto. Lant and Mezias (1992: 49) state that "Satisfactory performance will tend to result in reinforcement of the lessons drawn from the organization's past experiences; the status quo will be maintained and justified, resulting in first order learning (discussed in chapter 3) and convergence (stability through incremental change as opposed to large changes). By contrast, this tendency toward convergence will be mitigated when unsatisfactory performance calls existing routines and practices into question."

Given this evidence, we can ascertain that:

- ⇨ (implication) Expectations are a function of the environment; and
- ⇨ (implication) Expectations influence peoples' reactions to events.

Chapter 2 shows that the environment cycles or reverses over the long-term. This, combined with what was discussed above, suggests that expectations are sometimes strong and at other times weak. Reversion forces include extremes (caused by efficacy-performance spirals) that reverse, the economic cycle, and competitive forces that cause growth and margins to follow a life cycle.

Therefore:

- ⇨ (hypothesis) The environment reverts over time (my research supports this hypothesis; although, overall level of expectations appears to be sticky);
- ⇨ (implication) Expectations revert over time; and
- ⇨ (implication) Peoples' reactions to events change over time.

This paper explores the impact of CEO change (of any type) as a force of disruption and also whether CEO succession is influenced by the environment. Chapters 6 and 7 discuss performance measurement, which defines the environment and the expectation phase. Chapters 3 and 4 show that new leaders tend to question existing routines and procedures more so than the leaders they replace (the leaders who created those routines and processes), so they are not limited by biases of former leaders.

CEO turnover, therefore, can influence an organization's reactions to events:

- ⇨ (implication) New CEOs can be a disruptive force; thus
- ⇨ (implication) Succession can influence peoples' reactions to events.

Chapter 4 discusses how people tend to under-react to non-confirming information – information that does not support the status quo – when performance is strong. Chapter 3 reviews the learning curve, which suggests that leader turnover is needed at these times to reassess and change an organization – some level of disruption is optimal. On the other hand, when the environment is poor, people tend to over-react to negative information; thus, at these times succession could lead to extreme and unproductive disruption in a process that is already changing. One of these over-reactions may include replacing the leader.

Thus:

- ⇨ (hypothesis) When performance is poor leaders are more likely to be replaced (my research does not support this hypothesis);
- ⇨ (implication) Disruption through CEO change has different influences on future performance depending on the initial expectation (influenced by the environment) setting;
- ⇨ (hypothesis) Different amounts of disruption are optimal during different expectation settings and, unfortunately, because of over-reactions to negative stimuli, succession is most common when it is least needed (during poor environments) and may be least common when it is most needed (during strong environments) (my research provides moderate support for this hypothesis).

Taking all of the aforementioned conditions together, we can see that, depending on the environment that determines the expectation setting, leadership succession may eliminate under-reaction or result in over-reaction to negative information. Chapter 5 brings all of the above concepts together in a review of the expectations clock. This clock illustrates how the environment, which cycles, influences expectations. Expectations impact inertia and the resistance to change; therefore, introducing a new leader at different points in the clock may have varying impacts on future performance.

Incorporating the notion of the expectations clock (see figure 1.a.), which has four phases, makes this research multi-dimensional versus other succession research that does not make a distinction regarding the environmental setting, making it one-dimensional.

(Insert Figure 1.a.)

As shown in figure 1.a., four phases are considered:

Phase 1: low performers where recent performance has deteriorated;

Phase 2: low performers with recent improvements in performance;

Phase 3: high performers with recent improvements in performance; and

Phase 4: high performers where recent performance has deteriorated.

It is important to keep in mind, as the ensuing discussions show, that expectation phase 1 is associated with low expectations and low inertia and expectation phase 3 is associated with high expectations and high inertia. Chapters 2-4, which discuss research from finance, management, and psychology, note pertinent phases of the expectations clock associated with the literature, keeping the reader tuned in to why those topics are important. Chapter 5 ties the literature together and discusses the clock, additional supporting theory, and the hypotheses associated with the expectations clock.

This expectations clock is a modified version[1] of the investment clock, presented in chapter 2, that I utilized as an investment professional during my fifteen years in the field. In my tenure, I managed various asset classes and portfolios in all investment styles (large-, mid-, small-capitalization and value, core, and growth styles (defined in chapter 2)). My roles have included being a strategist, an analyst in a variety of industries, a portfolio manager, and a director of research. I worked at public institutional ($50 billion assets under management) and private institutional and mutual fund ($14 billion) buy-side (investors) organizations. In 2007-8, I consulted for the #1 (as evaluated in a survey of top buy-side investment professionals and published in the *Institutional Investor* magazine) sell-side (investment advisor) firm (International Strategy & Investment Group) in the United States for areas such as economics and strategy (Paulden, 2007). Specifically, I worked with the firm's strategist, Francois Trahan, and his team on building quantitatively-derived investment strategies. I also oversaw the student investment program at The Ohio State University and I am currently the practitioner director of the Hawk Center for Applied Security Analysis and Senior Lecturer at the University of Wisconsin-Madison. I earned my Master of Science degree in Finance from University of Wisconsin-Madison and I am a Chartered Financial Analyst charter holder.

This research adds to several areas of academic investigation. The main contributions are to (1) finance literature with the evidence the research provides for reversion and stickiness in performance, (2) management research by showing how leader succession

[1] It is modified based on a review of literature from finance, management, and psychology.

may be associated with change and learning – impact over- and under-reaction to negative stimuli, and (3) psychological literature by showing why behaviors and expectations may be associated with performance as modeled in the expectations clock. Conclusions also provide evidence for: new insights into how corporate managers should manage their businesses during different environments to achieve maximum performance; competing theories of organizational change - do organizations change in response to threats, is a stable organization optimal, or are changes the result of random occurrences - during different performance environment settings; and the implications of the role of a president within a university. Most importantly, by incorporating and expanding on ideas in the aforementioned areas, especially the concept of expectations, the research adds to the knowledge of the interdisciplinary field of behavioral finance. Overall, this research capitalizes and expands on literature from finance, management, and psychology.

Conclusions from succession research are often contradictory (Kesner and Sebora, 1994) and theories of organizational change are at "odds." Why? After reviewing an abundance of literature (in chapters 2-5), it can be argued that a main reason for these fragmented conclusions is because research on the financial repercussions of leadership turnover has not adequately taken into consideration leadership succession's interrelationship with the environment that influences human and organizational behaviors and, ultimately, expectations. Singh, House and Tucker (1986), in their review of literature on organizational change, state (page 608) that "Future studies also need to investigate the contextual factors that may have an impact on the adaptive or disruptive consequences of organizational change, since it seems unlikely that any change would have the same consequences under different contextual conditions." This study provides the glue that binds together fragments of research from finance, management, and psychology. The key in this statement is not that there is a consensus…there is not...but that there may be a factor (expectations) that makes sense out of all of this literature.

This research builds upon and adds completely new ideas and methodologies to existing executive succession research. Specifically, it adds to the existing literature by exploring the association of expectation phases (current and past changes in performance are related to expectations) in *conjunction* with leader succession with future performance; henceforth referred to as "conjunctive research."

Kesner and Sebora (1994), in their review of thirty years of succession research, discuss four control factors that influence results of succession: 1) antecedents (how and who), 2) contingencies (industry, organization, and selector issues), 3) the event itself (process, candidate, and choice issues), and 4) consequences (performance/strategy, shareholder issues, and evaluation issues).

As discussed in chapters 6 and 7, this study considers several *contingencies* cited by Kesner and Sebora such as the current level of performance (high and low), past changes in performance (improving and deteriorating), life cycle stage, and size. The paper also considers *consequences*, noted by Kesner and Sebora, such as future performance, and internal and external stakeholders (discussed in chapter 7).

Kesner and Sebora (1994: 366) call for more multidisciplinary research, "... it (future research) should focus on identifying a basic model which uses a multidisciplinary perspective." This study provides a multidisciplinary perspective.

Furthermore, longitudinal studies that test cognitive inertia (inertia in mental accounts caused by behavioral biases) "to see if mental models (of the competitor space) actually play (a role) in facilitating and/or inhibiting strategic change in dynamic environments" have not been forthcoming (Hodgkinson, 1997: 923). Although our research approaches and aims differ (most notably with respect to his greater focus on models of competitiveness), we both tackle the problem of modeling cognitive inertia in changing environments. This study not only adds to studies called for by Hodgkinson, but also focuses on inertia in stable environments and what can be done (succession) to influence inertial tendencies in dynamic and stable states.

Universities provide the setting for this research. This setting, reviewed in chapter 6, has several advantages over settings explored in prior research. Chapters 6 and 7 discuss how the data: is both cross-sectional (across universities with different characteristics) and longitudinal (1992-2006); is of several types including accounting, operational, and market variables; focuses on four stakeholders (management, owner, government, and customer) versus one or two in other studies; and measures the level of *and* change in performance versus one of these measures alone.

By analyzing leadership versus the interaction of market participants, the focus of other behavioral finance research, it is easier to isolate actions and their effect on outcomes. Analyzing leadership and using an alternative data setting provides a unique way to test over- and under-reaction for two reasons. First, financial research on momentum and reversion (that illustrates over- and under-reactions as noted in chapter 2) has concentrated on the stock market. Thus, analyzing reversion in a different setting helps fill a void in research. Second, since leadership change is a form of reaction, by identifying when this reaction is positively or negatively related to future performance one can determine the performance environments, and their related expectation phases, that are associated with over- and under-reaction. If leadership succession is related to negative future changes in performance, then this means that it represents an over-reaction; if leadership succession is related to positive future changes in performance, then this means that the event reduces under-reaction. The expectations clock is one of the first unified models to evaluate over- *and* under-reaction. Furthermore, if leadership succession is not related to performance (over- or under-reaction), this implies that leaders may not be important. Accordingly, the study has important implications concerning the value of leaders to their organizations.

Chapter 2: Finance (the "What")

This chapter reviews financial literature concerning momentum, reversion, and cycles in performance, or "what" ultimately happens. Momentum is a short-term phenomenon that results from efficacy-performance spirals and reversion is a long-term correction to extremes that develop from momentum. Cycles occur in the lives of organizations and are due to economic forces. This research provides strong support for the notion that the performance environment moves through phases, much like a clock – the expectations clock. That is, performance reverts over time. What is less known from finance is how the performance environment impacts succession and learning, and why it influences expectations and behaviors of people and their associated actions that cause momentum, reversion, and cycles. These topics are addressed in chapters 3 and 4, which review literature from management and psychology. Most studies of reversion and momentum focus on stock prices, so this research, by considering multiple stakeholders (see chapter 7), expands the breadth of the literature.

2.1. Efficacy-Performance Spirals

Papers discussed in this chapter are derived from a review of the stock market, but they are applicable since stock returns are driven by people...including leaders. The void in momentum and reversion research outside of the stock market highlights the need for more research in other settings such as that undertaken in this study.

Over the last two decades, financial research has identified short-term stock momentum, defined as the continuation of past trends, and long-term return reversals. This research has shaken the foundations of the efficient markets theory. Some people continue to argue that the market cannot be driven by both momentum and reversion. I disagree because, as discussed below, momentum is a short-term phenomenon and reversion is long-term reality. If momentum builds over time and eventually reverses then this refutes the weak form of the efficient market theory that posits that one cannot make excess returns by studying prices alone.

Efficacy-performance spirals are defined (Lindsley, Brass and Thomas, 1995: 645) as "deviation-amplifying loops in which the positive, cyclical relationship between perceived efficacy and performance builds upon itself." This feedback loop, where positive performance results in confirmatory evidence (perceived efficacy) of a chosen strategy, increases the likelihood that one continues down a path and under-reacts to non-confirming stimuli. Soros (2002) describes this feedback loop in his theory of reflexivity which explains why financial (and other) bubbles and bursts occur. Because of efficacy-performance spirals and environmental reversion tendencies, people tend to retain "good" strategies long after they fail (because they are stuck in a high expectation frame such as phase 3 of the expectations clock) and, oftentimes, abandon "poor" strategies, or over-react, just before they come into favor (because expectations are low such as during phase 1).

Spirals occur in investment and corporate settings. Stock prices tend to move to extremes over the short-term (up to one year) and reverse over the long-term (three years) (see discussion below). Based on my experience as a professional money manager, different types of investment managers exploit these anomalies.[2] It is known in the investment world that "value" managers capitalize on reversals and have long horizons while "growth" managers often ride current fads to take advantage of positive momentum. Thus, some managers focus on reversion, while others focus on momentum. As an investment manager, I have observed that expectation spirals lead corporations to buying sprees (mergers and acquisitions and capital expenditures) after good performance (at peaks of spirals) and divestitures at economic and/or business troughs or shifts in life cycle stages (described later in this chapter). As a result, corporate managers tend to buy assets at high prices and sell them at low prices. These spirals may occur because of behavioral biases associated with fundamentals that cause inertia in expectations (a concept discussed in detail in chapter 4). Thus, momentum and reversion may be tied to underlying fundamentals and their related behavioral biases.

Momentum and reversion have often been associated with over- and under-reaction; however, there is confusion over which phenomenon (momentum or reversion) is tied to which condition (over- or under-reaction). Are people over-reacting to current positive trends when they follow successful trading strategies or are they under-reacting to negative information that would indicate it is time to change course? Does momentum develop because people react slowly (under-react) to new information or should momentum be

[2] Academics tend to use the word anomalies to describe events that are not explained by theory. In reality, it may be the theory that is the anomaly. In this instance, the anomalies that are in dispute include the Efficient Market Theory and the Capital Asset Pricing Model.

considered an over-reaction because it drives securities to extremes (over-valuation)? In this research, over- and under-reaction refer to people's reactions to negative stimuli in different environmental settings.

Fama (1998: 284) argues that in order to refute the efficient market hypothesis a new theory of behavioral finance must "specify biases (behavioral biases) in information processing that cause the same investors to under-react to some types of events and over-react to others." Fama argues that over-reaction and under-reaction are just as likely and if the market over-reacts and under-reacts the convergence of the two results in an overall efficient market. This specification or missing facet Fama asks for is modeled in the expectations clock, which illustrates how expectations are derived from the performance environment. The environment has an important impact on expectations and the market's under-reaction to negative stimuli in some situations and over-reaction to negative information in others.

Chapter 4 discusses the link between expectations and performance but a preview of the topic is warranted at this point. Nobel Prize in Economic Sciences recipient, Herbert Simon (according to the Nobel Prize website (www.nobelprize.org) "for his pioneering research into the decision-making process within economic organizations"), suggests that there is a difference between perfect human rationality as prescribed by economic theories and actual rationality observed by psychologists. Bounded rationality is a term used to describe how people make decisions given their cognitive limitations – limitations in both knowledge and computational capacity (Simon, 1992). Simon notes (page 6) that "Because we human beings cannot see all things at once, we simplify our decision problems by viewing situations within the framework of our organization: the goals of that organization, the factors that are relevant to those goals – a view of the world, so to speak..." What is clear from his work is that people's "view of the world," or expectations of the world, is/are influence by the environment in which they make decisions.

A few other papers, besides this one, have produced unifying models of over- and under-reaction. The most frequently cited papers include Daniel, Hirshleifer, and Subrahmanyam (1998), Barberis, Shleifer, and Vishny (1998), and Hong and Stein (1999). The authors have taken different approaches to Fama's challenge. The first two articles describe the conditions for over- and under-reaction from a behavioral standpoint. Daniel, Hirshleifer, and Subrahmanyam's article is reviewed in chapter 4 and again in chapter 5 where these and other behavioral models to describe over- and under-reaction are discussed. Contrary to these models, Hong and Stein focus on non-behavioral factors to describe how traders interact to influence over- and under-reaction tendencies.

Hong and Stein segment traders into newswatchers and momentum traders who each have different limitations in information processing (their "bounded rationalities" such that each type of participant only processes a subset of information). Newswatchers observe information about fundamentals (earnings, business cycles, etc., other than prices) and momentum traders only focus on past prices. The authors also assume that fundamental information diffuses slowly so newswatchers under-react to any new information in the direction the news indicates (positive or negative). Momentum traders, on the other hand, arbitrage away the under-reaction from newswatchers and, if they also relied on fundamentals, would make the market efficient. Momentum traders accelerate reaction in the direction of the initial reaction of newswatchers. They appear to be simplistic in their approach since they only focus on past prices and, consequently, their trading not only accelerates reaction but takes prices beyond the equilibrium point. Their buying and selling activity drives securities prices, which then justifies more purchases or sales, and so on...causing efficacy-performance spirals and market over-reaction.

Below is a more detailed discussion of the concepts of momentum and reversion.

2.1.1. Momentum

Momentum has been a common subject in financial research. Momentum, because of poor or stellar performance, can build because of efficacy-performance spirals. Momentum is the opposite of reversion. We can take some comfort that momentum exists since even Fama and French, who are some of the strongest proponents of the Efficient Market Theory[3], agree that even their improved three factor model (Fama and French, 1996) for explaining returns cannot justify the persistence of short-term returns.

[3] The strong form of the Efficient Market Theory posits that security prices fully reflect all information for all securities all of the time so stock prices always reflect economic values.

One simplistic momentum strategy is buying stocks that have performed well over the last 3-12 months and holding them for the next twelve months (Jegadeesh and Titman, 2002). Based on a review of research, Chan, Jegadeesh, and Lakonishok (1996) suggest several reasons why momentum strategies can be successful. First, there appears to be sluggishness in price response to analyst earnings revisions. Second, positive feedback trading strategies reinforce movements in stock prices which results in more purchases in the same direction, and so on. This is somewhat like Hong and Stein's momentum traders (discussed above) who do not necessarily trade on fundamentals. Third, Chan, Jegadeesh, and Lakonishok (1996) tested various strategies on the same data set and showed that past return and various measures of earnings surprises (standardized unexpected earnings, earnings revisions, and earnings surprises[4]) exploit market tendencies to under-react (at least for a couple of quarters). One caveat should be noted. Much of the abnormal returns are captured in the days around earnings announcements, so if a manager is not nimble he or she will not be able to realize excess returns from these strategies.

In my view, each of these strategies works, to at least some degree, because expectation frames change *gradually* (the behavioral reasons for inertia in expectations are discussed in chapter 4). So, one can make abnormal returns by buying after initial expectations improve and selling after initial expectations deteriorate. This also means that prices, which reflect investors' views, change gradually. These investors include corporate managers who provide publicly announced forecasts, or expectations, of corporate earnings, and analysts and portfolio managers who invest based on their expectations of future earnings.

Revisions in earnings estimates follow predictable gradual trends. A revision is defined as an upward or downward adjustment to the prior consensus earnings estimate. Upward and downward revisions should be random. Goldstein[5] (1998) showed that the probability of an upward revision after a series of negative revisions is about one in four, but this rises to one in two after the first upward revision. If there are two upward revisions after a series of

[4] Standardized unexpected earnings equals the most recent earnings less the earnings four quarters ago divided by the standard deviation of this difference over the prior eight quarters. Earnings surprise equals the cumulative relative price return to an equal-weight market index around the recent earnings announcement. Earnings revision is the change in the six-month moving average of the one month change in earnings estimates scaled by the respective stock prices.

[5] Goldstein is the former investment strategist for Sanford Bernstein, a Wall Street brokerage firm, and is now owner of Empirical Research Partners. In 2007, he was the #1 rated investment strategist and quantitative analyst on Wall Street, as rated by institutional investment managers in *Institutional Investors'* annual survey.

negative revisions then the probability that the next revision is positive is seven in ten. This phenomenon is even stronger for downward revisions after a series of upward revisions. Peoples' perceptions, or expectations of the future, are anchored to what has happened in the past (the series of prior revisions). Expectations change slowly so people do not fully alter their earnings estimates after the first earnings revision in the opposite direction of the prior trend; therefore, more revisions in the direction of the first opposite revision follow. The result is that upward and downward estimate revisions are not random. Expectations may reflect underlying fundamental (sales, earnings, etc.) momentum. Business and economic cycles tend to last more than one year and build upon themselves over time (until they revert). Momentum profits can be made in strong and poor economic states (Griffin, Ji, and Martin, 2003), as there are winners (at least on a relative basis) and losers in all economic phases. Different industries (and the companies within) have varying systematic risks.[6] For instance, my experience as an institutional investor has shown that, in the US, cyclical sectors such as industrials, materials, and technology have greater exposures to systematic risk than stable or growth sectors such as consumer staples, health care, and utilities.

Using weekly return data, Lo and MacKinlay (1990) found that individual securities are positively cross-autocorrelated. This means that a higher return for security A tends to be associated with a higher future return for security B. If firm B moves up because of firm A, and firm C (and maybe A again) then reacts to firm B, positive momentum can develop. Firms react with delay to common factors; although, they tend to over-react to firm-specific information (Jegadeesh and Titman, 1995). Moskowitz and Grinblatt (1999) find that industry affiliation, a common factor, overwhelms stock momentum; therefore, purchasing past winning industries and selling the losers, even after controlling for size and B/P (equity book value to price), may produce excess returns over the market. This means that information related to the industry diffuses slowly while information related to a company diffuses rapidly. It may take time for investors to recognize that good news for an individual security reflects strength for an industry (obviously, it may not happen at all if some companies in an industry do well while others perform poorly). It can therefore be profitable to purchase industries with top individual company performers and sell those with severely underperforming companies because company-specific information may indicate changing overall industry fortunes.

[6] Systematic risk entails exposure to economic and market related factors.

Systematic effects on security returns are strong and corporate leaders have little control over what happens in the entire industry or economy. As an industry moves through its life cycle or the economy through its economic cycle (see discussion below), a company is similarly affected. To reduce systematic biases on this study's results and to test what leaders control – his or her individual firm – relative, as opposed to absolute, measures of university performance are evaluated.

2.1.2. Reversion

DeBondt and Thaler's 1985 paper on whether the stock market over-reacts is frequently credited as a leading, and one of the first, articles in behavioral finance. They showed that stock strategies that capitalize on reversals outperform. Recent top performing stocks are the worst performing securities long-term (three-year) and the recent poor performing stocks are the best performing securities long-term. Stock markets, in addition to individual securities, show reversion tendencies as well (Hirschey, 2003).

Eventually, even Fama and French (1996) recognized that other factors besides beta, such as size, leverage, B/P, E/P, CF/P,[7] past sales growth, long-term past returns, and short-term past returns, impact returns and are *not* incorporated in the Capital Asset Pricing Model[8].

B/P, E/P, CF/P, etc. are good long-term contrary indicators because the denominator, price, often moves to unsustainably high or low levels as a result of efficacy-performance spirals. Investors may under-react to negative information at the top of spirals and over-react to negative information at the bottom of spirals. Both situations cause stocks to move to extremes, which from a statistical perspective, must eventually reverse.

Market prices revert because expectations, implied in valuations, move in the direction of underlying reversing fundamentals.

[7] B/P is defined as book value of equity to market capitalization of the stock. E/P is earnings divided by market capitalization of the stock and CF/P is cash flow divided by market capitalization of the stock. All of these ratios are measures of value – what one receives per unit of what one pays for a security. If one receives more per unit of price (what is paid) then security returns tend to be higher than if one receives less per unit paid.

[8] The Capital Asset Pricing Model describes security returns as a function of the risk-free interest rate plus a premium for market risk multiplied by a security's systematic risk exposure to the market.

Fundamental reversals may be related to our capitalistic society where companies are motivated by profits. Industry leading companies are copied by competition (isomorphism to the leading model is discussed in chapter 3). Additional competitive supply leads to falling prices (and profits) (Hirschey, 2003) and the sharing of industry growth. Competition may also lure good management away from the leading company and, eventually, products mature. On the other hand, underperforming companies face slackening competition that leads to higher profits, other common forces of change including reduction in capital expenditures, layoffs, and plant closings (Hirschey, 2003), and change in management (see discussion of catalysts for succession in chapter 3). In two articles (1987 and 1994), Clayman showed that "unexcellent" companies improved and "excellent' companies deteriorated on six financial measures (asset growth, equity growth, P/B ratio, return on capital, return on equity, and return on sales) over time. Furthermore, as discussed below, fundamental life and economic cycles cause reversion.

To avoid reversion when performance is strong it is imperative that leaders continually reinvent the wheel and question practices. Unfortunately, it is normally easier and more comfortable to (see behavioral discussion in chapter 4) support the status quo (see discussion in chapter 3).

Market prices revert. Thus, investors suffer from the same behavioral biases as corporate managers who frequently appear not to look beyond the present situation to see that conditions change. If the investors had perfect foresight and were not biased based on current and past conditions, then they would foresee underlying cycles and prices would not move to extremes. Momentum pushes prices beyond equilibrium in the direction of present fundamental trends so, over the long-term, they must revert back to equilibrium prices. Over-reacting (due to momentum) to present fundamentals combined with reversing fundamentals may imply that reversals in stock prices are more severe than reversals in underlying fundamentals.

"Good" (expectation phase 3) and "bad" (expectation phase 1) expectation frames illustrate different levels of management and investor inertia. Abnormal stock returns from reversion strategies originate from overextended expectations (implied in prices). Investors extrapolate too far past performance trends in their expectations of the future (Lakonishok, Shleifer, and Vishny, 1994) and end up paying too much (low B/P) for growth stocks (the opposite of value) and too little for value stocks. Stocks with very high earnings growth expectations under-perform stocks with low expectations (LaPorta, 1996).

Because of these tendencies, earnings surprises are systematically more positive for value stocks than growth stocks (LaPorta, Lakonishok, Shleifer, and Vishny, 1997). Investors are surprised (their expectations are wrong) when the expectation phase moves from high and improving performance to high and deteriorating performance and when the phase moves from low and declining performance to low and improving performance.

Thus, reversion appears to be related to behavioral biases (that cause momentum which drives stocks to extremes), to fundamental market pressures, and to cycles that people tend to overlook. Cognitive limitations appear to be due to the environment (see discussion in chapter 4) and influence the environment. However, there is another possible explanation for reversals and momentum. Klein (2001) suggests that stocks should exhibit long-term reversion due to capital gains taxes. The logic of his model is quite simple. Due to taxes, investors with too many shares (those who would like to sell) of high performing stocks sell fewer shares than would be the case in the absence of taxes. There is no similar bias for those with too few shares since buying does not trigger taxes (unless it is to reverse a short sale). Because of this, investors with too many shares require higher prices to sell – prices resulting in less buying since stocks are over-valued. The higher prices are above-equilibrium ("efficient") prices that revert as selling commences.

2.2. Cycles

The expectations clock is a model of cycles. Cycles include secular (life), economic, and investment cycles. The economic and investment discussion that follows is primarily based on my fifteen years of practitioner research as a strategist, portfolio manager, and director of research; whereas, academic research provides support for life cycles.

Academic institutions, the subject of this research, are generally old and stable, so I am primarily concerned with one life cycle phase (mature) and firms with low (inelastic or "defensive") economic sensitivity. On the other hand, universities are categorized by several expectation phases (discussed in chapter 7).

2.2.1. Life Cycles

Corporations transition through life cycle stages – pioneer, growth, mature, and decline – as they age. The concept of industry (Jevanovic and MacDonald, 1994), firm (Agarwal and Gort, 1996), and product (Klepper, 1996) life cycles are familiar. Life cycle stages exhibit various characteristics (Hooke, 1998) and tend to move in the order shown in table 2.a.

(Insert Table 2.a.)

As discussed in more detail in chapter 4, evidence suggests that behavioral characteristics vary based on situational (life cycle stage) factors.

- Pioneer

  The pioneer stage is characterized by high risk and growth; however, entrepreneurs are frequently overconfident and overlook risks. As a result, they under-react in loss situations, overlook non-confirming evidence, and often escalate their efforts when faced with negative information. Oftentimes, people who manage start up businesses do not have business experience. Experience is often the best teacher. Failure is commonplace because of their liability of newness (Hannan and Freeman, 1984). Managers of pioneer companies frequently devote their entire fortunes and dreams to making the ventures succeed and, as a result, in situations where failure is certain they often risk more to break even (consistent with prospect theory).

- Growth

  Growth companies experience above average growth and are perceived as less risky than other companies. This phase represents the golden years. Profit and success result in feelings of security. Complacency is risky because high profits and growth attract competitors and products eventually mature. The greater the past success the more confident managers become and the larger the mistakes that may ensue if they under-react to threats. Firestone Tire & Rubber is an example of a growth company (a good company) that failed to respond to the radial tire revolution (Sull, 1999). Not only did the company fail to respond to changing industry dynamics, but it made matters worse by accelerating activities that contributed to its past success. It is hard to break old patterns, especially when the environment has been favorable for a long time.

- Mature

Mature markets are characterized by average growth and rising risk. Companies tend to be older, larger, and more complex. Strategic inertia is directly related to these factors (Hannan and Freeman, 1984). As corporations grow older they become more inert (Singh, House, Tucker, 1986). As companies mature, the environment toughens and threat increases so managers should question past practices. However, managers often overlook (confirmation bias) the fact that their businesses are maturing and mistakenly pour more money into failing projects (escalate the effort) and previously successful strategies and procrastinate tough decisions concerning change (Bazerman, 2002). During this period, the number of choices facing managers increases and studies have shown that when people are faced with many options they tend to choose the default option (do nothing or, in other words, stay with the status quo).

- Decline

During the declining phase managers face losing situations. Growth is below average (possibly negative) and risk is high. Prospect theory argues that investors tend to hang on to losing stocks in order to avoid locking in losses (Shefrin and Statman, 1985). Shefrin and Statman refer to this tendency as the "disposition effect," which is influenced by prospect theory as well as mental accounting (addresses how different types of gambles are separated into different "mental accounts" that do not interact), regret aversion (deals with why it is difficult to realize gains and losses), and self-control (looks at how investors force themselves to realize losses). Corporate managers behave similarly. These managers, when faced with reprisal, often play the blame game, "pass the buck" to other people, and avoid making hard decisions to abandon current strategies. In an organizational context, the asymmetry between losses and gains described in prospect theory are enhanced because leaders often bear an unfair share of the blame (and credit) for

> success of organizations (Kahneman and Lovallo, 1993). At some point, when the pressure is highest and managers fear loss of their jobs, they may do *something*, without purpose or proper planning, and what they do may not be right. They often over-react at the bottom and just before reversion sets in.

Of course, there are exceptions to life cycles. Undoubtedly, some firms are continually able to reinvent the wheel and maintain above average growth for a long time. However, infinite above average growth, while mathematically possible, is very unlikely. For instance, if a firm is 1% of the market (if we assume the market is the Standard & Poor's 500 index, then each company is, on average, 0.2% of the market, but there are many firms that are 1%) and its earnings growth (and associated price appreciation) is two times the market (say 14% vs. 7%) then in 1 year the firm will be 1.1% of the market, in 5 years it will be 1.9% of the market, and in ten years it will be 3.7% of the market. However, due to compounding, in the next ten years (at year 20) it will jump 10.0% to 13.7% of the market, and in 30 years it will be 48.1% of the market, and finally in 36 years it will be 99.9% of the market.

Universities tend to be mature enterprises. This is especially true of national universities which are the subject of this research (as noted in chapter 7, their rate of long-term revenue growth is 6.5% per year over the time period of this study, or about the rate of long-term GDP growth). Age is associated with the reliance on rules and is positively related to inertia (Ocasio, 1999). Based on these characteristics, universities should have a high level of strategic inertia.

2.2.2. Economic Cycles

The economy cycles, and different phases of the cycle favor various types of securities, as represented in the economic clock (figure 2.a.).[9] The economic cycle determines the security return cycle. Please note that the economic clock is not supposed to imply that every cycle experiences four phases. For instance, in some cycles, the economy simply gyrates from high growth/low inflation to low growth/low inflation and back.

[9] This clock is derived from numerous articles from the academic community, business community, my research and substantially from the investor community (various Wall Street strategists and economists) over the last 15 years. It is how I, as a portfolio manager, Director of Research, and strategist, have modeled the relationship between economic variables and asset, style, and sector returns. The clock shown is abbreviated to only include characteristics associated with growth and inflation.

(Insert Figure 2.a.)

To understand the economic clock one must first accept that the economy moves through various states of growth and decline and experiences different inflationary environments. To appreciate this fact, one must also consider the various causes of these cycles. It is widely accepted that the economy moves through cycles, but the causes of these cycles is still up to debate.

Cycles could be caused by exogenous shocks (unexpected events), instability of investment caused by swings due to confidence changes by producers, productivity shocks that cause returns to decline and induce people to work less, policy mistakes (improper monetary policy by the Federal Reserve), and/or excess supply caused by overinvestment (Economist, 2002). Temin (1998), in his review of economic recessions from 1893 to 1990, categorized causes of recessions as domestic real economic shocks (end of World War I in 1918), foreign real economic shocks (oil shock of 1980), domestic monetary policy error (rising reserve ratio in 1937), and foreign monetary policy error (banking panic in 1907). If cycles are caused by shocks[10], then this implies that we cannot forecast recessions (Fuhrer and Schuh, 1998). This statement does not portend an entirely happy state of affairs; however, it fits neatly with why people over- and under-react because of bad foresight. Cycles may also arise because they are due to occur from a statistical standpoint. In 1927, Slutsky showed that regular business cycles could occur due to a summation of random causes[11] (Barnett, 2006).

So, the economy cycles, but why do different types of securities perform better or worse during the four potential phases (low growth/low inflation, low growth/high inflation, high growth/low inflation, and high growth/high inflation) of the economic clock? Below, I summarize the logic behind these relationship and also back up my conclusions with a few references (please note, these are just a handful of the many articles and my research that went into developing the economic clock). First, I explain the logic, from earnings and inflation angles, of the style (value, growth, small, and large) and sector (cyclical and

[10] Temin includes monetary policy mistakes as shocks, whereas other authors do not categorize monetary decisions, right or wrong, as shocks.

[11] Summation refers to the fact that multiple causes over time could produce multiple consequences with the magnitude of the consequences determined by more than one of the prior causes. Barnett details different interpretations of Slutsky's article. The definition of what Slutsky meant by causes and even what he meant by randomness is open to debate. For instance is randomness in reference to pure "randomness" from a statistical perspective or based on random real developments in the economy?

defensive) rotations and then I explain the logic for the asset (stocks, commodities, bonds, and cash) rotations.

Growth, large, and defensive[12] companies perform *relatively* well when the economy (earnings) deteriorates, while cyclical (sales are elastic to the economy), value (described in the next section as having lower growth in earnings), and small firms perform *relatively* well when the economy rebounds. When earnings and growth are abundant (during economic recoveries) there is no reason to pay up (higher multiples of earnings) for growth (defined as expensive stocks in the next section) and defensive stocks. Also, at these times, perhaps it does not make sense to invest in large – diversified - companies that are more capable of weathering economic "storms" and are considered to have lower risk than small companies where fortunes could rest on success of single products or business lines. Consistent with these arguments, Jensen, Johnson, and Mercer (1998) showed that small and value stock premiums (excess returns over large and growth stocks) are larger during economic expansions than during contractions. Sorenson, Miller, and Samak (1998) and Bernstein (2001) also showed that growth stocks outperform value stocks during difficult economic environments and value stocks outperform growth stocks in strong economic environments.

For instance, consider a growth company that is growing earnings at 15% per annum and a cyclical company that has a "normalized" earnings level of $1.00, no long-term growth, and earnings that gyrate between $0.50 in recessions to $1.50 during expansions. Given the lack of long-term growth and volatility in earnings, the cyclical stock probably trades at a low multiple of earnings, on average, over a business cycle - it is a cheap value stock. The cyclical company could also be more economically sensitive because it is a small - non-diversified - company. Thus, not only is one likely to pay less for cyclical, small, and value companies, but if he or she buys it at the bottom of an economic cycle and holds it until the cycle's peak the investment will grow earnings 300% ($1.50 / $0.50). This compares to the expensive growth company that will grow earnings only 131% (assuming an elongated six year up cycle). Similar arguments can be made for why it would not make sense to buy large and defensive companies over value, cyclical, and small companies when economic growth is abundant.

[12] Defensive stocks are stable in all environments. An example is a toothpaste maker. Toothpaste sales are inelastic to economic cycles.

The logic for why growth, large, and defensive companies perform relatively well as the economy moves to recessions is similarly explained. During recessionary environments, when earnings and growth are scarce, investors are more willing to pay up for stocks with sustainable earnings and higher rates of growth. At these times, they buy "safe" growth, large, and defensive stocks.

The main exception to these rules is dependent on market expectations as implied in valuation. Incorporating the size of the valuation spread between value and growth stocks[13] can improve models for forecasting value stock outperformance (Asness, Friedman, Krail, and Liew, 2000). When the spread is high this means that growth stocks are trading at a large premium to value stocks. At these times, growth stocks are less likely to outperform value stocks. For instance, at the peak of the stock market bubble in 1999-2000, large growth companies traded at very lofty valuations because people expected their fortunes to continue indefinitely (or so it seemed). Thus, when the economy turned down these stocks underperformed small value stocks that were, conversely, neglected and extremely cheap going into the peak of the bubble. Bubbles and bursts can destroy logical economic-stock relationships for a time; however, over the long-term these rules are still applicable. Furthermore, not all market corrections are related to economic corrections. This leads to some additional interesting dynamics for the relationships between large and small stocks and value and growth stocks. Growth stocks normally fall farther than value stocks when the market corrects (this is likely since they have further to fall because they rose higher). Also, small stocks tend to fall more than large stocks during market corrections (this is probably because people rotate to safe, diversified, large companies) (DeSanctis, 2000).

Why growth companies underperform value stocks when inflation is high is at least partly due to the concept of duration (a concept related to average years to maturity). Growth stocks are longer duration securities than value stocks because growth stocks pay proportionately less in dividends (and have less earnings and cash flow with which to pay dividends) to market value today than value stocks. To make up for the short-fall, expected growth in dividends (and earnings and cash flow) to market value for growth stocks is greater than value stocks. Recall, the intrinsic (economic) value of a stock is the

[13] Since value stocks generally have lower actual or *perceived* earnings, dividend, cash flow, and sales growth rates and more *perceived* risk than growth stocks, they tend to trade at lower multiples of earnings, cash flow, sales, and book value than growth stocks; however, the size of the multiple spreads vary over time.

discounted value of future dividends.[14] The intrinsic value can also be calculated as the discounted value of cash flow (less the value of debt plus cash). Since growth stocks *supposedly*[15] pay more of their dividends and cash flow in distant future years than value stocks, as inflation moves up (which correspondingly positively impacts the discount rate) these stocks should fall more than value stocks since proportionately more of their dividends are discounted at discount rates that are raised to higher powers (dividends in period infinity are discounted at $(1 + i)^{\infty}$ whereas dividends next year are discounted at $(1 + i)^1$).

What happens if inflation rises and growth slows or growth slows and inflation rises? Here, the above rules for growth and inflation conflict. For these scenarios, there are two additional rules. If inflation slows and interest rates correspondingly fall, then growth stocks outperform value stocks; however, if lower interest rates result in economic reacceleration then one should buy value stocks. Also, if inflation rises and this causes interest rates to rise, then one should buy value stocks; however, if higher interest rates result in an economic recession, then one should buy growth stocks. Furthermore, when inflation is high earnings also tend to be high (Bernstein, 2000)[16], thus value stocks may perform extremely well in inflationary environments. These rules imply that earnings are more important than inflation in determining the relationships between value and growth stocks; however, the relative importance depends on the initial level and the magnitude of the respective moves in earnings and interest rates. Lastly, since the distinction between growth and value has become blurred[17] these rules may be less applicable to predicting growth-value style rotation in today's market environment; although, the differences between large and small stocks remain clear.

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[14] The equation for this discounted dividends is $P_0 = D_0 * (1+g)^1 / (1+i)^1 + D_0 * (1+g)^2 / (1+i)^2 + \ldots + D_0 * (1+g)^{\infty} / (1+i)^{\infty}$, where $D_1 \ldots D_{\infty}$ represent future dividends, P_0 is the current price, g is the growth rate in dividends, and i is the discount rate.

[15] In actuality, investors systematically overestimate growth for growth stocks and underestimate growth for value stocks, so this statement is based on market expectations versus what actually may happen.

[16] This makes mathematical sense. Imagine a company that has revenues of $100, costs of $50, and earnings of $50. If inflation in revenues and costs is 5% then earnings will grow 5% (new revenue of $105 – new costs of $52.50 = new earnings of $52.50), but if inflation is 10% then earnings will grow 10% (new revenue of $110 – new costs of $55 = new earnings of $55).

[17] For instance, commodities and energy may now be considered growth areas even though their underlying long-term growth will continue to be muted by slower growth in developed economies over the long-term. Most recently, due to a synchronized global expansion, demand has outstripped supply for commodities and oil and sent these securities skyrocketing. When the economies turn down the stocks could be pummeled. Not too long ago (late 1990s) I was a manager of a value fund that heavily invested in commodity and energy stocks and everyone thought we were crazy. Now, many probably think I am crazy again for not including these securities in my personal portfolio (long-term horizon).

Now, I turn to explaining why different asset classes perform better or worse depending on the economic phase.

First, it is easy to see why stocks perform well when growth is high and inflation is low. I contend that this scenario is the most likely economic scenario in the United States (at least I hope it is) over the long-term. It represents healthy economic expansion. When growth (or earnings) is abundant the numerator in the asset pricing model[18] is high (dividends and dividend paying ability are high) and the denominator is low (the discount rate is low), so stocks prices should be high.

Second, when inflation is high and growth is high commodities perform best. This scenario is not unusual. Bernstein (2000) shows that there is a positive relationship between the producer price index (a measure of input inflation) and earnings. Interest sensitive securities, such as bonds and stocks that find their value based on discounted streams of interest and dividend payments, should underperform as interest rates rise with inflation. Normally, both inflation and growth are high late in economic expansions. At these points, spare capacity of raw materials (commodities) for production is low so commodity demand outstrips supply and commodity prices (and their corresponding stocks) rise.

Third, when growth is low and inflation is low bonds perform best. Low inflation is not good for commodities and low growth (such as a recession) is not good for stocks. Low growth is also not good for bonds, but they still perform better than stocks for several reasons. Bonds have a "guaranteed" payment of interest whereas there is no stated guarantee for dividends. Also, some bonds are backed by the federal and state governments so they tend to be safe. Corporate bonds are still safer than corporations' corresponding stocks because the penalty for not paying interest on bonds is stiffer (bankruptcy) than not paying dividends (disappointed shareholders) and bondholders have right to receive restitution in the event of bankruptcy before shareholders receive anything.

Finally, when the economy is very poor – growth is low and inflation is high – the best asset class may be cash since it is often considered the safest security. The next best option

[18] The relationship between price, growth, dividends, and the discount rate can be approximated by the Gordon Growth Model: $P_0 = D_0 * (1+g)^1 / (i - g)$.

may be commodities (like it was during 2007-8); however, low growth eventually leads to falling raw material demand that results in excess supply and declining commodity prices.

Given the arguments presented, one can see that the economy and aggregate securities markets (asset class, style, and sector) cycle. Now, let's turn to putting this discussion in the context of universities.

Universities tend to be defensive in nature. They may experience an increase in student applications when the economy falters as people lose jobs and contemplate changing careers. On the other hand, when the economy slows government educational subsidies may decrease, thus offsetting rising revenues from enrollment.

Maturing and declining businesses tend to be more economically sensitive, or cyclical, than other companies and they also have slower growth (as noted in the discussion of life cycles). Mature companies tend to be large, complex, and old – factors correlated with strategic inertia. As noted earlier, universities tend to be mature so growth is slow; although, given their defensive nature, they are not very cyclical.

Since the economy gyrates between troughs and peaks, inertia might act in mature and declining companies' favor at troughs and to their detriments at peaks. By doing "something" at troughs, these companies could end up selling or closing a losing business at the bottom (over-reacting when the pain is greatest) just before the economy rebounds. Change is disruptive and can negatively impact the hazard rate for old companies (Amburgey, Kelly, and Barnett, 1993) so, for these companies, it may actually be best to do nothing and wait for the environment to revert at troughs.

Finally, while unlikely, it is possible that some companies buck stock and asset trends associated with economic cycles. This could be the case for firms transitioning from one life cycle stage to another (growth to mature (or defensive)) or for firms that may be moving around the investment clock (discussed next) independent of the economic clock.

2.2.3. Investment Clock

As an investment manager, I have observed expectation cycles (defined by the investment clock), which are partly attributed to life and economic cycles and partly attributed to other factors.

"Growth" managers tend to populate their portfolios with pioneer and growth companies while mature and declining companies are typically more appealing to "value" managers. It is easy to see why pioneer and growth companies may be attractive to growth investors; however, it is more difficult to understand why someone would want to buy a mature or declining company. Mature and declining companies are often overlooked, so their stock prices versus their stock values (based on discounted dividends and cash flows) are often disconnected. This disconnect creates opportunity for earning high returns on these low growth companies.

It is generally accepted, among investment managers, that growth and value companies and growth and value managers differ in many aspects (see table 2.b.).[19] From the time of Graham and Dodd (1934), one of the defining characteristics of value investors is paying low multiples of earnings (P/E, which is the reciprocal of E/P), book value (P/B, which is the reciprocal of B/P), etc. for stocks. Second, and equally important, growth and value investors tend to make different errors of judgment - errors in expectations.

Growth portfolio managers tend to be optimists and, as a result, pay too much for stocks because they expect above-average growth to be sustained at too high rates for too long (LaPorta, 1996). Because of optimism surrounding growth stocks, when growth stocks miss their earnings estimates they fall much more severely than value stocks (where average expectations are lower) (Skinner and Sloan (2004) and Bauman and Miller (1997)). Growth managers are frequently less patient and more short-term in their investing practices and tend to pay up for liquidity (when buying and selling) in the market. They under-react, by buying, to new negative information at peaks (at 12:00 on the expectations clock) and over-react, by selling, to negative stimuli at bottoms (at 6:00 on the

[19] With the help of my students and investment analysts, I have developed criteria to characterize value and growth investment companies/stocks/managers. This list is a condensed version of the 40 or so characteristics we have developed over time. My favorite is "what car does the value and growth manager drive?" Growth = Porshe, Value = Cheverolet Cavelier.

expectations clock). Growth managers capitalize on market momentum. The trend is their friend.

(Insert Table 2.b.)

Value portfolio managers tend to buy stocks too early before catalysts emerge to drive strategic change and performance improvement. Value managers tend to be patient, long-term investors, and provide liquidity by buying under-performing stocks with the hopes of reversals. Value managers do not get caught up in efficacy-performance spirals, but this is offset by buying and selling too early (at 3:00 and 9:00 in the expectation clock). In the extreme case, value managers buy the "dogs" from growth managers and growth managers buy the "stars" held by value managers. Value managers capitalize on market reversions.

Growth stocks include companies that have experienced good performance and value stocks include firms that have gone through periods of environmental duress. As discussed in more detail in chapter 4, good performance results in optimism, high expectations, and inertia, while bad performance produces the opposite response.

Contrary to normal human tendencies, perhaps managers of growth companies should be on the lookout for behavioral biases that cause them to stay the course for too long while managers of value companies should be careful to not buy too soon because cheap valuation alone is not necessarily a catalyst for reversion.

It appears that good portfolio managers capitalize on the expectations and resulting behavioral mistakes of growth and value managers (and companies). Bad portfolio managers get caught up in efficacy-performance spirals and, unfortunately, buy high and sell low.

Figure 2.b. shows the investment clock, which I utilized not only as a portfolio manager, but when teaching in the student investment program ("SIM") at The Ohio State University. The investment clock illustrates how companies move from value to growth and vice versa.

The time shown on the clock does not correspond to life cycle or economic stages; instead, it corresponds to phases similar to the expectation phases. While companies generally move through all life cycle stages once during their lives and economic stages several times, firms can move through the investment clock many times during each life cycle phase, as well as during individual economic stages.

(Insert Figure 2.b.)

Bernstein (1995), investment strategist at Merrill Lynch, developed a similar clock that describes the earnings revision process. He calls his clock the Earnings Expectation Life Cycle ("EELC"). The EELC provides an overview of how earnings expectations move from positive momentum to negative surprise, then to negative revision, eventually to positive surprise, and finally back to positive momentum. I contend that earnings revisions and surprises move through these stages because earnings expectations overshoot reality when times are very good and very bad.

In the investment clock, stocks, fundamentals (performance), and investors (and managers) experience four investment stages, with two of them being good and two being bad. In my clock, the best time to buy stocks is at 6:01 (when the risk appears high and expectations, performance, and inertia are lowest) and the best time to sell is at 12:00 (when expectations, performance, and inertia are high). Unfortunately, growth investors tend to buy at 9:01 and they do not sell until 3:00. They buy after past success creates a new positive frame, while confirmation bias, escalation of effort, and other biases keep them from selling until long after the first disappointment (12:01). Value managers, on the other hand, buy at 3:01 and sell at 9:00. At 3:00 stocks are cheap but fundamentals are not improving so they buy too early, and at 9:00 stocks have run up with improving fundamentals so they are expensive but the upward trend is not over so they sell too early.

Bernstein's clock also has two good phases and two bad phases. From 12:01 to 6:00 earnings revisions are negative (bad phases) and from 6:01 to 12:00 earnings revisions are positive (good phases). I argue that only after some time of positive revisions (6:01 to 9:01) do growth managers recognize that performance is improving and buy at 9:01. Then, only after an initial period of negative revisions (12:01 to 3:00), proceeded by a series of positive revisions (6:01 to 12:00), do they recognize that the trend is negative and jump ship (sell at 3:00). To make matters worse, I have observed that before jumping ship at 3:00 they frequently first escalate their effort by buying more at 1:00. At 3:01, stocks are probably cheap, so value managers start buying. This would be a fine strategy if earnings turnarounds did not take substantial time - revisions are negative until 6:01. From 6:01 to 9:00 value managers continue to hold the stock; however, they probably sell at 9:00 because by that time the stocks are no longer cheap. Thus, value managers tend to buy too early and sell too early and growth managers tend to buy too late and sell too late.

While the investment clock represents the way some co-workers, friends, and I have preferred investing - from a high level viewpoint, with a long-term horizon (we cannot say we always or even most of the time have had the luxury of a long horizon) - it is clear that people can make money in all phases of the investment clock.

If one has a short-term horizon, then waiting to buy after good news has occurred at 9:00 and selling at 12:00 may be prudent. Some, or most, firms do not have client bases patient enough to allow managers to be value investors. This may preclude those managers from buying at 6:00 for fear of mistaking 4:00 for being 6:00. If one underperforms and owns 4:00 companies, then an especially dire situation is created. Firms at 4:00 are generally dismal on a wide variety of performance metrics so underperforming with a portfolio containing numerous 4:00 companies is equivalent to underperforming *unconventionally*. A portfolio manager is more likely to keep his or her job after underperforming and holding good performing (other than investment returns) firms. This manager would underperform *conventionally*. It is rational to try to protect one's job; however, the fact that many investors systematically avoid value stocks is one of the main reasons value stocks tend to outperform over the long term. Not only do fundamentals revert, as noted previously, but prices of value companies are too low relative to their depressed fundamentals because they are overlooked. Thus, a value manager risks his or her job in the short-term but benefits long-term by owning stocks where fundamentals revert and multiples on fundamentals (P/E, P/CF, P/B, etc.) expand.

As a further example, Sean Browning, one of my senior technology analysts at the State Teachers Retirement System of Ohio, was great at predicting turns in technology stocks using a short-term approach. A momentum approach for technology and some other areas of the market (especially those favored by growth investors), and during some market environments (often determined by the expectation phase and life cycle stage of the security), may prove best over time.

If a fund is allowed to sell short, then selling at 12:00 and buying at 6:00 may make sense. The proliferation of hedge funds has made short selling much more popular. Furthermore, one can make money from 12:01 to 3:00 if he or she consistently buys on dips and sells on gains. The start of this period is often signaled by the first negative event (earnings miss) after a string of positive events. In my experience and according to Skinner and Sloan (2004), disappointments for growth stocks can result in severe penalties. The first disappointment is often associated with a huge plunge in the stock. If one buys soon after the plunge and sells before the next miss, he or she may be able to make money. This short-term approach is based on short-term reversals following misses.

Finally, one should note that some companies can stay in one phase of the clock for a long time. It often takes a long time for a firm to recognize its problems (12:00 to 3:00) and even if it does recognize issues then it may take even longer to fix the problem. On the other side of the clock, sometimes high expectations last a very long time. For instance, expectations for technology, and especially internet stocks, stayed high for much of the latter half of the 1990s. Of course, this overextended cycle also crashed especially hard and the down cycle was long. In this case, we can say that the greater the momentum the greater the reversion.

Chapter 3: Management (the "How" and the "Who")

While financial literature provides the basis of the expectations clock through the evidence it provides for reversion and cycles, it lacks an explanation for "how" change, succession (the "who"), and learning occur and also influence these cycles. These are topics for management from which several theories of organizational change have evolved which provide conflicting messages and varying amounts of support for the expectations clock. Management research also lays the foundation for models of learning which indicate that organizations learn to varying degrees during different environments. Finally, management research shows that the environment can be a catalyst for succession and succession a catalyst for change.[20] From this literature, a hypothesis for this paper is formed: leader succession has different influences on future changes in performance when current and past performance is strong versus weak. Thus, management picks up where finance drops the ball; however, it does not complete the story. We still do not know why learning varies in different environments and why the environment can be a catalyst for succession and succession a catalyst for change. The answers to these questions are discussed in chapter 4.

1.1 Theories of Organization Change

Over the last four decades several theories of organization change have emerged. Singh, House, and Tucker (1986) and Hannan and Freeman (1984) summarize these theories as the adaptation theory, population ecology theory, and random transformation theory. Their premises offer different perspectives with regard to organization change (specifically through leadership succession):

- the adaptation approach asserts that companies successfully change with their environment;
- the population ecology theory suggests that attempts at change will fail so surviving firms are those that are the best fitted for the environment;
- the random transformation theory argues that change is random and not predictable.

[20] Succession is utilized as a proxy for change; however, this proxy is not to be confused as being the only catalyst for change.

Only the adaptation theory would support utilizing leadership succession as a tool to change organizations to improve performance, as the population ecology theory suggests that attempts at change will fail and the random transformation theory argues that change is not predictable.

The theories of organizational change are described in more detail below. The framework of the discussion is as reviewed in Singh, House, and Tucker (1986) and Hannan and Freeman (1984), and the review includes ideas from some of the articles they reference, as well as other articles related to this research.

3.1.1. Adaptation Theory

The adaptation theory, or organizational learning approach, holds that "organizations notice and interpret information and use it to alter their fit with their environments" (Aldrich, 2003: 57). There are several offshoots of this theory: 1) contingency theory, 2) resource dependency theory, 3) adaptation to prevailing models, and 4) Marxist theory related to labor (Hannan and Freeman, 1984).

The contingency theory holds that firms have the highest probability of success when they are properly matched to things such as the environment and technology (Singh, House, and Tucker 1986). If success is defined as long-term performance then this theory is at odds with the notions of the mean reverting expectations clock. If firms believe this theory, then they will be motivated to change the environment and prevailing technology during periods of failure. Later in this chapter, performance as a motivation for change is discussed in more detail in the review of how the environment is a catalyst for succession.

The resource dependency theory suggests that shifts in power coalitions, including leaders, help organizations to successfully adapt to changing environmental conditions (Friedman and Singh, 1989). Replacing leaders may help to realign the company with the environment (to increase probability of success, as purported by the contingency theory). Succession's impact on change is discussed in more detail later in this chapter. As the mismatch with the environment grows, stresses rise to the point where leaders are replaced. Thus, one would expect that current leaders more willingly institute changes to avoid being fired when performance is poor.

Organizations adapt to mimic prevailing models of organizing (Meyer and Rowan, 1977, DiMaggio and Powell, 1983). The prevailing model is often that of the most successful player (success attracts competition in a capitalistic society). On the other hand, one model may not be best for all companies and the best model today may not be the best tomorrow if the environment reverts.

Hannan and Freeman (1984) explain the Marxist theory, which suggests that organizational structures change to afford owners control over labor. This theory may be more applicable in areas dominated by labor unions.

The first three derivative theories are relevant to this research.

Organizations that are mismatched to their environments are, essentially by definition, poor *relative* performers. Lant and Mezias (1992) assert that a learning model of organizational change can account for the pattern of punctuated equilibrium – a framework that suggests that companies experience long periods of relative stability (expectation phase 3, and possibly phases 2 and 4) with incremental change (or under-reaction) punctuated by periods of large changes or strategic reorientations (resulting in possible over-reaction during expectation phase 1).

In Lant and Mezias's (1992) model, people set goals, evaluate success or failure based on the goals, and search for alternatives if they fail. Failure may be preceded by environmental change. This view suggests that leaders can influence organization adaptation after failure (expectation phase 1) since at these points strategy is most out of line (because of previous under-reaction) with the environment. However, if the performance environment reverts, radical change through leader succession during these periods is not optimal. Some change, which is likely already afoot, may still be reasonable (as discussed later in this chapter in the section on the learning model).

Three forces propel companies to adapt and change to become increasingly similar: 1) coercive isomorphism related to the need for legitimacy and a need to follow rules, 2) mimetic isomorphism resulting from the need to adapt to the successful player because of competition, and 3) normative isomorphism associated with conforming to professional standards (DiMaggio and Powell, 1983).

Meyer and Rowan (1977) show that isomorphism with the "institutional environment" (a type of herding activity described in chapter 4) produces confidence (also discussed in chapter 4) and confidence reduces inspection and effective evaluation (results in under-reaction to stimuli). If performance is strong and a firm is isomorphed, confidence in the status quo will be high. One can see how isomorphism can be beneficial to managers who are trying to protect their jobs and justify their performance; however, it can decouple action from what is most effective and appropriate for the organization's *individual* situation/needs.

Meyer and Rowan (1977) and DiMaggio and Powell (1983) indicate that organizations tend to adapt to one model and once adaptation is complete (in expectation phase 3) companies are no longer motivated to change even if change can make them more efficient. Meyer and Rowan (1977: 340) claim that "conformity to institutionalized rules often conflicts sharply with efficiency criteria and, conversely, to coordinate and control activity in order to promote efficiency undermines an organization's ceremonial conformity and sacrifices its support and legitimacy." Thus, an organization faces a quandary: should it do what is right (seek efficiency and its own best ways of doing business) and lack confidence, or do what is wrong (go with the crowd) and increase confidence?

Adaptation to one model may not be the ideal situation for every company and for the system overall. If a firm is an average player or better, it is unlikely to engage in additional performance improving changes – it will under-react - without turbulence caused by a decoupling action such as replacing a leader. Furthermore, because of an inherent need to isomorph, executive succession when the organization is negatively decoupled from the environment (expectation phase 1) is not needed. It may result in over-reactions.

Friedman and Singh (1989) suggest that the adaptation theory, in its strongest form, claims that executive turnover occurs in response to a need for a new approach and changes always result in improved performance. However, they also note that the strong form is limited since it assumes that new management has the support and discretion to implement change and that the requirements for the new leader are derived from "*expected* environmental demands" (page 720). The latter assumption is especially unrealistic. As discussed in chapter 4, expectations are based on initial performance and, as discussed in chapter 2, initial performance tends to revert, so derived expected environmental demands are most likely inaccurate.

3.1.2. Population Ecology Theory

The population ecology theory ("PET") posits that inertia is important for survival and restructurings lower the probability of survival; thus, changing leaders will lead to worse performance. The theory is directly opposed to the adaptation theory. If the performance environment reverts, the match between an underperforming firm and the environment will increase over time; although, the match for an outperforming company should decrease over time.

Creating routine processes and procedures, versus reorganizations, is critical to survival (Hannan and Freeman, 1984). To create the optimal processes, a firm must focus on what it does instead of what it may be able to do. This implies that inertia is beneficial. "Populations change over time through selection" (Singh, House, and Tucker, 1986: 588), therefore, variations in the *population* result from the survival of the fittest organizations (to the then prevailing environment). Of course, if a company's routines are matched to the environment and it reverts, then this theory will find no support.

Haveman (1992) suggests that PET may be improved by controlling for whether changes result from dramatic restructurings of the environment or if they build upon core competencies. During sudden environmental transformations (a fast move to expectation phase 1 versus a gradual move), she shows that organizational change positively impacts future performance and that diversifying moves produce better performance if new activities build upon or are related to the existing competencies. Thus, there may be instances when radical changes during uncertain environments (expectation phase 1) are positive for future changes in performance. This exception to the expectations clock may be due to Haveman's data setting. She studied changes to California's savings and loan regulations between 1978 and 1982, which have been described as a transformation that do not appear to be mean reverting.

Hannan and Freeman (1977) propose eight limiting constraints, four internal and four external, to adaptation. Internal constraints relate to: 1) past investment in property, plant, and equipment, 2) limits on information exchange, 3) internal political constraints related to preservation of self interests, and 4) historical success with prevailing methods. External constraints include: 1) legal and economic barriers of entry and exit, 2) information costs to accurately evaluate environmental conditions, 3) legitimacy considerations of adaptation, and 4) an issue related to collective rationality (what is good for one firm may not be good for the population).

Constraints to adaptation result in inertia that leads to less frequent, but more revolutionary, changes. Thus, a company may under-react, but after a long period of under-reaction it may react violently as the match between the environment and the firm becomes out of line (expectation phase 1). Revolutionary changes (such as those a new leader may institute) can decrease second order learning (discussed later in this chapter), a type of learning which is necessary for new procedures and processes to become permanent. Thus, revolutionary changes reflect an over-reaction that may negatively impact future performance.

Revolutionary changes are more likely to occur when performance is poor (expectation phase 1) and various internal constraints (#3 and #4) and external constraints (#1 and #3) diminish. However, when constraints and inertial forces are strong (expectation phase 3), executive succession may provide the right amount of disruption to reduce under-reaction to the benefit of an organization.

3.1.3. Random Transformation Theory

The random transformation theory argues that there is no relationship between organizational change and firm survival (Singh, House and Tucker, 1986). This is due to organizational drift, unintended consequences of actions, and loose couplings.

Intentions often follow versus precede actions (Weick, 1976). Some actions are associated with perceived problems, but most actions occur even if not stimulated by conditions (problems, successes, threats, and opportunities), and conditions are sometimes made up to justify actions (Starbuck, 1983). "Many organizations drift along, perceiving that they are succeeding in stable environments, until they suddenly find themselves confronted by existence-threatening crises" (page 100).

Starbuck (1983) suggests that organizations misperceive environmental opportunities, they repeat success strategies, and this turns "into some of the main problems of crises" (page 92). Thus, during high performance environments people are complacent. Complacency reduces the probability of change – results in under-reaction to negative stimuli. Under-reaction to negative information during high performance periods could result in reversion if new competitors enter the leader's business and share in its growth, profits, and market share.

To fix these problems, Starbuck (1983: 100) notes that "in every case…reorientations included the wholesale replacement of top managers." I disagree, since when conditions deteriorate existing management is motivated to change and too much change may reduce learning (this is discussed in more detail in the section on the learning model later in this chapter).

March (1981) argues that unintended consequences of actions stem from the rate of adaptation and the rate of environmental change being inconsistent, covariance between actions causing joint outcomes that are not intended, and unclear causal links from new procedures. This paper addresses the first two points. For instance, if a poor performing organization changes its leader (expectation phase 1) when it is already adapting (because current management is motivated to change) then this represents a joint action. This new leader may institute additional changes that go beyond what is needed in an environment that could also be reverting. Thus, the rate of adaptation could be faster than the rate of environmental change. On the other hand, when performance is strong, the natural rate of adaptation may be too slow without leadership changes.

Organizational responses to the environment impact the environment itself. "For example, organizations are frequently combined into an ecology of competition, in which the actions of one competitor become the environment of another" (March, 1981: 570). Competitors react to environments, which changes the original environment, which competitors react to thus changing the environment again, and so on. Actions of any one firm have a multiplier effect through the system. As an illustration, March claims that parents adapt to children at the same time as children adapt to parents. Constant action and reaction may create unpredictable circumstances. As noted in the chapter on finance, Soros, a famous investor, describes this in his theory of reflexivity. Because of reflexivity, financial markets are not in equilibrium - "what happens in financial markets can affect the economic 'fundamentals' that those markets are supposed to reflect" (Soros, 2002: 18). Reflexivity describes a feedback loop that results in momentum. Weick (1976: 18) suggests that "scientists are going to have some big problems when their topic of inquiry becomes low probability couplings."

There is not a direct relationship between intentions and actions or actions and results. These loose couplings result in people over-attributing meaning to their intentions and actions (discussed in more detail in chapter 4). In reality, there are many intervening factors (including performance environmental variables) that affect future performance. Thus, it is unlikely that introducing a new leader will have the expected impact on a firm.

Even if a new leader impacts change, because of responses throughout the environmental system, unintended consequences of actions, and the fact that the justifications for actions may be derived following those actions, there may be too much noise to ascertain whether the impact of change is positive or negative on future performance.

3.1.4. Conclusion

Perhaps there is some truth to each of these theories. Singh, House, and Tucker (1986) argue that the adaptation and population ecology theories may not be inconsistent. They conclude that core changes (radical changes) are related to the ecological view and peripheral changes are supportive of the adaptation theory.

Furthermore, they argue that the effect of change on death rates depends on the life cycle stage and that future research needs "to investigate the contextual factors that may have an impact on the adaptive or disruptive consequences of organizational change" (Singh, House, and Tucker, 1986: 608). Allmendinger and Hackman state (1996: 338) that the theories are "...likely to be differentially useful in explaining organization-environment relations in different historical and organizational circumstances."

It makes little sense to search for absolutes about the effect of organizational change on future performance, and over- and under-reaction, when situational variations are significant. It is better to segment the population based on performance environment considerations and analyze the effectiveness of executive succession on performance under their corresponding expectation phases. By doing so, it should not be surprising to find that support for the adaptation, population ecology, and random transformation theories, depends on the expectation phase.

As mentioned earlier, the expectations clock provides a unifying theory that yields support for both the adaptation and population ecology theories under certain conditions. Building on the reversion tendencies and cycles discussed in chapter 2, the best course of action may be to hunker down and perfect current strategies when performance is poor (expectation phase 1) (supporting the population ecology theory), and pursue reorientations when performance is strong (expectation phase 3) (supporting the adaptation theory).

Based on psychological research (the next chapter), we know that people's expectations are tied to performance. Given this and what we know about reversion (from finance), the future may, indeed, appear to be random (supporting the random transformation theory). People's expectations are based, at least in part, on current and past performance. Therefore, since the future (over the long-term) does not resemble initial performance, expectations of the future frequently differ from actual future events. Thus, the future may *appear* to be random.

3.2. Catalyst for Change

The environment can be a catalyst for succession and succession a catalyst for change.

3.2.1. Environment as a Catalyst for Succession

Evidence abounds that leaders are more likely to be replaced when performance is low (expectation phase 1 and possibly phase 2 and 4). Huson, Parrino, and Starks (2001) show that accounting level of and change in performance and market-related (stock) change in performance matter for turnover decisions. People look to blame leaders for positive and negative performance. They are often a scapegoat for poor performance, but they also reap the rewards of good performance even if the performance is not directly related to their efforts. For instance, Occidental Petroleum's CEO recently received $416.3 million in compensation, with two-thirds of the income related to exercising stock options (Gold, 2007). Much of the oil firm's success is tied to the fact that oil prices rose significantly, thus is it right that the CEO benefited from a good market for oil when it is highly doubtful that he, specifically, had a big impact on oil prices?

Brickley (2003), in his summary of succession research,[21] notes that CEO's are more likely to be replaced when performance is poor; both stock price and accounting performance have predictive power in explaining turnover. However, sensitivity of performance to turnover varies across firms. It increases with the number of outsiders on the board, concentration of stockholder makeup, homogeneity of industry, product market competition, and the smaller the size of the firm. It decreases with manager stockholdings and when a manager is a member of the founding family.

Why do these additional factors matter? I contend that they either magnify or minimize the focus on the leader as the culprit for performance outcomes. Succession is probably more sensitive to number of outside directors because outsiders are less connected to the existing management team. They are more likely to make assessments independent of the leader. Concentrated shareholder makeup makes it easier to vote board members out of office and replace them with members who will fire management. If the industry is homogenous and product competition is high then this may imply that mistakes are magnified (if company A makes a mistake then company B will quickly capitalize on it) so excellent leadership is especially important. If a leader owns a lot of the corporation's stock, then he or she is more likely to act like a shareholder so one would expect that shareholders would be less likely to oust the leader when performance is poor. Also, it is probably difficult to fire members of the founding family. Finally, turnover may be more sensitive to performance in small firms because these firms may not be diversified and may be more sensitive to difficulties with individual business lines.

Friedman and Singh (1989), Virany, Tushman and Romanelli (1992), Lant, Milliken and Batra (1992), and Denis and Denis (1995) all imply that leader turnover is more common when performance is poor. Their articles are reviewed in detail in the section 3.3.1.

[21] Kesner & Sebora (1994) provide a more comprehensive review and Murphy (1999) provides an additional review.

Goldman, Hazarika, and Shivdasani (2003) found that prior stock performance only influences CEO turnover when it is below a certain stock level threshold (when it declines).

Farrell and Whidbee (2003) show that CEO turnover events are related to deviation from expected performance. These deviations may be more likely when firm performance is low (expectation phase 1) than when it is high (expectation phase 3), stemming from the tendency of people to be overconfident, escalate their efforts, and to look for confirming information to their plans (see chapter 4 for a discussion of these biases).

3.2.2. Succession as a Catalyst for Change

Research shows that turnover disrupts the status quo – it is a catalyst for change – and the disruption depends on the context.

Change in leadership is generally associated with changes in structure and strategy, and Miller (1993: 656) claims that this is most "useful when organizations are experiencing dangerous strategic stagnation, when their environments are changing, and when performance is deteriorating" because "succession seems to break organizational momentum." This would imply that succession is needed during expectation phases 1 and 4, which is contrary to hypothesis 2 (see chapter 5). Grusky (1963: 28 and 30) suggests that "managerial change inevitably upsets old patterns of behavior" and, somewhat contrary to Miller, he says that "frequent managerial change can produce important dysfunctional consequences." Thus, whether leadership turnover is positive for future performance is up to debate, but most people agree that succession influences change to some degree.

If we assume that in a spectrum of leader origin – outside, inside, and the continuum of existing management – that selecting a new leader from inside an organization is most similar to maintaining existing management structures, then we can conclude, from the evidence that follows, that existing management teams generally support maintaining the status quo and new management teams (outside origin especially) are a more disruptive force.

Research shows that firms have a greater likelihood of making strategic changes when successors emerge from outside organizations (Greiner and Bhambri, 1989). This may be because insiders are place bound, while outsiders tend to be career bound (Carlson, 1961). Thus, insiders will be much more supportive of initiatives that protect their jobs than those who will lead the organization to new successes.

Outsiders are often associated with greater disruptions (Friedman and Saul, 1991). Helmich (1974) shows that outsiders are more concerned with "co-opting" to the environment than insiders. This may be because insiders may have worked alongside the former CEO so they likely share common views. The CEO may have picked the insider to work with him or her based on these shared views and the CEO may have mentored some of the other senior executives. Because of this, insiders are likely more concerned with their internal network than are outsiders.

Unsatisfactory prior performance raises the probability that an outsider is chosen (Carlson, 1961). If an outsider is chosen the board may be hiring him or her because of the views he or she does not share with the existing management team. The probability that a new CEO changes existing executive team members increases if the CEO is hired from outside the organization (Helmich and Brown, 1972), thus creating executive team heterogeneity that increases the likelihood of sharing new ideas.

The combination of the fact that managers who are architects of current strategies may be psychologically prone toward the status quo and the notion that the ability of managers to attribute failure to the environment or temporary conditions, bias internal managers to maintain the status quo (Lant, Milliken, Batra, 1992).

Given this evidence, it follows that hiring new CEOs from the inside/outside increases first order/second order learning (discussed later in this chapter).

Additional studies show that context influences succession's impact on change.

The longer the tenure of the former CEO the more likely that old ways are ingrained in the organization. Miller (1991) suggests that the longer the tenure of the prior CEO the poorer the match of the company and the environment. He also showed that the poor strategy match results in financial problems and the need for significant reorientations (or second order learning discussed below) (see figure 3.a.). Please note: performance relates to concurrent, versus future, performance.

(Insert Figure 3.a.)

The approach of leaders is important. Greiner and Bhambri (1989) conducted a case study and found that new CEOs can implement successful strategic changes over the short-term, but their success depends on the CEOs' approaches (comprehensive to limited and unilateral to collaborative), political behaviors of the executive teams (low tenure is beneficial), and the intervention processes (mandates, alternative debates, etc.).

The nature of the management team (the upper echelon) is important for strategic change. Wiersema and Bantel (1992) suggest that the younger the executive team, shorter their organizational tenure, higher their educational level, and greater the heterogeneity of their specialization the higher the probability of making strategic change. Tenure and heterogeneity have been discussed, but age and education have not. It is possible that younger teams are more willing to take risks (initiate change) because they have more years remaining in their careers to make up for mistakes. People with higher levels of education may be over-achievers who may have more confidence in making changes (because of their past educational successes). Further, if their education involved learning about new technology, processes, ways of managing, etc., they may be eager about executing those ideas.

The nature of the corporate board influences succession. Ocasio (1999) suggests that formal rules in corporate governance (corporate boards) influence inertia in the rules of CEO succession. These include limiting open criticism of the CEO and prohibiting contact with fellow board members outside of meetings. Informal and formal rules (selection process for new CEOs) and historic precedents (inside or outside selection tendencies) are not easily changed.

As seen, there are a myriad of contextual factors that could influence the succession event and the impact of succession on change. A summary of the various antecedents for succession (making up the degree of succession) are described in detail in Appendix 2 (see also Karaevli, working paper). These factors include origin of successor, management characteristics (entrants and exits, median age of management, number of employees), executive team character and changes, initiating force (firing, death, retirement, resignation), leader tenure, leader character, leader compensation, approach of leader, nature of management team, nature of corporate board, and the match between the environment and CEO tenure.

3.3. Environment, Succession, and Change

As shown above, the probability of succession and the outcome of succession are impacted by the context of the event. A very important context is the environment, which influences the learning model that illustrates the *overall* mode for the impact of succession.

3.3.1. Environment

A substantial number of studies have analyzed CEO change and past performance and CEO change and future performance, but few have considered the performance variables simultaneously (as this paper does). Also, none of the conjunctive papers address the concept of expectation phases. However, what is clear from these studies is that the environment impacts the outcome of succession.

Table 3.a. lists prior conjunctive research. The table outlines the authors' hypotheses, results, data, methodologies, and limitations of the research. Below, the main conclusions and some of the limitations of the research are discussed.

(Insert Table 3.a.)

Lieberson and O'Connor (1972) argue that economic, industry, and company factors (environmental factors) are important to explaining firm performance, and that leadership changes influence the remainder of performance fluctuations. A limitation to this study is that it did not ascertain whether leader change is a positive or negative force.

Virany, Tushman and Romanelli (1992) analyze the outcome of succession during turbulent environments (expectation phase 1 and possibly phases 2 and 4). The authors show that when the environment is turbulent there is a positive relationship between CEO and executive team succession on future performance, and that performance is improved if the new CEO is internally sourced. This means that when inertial tendencies are low (during turbulent markets) some change is prudent but a wholesale change in strategy that is commonly associated with outside CEO successors is not optimal. Unfortunately, the study is limited by the fact that the authors did not adjust their results (except for one hypothesis) to consider firms with different levels of initial performance so we do not know if the results apply to high performing or low performing companies.

Tushman and Rosenkopf (1996) show that during stable environments (expectation phase 3) CEO change will lead to improved performance and that performance is negatively associated with CEO turnover in turbulent environments (expectation phase 1, and possibly phases 2 and 4). Specifically, they show that the impact of executive change differs based on whether the environment is stable or turbulent. This study also did not adjust results for firms experiencing different levels of initial relative performance.

Almendinger and Hackman's (1996) research also suggests that firms that changed their leaders during turbulent environments perform poorly. This study was limited by a short period measurement period.

Earlier in this chapter, it was suggested that the probability of succession is inversely correlated with performance (it is more likely during expectation phase 1), but these studies suggest that succession is suboptimal at these points of time. How can we explain these seemingly conflicting messages?

Given reversion tendencies and the tendency for succession to be put off until performance deteriorates, by the time firms react (succession occurs) the forces of reversion could already be in place. Too much change and stress can actually diminish work performance (Newman, 2000), so introducing a new leader at a point of low performance could disrupt natural reversion tendencies. At these points, new leaders may initiate disruptive change strategies (see prior section). It makes sense that most leaders would want to make their "mark" on their firms so they are biased to making changes even without extra encouragement stemming from poor prior performance.

Furthermore, leaders who emerge in poor environments may not have the necessary knowledge and understanding of the conditions that resulted in poor performance to make the right changes. Newman (2000) reviewed prior research and hypothesized that while the willingness to change increased with environmental turbulence, the ability of a new leader to effect positive change is reduced since he or she often does not have experience or knowledge of the new environment. Newman's paper is limited by the fact that it is descriptive in nature (there were no empirical tests).

Contrary to works discussed above, research by Friedman and Singh (1989), Denis and Denis (1995) and Karaevli (working paper) claim that turnover has a positive impact on future performance.[22]

Friedman and Singh (1989) showed that stock prices respond favorably to leadership succession when prior performance is poor and the lower the prior performance the more likely the Board is to initiate succession (encourage change). When prior performance is strong the former CEO is most likely to maintain ties to the organization (discourage change). Unfortunately, the authors do not industry-adjust their numbers so we do not know if the results are influenced by systematic effects and the time period under investigation was very short.

Denis and Denis (1995) claim that prior performance (return on assets and stock performance) is negatively related to CEO turnover and that CEO turnover is positively related to future performance. Denis and Denis do not differentiate between high performers and low performers so we do not know if the positive impact of turnover on performance applies to one or both subsets.

Karaevli (working paper) reviewed the degree of CEO "outsiderness" in different environmental contexts. Karaevli showed that CEO outsiderness is associated with positive future performance when prior performance is low. On the other hand, he also showed that new CEO outsiderness in combination with less strategic change is a better combination than with more strategic change. This implies that some, but not too much, disruption is beneficial. Unfortunately, while Karaevli industry-adjusts post-succession firm

[22] Results from Friedman and Singh (1989) and Karaevli (working paper) suggest that performance may differ depending on environmental conditions.

performance and makes other important improvements in his study over others noted above and below, his assumptions for what he calls turbulence (volatility) and munificence (growth) are suspect. For instance, in my experience, small changes in sales for a very cyclical industry (such as chemicals in his research) can produce wide swings in earnings (turbulence). It would have been useful for him to supplement his factors for turbulence and munificence with additional variables such as earnings.

If the work by Denis and Denis and Karaevli addressed firms experiencing relatively good conditions (expectation phase 3) then, consistent with the arguments above, introducing a leader could be positive because it could eliminate unwanted under-reaction by providing the right amount of change (see next section). On the other hand, if their data set included only relatively distressed firms, then this research is at odds with hypothesis 2 (see chapter 5).

Czaban and Whitley (2000) and Usdiken and Ozmucur (working paper) look at the environment from a different perspective – one of corporate governance. Higher levels of governance when combined with turnover result in better future performance. Perhaps bureaucracies only make changes after careful deliberation. If so, bureaucracies may limit corporations from using the president as a scapegoat for poor performance.

Czaban and Whitley (2000) claimed that organizations with outsider (or foreign ownership) leaders instituted more changes (and they implied that this improved performance) than organizations that did not change their leaders; although, this study is limited by the fact that performance (accounting or stock-based) resulting from changes was not specifically discussed.

Usdiken and Ozmucur (working paper) argue that short-term performance associated with executive succession is more negatively influenced in a liberalized context than in a state-denominated and regulated context, and long-term performance effects of executive succession is less positive in the liberalized environments than in state-denominated and regulated contexts. Once again, these authors show that the environment influences the outcome of executive succession; although, this study is limited by the assumption that all companies in the two periods under review were considered either stable or volatile. This assumption seems unreasonable because even during tough markets some firms perform well and during strong markets there are laggards.

Lant, Milliken and Batra (1992) show that CEO turnover and environmental awareness positively influence the degree of strategic reorientation, and past performance is negatively correlated with top management team turnover and strategic reorientation. This suggests that inertial forces are low when the environment is poor (phase 1). Although, the results are suspect because the performance period was just a few years and the authors assumed that all companies in the two industries (furniture and computer software) were experiencing the same stable (furniture) and turbulent (computer software) environments.

The main takeaway from these studies is that it is important to consider the environment when evaluating the influence of succession on future performance. Overall, even though their results are not consistent, these studies provide support for further conjunctive research; however, they each suffer from different shortcomings and some common problems (some were discussed above). Many of these shortcomings are addressed in this study (see chapter 7).

Several of the studies assume that all of the subjects experienced the same conditions - turbulent or stable. For instance, Virany, Tushman and Romanelli (1992) claim that the period from 1968 to 1980 was turbulent for *all* technology stocks. Even during turbulent periods there are sub-periods of stability and even if an industry is turbulent some organizations within the industry perform well; thus, the underlying premises of the studies are questionable. It would be better to characterize companies as stable or turbulent by their individual characteristics (high or low relative performance) than by their industry characteristics at any particular time. This study evaluates performance over long periods, characterized by different economic backdrops, and divides the universe by relative initial performance levels in order to minimize these issues.

Some studies do not adjust company performance for industry and economy-wide effects. Without these adjustments, it is difficult to differentiate between systematic and non-systematic impacts of the environment in conjunction with turnover on future performance. To overcome this limitation, this study evaluates relative performance, versus absolute performance.

If a new management team simply prolongs the death of a company then this should be considered success. For instance, there is little that leaders of a producer of a commodity such as steel (that faced competition from aluminum, then plastic, and foreigners) could do to significantly change its growth (or lack thereof) trajectory in the 1990s and early 2000s, but good management may have been able to slow the rate of decline by being the best (lowest cost) producer of steel. The success of Alcoa over this period is an example. Now that emerging markets' demand for steel is rising, steel companies are raking in the profits; however, their success is, generally, not related to management.

Some studies evaluate industry-adjusted performance; however, it is not known if their results are influenced by outliers. To limit this bias and the one considered in the above paragraph, my study evaluates performance on a relative percentile *group* ranking basis (described in chapter 7).

Most of the studies only consider turnover in the CEO position, while the upper echelon theory (Hambrick and Mason, 1984) claims that this is limiting since the entire upper management team (the dominant coalition) impacts organizational outcomes (strategies and effectiveness). Incorporating additional factors to control for this circumstance and other contextual factors described in the prior section and Appendix 2 are beyond the scope of this and other conjunctive papers.

Most of the studies focus on one or two industries so it is unclear if the results can be extrapolated to other settings. This study focuses on one industry so it is also limited by this factor; however, for reasons discussed later, the data setting offers many offsetting benefits.

Finally, quite a few of the studies focus on return on assets as a performance measure. While this measure provides a reasonable way to evaluate overall firm (debt and equity) performance, in my experience as an investor most CEOs focus on other factors as well. For instance, since CEOs of public corporations ultimately report to shareholders, these studies would have benefited from also considering return on equity as a performance variable. To limit stakeholder bias/misspecification, this study's performance variables reflect a number of different stakeholders.

3.3.2. Learning Mode

Learning takes place in organizations during varying environmental settings. Learning modes, discussed below, may have different triggers and limitations depending on the interaction of management succession and the environment. The second hypothesis (see chapter 5), related to succession's influence on over- and under-reaction, specifically takes into account these learning modes.

There are several types of learning. They include adaptive, anticipatory, deutero, and action/reflective learning (Marquardt, 1996). Adaptive learning occurs from experience. The steps to adaptive learning include: 1) action to reach a goal, 2) outcomes, 3) evaluation of whether actions meet goals, and 4) modifications of future actions based on the evaluation. Anticipatory learning involves learning from expectations of the future. Deutero learning entails critically analyzing "taken-for-granted assumptions" (Marquardt, 1996: 39). Action learning involves working on problems, focusing on learning acquired, and implementing solutions. Marquardt notes that adaptive learning is similar to coping from learning (associated with expectation phase 1), whereas anticipatory and deuteron learning is more proactive (changes during expectation phase 3 may represent this type of learning).

Learning can also be described as first order and second order learning.[23]

First order learning involves incremental changes, which helps maintain "internal reliability," and takes place during stable environments (Newman, 2000) (expectation phase 3). First-order learning is associated with improved efficiency of operations - gaining competency - but not radical change (Lant and Mezias, 1992). It is also associated with learning by doing (Adler and Clark, 1991).

Tushman and Rosenkopf (1996) argue that second order learning involves unlearning prior methods, instituting new premises and standard operating procedures, and a shift in core assumptions. Second-order learning is needed for lasting *real* advancement.

[23] A more thorough discussion of first and second order learning is found in Tushman and Rosenkopf (1996), Virany, Tushman, and Romanelli (1990), and Lant and Mezias (1992). This discussion is summarized from these articles and some of the articles they reference, and other articles.

Change is influenced by environmental conditions. "Organizational change will increase following environmental change, and will decrease during environmental stability (expectation phase 3)" (Lant and Mezias, 1992: 50).

Keck and Tushman (1993) claim that the longer the period of stability the greater the management tenure and homogeneity of its members. Their environmental and organizational clocks, similar to some extent to my expectation clock, measure the time between exogenous shocks. The length of the period impacts inertia and change. The longer the period of stability the lower the rate of second order learning and once significant change occurs, the clocks are reset.

As a second order learning example, Bartunek (1984) showed (see figure 3.b.) how environmental changes impacting a Roman Catholic religious order were mediated. The environment's impact was not direct since it was limited by shared interpretive religious schemes (values, interests, and assumptions) and emotions of its members and leaders. He showed that second order change in interpretive schemes occurs through a process in which old and new schemes interact and synthesize. Of course, the validity of applying this scheme to other organizations may be limited by religious organizations' unique circumstances, but the scheme nevertheless provides a framework to illustrate how behaviors, the environment, and leadership are interrelated in the change process.

(Insert Figure 3.b.)

The learning curve, in its traditional definition, describes a process whereby people learn through experience. There is an abundance of literature on the topic, but the research is sometimes frustrating because "progress in research has been impeded by a lack of a behavioral model of the learning process" (Adler and Clark, 1991: 267). The expectations framework provides this behavioral model.

While the traditional learning curve suggests that productivity increases with experience (Adler and Clark, 1991), some people claim that too much upheaval (which could result in adaptive learning) may limit a leader's ability to transform an organization (Newman, 2000). This was previously discussed in my review of conjunctive research. Thus, it appears that learning is a function of change (and experience) but too much change can negatively impact learning.

Figure 3.c. illustrates this phenomenon in a depiction of a modified (from traditional curves) learning curve (based on research by Fiol and Lyles (1985), Newman (2000), and Allen, Hitt, and Greer (1982)). The learning curve is a simplistic model: I do not intend to suggest that the degree of learning is a smooth function of turmoil. In actuality, it could be a complex curve with steps, peaks, and valleys.

(Insert Figure 3.c.)

Fiol and Lyles (1985) argue that under extreme turbulence (expectation phase 1), or when change occurs very gradually (expectation phase 3), very little learning takes place, whereas in moderately turbulent environments (phases 2 and 4) lasting positive learning takes place. Under extreme duress, people are paralyzed and may over-react to negative events, whereas in benign environments only first order learning (or under-reaction to non-confirming information) takes place because catalysts for real change are absent. Points of stress between these extremes are more readily associated with second-order learning.

Newman's (2000) depiction of this phenomenon illustrates how individuals deal with stress in the work environment and how stress can have functional and dysfunctional effects. Too little or too much stress results in a low probability of organizational transformation. Getting a new boss at times of high stress (expectation phase 1) will move one further to the right and down the learning curve, while introducing a new leader when stress is low (expectation phase 3) can move a company to the right to higher levels on the learning curve.

Shea (1999) found that when the task at hand is complex and unfamiliar, not so unlike the conditions exemplifying expectations phase 1, considerate leadership is best (followed by charismatic leadership and then by structuring leadership[24]). Considerate leaders reduce stress by exhibiting concern for others and expressing gratitude for good work, making others feel important and happy in their job, etc. As discussed earlier in this chapter, it is

[24] Shea identifies charismatic leaders as people who have clear visions of the future, high expectations of followers, and have confidence in follower's abilities to meet the tasks at hand. Structuring leaders focus on tasks at hand and emphasize behaviors such as maintaining standards and meeting deadlines.

unlikely that a leader who takes over in tough times will be viewed as considerate, since new leaders are likely to make changes (cause disruption).

"Perhaps, however, some optimum level of managerial strain is associated with maximum organizational effectiveness" (Grusky, 1963: 27). Based on the learning curve, when the environment is turbulent (expectation phase 1) it is possible that too much change can limit learning. If so, this is not the best time to change a leader (who adds to the uncertainty). Conversely, the learning curve indicates that when the environment is stable (expectation phase 3) new leadership encourages the right amount of learning (reduces under-reaction). Introducing a new leader at key periods can supercharge the reaction (an over-reaction) to environmental change in poor circumstances (by pushing the organization further to the rightmost part of the learning curve) or bring sufficient reaction (reducing under-reaction) in high performing environments (by moving the organization to the right and middle of the learning curve) to produce second-order learning. Turmoil also has a secondary impact on learning. When stress is high a good manager (who is marketable) may leave his or her organization and when it is low bad managers (who have fewer reasons to fear their jobs) may stay.

In summary, we know that during periods of significant upheaval the effectiveness of new leaders will be diminished. When the environment is uncertain, introducing a new leader, which results in additional disruption, may result in less learning than when one introduces a new president when times are stable. It appears that the likelihood of positive organizational transformation increases with environmental change to a point at which second order learning ceases and declines.

Before moving on, some important distinctions must be made with regard to limitations of prior learning curve research.

The studies (Newman (2000), Allen, Hitt, and Greer (1982), and Fiol and Lyles (1985)) that support the modified learning curve were either reviews of a myriad of prior research or based on survey data.

Furthermore, Allen, Hitt, and Greer's (1982) tests (using survey data from only four firms) did not support their hypothesis. Thus, this study may be one of the first of its kind to validate the learning curve in the organizational setting through empirical tests.

Finally, another complication of learning-related research is that "there is little consistency in the application of the terms (learning, adaptation, etc.) being examined" (Fiol and Lyles, 1985: 809). In this study, change can involve restructurings, reorientations, etc., but these changes may not result in learning. Learning is defined as activities that result in improved future performance (reducing under- and over-reaction). When someone learns, he or she is not limited by the behavioral biases discussed in the next chapter.

Chapter 4: Psychology (the "Why")

Financial literature shows that momentum and fundamental reasons (competition, and life and economic cycles) cause cycles and reversion. From management, we know that there is substantial disagreement over whether firms can effectively change. We know that succession can be a disruptive force, but the effect of succession and cause of succession depends on the context and environment. Finally, the learning model indicates that there is an optimal level of stress, hence, an optimal level of environmental duress and corresponding expectation phase, when a leader should be replaced.

The problem with this finance and management research is that it does not tell us "why" people's expectations, which influence reactions that cause fundamental changes (including reversion, momentum, and cycles) and learning, vary based on the environment. This chapter shows that the environment is linked to expectations of the future and explains why leader turnover affects inertia. The chapter is titled "Psychology;" however, evidence emerges from the fringes of finance and management, as well as from psychology. The fact that researchers in finance and management are borrowing from psychology to find reason for their research exemplifies the underlying need for an overarching framework, as provided by the expectations clock, which ties these fields together.

This research shows that expectations are a direct function of the environment. The discussion includes a review of behavioral biases associated with performance and their influence on inertia. The review and illustrations indicate that during low levels of stress (high points on the expectations clock) new leaders may provide the right amount of disruption to eliminate under-reaction to non-confirming information, whereas in periods of high stress (low points on the expectations clock) new leaders may harm the learning process and produce over-reactions to the poor environment.

In my review of literature from finance and management I have focused on critically analyzing the research; however, in my review of behavioral biases from psychology, the research findings are much clearer. That is, the findings do not contradict, but feed off of each other.

4.1. Expectations are a Function of the Environment

Prior performance influences expectations of future performance.

Black (1990) produced a model showing that the risk premium declines as wealth increases (expectation phase 3). When wealth (performance) is high/low, one's sense of risk decreases/increases, which causes him or her to stay the course/change direction.

Feather (1966) analyzed future performance expectations of groups of individuals based on their performance over 15 tests. Expectations were tracked at each performance interval. If performance was strong, then expectations of future performance tended to be high. If prior performance was weak, then expectations of future performance tended to be low. Similarly, the top half of the expectations clock represents high performers that have higher expectations than the lower half.

Expectations appear to be driven by prior performance; however, experiences of prior performance may influence our perceptions of the events as well. To see how this is the case, let us take a step back and review what we know about finance and psychology. Simon (1955) suggests that economic theory assumes that people have knowledge of all aspects of the environment and are rational. To be rational, one is assumed to have a well-organized set of preferences and be able to choose among the actions with the highest utilities. Psychology, on the other hand, does not make such grandiose assumptions. Simon claims that the limitations of the "economic man" (Simon, 1955: 99) can be analyzed from the perspective of the individual (cognitive) and the environment (through the characteristics of the environment and the interrelations of the individual and the environment). Bounded rationality describes the "limits upon the ability of human beings to adapt optimally, or even satisfactorily, to complex environments" (Simon, 1991: 132).

Hambrick and Mason (1984) describe strategic choice under conditions of bounded rationality (figure 4.a.). This schematic is similar to what was shown in figure 3.b. Strategic choices are made based on information that has been sifted through a funnel. The screens in this funnel include limited fields of visions (of information from the environment) and cognitive bases, as well as values that alter, or filter, perceptions and interpretations of that information.

(Insert Figure 4.a.)

The first filter is one's comprehension of the environment. Comprehension is limited by one's cognitive base and values, which also influences the rest of the filtering process. Then, what people comprehend is limited by their field of vision. The information set is further reduced because only some of the information in the field of vision is selectively perceived and then it must be interpreted before managers can make a final assessment of the situation. Further, the ultimate "right" choice, based on this filtering process, could be rejected because the final decision could also be altered based entirely on values alone. Thus, choices are based on imperfect, or incomplete, information and perspectives.

The ensuing discussion reviews the behavioral biases that influence our perceptions (the filters) of realities. These biases are interrelated with the environment. Shea (1999: 407) summarized this best when she said, "...human behavior is best understood when viewed as a reciprocal system of causality where personal characteristics, environmental factors, and behavior operate through cognitive self-regulatory mechanisms as interacting determinants of each other."

Feather (1966) also showed that future expectations change gradually (expectations change in small increments versus one big jump (or fall)) as performance deteriorates or improves in subsequent tests. This concept is incorporated in the expectations clock. The higher or lower one is on the left and right-hand sides of the expectations clock the higher or lower one's expectations.

If expectations change gradually, then this means that expectations exhibit inertia. "The notion of cognitive inertia implies that, to a certain extent, firms experiencing a down-turn in their business may actually perpetuate this state of affairs due to the inability of strategists (leaders and management) to revise their mental models of competitive space sufficiently quickly to adapt successfully to the changing environment" (Hodgkinson, 2997: 923). Human behaviors (see table 4.a.), described in terms including self attribution, overconfidence, prospect theory, escalation of effort, herding, confirmation bias, and anchoring contribute to this phenomenon.

(Insert Table 4.a.)

Depending on past performance, self attribution bias can lead to different levels of confidence in one's position. Daniel, Hirshleifer, and Subrahmanyam (1998) suggest that positive outcomes are attributed to self and negative outcomes are attributed to "other." This can cause momentum (more of the same) and over-reaction to positive performance and under-reaction to negative performance. Thus, people will attribute more meaning to plans that went well than to plans that went awry.

Overconfidence can account for distortions in investment decisions (Malmendier and Tate, 2005). Malmendier and Tate argue that people overestimate returns on their investments, consequently, they view external funds as costly (issuing equity involves sharing the rewards). They tend to over-invest when they have an abundance of internal funds (expectation phase 3) and under-invest when internal funds are scarce (expectation phase 1). Over-investing is similar to staying the course too long and under-investing is similar to not investing enough when performance is poor (possibly over-reacting to negative events by selling poor performing assets just before performance reverts). Hayward, Rindova, and Pollock (2004) suggest that overconfidence is a problem for leaders since journalists often over-attribute success to their actions, versus broader situational factors, and because a leader has a tendency to internalize (self-attribute) this celebrity. Gervais and Odean (2001) created a model linking traders' level of confidence directly to successes and failures. They claim that traders may become overconfident because they take too much credit for success; however, overconfidence is less pronounced for traders who have more experience.

Prospect theory, which earned Kahneman a Nobel Prize, describes how people tend to take risks in loss situations and tend to lock in gains (Kahneman and Tvesky, 1979). There is an asymmetric utility function. Extra gains ("prospects") above a certain point are not as valued as highly as initial gains; losses ("gambles") beyond a certain point do not create as much negative utility as initial losses. This reference point could include levels of current and past changes in performance. When conditions deteriorate below a reference point, individuals tend to be unhappy and escalate their original commitments by pouring more resources into the effort even if the likelihood of future success is low. People do not ignore sunk costs.[25] Inertia is strong, so their ability to change plans mid-course is low.

[25] Sunk costs are prior expenditures that have been invested, or sunk, into a project and are not recoverable. They include direct costs (materials, etc.) and indirect costs (returns from other possible uses of the funds). One should ignore sunk costs when determining whether to continue investments in a project.

Expectation phase 4 reflects this condition; however, the expectations clock indicates that people eventually throw in the towel (during expectation phase 1).

Staw (1981) describes several reasons why people escalate their commitments. First, people must provide self-justification for prior decisions and this is most common when events are poor. Thus, it is not until events have significantly deteriorated (expectation phase 1) that people are normally willing to change their views. They may be stuck in mid-course during phase 4. Also, if the person who made the initial decision is the one who controls the following allocation of resources, then it is more likely that the project receives additional funding. Second, Staw explains that people like consistency in decisions and behavior that is of the "norm." If the environment is strong, people will herd to mimic good performance because it is considered the successful model, while not sticking with a plan is considered a weakness. For instance, during the 2004 United States presidential elections some people considered John Kerry a weak contender because he frequently changed his opinions. On the other hand, in the presidency that resulted, George Bush seldom changed his stances. Is this a good situation? Internal and external pressures to stay the course, and "save face," are sometimes very strong.

Nofsinger and Sias (1999) consider herding behavior in their explanation of the strong correlation between changes in institutional ownership and stock returns. When returns have been high (expectation phase 3), managers buy more of the stock, which leads to higher returns and more buying, and so on. This is one way strong momentum develops (and its corresponding buying which is a reflection of high expectations). The situation also works in reverse. When momentum is poor selling commences, which worsens the situation, and results in even lower expectations.

Confirmation bias also contributes to escalation of commitment. This bias is related to how people are partial to interpreting evidence based on existing beliefs (Nickerson, 1998). A bias to look for confirming evidence may result in someone committing more resources to a failing project because it is not recognized as risky. For instance, after a person buys a new car he or she may stop comparing and contrasting his or her choice. Of course, this is partially because the purchase was already made; however, it probably also reflects the fact that one does not want to find out that he or she made the wrong choice. How would a person feel if he or she purchased a car for $30,000 and then a week later found out that it went on sale for $25,000? Nickerson goes on to explain that confirmation bias comes in several forms: 1) it can show up in preferential treatment of evidence supporting existing beliefs, 2) looking only or primarily for positive cases, 3) overweighting positive confirming information, and 4) seeing what one is looking for (people sometimes see patterns that they seek even if they do not exist).

People tend to anchor decisions on an initial point. "People make estimates by starting from an initial value that is adjusted to yield a final answer" (Kahneman, Slovic, Tversky, 1982: 14). Assume these initial points are the four expectation phases. Forecast alterations (changes in expectations) will alter differently depending on the anchor. Amir and Ganzach (1998) claim that anchoring leads to "excessive moderation." They argue that this heuristic, combined with the "representative heuristic that leads to excessively extreme predictions" and "leniency" (overly optimistic bias) results in over-reaction in forecast changes (new estimate versus prior reported figure) and an under-reaction in forecast revisions (new estimate versus prior estimate). This results in an over-reaction to positive modifications (expectation phase 3 and possibly 2) and an under-reaction to negative alterations (expectation phase 4 and possibly 3). Only after new results do not confirm past estimates (because estimates change slowly) do people radically change (over-react) their forecasts (expectation phase 1).

As one can see, behavioral biases (that create inertia) cause organizational strategy and structure to become out of synch with, and under-react to, negative environmental conditions (expectation phase 3, and possibly phases 2 and 4). Most of the evidence supports the notion of under-reaction to negative information; however, eventually these under-reactions result in conditions where an organization must snap back in order to survive. Unfortunately, firms often snap back too far, especially if the reorientations occur at bottom of cycles that are about to revert (expectation phase 1). Replacing a leader may be one way a firm adjusts, but if this occurs at the same time the rest of the organization is adjusting it could lead to over-reactions.

4.2. Ignoring the Dissenters

Because of inertia, dissenters who oppose the status quo are often ignored. Ignoring dissenters may have negative repercussions, especially during expectation phase 3.

Diether, Malloy, and Scherbina (2002) use the dispersion of analysts' forecasts as a proxy for differences of opinion about a stock. They show that when differences of opinion are high, prices reflect the optimistic view because investors with the lowest expectations do not trade. High dispersion stocks become over-valued and eventually under-perform despite their above-average risk (as exhibited by their high estimate dispersions).

The expectations clock captures this concept. When times are good and/or improving (expectation phases 2-4), expectations and inertia are high so dissenters are ignored, causing corporations to under-react. If the environment reverts (expectation phase 4 follows phase 3), selling, new leadership, and strategic change are optimal while staying the course is not.

Diether, Malloy, and Scherbina refer to Miller's 1977 paper to support their arguments. Miller shows that prices reflect the optimistic view when pessimistic investors are kept out of the market when there are no short sellers and there is a limited supply of stock. Miller shows that an increasing divergence of opinion results in higher stock prices. When there are short sellers, these biases are less prevalent. This condition can also be seen in the corporate setting. Lack of sellers is similar to the reluctance of corporate managers to close a plant. Short-sale costs, or the behavioral costs of selling (it is difficult to bet against the market), are similar to the emotions experienced by managers who have to sell underperforming assets. When a manager is faced with closing a plant he or she deals with issues of sunk costs, emotional ties to the people who will lose jobs, real costs of closing the operations, and most important, the fact that he or she should have closed the plant earlier. When faced with these costs, it is much easier to be an optimist and stay the course. Doing something is often more painful (especially if one is changing course because he or she was wrong) than doing nothing. What is worse is the knowledge that if one does something and events reverse (hence, he or she is wrong again), it can be even more painful than doing nothing and continuing to be wrong.

Henry and Sniezek (1993: 106) suggest that "...judgment accuracy will be adversely affected when conditions are created which encourage the individual to think optimistically about future levels of performance." Leaders, who generally are only in control for a short time (note: 5.9 years is the average number of years a university president remained in my data set) and are highly compensated, have ample incentives to think optimistically. Also, board members, who are fed information from CEOs, only hear part of the story so they are not likely to remove CEOs until the environment deteriorates significantly (expectation phase 1). Therefore, leaders often miss signs of change when events go awry.

Diether, Malloy, and Scherbina (page 2,115) state that "...any friction that prevents the revelation of negative opinions will produce an upward bias in prices..." In this case, friction refers to motivations that encourage people to think optimistically. These frictions are captured in behavioral concepts (described earlier in this chapter) such as escalation of effort, prospect theory, overconfidence, herding, anchoring, confirmation bias, and self attribution. Friction may be high during phases 2-4. Only after a prolonged period of poor and declining performance (phase 1) may a firm embrace change and friction may be low.

Unfortunately, even group revision and review processes do not counteract friction. These revision procedures may even raise the original level of confidence in group estimates (Sniezek and Henry, 1990).

4.3. Leadership Change as an Antidote to Friction

Succession can provide the necessary antidote to "friction" needed to introduce new ideas to an organization, and this is probably most important when inertia is highest (phase 3). A new leader does not suffer as much from various biases, discussed below, of current leaders.

CEOs communicate their plans within their organizations and to outsiders. Public announcement of one's position leads to escalation of commitment to the position (Staw, 1981). Thus, a new CEO who is not tied to the previously advertised plans may break the status quo.

Smart people may exhibit an inability to learn. It is assumed that CEOs and other leaders most often rise to their positions because of past successes. Given that they have not made many mistakes, or at least not many serious mistakes, leaders are often overconfident in their ability to control outcomes, especially when monetary rewards (rewards for CEOs are high) are present (Henry and Sniezek, 1993). The best way to learn is through making mistakes, and since leaders do not make many mistakes Argyris (1991) concludes that "smart" people are not good learners.

Overconfidence and the inability to learn lead managers to ignore non-confirming information (Lovallo and Kahneman, 2003). Managers tend to believe in their positions (self attribution issue) even after they are not supported because they attribute failure to outside forces. Furthermore, when one has the ability to influence a situation, as a leader does, judgments about future performance are escalated (Henry and Sniezek, 1993). Bringing in a new leader, who did not make the prior decisions, may eliminate overconfidence, confirmation, and escalation biases.

Leaders with long tenure surround themselves with similar thinkers (herd mentality concept), which blinds them to the need for change (Miller, 1991). New leaders, who have not hired and possibly not worked with the existing teams, do not suffer from group think. Actually, they may be biased to changing the organization in order to create their own legacies.

Given this evidence, it is clear that existing CEOs tend to "grow stale in the saddle" (Miller, 1991: 34, and 1993) and support the status quo (since they created the status quo), even during high probability loss situations (prospect theory concept). Only when it is apparent that one must change course to protect his or her job (expectation phase 1) may a CEO be motivated to change strategies. At these times, it may be best to leave the current CEO in place since he or she probably recognizes, understands, and may finally be willing to address the problem.

Chapter 5: The Expectations Clock

Studies incorporating contingency factors have improved the quality of succession literature. Building on these studies, this research is the first to explore the impact of executive succession on future performance in firms that vary in their expectation clock phases (a contingency factor defined by the frame of environmental duress) (see figure 1.a.). This research seeks to investigate whether over- and under-reaction to negative information is predictable based on these phases, whether expectations are related to the succession event, and whether these phases revert over the long-term. As shown in figure 1.a., four phases are considered:

> Phase 1: low performers where recent performance has deteriorated;
> Phase 2: low performers with recent improvements in performance;
> Phase 3: high performers with recent improvements in performance; and
> Phase 4: high performers where recent performance has deteriorated.

Thus, each phase is defined by the degree of environmental duress, which is measured by current performance (*relatively* strong or weak) and past changes in performance (*relatively* improving or deteriorating). Huson, Parrino, and Starks (2001) show that level of and past changes in performance are related to CEO turnover. The performance variables are described in detail in chapters 6 and 7.

One should interpret the clock as follows:

- the left side of the clock (6:00 to 12:00) represents improving performance and the right side of the clock (12:00 to 6:00) refers to deteriorating performance;
- the top portion of the clock (9:00 to 3:00) references top performing firms and the bottom half of the clock (3:00 to 9:00) refers to bottom performing firms;
- from 3:00 to 6:00 (phase 1) expectations and inertia are low because performance is in the bottom half and is deteriorating; therefore, people are willing to try anything to improve (over-reaction to negative stimuli is commonplace);
- from 9:00-12:00 (phase 3) expectations and inertia are highest because performance is in the top half and is improving; therefore, under-reaction to

negative stimuli is commonplace since people have little motivation to change the status quo;

- from 6:00-9:00 (phase 2) expectations and inertia are between phase 1 and 3 because performance is in the bottom half but is improving;
- from 12:00-3:00 (phase 4) expectations and inertia are between phase 1 and 3 because performance is in the top half but is deteriorating.

Figure 1.a. indicates that expectations, duress, and inertia are constant in each of the phases, but in reality they are not. Figure 5.a. represents a more realistic depiction of the expectations clock. The arrows indicate the *degree of* expectations, duress, and inertia during each phase. For instance, during phase 3 expectations and inertia are highest and duress is lowest when the time on the clock is 12:00. 12:00 represents the best combination of level of current relative performance and past changes in relative performance.

(Insert Figure 5.a.)

Recall, the clock does not differentiate between expectations, duress, and inertia of leaders and other constituents - customers, management, and government - because they all interact to produce actions that influence future performance. However, if there is a spectrum of influence, then it can be surmised that declining inertia would begin with outside constituents who compel leaders to change; leaders in turn force management to modify processes and strategies. Furthermore, expectations relate to current estimates of future performance. On the other hand, duress refers to current anxiety about the future environment and this apprehension is tied to current levels and past changes in performance. Inertia relates to one's willingness to change current practices which influences future performance.

Chapters 2 through 4 laid the empirical and theoretical groundwork for the expectations clock and throughout these discussions the clock was referenced so that the reader did not lose track of the relevance of the literature review. Those chapters explained the what, how, who, and why of the clock.

Chapter 2 showed "what" happens - the environment reverts over the long-term. Thus, the environment cycles between improving and deteriorating performance as illustrated in the left and right sides of the expectations clock. The notions of value and growth indicate that companies can be categorized as high and low performers as well, which is captured by the top and bottom portions of the clock.

During phase 1, performance is lowest and has been deteriorating. Chapter 4 reviewed "why" expectations and inertia are lowest and adherence to the status quo is least during this phase. On the opposite end of the spectrum is phase 3, where performance is high and has recently improved. Here, expectations and inertia are high. Expectations during the other phases fall somewhere in between.

Companies may not necessarily move steadily through one phase of the expectation clock to the next. These moves may result from succession or other circumstances. Executive succession may positively impact learning at certain times, while at other times it exacerbates change and creates so much uncertainty that it inhibits second order learning. Chapter 3 discussed the learning curve, which indicates "how" introducing new leaders ("who") when performance is strong (phase 3) may provide the right amount of disruption (reduces under-reaction to negative events). During phase 1 leadership change could result in paralysis to the learning process and over-reaction to negative stimuli. Unfortunately, chapter 3 also discussed literature that indicates that leadership change is most likely during phase 1 and least likely during phase 3; therefore, leader turnover appears to be most probable when it is least needed.

The remainder of this chapter provides additional theoretical support for the expectations clock, ties the hypotheses to the clock, and illustrates the clock with several examples.

5.1. Theoretical Foundation

The expectation clock finds *additional* theoretical support (beyond what is provided in the prior literature review) in a classic article regarding rational choice by Herbert Simon (1956). Furthermore, as noted in chapters 1, 2, and 4, there are a few other models to describe over- and under-reaction. These models are reviewed in more detail below. The expectations clock is consistent with and encompasses all of these other behavioral models; therefore, it is a unifying model of other unifying models to explain over- and under-reaction.

5.1.1. Simon

Simon's (1956) article on rational choice reviews the merits of psychological and economic theories of decision-making. Specifically, he showed how humans and organizations respond to the environment.

Simon's models do not require a tremendous number of assumptions, utility functions and/or indifference curves to explain the way people make decisions. The expectations clock shares these advantages.

Two models are presented below. I specifically discuss Simon's models and then I use and adjust some of Simon's insights and definitions to put them in the context of the expectations framework. My first model is a simple model where leaders have one goal – survival. The second model is more complex and explains how leaders gyrate between two states – high expectations and low expectations. The second model provides the greatest contribution to the expectations clock.

Simon's simple model describes the activities of a simple organism that has a single need – to get food. Food is found in heaps upon a surface on which the organism resides. This organism can rest, explore, and partake in activities to get food. The simple model has four assumptions.

1. The simple organism has one objective: get food.
2. The organism only needs to maintain a certain average rate of food intake to survive and additional food is no use to it. Successes and failures do not change its aspirations.
3. The "nature of its perceptions and its environment limit sharply its planning horizon" (Simon, 1956: 131). Food is distributed randomly and once the organism sees a means to acquiring food it proceeds to it in the most direct and best path. This path sets its planning horizon.

4. There is a difference between means and ends. Except for food heaps, one point on the surface is as agreeable to it as another and locomotion has significance only as a means to acquiring food.

The assumptions need to be adjusted in order to modify Simon's simple model for my purposes. First, instead of an organism in search of food, consider a leader who has a single objective of surviving (not being fired). In order to survive, he or she must keep his or her stakeholders happy through actions that result in meeting goals that build goodwill. These and other adjustments to Simon's model are discussed in more detail below.

1. Leaders have one objective and it is to survive (not be fired).
2. In order to survive one must maintain a certain amount of goodwill from various constituents. This goodwill is achieved by meeting or surpassing goals set out by shareholders, employees, board members, customers, suppliers, regulators, advocate groups, etc. Decisions that do not meet those goals reduce the store of goodwill.
3. Goals are distributed randomly and once a leader sees a means to achieving a goal he or she proceeds to it in the most direct and best path. This path sets one's planning horizon.
4. There is a difference between achieving a goal and not achieving it. One condition (of performance) is best.

To relate Simon's model to the expectation clock, one must also assume that an individual's expectation of future success (performance) is the probability of survival calculated by the models.

The complex model differs from the simple model by relaxing the first assumption.

While I understand and respect that some people will take issue with my comparison of Simon's discussion of simple organisms in search of food to my research of leaders of complex organizations, reversion, and expectations, please read the following pages with interest because there are some strong resemblances between the two situations. Furthermore, it is widely known that people use heuristics, or rules of thumb, when faced with complex situations (Kahneman, Slovic, and Tversky, 2001), so these examples are not necessarily far-fetched. Note: Kahneman is a 2002 Nobel Prize in Economic Sciences recipient for "having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty" (www.nobelprize.org).

In the paragraphs that follow, notations in parentheses are my adjustments to Simon's model. If notations in parenthesis or other indications of alterations are not made, then assume I am making a direct comparison to Simon's work. Even where alterations are made, they are cosmetic since all of the equations are from Simon's 1956 paper.

5.1.1.1. Simple Model

Each decision by Simon's organism (or my leader) leads to outcomes which impact future choice opportunity sets. Decisions are made to reach goals. Therefore, decision points could be goal obtainment points or intermediate points. At goal obtainment, food is obtained (or goodwill is achieved).

New paths lead from intermediate points and goal points resulting from the immediately prior decision, which was made based on paths that opened up from the decision before that one, etc. Likewise, the decision an organism (or leader) makes now will influence the opportunity set of paths for the next decision, and so on. Branches lead from each decision point.

Notations:

- Let g, $0 < g < 1$, be the percentage of points, randomly distributed, where food is obtained (goals are achieved).
- Let d be the average number of paths that diverge from goals and intermediate points.
- Let v be the vision, or planning horizon, that one can see from each point.
- Let G be the maximum number of decisions an organism (or leader) can make before it (he or she) uses up all of its (his or her) store of food (goodwill) and does not survive.

At each decision point the organism (leader) can see d paths one decision away, d^2 paths two decisions away, and so on. The number of paths it (he or she) can see is limited by its (his or her) vision, v. The number of points that can be seen over time is calculated in equation 1.

Eq. 1: $d + d^2 + \ldots + d^v = [d / (d - 1)] (d^v - 1)$

After each decision, d^v new paths become visible; however, the organism (leader) is limited by how many decisions it (he or she) can make by its store of food (goodwill). Food (goodwill) declines steadily with each decision that does not result in goal obtainment; thus, the maximum number of decisions the organism (leader) can make before reaching a goal is G.

What is the probability that the organism will starve (leader will be fired) ($F = 1 - S$)? In my model, S stands for the probability of survival and F stands for fired. This equals the probability that no goals are visible in $(G - v)$ moves.[26]

Since g is the percentage of points where food is obtained (goals are achieved), $(1 - g)$ is the percentage of points where there is no food (no goals are achieved). Thus, f, is the probability that none ($f$ailure to see) of the d^v visible points after a decision is made is food (a goal). See equation 2.

Eq. 2: $f = (1 - g)^{d^\wedge v}$

From Simon's equations, we can see that:

Eq. 3: $F = (1 - S) = (1 - g)^{(G-v)\, d^\wedge v}$.

[26] When g is small one can disregard the possibility that food (a goal) is visible on the first move. For public corporations, this is a reasonable assumption when one considers that results are published four times per year with the most important result occurring at the end of the year. At these points, which occur after many decisions, goal obtainment is evaluated by constituents (at least outside constituents such as shareholders who can fire or reward management via their ability to influence board decisions). Also, it is commonplace for employees to be evaluated once per year. While the review may consider the achievement of multiple goals, raises, bonuses, and/or promotions (measures of goodwill) resulting from recognition of goal obtainment occur much less often. For universities, the subject of this research, performance is also evaluated at key points during the year. Fiscal year end is one of those points, but intake (start of the academic school year) and graduation are two additional key points when performance is measured. Other points may include semester or quarter ends.

The chance that the organism (leader) survives is directly related to 1) the store of food (goodwill), 2) the number of paths leading from each decision point, 3) the abundance of food (goals), and 4) the planning horizon, or vision. The first, second, and last factors are a function of the environment and the organism (leader), while the third factor depends solely on the environment.[27]

Let us now look at each component in more detail by applying the above concepts to a hypothetical example of leaders operating in expectation phases 1 and 3.
During expectation phase 3, the environment is rich - performance is strong and has been improving. The probability that one survives is high (F is low and S is high) because goodwill, the number of paths, the number of goals, and the vision are high. High perceptions of survival (low risk) are associated with high future expectations.

- Storage of goodwill is probably high. Constituents are happy – customers are buying the product, suppliers are benefiting from the firm's growth, shareholders are happy with company performance, and management and employees are pleased because they are well-compensated for success.
- The number of paths is probably high. More options tend to be open to a leader who has been successful than to one who has not. Cash flow and earnings for the company are probably high, which provides ample funds to invest for growth. People trust the leader for his or her leadership because of the firm's past success.
- The abundance of goals is probably high. Assuming that hurdles are based on earnings growth or some other metric of profitability, expectation phase 3 reflects firms with high growth and profits. Thus, it is likely that the firm is meeting its goals.
- Vision is probably high. Vision refers to the planning horizon. Since the firm is not pushed to make decisions (as opposed to a company that is trying to avert breaking bond covenants and is on the verge of bankruptcy), the company has the luxury of making long term plans.

[27] Simon indicates that the second and third factors are based on the environment and the first and last factor are based on the organism. I argue that vision can be impacted by expectations that are derived from the environment.

During expectation phase 1, the environment is poor – performance is weak and has been deteriorating. The probability that one survives is low because goodwill, the number of paths, the number of goals, and the vision are low. Thus, expectations are low.

- Storage of goodwill is probably depleted. Constituents are not pleased with results. Storage capacity begins its decline during phase 4, when performance is still good but has been worsening. Patience (goodwill) is running low by the time the clock moves from phase 4 to phase 1. Employees are nervous and leaving, shareholders are selling the stock and demanding change, and customers have begun buying competitors' products.
- The number of paths is probably low. Since profits, growth, cash flow, etc. are low, capital is scarce. If the supply of capital is low, hurdle rates for new projects are likely higher. Higher hurdle rates limit the number of options for the firm. People do not trust the leader.
- The abundance of goals is probably low, and even if a goal is obtained, it is likely that achieving a goal creates minimal goodwill since overall results are still poor.
- Vision is probably low. Given the recent poor performance, the planning horizon is limited because the leader is probably trying to make short-term numbers in order to protect his job. Focusing on the long-term when he or she is fearful about surviving does not make sense.

Let me now put some numbers into the equations. Assume:

- Leader goal obtainment is recognized once per year and is based on firm success. Each leader decision, right or wrong, uses up one unit of goodwill.
- Because of lack of past success, the phase 1 leader has storage of goodwill of three units, or enough to last three decisions before the leader is fired if no goals are obtained. The phase 3 leader has goodwill storage of six units.
- There are two paths from each decision point for the phase 1 leader and four paths open per decision point for the phase 3 leader.
- The probability of a path resulting in goal achievement is 3% for the phase 1 company and 6% for the phase 3 company.
- The vision for a phase 1 leader is one decision ahead and the vision for a phase 3 leader is two decisions ahead.

Using these figures, the likelihood of survival to the next year for the phase 1 leader is 9.6% versus 98.1% for the phase 3 leader. For every metric, the phase 3 leader is twice as strong as the phase 1 leader, yet his or her probability of survival is more than ten times as likely! Thus, it is no wonder the phase 1 leader is so willing to make moves to change (phase 1 is associated with low expectations and inertia), whereas the phase 3 leader has little motivation to change because he or she has high expectations based on a low probability of being fired.

We can also calculate the probability of making k-1 moves without obtaining food (achieving a goal) and then obtaining food (achieving a goal) on the k^{th} decision (S_k).

Eq. 4: $S_k = (1 - f) f^{k-1}$

From this we can calculate the average number of moves required to reach food (a goal) (R).

Eq. 5: $R = \sum_{1}^{\infty} k (1 - f) f^{k-1}$

$R = (1 - f) / (1 - f)^2 = 1 / (1 - f)$

Recall, f is the probability of *not* seeing food (a goal) after a decision, so $1 - f$ is the probability of seeing food (a goal) after a decision. Thus, R is the reciprocal of $1 - f$.

Turning back to my example, for the phase 1 leader, the average number of decisions to obtain a goal is 20.3. This is considerable, since the leader only has three units of stored goodwill. The phase 3 leader only needs to make 1.6 decisions, on average, to obtain a goal and he or she can make six decisions without goal obtainment before being fired.

5.1.1.2. Complex Model

The complex model relaxes Simon's first assumption of only one objective. This model is more realistic and is more representative of the expectations clock.

The expectation clock reflects how expectations change during different performance settings. The complex model considers divergent states of expectations. Future researchers may wish to expand the breadth of the linkages between high and low expectations and Simon's model to states of greed and fear, hope and fear (Shefrin, 1999), optimism and pessimism, etc.

As noted, the complex model allows for multiple objectives. Resources (storage of food (goodwill)) spent achieving one objective take away resources available for achieving others. Simon assumes that the organism has two objectives – obtaining food and other activities. My two objectives include maximizing self actuation (or the status quo) from high expectations and minimizing the likelihood of not surviving (being fired) from low expectations. Resources spent on these objectives depend on the expectation phase.

In the previous example, phase 1 and phase 3 leaders have very different probabilities of survival. A phase 3 leader has a high probability of survival and a phase 1 leader has a low probability of survival. A phase 1 leader probably has much different expectations of the future than a phase 3 leader! That is, he or she is *fearful* of being fired. His or her expectations are low and he or she is willing to give up old ways and change and react quickly (possibly over-react) to any new negative signs. On the other hand, the phase 3 leader has little reason to fear for his or her job. His or her expectations are high and he or she is much more likely to be motivated to stay the course and under-react to negative information that does not confirm his or her views. He or she is motivated to do more of the activity that earned him or her original success.

In Simon's complex model, the organism only devotes a fraction of its decisions, *D*, to food seeking activities, with the remainder of its decisions focused on other activities.

In my expectations clock, the phase 1 and phase 3 leaders devote a different fraction of decisions, *D*, to maximizing self actuation and, 1 - *D*, to building goodwill (thereby minimizing the chances of being fired). While a phase 1 leader worries about being fired (using up goodwill storage before goals are achieved), he or she still is concerned, to some degree, with self actuation. Also, a phase 3 leader needs a sufficient store of goodwill so that he or she can focus on self actuation through maintaining the current course (that he or she was the architect of) without fear of being fired.

In order to achieve multiple goals, additional storage is needed in both Simon's model and my expectations clock. In my model, this additional storage, call it i for inertia, can be used to engage in self actuation activities that can continue as long as a leader maintains a minimum amount of goodwill associated with a minimum expectation level, keeping fear of being fired at a manageable level. Similarly, in Simon's model this additional storage can be used for other activities as long as the organism maintains a minimum storage of food to control for the risk of starving.

The minimum storage in Simon's model and my expectations clock is R, which was previously described as the average number of decisions to reach food (a goal). Of course, R is only the amount of food (goodwill) needed to reach the next piece of food (goal) and it does not indicate anything about what is needed to reach food (goals) after that. Also, the organism (leader) may want a little bit more than the minimum storage necessary to reach the next piece of food (goal). Note: Simon and I assume that achieving a goal produces some multiple of the food (goodwill) that was spent getting there.

As long as i is large, an organism (leader) can continue with activities which go beyond survival needs. An organism (leader) begins to focus on survival related activities more and more as i nears zero. The fraction of resources spent on survival related activities is shown in equation 6.

Eq. 6: $A = R / (R + i)$

After very long periods of reaching many pieces of food (achieving many goals), i will be so large that A will approach zero. At this point, all activities will be focused on other activities (self actuation during expectation phase 3) versus food gathering (increasing goodwill to increase expectations thereby reducing the probability of being fired during expectation phase 1).

In figure 5.a., notice that expectation phase 3 is labeled high inertia and expectation phase 1 is labeled low inertia. Based on the complex model, it is not surprising that people exhibit high inertia and under-react to negative information by focusing on self actuation of the status quo in expectation phase 3 and over-react to negative events in order to reduce the risk of being fired by maximizing goodwill during expectation phase 1.

This leads to my last point. During expectation phase 1, people are much more sensitive to danger paths. In my model, there are more danger paths that increase the risk of being fired in expectation phase 1 than during expectation phase 3. These paths must be avoided during phase 1 and avoiding them reduces the overall number of paths that can be utilized to reach a goal (and its associated goodwill). Because of these restricted paths, R becomes larger. The new f, f^{1}, the number of visible decisions that can reach a goal, is $(1 - g)^{(1 - r)\, d^{\wedge}v}$, where r represents restricted paths. In the above example, if the number of possible safe paths for the phase 1 leader was reduced from two to one, then the probability of survival, S, is only 4.9% (versus 9.6%) and the average number of decisions to obtain a goal, R, almost doubles to 40.0 from 20.3.

5.1.2. Over- and Under-Reaction Models

Several models explaining over- and under-reaction have emerged since Fama (1998: 284) made his claim that behavioral finance research lacked theories that "specify biases (behavioral biases) in information processing that cause the same investors to under-react to some types of events and over-react to others." Individual models have described *specific* behavioral biases that may be associated with over- and under-reaction. On the other hand, psychological research has identified *many* biases that impact human decision making and some of these biases are beyond the scope of these individual models. The expectations clock improves upon these theories by explaining how at least seven biases (including some from the other models) may influence both over- and under-reaction. Furthermore, the individual models are consistent with the inferences of the expectations clock, at least for certain phases of the clock, so the clock may be considered a unifying model of the other unifying models to explain over- and under-reaction.

The two most frequently cited behavioral models to explain over- and under-reaction are those of Barberis, Shleifer, and Vishny (1998) and Daniel, Hirshleifer, and Subrahmanyam (1998).

Barberis, Shleifer, and Vishny's (1998), or "BSV's," model is based on the conservatism and representativeness biases. Conservatism suggests that people are slow to update beliefs – they have inertia. Representativeness refers to how people anchor beliefs based on past classifications (growth or value). The authors suggest that stock prices tend to under-react to news such as earnings announcements (conservatism), but they tend to over-react to a series of news (new classification/new representation emerges). Imagine that the series of positive news is associated with expectation phase 3 and then there is a first negative sign. In this case, over-reaction in phase 3 is equivalent to investing more in previously successful strategies where the luck is about to turn. If conditions revert, then returns on these investments will likely be low; accordingly, these investments are considered over-reactions (this is similar to saying that investors under-react to negative signs). Similarly, if the series of news is negative (phase 1), individuals will tend to over-react to this negative information and under-react to any positive signs that could indicate the start of phase 2.

Daniel, Hirshleifer, and Subrahmanyam's (1998) model was discussed in chapter 4 in the review of the self attribution bias. The model is also based on the overconfidence bias. People tend to over attribute events that confirm their opinions to their ability and non-confirming information to "noise." Overconfidence magnifies this bias since individuals tend to be overconfident (over-react) about private information signals but not (under-react) about general information available to the public. This can cause momentum (more of the same) in stock prices and over-reaction to positive performance and under-reaction to negative signs during phase 3. Eventually, stock prices must revert, during phase 4, because momentum in prices, during phase 3, causes stock prices to move away from fundamentals.

As discussed in chapter 4, Amir and Ganzach's (1998), or "AG's," model relies on the leniency, representativeness, and the anchoring and adjustment biases. Representativeness was also utilized to explain BSV's model and conservatism in BSV's model is similar to the anchoring and adjustment bias. Representativeness leads to extreme predictions (over-reaction), anchoring and adjustment results in excess moderation (under-reaction), and leniency leads to lenient (overly optimistic) predictions. These biases result in an over-reaction to positive modifications (expectation phase 3 and possibly phase 2 estimates are too high) and an under-reaction to negative alterations (expectation phase 4[28] estimates do not decline sufficiently and misses ensue).

[28] If this also applies to phase 1, then the model is inconsistent with the expectations clock since phase 1 individuals over-react to negative signals.

Odean (1998), through his review of psychological literature, suggests that reaction varies based on types of information. He suggests that markets under-weight (under-react to) abstract, statistical and highly relevant information and over-weight (over-react to) salient (information that stands out and captures attention), anecdotal, and less relevant and extreme information. The former type of information may include data such as earnings announcements and the latter may include events such as initial public offerings and rumors. This implies that individuals may be slow to incorporate information from 7:00 to 11:00 and 1:00 to 5:00 – the majority of phases 2 and 3 and 4 and 1 - but may over-react to extreme conditions - 12:00 and 6:00 (the transition times).

Mullainathan (2002) discusses how categories and updating influence over- and under-reaction. People are slow to adjust to new information and categorize situations based on series of past information. This theory is somewhat similar to BSV's and AG's models. Inertia in category updating may lead to under-reaction to negative and positive information during phases in phases 3 and 1, respectively. Under-reaction to positive information during phase 1 is similar to over-reaction to negative information. Mullainathan also suggests that category changes are only made when people see enough information that indicates that a better category fits the data. Since new categories may be very different from old groupings the act of category revision may result in over-reaction. A lower number of categories amplifies this phenomenon. If the categories are very course, then this could cause reactions to teeter-totter between phases 3 (over-reacting to positive events) and 1 (over-reacting to negative information).

Epstein and Schneider (2005) review how information ambiguity and the type of information (good or bad) may influence reactions to data. They suggest that individuals take a worse case assessment with respect to quality of ambiguous information. This results in people reacting more strongly to bad ambiguous news than to good ambiguous news. Good news information is considered unreliable so this leads to under-reaction and momentum (phase 2 shifting to phase 3) and bad news information is considered reliable so this leads to over-reaction and reversals (phase 3 moving to phase 4). While the above implications are consistent with the expectations clock, the interpretations are not. For instance, the clock indicates that people over-react, versus under-react, to good news during expectation phase 3 and the over-reaction is what causes momentum. Also, the clock indicates that people under-react, versus over-react, to bad news during phase 3 and this under-reaction eventually leads to reversion.

Each of the above-described models fits nicely in the expectations clock framework. Several of the behavioral biases – conservatism, representativeness, overconfidence/ leniency, self attribution, anchoring and adjustment, and categories and updating – that these models are based on are similar to or the same as the biases - self attribution, overconfidence, prospect theory, escalation of effort, herding, confirmation bias, and anchoring - that provide a foundation to the expectations clock. Overall, collectively and possibly individually, these biases result in different levels of inertia during different expectation phases.

5.2. Hypotheses

The literature review and the explanation of the expectations clock lay the groundwork for my research hypotheses. In this section, some problems with past research are recited, a framework to answer the research questions is provided, and specific hypotheses are reviewed. Recall, the three research questions include:

1. *Are expectations negatively associated with future changes in performance (do expectations revert)?*
2. *How is leadership succession associated with over- and under-reaction in different expectation settings?*
3. *Are expectations negatively associated with leadership succession?*

Goals of this research include showing: how expectations, derived from the interaction of current and past performance with behavioral tendencies (described by terms such as escalation of effort, prospect theory, overconfidence, herding, anchoring, confirmation bias, and self attribution) influence turnover; whether expectations revert; and how over- and under-reactions are associated with succession during their different expectation phases. By doing so, this research adds to the body of literature in behavioral finance.

The concept of the expectation clock is new. Turbulence and stability have been considered in prior research (Virani, Tushman, and Romanelli, 1992; Tushman and

Rosenkopf, 1996; and Karaevli, working paper), but these studies do not differentiate whether the environment is part of the life of the company or a temporary change within a life cycle phase (an expectation phase).

5.2.1. Problems with Extant Research

After reviewing an abundance of literature on organization change, executive succession, human behavioral tendencies, and the interaction of expectations and the environment, it is apparent that inconsistent and often statistically significant but not economically significant results of succession and organization research (Brickley, 2003) is wholly, or at least partly, due to the lack of control for intervening environmental (performance) circumstances. These circumstances influence expectations thereby impacting the consequences of succession. Accordingly, disjoined conclusions may be fused together into a workable overall model by considering the impact of expectations at the time of succession. Other reasons for inconsistent results include differences in data, approaches, definitions, type of academia exploring the topic (the area is multidisciplinary), industries analyzed, ways of evaluating performance, years studied, etc. (Kesner and Sebora, 1994). Furthermore, financial research on reversion and cycles is lacking because its knowledge of the reasons (fundamental and especially behavioral) for these cycles and the forces (executive succession) that may influence them, as well as its acceptance is still developing. As a result, behavioralists have yet to identify a better model of decision making than that postulated by economists. Fortunately, by taking into consideration the environment's impact on expectations and by considering the interaction of these elements with succession, this research presents and tests a unified model for over- and under-reaction. As noted in chapter 2, a few other researchers have also attempted to develop unified models, but I believe I am one of the first to empirically test such a model.

Khurana and Nohria (working paper) suggest that many factors are at work in CEO turnover decisions and the factors are not independent of one another. Therefore, various factors must be viewed in combination. For instance, the authors found that the predictive power of hiring inside or outside the firm (independent factor) on firm performance (dependent factor) can be increased by also considering whether the prior CEO was forced out or voluntarily departed (another independent factor). There may be a specific reason why the new CEO was hired from the outside. Other research (discussed previously) shows that where a new CEO is sourced is related to whether the Board pushes for firm-wide changes that may result from the separation of firm strategy from environmental conditions.

While the scope of my research does not consider Kesner and Sebora's (1994) antecedents (how and who mentioned above) and the event itself (process, candidate, and choice issues), it does control for very important contingencies (the environment) of succession and focuses on the consequences of turnover on over- and under-reaction.
Lant and Mezias (1992) claim that the learning model can explain periods of stability and change. In the learning model, one evaluates performance based on goals and adjusts accordingly. That is, depending on the environment (success or failure) one searches for alternatives and changes. The search is more intense during times of failure. This suggests that one must consider the environment when analyzing organization change and inertial tendencies.

Considering the arguments of Lant and Mezias (1992), Khurana and Nohria (working paper), and others previously discussed, issues of past research, and conclusions from extant research, I have derived several hypotheses with respect to environmental reversions tendencies, how the expectations interact with turnover and relate to the outcome (over- or under-reaction) of succession events, and the relationship between expectations and the succession event.

5.2.2. Models

The models fall into four categories. There is one framework and three specific hypotheses. Except for hypothesis 3, tests were conducted on the entire data set and for each expectation phase separately.

Framework:

The framework models the relationships between turnover and composites for current performance ("Current"), changes in past performance ("Past"), and bureaucracy ("Bureaucracy") with changes in future performance ("Future"). Essentially, the framework incorporates hypotheses 1 and 2.

Specific Hypotheses:

1. Models of reversion. Tests of whether future changes in performance are inversely associated with current performance, past changes in performance, and bureaucracy.
2. Models of over- and under-reaction. Tests of how the association of succession ("Turnover") in combination with expectations relate to over- and under-reaction.
3. Models of succession. Tests of the association of turnover with bureaucracy, current performance, and changes in past performance.

As noted, the framework provides an overall model to test the hypotheses. Essentially, it incorporates hypotheses 1 and 2 into one model. This framework is depicted in figure 5.b.

(Insert Figure 5.b.)

Figure 5.b. illustrates how composite variables relate to each other and how observed variables relate to the composites. One can see that the Bureaucracy is made up of observed variables REV and PUVSPRAdj (see tables 6.c. and 8.a. for definitions of observed variables), and that it is in turn related to the composite Future. Furthermore, Current and Past (which collectively are a proxy for expectations) are each made up of their observed variables and are also related to Future. Turnover is also related to Future. The observed variables of and composites for Current, Past, Bureaucracy, and Future are described in detail in chapters 6 and 7.

5.2.3. Hypotheses

Three specific hypotheses are explored: 1) expectations reversion, 2) how expectation phases in conjunction with turnover relate to over- and under-reaction, and 3) the relationship between expectations and the succession event. Furthermore, this research also explores the relationship between bureaucracy and future performance and turnover.

Below, I state the hypotheses, show path diagrams for the models, and briefly reiterate the research basis (discussed at length in prior chapters) for each hypothesis.

Hypothesis 1: Reversion

Expectations are negatively associated with future changes in performance.

High expectations (phase 3) are associated with declining future performance and low expectations (phase 1) are associated with improving future performance.

The path diagram for hypothesis 1 is depicted in figure 5.c.

(Insert Figure 5.c.)

Research Basis for Hypothesis 1:

Momentum exists in the short-term (Jegadeesh and Titman, 2002), but research shows that the environment reverses over the long-term (DeBondt and Thaler, 1985). Lakonishok, Shleifer, and Vishny (1994) show that expectations move to extremes and even Fama and French (1996) admit that returns can be explained by asset pricing metrics, such as B/P, that exhibit reversion. They also admit that their improved three factor model for modeling returns cannot justify the persistence of price momentum. As noted in chapter 2, there is substantial evidence showing that companies move through cycles – possibly because of life cycles, economic cycles, and/or investment cycles. These cycles may be caused by behavioral biases that lead expectations to change gradually (Feather, 1966) as well as forces due to competition. It also makes logical sense that exceptional performance is, well, exceptional (by definition), so it must revert toward the mean from a statistical standpoint.

Hypothesis 2: Over- and Under-Reaction

Expectations are positively related to leader succession's association with future changes in performance.

When expectations are low (phase 1) leader turnover is associated with over-reaction (as indicated by lower future performance) and when expectations are high (phase 3) leader turnover is associated with reducing under-reaction (as indicated by higher future performance).

The path diagram for hypothesis 2 is shown in figure 5.d.

(Insert Figure 5.d.)

Research Basis for Hypothesis 2:

If future performance is better following succession (an action) than if turnover did not take place, then succession represents the right reaction. Without turnover, future changes in performance would be worse and this would represent an under-reaction. On the other hand, if succession results in worse future performance then succession reflects an over-reaction since a firm would have been better off with the former leader intact. Real learning through leadership turnover only includes scenarios in which succession is positively related to future performance. The outcome of the first hypothesis, as shown in chapter 8, helps explain the logic behind results of tests of hypothesis 2.

Prior empirical research has not tested hypothesis 2; although, various empirical and theoretical (Simon (1956), Daniel, Hirshleifer, and Subrahmanyam (1998), Barberis, Shleifer, and Vishny (1998), and Hong and Stein (1999)) research papers provide support for the hypothesis. As a review, prior research has established that the level of performance influences behavioral biases and behavioral biases impact inertia. The research also shows that succession can disrupt the status quo and that environments cycle. The time on the expectations clock is determined by performance factors. By deduction, succession, which causes disruption, should have varying outcomes on future performance depending on the phase of the expectation clock.

Fiol and Lyles (1985) and Newman (2000) show that there is an optimal level of duress that influences learning or the willingness to learn. Based on figure 3.c., one would expect a negative consequence of introducing more change through leader turnover in periods of high duress (expectation phase 1) and that succession is most needed in periods of low duress (expectation phase 3). Leader succession may bring about the right amount of disruption to eliminate under-reaction when performance is good and improving, but may result in over-reaction (too many changes) or paralysis when performance is low and falling.

Virany, Tushman, and Romanelli (1992), Tushman and Rosenkopf (1996), and Almendinger and Hackman (1996) suggest that leader turnover during turbulent environments may be suboptimal. Newman (2000) claims that new leaders who emerge in poor environments may not have the necessary knowledge and understanding of a firm to make the right decisions. Also, new leaders who take over in these environments may be encouraged to do "something" versus the right things. We know from Miller (1993) that new leaders are likely to make changes. Also, if the environmental conditions revert, then doing "something" or "anything" may be suboptimal. Grusky (1963) argues that the rate of succession and organizational effectiveness are negatively correlated.

Hypothesis 3: Turnover

Expectations are negatively associated with leader succession.

Expectation phase 1 has a greater association with succession than expectation phase 3.

The path diagram for hypothesis 3 is illustrated in figure 5.e.

(Insert Figure 5.e.)

Research Basis for Hypothesis 3:

Evidence of momentum (Jegadeesh and Titman, 2002) indicates that there are periods of extreme optimism and pessimism and these periods result from efficacy-induced performance spirals (Lindsley, Brass, and Thomas, 1995). Friedman and Singh (1989), Virany, Tushman, and Romanelli (1992), Lant and Mezias (1992), and Denis and Denis (1995) suggest or imply that leadership turnover is more likely when performance is poor. Diether, Malloy, and Scherbina (2002) and Henry and Sniezek (1993) show that the lack of friction, or in this case feeling good about current high and improving performance, prevents people from recognizing negative factors. This causes an upward bias in opinion. Overconfidence and the inability to recognize non-confirming information (Lovallo and Kahneman, 2003) may limit a person's willingness to change. Kahneman and Lovallo (1993) and Birnbaum (1989) show that in a company's search for an explanation of poor performance it often pushes too much of the blame on its leader. Blaming the leader for poor performance could cause a firm to replace its leader. Keck and Tushman (1993) show that the longer the period of stability the greater the management tenure. Finally, there is substantial evidence that prior and current performance directly influences expectations (Feather, 1966) and the level of expectations is directly related to inertia (including decisions regarding turnover).

Framework

The framework combines hypotheses 1-2 (above).

The framework should find support if hypotheses 1 and 2 are supported, and it should be a better model than those for the specific hypotheses.

See figure 5.b. for the path diagram for the framework.

Exploration: Bureaucracy

Is bureaucracy associated with future changes in performance?

The impact of bureaucracy is shown through the framework, reversion, and cause of succession models. It is not clear from prior research whether bureaucracy is a positive or negative force and it may be proven that its impact depends on the expectation phase.

Ocasio (1999) shows that strong corporate boards add to inertia. Fisman, Khurana, and Rhodes-Kropf (working paper) show that strong boards result in improved decisions to fire CEOs and this is needed because Alderfer (2001) claims that CEOs often have substantial control over their boards. Hannan and Freeman (1984) theorize that inertia may increase with firm size and complexity and Fiole and Lyles (1985) note that centralized organizations tend to support past behaviors whereas decentralized organizations are more flexible. Given these and other studies, we know that bureaucracy is an important variable, but it is difficult to ascertain whether it relates positively or negatively to future performance.

5.3. Illustrations

Sir Isaac Newton said, "Every body continues in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it." This research considers how the environment, in conjunction with disruption (the "forces impressed upon it" in the quote above) caused by turnover, are related to future organizational performance (and influences under- and over-reaction). The environment sets the stage for learning, as the following real and hypothetical examples illustrate.

Wright, van der Heijden, Bradfield, Burt, and Cairns (2004) provide a real life example that I use to illustrate my expectation clock. Their example, of Canon taking market share from Xerox, explains the forces that cause managers to under-react. They show that companies are slow to adapt and change in both high threat (at least to a breaking point) and low threat environments.

- In a low threat environment, confirmation bias and overconfidence lead to low levels of stress and an unconflicted view that business as usual is best. For instance, the authors explain that Xerox's high market share (95%) and success in the 1970s led it to "stay the course" (recall the axiom "don't fix what is not broken") and ignore competitive threats to its eventual demise. Canon, a competitor, gradually gained significant market share by targeting customers with new products (that made copying available outside of copy centers) and captured a large part of Xerox's corporate customer base.

    - The low threat environment, described above, is equivalent to phase 3 and possibly phases 2 and 4 of the expectations clock. The environment is good and has been improving or has been poor but improving. People tend to be overconfident during phase 3. Dissenters tend to be ignored as the optimists herd together.

- Even when faced with high uncertainty, managers initially (expectation phase 4 and possibly phase 3) under-react. The authors explain that even when the environment is characterized by high volatility, poor performance, and uncertainty (Canon gaining market share) managers often fall into the trap of bolstering, procrastinating (people are reluctant to make important decisions), buck passing, and escalating their effort, all of which eventually lower the level of stress and increase the level of strategic inertia.

- The expectations clock suggests that these biases continue until the breaking point – the point when people and firms in general reverse course and over-react (expectation phase 1).

- When the environment begins to deteriorate people continue to under-react, but this is because the environment is still good (expectation phase 4). Here, people tend to anchor beliefs based on past success (expectation phase 3) and look for confirming evidence. By initially escalating their efforts through investing more in failing strategies, they fall into the trap of taking more risks in this losing situation.

- After prolonged period of losses (expectation phase 1), the firm becomes so out of sync with the environment that people panic, throw in the towel on old strategies, and do something. Unfortunately, the action may not be well planned as it often occurs at the bottom of the cycle, just before the environment reverts.

- People may fail to act until phase 1 because they are confused, they selectively perceive (confirmation bias and self attribution) their environment and actions, or actions and outcomes are often years apart.

    - Lant and Mezias (1992: 52) claim that "the development of inertia may result from an organization's attempts to learn in an ambiguous world" in which it is difficult to determine the consequences of actions.

    - Inertia stems from the fact that the original decision and the outcomes are often years apart, and when events go awry managers are able to distance themselves from the performance by blaming it on factors beyond their control (the economy).

The example below shows how behavioral biases (including overconfidence, anchoring, inertia, confirmation bias, escalation of effort, prospect theory, group think, and herd mentality), formed by the environment, may influence expectations and the ultimate decisions of a hypothetical model student. The implications noted are based on the previously discussed literature review. Imagine...

- During his junior year, a model student (4.0 GPA/all "A" average) (expectation phase 3) enrolls in his first finance course. His past academic success sets his high expectations for this class. Are his expectations reasonable? They are not out of the ordinary; however, does past academic performance predict future success? People tend to anchor future expectations on past occurrences. His high expectations are an example of how people overestimate their abilities even when faced with new situations.

  - Implications: People rise to leadership positions because of past success. Leaders have the ability to make decisions to impact outcomes. This combination frequently results in leader overconfidence. Leaders also anchor future expectations on past performance. These past trends set the perceived expectation frames.

- The model student performs poorly in his first finance class (expectation phase 4); however, given his prior academic success and the fact that he performed well in the first part of the course, he considers his overall failure to be an anomaly. He under-reacts to the situation. As a result, next semester he enrolls in a higher-level finance course and takes a lighter overall course load in order to devote more time to finance.

  - Implications: Leaders alter their anchors slowly. Inertia in expectations continues even after the first signs of failure. People under-react to negative stimuli when the overall environment is favorable. Leaders look for evidence to confirm their decisions instead of looking for contradictory facts. Not only do they fail to react and anticipate new environments, they often escalate their efforts by dedicating more resources to achieve the same goals even when performance starts to deteriorate.

- When his performance in the second finance course mimics the first (expectation phase 4, but close to 3 o'clock), he begins to doubt his abilities and considers his alternatives. Despite his doubts, he does not change majors. He has already committed significant effort to finance (two courses over a year) and has told his family (who are paying big bucks for his education), friends, and himself that he is a finance major, so instead of changing direction and abandoning finance he escalates his effort by taking more finance courses.

  - Implications: Leaders often face situations in which they have set expectations (by making announcements) of excellence. Even when events go awry and failure is certain, rather than admitting failure and moving on, they under-react, "stay the course," and escalate efforts. They take additional risks in loss situations (prospect theory describes this tendency) in order to recover even when the probability of breaking even is low.

- The student eventually switches majors after performing poorly in his third finance course (expectation phase 1); however, this unwise detour costs him an additional year to earn his degree and lowers his GPA.

  - Implications: Leaders who do not recognize their behavioral biases often lead their organizations to suboptimal results. Resources are wasted that could be better utilized in other value-added projects. Leaders, and the people they lead, are eventually willing to change, but inertia is broken only after the pain is too great to ignore.

- How could the student have avoided this suboptimal outcome? If he would have sought *outside* guidance from advisors, friends (in finance), or teachers (in finance) after his first course he may have realized that higher level finance courses were even more difficult and his performance would not improve. In addition, he may have avoided finance altogether if he had attended finance club meetings before enrolling in his first finance course.

  - Implications: Executive succession impacts the degree of *outside* perspectives considered by an organization. Executive teams and boards with long tenure are impacted by group think (when people have worked together for a long time they often act as one) and herd mentality. New leaders, with alternative backgrounds and a clean slate upon which to make decisions, may be able to make sense out of ambiguous circumstances and environments (Lant and Mezias, 1992) as well as influence strategic change to a greater degree than existing leadership teams. Hence, new leaders stir things up. However, the impact of new leaders on performance depends on the environment.

The student example could be reversed to consider a scenario in which a struggling student performs well in his first finance course (close to 6 o'clock during expectation phase 2). Given his lack of prior success, he would be positively surprised with his strong performance. Since people are motivated to succeed, success after a long period of failure would prompt him to change careers. He would over-react to the new situation. Doubt associated with past failure combined with initial success would influence him to quickly change majors, versus the opposite scenario where overconfidence associated with past success combined with initial failure caused him to stay the course.

- Implications: When the environment is poor, resistance to change, or inertial tendencies, is low. This means that new leaders who take over when performance is poor can more easily impact performance than leaders who take over in good times; however, when performance is poor current leaders are more willing to change to protect their jobs, so there may be less need for leadership turnover in the first place.

What would happen if the struggling student changed his major to finance after initial success and then failed his second course (rotation from expectation phase 2 back to phase 1)? He would have been better off not to have changed majors. He over-reacted by changing majors. The energy and process of changing majors, not to mention the emotional drain after failing the second course, would be wasted. This energy could have been put to better use on other school activities (or possibly playing Nintendo). Too much change may lead to worse results than no change at all.

- Implications: When the environment is poor, new ideas are embraced; however, change is not always optimal. For instance, managers in cyclical industries may be replaced at bottom of cycles due to poor performance that is out of their control. New leaders who emerge at these times may desire to create their own legacies and may be hired by boards to change organizations, thus they may sell (and have support to sell) underperforming assets at cyclical troughs. Doing so at bottoms of cycles reflects an over-reaction to negative conditions. Given tendencies for performance reversals, changing leaders and radically changing organizations when performance is poor may be suboptimal to future performance. Also, as noted previously, changing leaders at the bottom may result in so much disruption that little learning and improvement can be accomplished.

The next illustration picks up where my discussion of value and growth left off in chapter 2. Please consider the following discussion in light of the characteristics of value and growth managers previously discussed.[29]

- Imagine four types of investors - momentum, growth, value, and contrarian. Growth investors tend to be followers. They buy companies in which expectations and inertia are high (expectation phase 3). They prefer companies that are "in style," widely known, and popular (things are good). They follow the herd and tend to ignore information that may indicate that expectations are too high. Momentum investors feed off the emotions and tendencies of growth investors – they are the extreme version of growth managers and drive growth stocks to irrational heights. They are overconfident that trends will continue (unless, of course, they have a very short horizon). Value investors, on the other hand, watch and wait for the right opportunity to buy stocks tossed away by growth managers. They look for "value" and catalysts for change (they try to buy at 6:00; however, they often buy too early during expectation phase 1). They search for "diamonds in the rough." They realize that bad events do not last forever and that prior performance often reverts. Contrarian managers are the extreme version of value managers. They do not care about catalysts. They love what everyone else hates.

[29] With the help of a good friend, Barbara Browning, CFA charter holder and Portfolio Manager at Voyageur Capital, the illustration was developed to describe how investment managers who ascribe to the value approach think. Of course, we recognize that it is short-term momentum traders who create value managers' long-term opportunities, so we are grateful and appreciative of people with alternative investment approaches. I have also found, through experience and research, that different approaches (value, growth, momentum, etc.) tend to work in different industries, market environments (see the economic clock), and depend on one's time horizon. I have managed more than one portfolio with a growth bent; although, I am much more comfortable with value approach to investing.

- Now imagine four animal characters – the fleas, the sheep, the wolf pack, and the wolf pack leader. Growth managers are like sheep that move in flocks going wherever the best grass grows. Fleas dig into the fur of sheep and they bite the sheep. Their bites drive the sheep crazy since it is difficult for the sheep to scratch where they itch. When fleas bite the sheep roll on the ground and move around like crazy. Momentum managers are like fleas that feed on efficacy-performance spirals. Obviously, sheep that have errantly moved away the pack (due to trying to itch those nasty fleas) make easy prey for the wolves that wait patiently to attack and capitalize on the situation. Wolves are similar to value managers.

- What happens? It is obvious that the wolves eat the sheep, and in turn, eat the fleas. This means that over the long-term the value manager wins, which is consistent with studies that show buying losing stocks can lead to excess returns (De Bondt and Thaler, 1985). Oh, don't forget the contrarian. All wolf packs have leaders. The contrarian represents the wolf pack leader. The value managers' patient search for under-valued out-of-favor opportunities results in substantial rewards on their way to retirement "on the Waikiki Beach in the shadow of Diamond Head." This is much better than the alternative for managers who end up in the "smog-filled San Bernardino Valley in an unexciting place called Diamond Bar" where you are still going to "need some real help from your rich uncle" (Haugen, 1995: 7).

These illustrations, combined with the prior literature review, show that when past performance has been poor and declining people are often willing to change at the first sign of a solution (they over-react), but this may not always be beneficial. On the other hand, when performance has been stellar and improving people are normally slow to adapt (they under-react) since individuals rarely fix what they do not perceive as broken. Inertial tendencies are high during periods of high and improving performance. Therefore, this implies that when performance has been poor, succession will probably result in more change (but not necessarily learning) and over-reaction than when prior performance has been stellar. On the other hand, when performance is high and improving the firm is a target of new competition so change may be needed to improve, maintain performance, learn, and avoid under-reacting to negative stimuli.

During my conversation with Joe Laymon, Group Vice President-Corporate Human Resources and Labor Relations of Ford Motor Company, he noted that the same leader who can fix a company may not be the best leader for a firm that is performing well. Why? The same leader who can fix an organization may not be the right person to run a stable firm. Sometimes, when performance is good, the current leader, who may be overconfident and have beliefs of infallibility, embarks on new growth initiatives or escalates existing investments to unhealthy levels to the detriment of the organization.

Predicting the outcome of succession without consideration of the leader's (and organization's) behaviors that are tied to the environment appears to be short sighted. Based on the previous discussions this is obvious and intuitive, so why has academia yet to reach consistent conclusions regarding executive succession despite decades of research? The research spans many disciplines, studies do not share common research methodologies and data settings, and most importantly, prior research has generally explored the impact of succession without consideration of contingencies such as the environment (Kesner and Sebora, 1994).

Weick (1976: 15) suggests that "If there exists a set of multiple intentions which can determine a set of similar multiple actions, then the ability to detect a relationship between any one intention and any one action is likely to be imperfect." Just as there is no one environmental trigger causing a condition such as autism or one gene contributing to it (Wallis, 2006), there are many factors contributing to the effects of leader succession on future performance, reversion, and the cause of succession. Given these arguments, future research needs to consider environment and other factors *concurrently* when analyzing the probability of succession, reversion, and succession's impact on over- and under-reaction.

Chapter 6: University Presidential Research

The life and the job of university presidents have been explored extensively over the past 60 years (Robinson, 1988); however, most of the research is descriptive rather than empirical. Few empirical studies have tested what is under a university president's control and I did not uncover any studies that considered what may or may not be under the president's control during different expectation settings. Furthermore, this is perhaps the only study to consider whether a university's situation is mean reverting.

As noted in the chapter on finance, there is a void in research on reversion outside the stock market. Also, only a few studies have explored the impact of new presidents on higher level academic institutions' performance. Of these, Birnbaum (1989) analyzed the impact of university presidents on faculty and Levin (1998) reviewed the president's impact on organizational change for community college presidents. Birnbaum's data set consisted of survey data and Levin's consisted of interview data. Birnbaum concluded that presidents do not influence outcomes even though leadership is important, while Levin differs in his claim that presidents do influence organizational change. Birnbaum (page 125), in explaining his results, suggests that leader influences could be "masked or swamped by exogenous" conditions. These conditions define the environment. Levin specifically explored the impact of the institutional context (culture) and readings (perceptions) on the outcome of succession and concluded that they matter. Both authors suggest that performance-related succession research in the academic institutions space is sparse. In addition, Birnbaum's study was limited to evaluating one constituent (academic institutions have many stakeholders as is discussed at length in this chapter and in chapter 7) and Levin's research only included five community colleges, so it is difficult to generalize the results to higher level academic institutions as a whole let alone other settings. Consequently, additional succession research in the academic setting with controls for environmental influences would be useful.

In addition to the void in performance-related succession research in this setting, a much more important reason for analyzing universities is because of the data setting's various advantages.

A criticism of behavioral finance research in an investment setting is that it suffers from the fact that there are many investors who interact to determine prices. It is difficult to differentiate actions of market participants since some could under-react and others could simultaneously over-react and the market could move in one direction. Depending on the anchor (a term from the chapter on psychology) which is oftentimes determined by the purchase price, one can imagine that different investors could have different behavioral biases with respect to the current price of a stock. Some of these investors could be potential (they may not own the shares). For instance, in a simple world in which institutional investors can buy any stock and cannot short securities, owning and *not* owning a security constitute active decisions. The behavioral biases, from psychology, that cause some people to sell in response to negative news because they own the shares may also lead to a respite in buying from those investors who do not own the stock. The selling and lack of buying will lead to falling prices. If the market reverts, then these actions (selling) and lack of actions (not buying) reflect over-reactions on the part of investors. Who exactly over-reacts by selling is known, but who over-reacts by not buying cannot be clearly measured. Analyzing the impact of specified individuals, leaders, in a corporate (or university) setting isolates the effects of actions (and lack of actions) and the people who are making the decisions; therefore, it provides a better way to test over- and under-reaction.

Analyzing university presidents vs. corporate CEOs also has advantages. As noted in the chapters on finance and management, to a large extent the prior research on reversion and management succession have focused on the corporate setting and much of the measures of performance have focused on stock returns and financial measures such as return on assets. These measures of success focus on lender and owner stakeholders (as in the case of return on assets since assets = debt + equity) and market (stock prices) and financial (return on assets) data. Unfortunately, they provide little insight into operational performance and returns to other stakeholders such as consumers, management (employees), and the government. A CEO is ultimately responsible to owners; however, if he or she does not meet the demands of other stakeholders (such as employees, government, and consumers) and operate the business well then it will eventually stagnate. Later in this chapter and in chapter 7 it is shown that the university data set being utilized is unique because it includes financial, operational, and market data. Also, the variables reflect management (and other employees), government (who are indirectly shareholders), and customer stakeholders. Furthermore, the data measures current and past performance, versus other studies that may control for environmental factors by considering only one of these measures.

As will be shown and has been discussed, universities tend to be older, possibly larger, decentralized (but becoming more centralized), and more bureaucratic than the average organization. New university leaders also tend to originate from internal positions (inside the university or industry). All of these factors indicate that universities should be slow to change and that the impact of university leaders should be muted in comparison to the corporate setting. Consequently, this research's tests of reversion and over- and under-reaction for universities are more stringent than they would otherwise be for the corporate setting – the university data setting provides a conservative setting in which to test hypotheses 1 and 2 and the framework.

Furthermore, in the investment setting, it is not entirely clear whether shareholders (other than management who may also be shareholders) have a direct impact on business fundamentals. This relationship may be less clear now than in the past. The stock holding period for many (if not the average) institutional investors has shortened to less than one year, thus the influence of investors on corporate decisions may – or should – be becoming less pronounced. If this is not the case, the influence is at least becoming more confounded for those leaders who prefer to invest for the long-term.

Given these arguments, the university venue offers a better backdrop than the investment/corporate setting, and possibly one of the few settings that overcome the above-stated shortfalls of the investment/corporate setting, to analyze reversion (from finance), leader impact (from management), and psychological biases (from psychology) that relate to actions and originate from current and prior performance.

The ensuing discussion provides a brief background of university presidents, what they control, and the nature of universities. This discussion also introduces the variables for the research.

6.1. Presidential Background

Birnbaum (1988) showed that 300-400 presidents of 3,200 colleges and universities are replaced each year, while my dataset indicates that the average president tenure is at least 5.9 years (including interim presidents). Davis and Davis (1999) show that years in office has declined to 4.1 years in 1997, less than the time it takes an undergraduate to complete his or her degree, from 7.2 years in 1965, and that tenure differs by whether the institution is private (longer) or public (shorter).[30] As a reason for declining tenure, they cited the fact that presidents have to please a variety of constituents, hence, receiving a failing grade ("F") in any area averages "out to an F" (page 136). However, it is clear from the process of selecting a new president - about seven to nine months (Birnbaum, 1988) - that presidents remain important figures to universities despite their short tenure.

Wessel and Keim (1994) show that the majority (69.6%) of presidents of private doctoral granting universities (the focus group of this study) enter the higher education field right out of school. Another 17.3% arrive from other education positions (4.3% from a clergy/pastor, 8.7% from an elementary or secondary administrator, and 4.3% from other outside higher education positions) and only 13.0% find their way to the presidential position from outside of academia.

In addition, Wessel and Keim showed that 83.3% of the presidents arrive from academic career patterns (professorial roles), versus administrative roles, which means that presidents may have less business experience than university staff that they lead. These statistics are similar for deans of business schools (Fee, Hadlock, and Pierce, 2005) and are supported by the work of Stimson and Forslund (1970) on university president career patterns. More consideration for new presidents should possibly be given to people with non-academic backgrounds because concern for educational policy is not necessarily the only concern of academic organizations. This argument is discussed in more detail below.

Moore, Salimbene, Marlier, and Bragg (1983) claim that the normal career progression for university presidents is:

[30] For a comparison with corporations, please note that Farrell & Whidbee's (2003) corporate data set (derived from the *Execucomp* database for 1993-1997 and from *Forbes Annual Survey of Compensation* for 1985-1992) shows that CEO turnover took place in 9.0% of firms each year from 1986-1997. The likelihood of corporate CEO succession declined from 1986 to 1997.

President

^

Provost

^

Dean

^

Department Chair

^

Faculty Member

Only 3.2% of the sample actually followed the above career pattern, but 85.2% had at least one of the positions.

Since presidents generally rise to their positions from inside the academic (versus business) community and from academic (versus administrative) roles, they are "insiders" to some extent. Since insiders institute fewer changes than outsiders (see chapter 3), one could expect that new university presidents will institute fewer changes, all else equal, than new presidents in other settings.

To break the chain of inertia it may be beneficial if the new president originates from outside the organization. Data on this aspect is not available; however, in the business school setting 63% of new deans originate from outside the school (Fee, Hadlock, and Pierce, 2005).

6.2. Presidential Control

Universities are not characterized by an authority structure which is centralized and leaders are often "negotiators of compromise between interest groups" (Conrad, 1978: 109). Thus, university presidents may face larger obstacles to change than other corporations. "...how and by what methods administrators are influenced by power groups largely determines whether or not change will occur" (Conrad, 1978: 109). These arguments were made many years ago, and as shown below, the victors in the power struggle between administrators and faculty are changing.

Contrary to arguments that bureaucracy limits a university president's influence, a later study by Trow (1985) argues that a strong academic "senate" enhances the power of a president. A president can be symbolic and make political, intellectual, and administrative decisions. Trow discusses various resources that are under the president's control:

- by and large, the budget and its allocation are controlled by the president, and even though a large part of the budget is tenured faculty salaries, support services and other discretionary items are under his or her control;
- revenues for a university are derived from a multitude of sources and a president can borrow strength in one area to offset weakness in another.
- private contributions and the endowment's earnings are under his or her control;
- a president can restructure support staff who are not tenured (assuming they are not unionized) and many of the top officers (director of admissions (Sanoff, Morenoff, and Whitelaw, 1994), vice-presidents, provosts, deans, and through them department chairs); and
- a president can develop new departments that are under his or her control.

Birnbaum (1989) claims that universities do not appear to change as their presidents are replaced. If this is the case, why is there so much attention on leaders? He notes that humans (pg 132) "search for and must find rationality and causal explanations in order to impose meaning on otherwise inexplicable events," thus the cause of poor performance is often, incorrectly, blamed on the leader. As a reminder, Birnbaum suggests that differing environmental constraints (expectation phases 1-4) may mask the impact of new leaders; however, he does not control for this facet in his research.

In a related study of business schools, Fee, Hadlock, and Pierce (2005) found that dean turnover may be related to drops in business school rankings (*Business Week's* rankings) and the placement component of rankings (*US News & World Report's ("USN's")* placement component). They also showed that new deans have little impact on the future of rankings two years following the change,[31] but they did not control for the environmental setting.

[31] Two years is barely enough time for accomplishments to be realized, especially if the new dean arrives mid year. To overcome this (and other) issues, this study measures future performance three years from the turnover event.

Conrad admits that even if a president does not control all of the major changes within a university, he or she is an "agent for change," (Conrad, 1978: 106) since part of his or her job is to be a consensus builder/mediator and provide educational leadership.

University presidents view themselves as visionaries, as a trustee rapport builder and supporter, as a public relations specialist image builder, a fundraiser, a financial manager, and as a person who directs efforts of others, etc. (Cote, 1985) (table 6.a.). A 2005 survey of university presidents by the *Chronicle of Higher Education* (Association of Governing Boards Task Force, 2006) (table 6.b.) found that the top daily priorities for presidents include fundraising, budget and finance, educational leadership, and personnel decisions. About 50% of presidents meet with the Provost and Chief Financial Officer daily and 43% meet with the Director of Development and Advancement daily.

(Insert Table 6.a.)

(Insert Table 6.b.)

It is important to note that decisions with regard to personnel, budget allocation, and resources have far-reaching consequences on alumni loyalty, student quality, education quality, and resources - the categories for the eleven performance variables (see table 6.c. for the variables and tables 7.i. – 7.k. for these categories) analyzed in this study. These variables measure various aspects of a university that are under a president's control (described above). Also, several of these variables are sourced for *USN's* ranking of colleges, and as noted above, rankings impact leader turnover (at least for deans of business schools). Finally, these variables measure the *business* of universities – the suppliers (resources and student quality), the product (educational quality), and the customers (student quality and alumni loyalty).

(Insert Table 6.c.)

Running universities as a business has become more important as college education has become viewed as a right versus a privilege (Smith and Hughey, 2006). This change, a movement that has been growing since the 1970s, is a result of the period described by some as one of fiscal crisis. Slaughter (1985) spoke of this crisis in 1985 in his explanation of the shifting goals of regents on New York. "College and university presidents in the United States are becoming more responsible to outside constituencies and less sensitive to internal constituencies, academic administration is becoming more professional, and academic institutions are becoming more bureaucratic (hierarchal)" (Waugh, 2003: 84).

Waugh (2003) explains that university presidents are under pressure to meet performance standards such as number of students enrolled, reputation, endowment growth, cost per student, creating new programs and partaking in other activities to increase credit hours. Except for credit hours, each of these factors is measured in this study in variables including enrollment growth, reputation, alumni giving rate, and tuition per student (in place of cost per student).

The performance variables (in table 6.c.) are of several types and have varying levels of importance for various stakeholders. The variables are discussed below while data type and stakeholders are discussed further in the next chapter.

Presidents spend substantial time on fundraising activities. These activities are captured in the alumni giving rate variable. The alumni giving rate is measured by the percent of undergraduate alumni who have contributed to their universities in the last two years. It reflects the value alumni place on their education. If their education was solid then their ability to give back should be greater and their loyalty to the school should be greater if they were happy with their educational experience.

The shift of focus in institutions of higher learning is driven by what Cook (1997) calls the era of uncertainty. Declining support from government sources has raised the need for private fund raising. "Fundraising and financial affairs in general are among the most high-profile duties/endeavors of a president and among the skills/attributes most prized by trustees..." (Cook, 1997: 54) and the president is typically the most visible fundraiser (Cook and Lasher, 1996). Thus, it is appropriate to measure alumni giving as a performance criterion. Other resources such as tuition per student, revenues, revenues excluding tuition per student, and revenue growth are also measured.

Tuition and other revenue sources provide the funds for a university to carry out its mission. The greater these resources, per student, the more it can spend on maintaining and improving operations. Revenues excluding tuition per student consist of government, student services, alumni giving, and other operational revenues (including hospitals and research). Research revenues are important for pleasing traditional university stakeholders – the faculty.

New funding sources have shifted attention from pleasing faculty to pleasing other stakeholders, a situation that has created additional tension between faculty and presidents (Birnbaum, 1992). Birnbaum claims that new presidents initially have faculty support for initiatives (eliminating under-reaction during expectation phase 3 and resulting in over-reaction during expectation phase 1), but backing declines in later years. However, faculty collaboration does not appear to matter to presidents who, as Birnhaum explains, escalate their commitments (possibly in expectation phase 4) to current strategies.

Fortunately, it appears that institutions with better funding are capable of pleasing multiple constituencies (Trieschmann, Dennis, Northcraft, and Niemi, 2000). Trischmann et al suggest that private funders are most concerned with producing well-trained students for the workforce and with student quality statistics. Cook and Lasher (1996) concur that academic quality and reputation (discussed below) are critical to fundraising. Variables measuring revenues (described above), type of institution (public or private discussed below), existence of professional schools, and reputation are used to determine presidents' pay packages (Tang, Tang, and Tang, 2000). Even though independent rankings have been criticized as measures of performance (Newman, 2004), presidents remain acutely aware that rankings are tied to perceptions of reputation (Tang et al, 2000). As noted in table 6.c., many of the variables utilized in this study are derived from *USN's* annual rankings of universities. Variables utilized to measure student and education quality (including reputation) are discussed next.

If a university provides a good education, then student quality should be high – the best students (% in top 10% of high school class) should apply plus there will be many applications per admitted student (acceptance rate will be low).

Universities strive to provide a quality education. Quality of education is represented by a combination of variables.

1. The better the education the lower the scholarship expense per student. Merit-based, versus need-based, scholarships are probably used more frequently by lower ranked universities to attract the best students.
2. Tuition per student should be positively related to the value students and their parents, who may be paying the bill, place on their education.
3. Smaller class sizes are generally associated with quality of education (or at least it is desired by students and parents). The variable measured is percent of classes greater than 50 students.
4. Research is highly valued by most universities. It is the route to tenure for most faculty members. Thus, for a university to attract the best professors and maintain a standing that will attract the best students, its research must be solid. The variable, academic reputation, is reflective of the quality of research. *USN* obtains the academic reputation score based on a survey of university presidents, provosts, and deans of admissions of other universities from an outside research firm, Market Facts Inc. Surveyors ask each individual to rate peer (same category) school's academic programs on a scale from 1 (marginal) to 5 (distinguished). If one cannot answer the question fairly, he or she is instructed to mark "don't know."

Student, business (customer), and management (presidents, faculty, and staff) stakeholder factors were discussed above. The missing constituent is the government. Government represents the public and the public includes students; however, the reference goes beyond current students to how well the university performs for society as a whole.

Recently, some state governments have instituted performance standards to determine funding.

These states are not concerned with factors such as incoming student quality. Rather, measurements of enrollment, among other things, are more important (Burke, 1997; Serban and Burke, 1998). Serban and Burke (1998) explain that performance based funding increases accountability and improves institutional performance, but performance for whom? Burke (1997) reviewed the plans for nine states with performance based funding and found that there are three times as many factors measuring external concerns than internal concerns. Also, only 13% of the factors were based on inputs such as staffing, funding, and new student preparation (this study measures funding and student quality).

Furthermore, only 17% were concerned with outcome, such as test scores, job placement, and satisfaction surveys. These low percentages are in great contrast to *USN*, so we can see that different constituents have different views of success.

The remaining government performance categories include process and output. Output (20%) includes factors such as graduation rate (*USN* defines this as percent of freshmen who graduate in six years), retention rate, and enrollment, while process (43%) includes an assessment of student learning, use of technology, and workforce training and development.[32]

The main output factor, enrollment (enrollment growth), is measured, but this study does not directly measure other output or process factors. However, these variables are measured indirectly. If process and output were poor, then it is doubtful that measures of student quality and education quality, described above, would be high. For instance, placement and satisfaction (outcome factors) are tied to student quality and education. As evidence, Tracy and Waldfogel (1997), in their review of MBA programs, specifically created an adjusted performance ranking measure to remove the effect of input factors (GMAT, GPA, years of work experience) on output measures (salary statistics). They found that output factors are related to process factors (faculty salaries that measure quality of faculty, and teaching methods) as well as input factors. "Business programs whose students score higher on the GMAT and have more prior work experience have significantly higher starting salaries upon graduation and are, therefore, better inputs into the MBA training process" (Tracy and Waldfogel, 1997: 7).

6.3. University Nature and the Decision-Making Process

Conrad (1978) summarizes existing theories of academic change and proposes his own theory. At the time, there were four theories including planned change, change because of innovations in education, changes due to political pressures, and changes resulting from environmental influences. This study is most concerned with the last theory.

In his *Grounded Theory of Academic Change*, Conrad suggested five stages to academic change:

[32] The percentages do not add to 100% since some variables are combinations of these types.

1. Social structure – external and internal environmental influences threaten the status quo;
2. Conflict and interest group formation – there are several interest groups within universities – academic, government, student, administrative – and each has different goals and constraints which often clash;
3. Administrative intervention – university presidents often serve as the change agents, chief compromisers among interest groups, and as the impetus for reexamination of academic programs;
4. Policy-recommending – the stage in which recommendations are made;
5. Policy-making – stage in which decisions are made by the appropriate body.

Change starts with the environment (stage 1), and in subsequent stages presidents act as mediators, interveners, recommenders, and as decision-makers. This is consistent with surveys discussed earlier and we know, from the prior section, that the university environment is changing as financial pressures mount. This is shifting power among interest groups (specifically, to alumni).

In a more recent paper, Duderstadt[33] (2000) summarizes the university decision-making process (in an era of rapid change) in the title of his paper "Fire, Ready, Aim!" This title does not describe the traditional decision-making process. Rather, it describes what is needed in changing times. Duderstadt makes several relevant observations, detailed below, about the decision-making process.

First, universities are very complex organizations with potentially billion dollar budgets (the average for the research sample is almost $700 million) and thousands of students and thousands of employees. This results in a myriad of types of administrative decisions. Other decisions include crisis management (student activism, media attacks, etc.), strategic planning, and institutional transformation decisions (Duderstadt suggests that these are new decisions and represent a paradigm shift).

Second, universities have many constituents and have "long embraced the concept of shared governance" (page 2). Internal players include students, faculty, staff, and

[33] Duderstadt is a notable contributor to this area of research because he is President Emeritus at The University of Michigan.

governing boards, while external constituents include government, local communities, the public, the press, and politics. Diverse constituents with diverse goals often make the process of change contentious and slow. Universities are different from other organizations as they have a unique role in serving the public while simultaneously critiquing public ways. Governments play a role in funding professional programs (federal) and public universities are largely organizations created by states. There are also governing boards that are supposed to have a fiduciary and legal duty to protect the welfare of universities. Faculty largely determines decisions of academic matters at individual units (an MBA program). The administration is especially important in a changing environment, and as discussed previously, universities need to act more businesses-like, but Duderstadt says (page 12) "Pity the poor administrator who mistakenly refers to the university as a corporation, or to its students or the public at large as its customer, or to its faculty as staff." Faculty have yet to embrace the notion that administrators are important and that a university is a business. Last, there is the role of the president to consider. The president of an American university is more like a chief executive officer who has ultimate authority for making decisions. "American university presidents are expected to develop, articulate, and implement visions for their institution that sustain and enhance its quality" (page 12).

Last, Duderstadt suggests university challenges come in several forms. Since universities are complex and bureaucratic they resist change (inertia is great). This is not a good state of affairs since it conflicts with his view that the rate of environmental change is rapid.

The key takeaway from Duderstadt is that universities are complex, have many constituents, and face a changing environment. The first two observations limit the ability of universities to adapt and learn, while the last point indicates that there is a need for universities to be flexible.

Hannan and Freeman (1984) theorized that inertia may increase with age, size, and complexity. Karaevli (working paper) noted that past executive succession research has consistently identified the role of size on firm performance. Given their large size and complexity, universities should be slow to change (inertia is high).

Complexity increases the time for reorganization and death rates due to reorganization; however, it is argued that organizational death rates decrease with age (Hannan and

Freeman, 1984). This implies that universities are not likely to fail and that restructurings (from over-reaction in expectation phase 1) are likely to cause more harm than good.

Fiole and Lyles (1985) suggest that centralized organizations tend to support past behaviors and decentralized organizations are more flexible. As noted above, universities are becoming more centralized as presidents, who are the chief fundraisers, become more important; however, historically they have been decentralized where individual units and faculty have had substantial control over decisions. Adaptation may be quicker for private universities than public universities that have additional state government constituents.

From a population ecology perspective, Haveman (1993) argues that succession increases organizational death rates, but the relationship decreases as time passes from the succession event and possibly for older companies. Universities tend to be old, thus succession may not be as detrimental for universities as other organizations.

Strong governance may result in better decisions regarding firing a CEO. The stronger the governance the less the likelihood of misfiring a good manager because of misguided shareholder views (Fisman, Khurana, and Rhodes-Kropf, working paper). "CEOs normally tell directors what they want, and they usually get it." Given this, strong boards are important since "only in a crisis do directors depart from the CEO's expectations" (Alderfer, 2001: 40). Therefore, larger public universities, which may have more constituents (or at least many powerful constituents that need to be considered) and have to be more deliberate with decisions, should make better decisions regarding choice of presidents than smaller private universities and other organizations.

Given the evidence presented above, this study incorporates additional variables to measure university inertia in a composite called Bureaucracy. Bureaucracy is defined by size and whether a university is public or private. Inertia may increase with size, so larger universities are considered more bureaucratic. Also, it is widely accepted that public universities, which have additional layers of constituents, tend to be more bureaucratic than private universities (Duderstadt, 2000).

Chapter 7: Research Methodology

This chapter reviews data sources, observation data, composite variables, and the regression method for the research. Note: see chapter 6 for a discussion of the component variables of the composites.

7.1. Raw Data

The data is both cross-sectional and longitudinal.

National universities, as classified by the Carnegie Classification system, are studied. These universities range widely in terms of size, geography, resources, budget, reputation, and whether they are public or private institutions. In 2006, national universities included 248 American universities (162 public and 86 private) offering a wide range of undergraduate majors and master's and doctoral degrees. Many of the universities emphasize research.

The Carnegie Classification system was developed in 1970 by the Carnegie Commission on Higher Education. It has subsequently been updated in 1976, 1987, 1994, 2000, and 2005. The last three updates are relevant since with each update universities are removed or added. The data set includes 223 universities that existed across the entire period of the study.

Annual information was gathered from *U.S. News & World Report's* annual university ranking for these 223 universities. For 221 of these universities, annual data was gathered from the Integrated Postsecondary Education System ("IPEDS"), which is a database produced by National Center for Charitable Statistics ("NCCS"). Information was collected from 1992-2006, a period characterized by economic expansion and contraction. Since a large proportion of university budgets are government funded and tax revenue rises and falls with the economy, exploring university performance over expansionary and contractionary economic environments is beneficial. Government contributions could possibly be offset by enrollments, which may be countercyclical since people who become unemployed during economic troughs may go back to school.

U.S. News & World Report tabulates many indicators of academic quality. Each factor is assigned to a category of academic evaluation (admission quality, reputation, resources, etc.). Categorical scores are determined by a weighted-average scoring system of the category factors. *USN* computes final rankings by determining a weighted average score of categorical factors.

Unfortunately, *U.S. News & World Report* does not capture the same variables for all years and does not publish all data for all universities for each year. For instance, in 2005, *USN* tabulated 15 indicators: 1) overall rank, 2) whether the university is public or private, 3) peer assessment rank, 4) freshmen retention rank, 5) predicted graduation rank, 6) actual graduation rate, 7) value added (difference between actual graduation rate and predicted), 8) percent of classes under 20 students, 9) percent of classes over 50 students, 10) student to faculty ratio, 11) percent of faculty who are full-time, 12) SAT/ACT 25th-75th percentile, 13) freshmen in top 10% of high school class, 14) acceptance rate, and 15) average alumni giving rate. However, in 2006, rank (item #1 above) and student to faculty ratio (item # 10 above) were not collected for universities ranked 127-248 (the lower tier universities). Comparing 2005 to 1995, we see that in 1995 variables including predicted graduation rank (5), value added (difference between graduation rate and predicted) (7), percent of classes under 20 students (8), percent of classes over 50 students (9), and percent of faculty who are full-time (11) were not collected, but additional factors including yield (percent accepted who enroll), educational program costs per student, and alumni satisfaction were tabulated. For top tier firms (tiers 1 and 2 and sometimes just tier 1), more data is published; however, the number of universities per tier changes over time. As a result, the final data-set includes a limited number of useful factors for all years and for all universities.

Furthermore, the weights *USN* applies to the categories making up the final score change over time; therefore, one cannot compare the final rankings of universities across time.

To make up for limitations of *U.S. News & World Report* data and to gather additional information, data was also collected from the Integrated Postsecondary Education System ("IPEDS") database. All universities that receive federal funding must provide NCCS with general and specific information each year.

The NCCS administers three surveys throughout the year to collect information on enrollments, completions, finances, employees, tuition, and scholarships. For this research, *annual* data items were collected from 1992 through 2007 for 221 of the 223 national universities. For instance, in 2005, items collected included ten items for enrollments (categorized by type of degree (undergraduate vs. graduate), part-time vs. full-time, and gender), six variables for completions (categorized by type of degree (undergraduate, master's, doctorate), and gender), 20 revenue and 16 expense items, two variables for employees (name and title of chief administrator), four items for tuition (in-state vs. out-of state, undergraduate vs. graduate), and two items for scholarships (amount and source). In total, 60 variables were gathered for 2005.

Similar to *U.S. News & World Report,* NCCS does not always collect the same data items from year to year; thus, making longitudinal studies more difficult. Also, private and public universities have different accounting rules so financial data across universities is not comparable within years. Furthermore, accounting methods changed in 1997 and again in 2002-3. There are solutions to adjust the revenue numbers, but adjustments to expenses are problematic. Some companies depreciate expenses and others do not. Private universities allocate depreciation, interest, and operations and maintenance expenses across all expense items while public universities do not. For some years, reporting depreciation and interest was required, but for other years this was not necessary. Furthermore, IPEDS lacks balance sheet information for most of the years. Given these issues, the final set of financial variables is related to revenues only.

A downside of using common factors to measure performance is that not all measures may be appropriate for all universities. Some universities have argued that factors making up *US News & World Report*'s rankings are flawed measures for evaluating academic performance. Universities do not necessarily have the same goals, constituents, etc.

The initial data matrix derived from *U.S. News & World Report,* IPEDS, and custom data items (growth rates and ratios such as tuition per student) includes over 200,000 cells (the matrix is over 1000 variables (columns) by 221 firms (rows)). The rows consist of the 221 universities. The columns consist of the variable-years. For instance, in 2005, there were 60 IPEDS variables and 15 *U.S. News & World Report* variables or a total of 75 raw variables (raw variables do not include additional custom data items created from the raw data). These 75 variables multiplied by 15 years (1992-2006) yield over 1,000 columns of data.

This matrix of variable-years (columns) by universities (rows) was rearranged to variables (columns) and university-years (rows) in order to minimize systematic effects (different economic environments) on the results of the study. In the end, the sample included 932 records (university-years or rows of data) by 27 variables (columns) or 25,164 observations. The 27 variables include current values, past changes, and future changes of the 13 raw data items listed in table 6.c. Eight variables measure future performance, seventeen variables measure current and past performance, two variables measure bureaucracy (one of these also measures current performance), and one variable measures turnover.

The initial data base was reduced to the sample data set through the following process:

1. Sufficient observations were missing to justify eliminating data for 1992 and 2006.
2. Data was available for 1993-2005, but to study the impact of turnover on three year *future* performance while controlling for performance over the *last* three years, the period of study was reduced further to 1996-2002.
3. The data set was reduced because of non-comparability of information across years. For instance, eliminating financial items to measure expenses reduced the data set by 53,040 observations (16 items by 221 universities by 15 years).
4. Additional variables (columns) were removed because of substantial missing observations or because the items were similar to other variables with fewer missing items (student to faculty ratio was removed but percent of class > 50 students was kept) as long as the removal did not lead to eliminating a stakeholder or type of data (see table 6.c.).
5. Records (rows) were removed for university-years for which the complete set of variables was not available. This significantly reduced the size of the data set. The SEM analysis (see Appendix 3) requires complete data for all university-years.

Tables 7.a. to 7.c. provide a summary of the raw data. Table 7.a. shows summary statistics for the 27 variables for the universe (some observations for the universe are also missing).

(Insert Table 7.a.)

There were 1561 university-years in the universe, which is made up of 223 universities times 7 years (1996-2002). Missing data ranged from 0% to 18% for the university-years. No data was missing for turnover, public versus private, reputation, and past three year growth rate in enrollment; however, substantial data was missing for percent of students in the top 10% of their high school class (an indicator of the quality of incoming students). Because of missing data, not all of the variables utilized in the final analysis have current, past, and future values.

The mean and median values vary, sometimes substantially. The average national university is large (average revenue of nearly $600 million ("REV")); however, the median university generates about 39% less in revenue. Public universities were coded as "0" and private universities as "1" ("PUvsPR").[34] The average university-year was 0.35 and the median was 0.00, which indicates that the data includes more public universities than private universities. There were 223 universities, so the average and median reputation rank ("REP," lower is better) should be 111.5, but the average and median were 107.2 and 106.0. This means that the average and median university were slightly better than the *complete* universe.

Interestingly, universities tend to generate a lot more revenue from non-tuition sources than from tuition. Tuition per student (after subtracting scholarships) ("T_E") is only $7,029, while revenue excluding tuition per student ("RNT_E") is $38,108.

"EChg" and "RChg" represent the growth rate of enrollment and revenues over the past three years. First, please note that these numbers are positive. This implies that the universities, on average, are getting larger. Second, revenues are rising more quickly than enrollment (1.9%) and are growing at a high rate (21%, or a geometric average of 6.5% per year).

Tuition per student ("T_EChP") rose slightly faster than overall revenues (23% vs. 21%); however, scholarship per student ("S_EChP") rose even faster (32%), possibly to meet the

[34] PUVSPRAdj is coded as 1 for public and 0 for private universities.

needs of students who are unable to pay higher tuition rates. These high rates of growth continued into the future as well ("T_EChF" and "S_EChF").

Quality of students, as evaluated by the percent of students in the top 10% of their high school class ("T10ChpP"), was rising at the same time as the percent of students accepted ("ACRTChP") declined. This inverse relationship is to be expected. All else equal, in order to enroll higher quality students a university will have to admit a lower percent of applicants.

A measure of student satisfaction, or loyalty, is the alumni giving rate ("AGRT"). 17.9% of graduates gave back to their universities; however, this rate fell slightly (0.7%) in future years ("AGRTChF").

Finally, the percent of classes greater than 50 students ("SR") was 11.2% (11.0% was the median) and rose slightly in future years (0.2%). Smaller class sizes can be expected to be sought by students, so despite the higher revenues per student it appears that the extra revenues were not being spent to reduce class size.

Table 7.b. shows the same statistics as table 7.a., but this time the focus is on the sample. Table 7.c. shows the difference between the sample and the universe.

(Insert Table 7.b.)

(Insert Table 7.c.)

In general, the sample appears to consist of slightly better performing universities than the overall data, which introduces a slight sample selection bias. This is not surprising since one would expect that stronger and larger (the sample consists of larger universities) universities would be more willing to share data that shows outperformance, as well as have more resources to generate the data. There are statistically significant differences in means values (using the t-test of means assuming unequal variances) (at the p-value 0.10 or better) for all of the observed variables, except RNT_E, for current performance; however, the differences in means for the other variables are not statistically significant.

Eleven of the 17 variables which measure current and past changes in performance are stronger for the sample than for the original data set.

The sample has better values than the universe for the following variables: 1) reputation (lower rank is better), 2) past change in reputation (lower rank is better), 3) percent of students in the top 10% of their high school classes (higher percentage is better), 4) past change in percent of students in the top 10% of their high school classes (higher is better), 5) acceptance rate (lower is better), 6) past change in acceptance rate (lower is better), 7) alumni giving rate (higher is better), 8) revenue (higher offers more flexibility so it is better), 9) tuition per student (higher is better), 10) revenue excluding tuition per student (higher is better), and 11) past change in scholarship per student (lower is better).

The sample has worse values than the universe for the following variables: 1) past three year growth rate in enrollment (higher is better), 2) percent of classes greater than 50 students (lower is better), 3) past three year growth rate in revenues (higher is better), 4) past change in tuition per student (higher is better), 5) past change in revenue excluding tuition per student (higher is better), and 6) scholarship per student (lower is better).

Many of the transformed sample variables (see later section in this chapter for an explanation of transformations) are not normally-distributed, based on an analysis of the skew and kurtosis of the distributions. Many variables have a skew of greater than |0.5| and most show excess kurtosis (kurtosis – 3.0 greater than |1.0|) (see table 7.f. and Appendix 1).

As noted previously, the sample includes 932 university-years while the universe consists of 1,561 university-years. Thus, data for 40% of the university-years is missing. On the other hand, only 14% of the universities are missing so the sample reasonably reflects the original set of universities. Analyzing the data further shows that there is more missing data for earlier years (1996 and 1997) than later years (2001 and 2002).

The sample of 932 university-year records was divided into the four phases of the expectations clock (see tables 7.d. and 7.e.). The records were first divided as high and low performers based on current performance and then these two groups were separated based on whether change in past performance was improving or deteriorating.[35]

Table 7.d. shows the division of the sample by expectation phase and expectation phase by year. There is slightly more data for top-performing universities (expectation phases 3 and 4) than for bottom-performing universities. Phase 1, 2, 3, and 4 include 230, 189, 303, and 210 university-year records, respectively. In the optimal situation, each phase would include 25% of the data set. The best phase (phase 3, where performance is good and improving) makes up 33% of the sample while the worst performing universities (phase 1, where performance is poor and declining) contribute to 25% of the sample.

(Insert Table 7.d.)

Table 7.e. provides a summary of turnover events for the original data set and sample.

(Insert Table 7.e.)

Over the entire period of the study (1996-2002), there were 249 turnover events. This study considers what a university president can do three years following turnover, so it measures performance for leaders who remain in place for three years. There were 156 events that meet these criteria.

Of these 156 events, data for some of the variables is missing for 49 events or 31% of the original data set. This reduced the number of turnover events under study to 107 events for many of the tests. The 107 events were split somewhat evenly among top-performing (expectation phases 3 and 4) and bottom-performing (expectation phases 1 and 2) universities. Fortunately, except for one phase in 1997 and another phase in 2000, each expectation phase for each year has at least one turnover event. Similar to the performance data (discussed previously), there is less missing data for turnover events during recent years (2001 and 2002) than in early years (1996 and 1997).

[35] Factors used to determine current and past performance for these four divisions are the same factors used to measure the performance composites.

All 158 turnover events were considered for tests of the impact of expectation phases on turnover and for various other tests. These events include the 107 discussed above, plus 41 other events where the new leader stayed in place less than three years.

7.2. Data Types and Stakeholders

Previously, the relevance of the data was shown by noting that it includes variables that measure alumni loyalty, student quality, education quality, and resources. In addition, this data is of several types and is important to multiple stakeholders. These characteristics make this data set superior to others.

Data can take the form of market, accounting (Karaevli, working paper) and operational variables. All three types are utilized in this study, which is more desirable than using one measure alone (Venkatraman and Ramanujam, 1986).

Venkatraman and Ramanujam (1986) illustrate, in figure 7.a., various methods for analyzing performance. This research uses data similar to panel B. The data includes financial and operational factors (some of which are market factors) and the source of the data is from public (secondary) sources.

(Insert Figure 7.a.)

Accounting-based variables are useful because they measure financial success and financial success is derived from business "operational" success.

Unfortunately, accounting based factors for balance sheet items are lacking so statistics such as return on assets ("ROA") cannot be calculated, which is common in other succession studies (Huson, Parrino, and Starks, 2001; Tushman and Rosenkopf, 1996; Karaevli, working paper; Usidiken and Ozmucur, working paper; Virany Tushman and Romanelli, 1992). Although, ROA is overemphasized since CEOs are focused on shareholders (and earnings and return on equity). Also, profitability is probably *not* the main goal of universities, many of which are not-for-profit. Thus, lack of ROA observations is not problematic.

A negative of accounting variables is that they can be manipulated. Also, they are impacted by miscellaneous non-systematic and systematic factors out of a CEO's control. This study is most interested in evaluating what a CEO controls, so an attempt is made to reduce systematic biases through various data transformations (discussed later in this chapter) including comparing institutions on a relative basis.

For universities, relevant financial and operational measures include financial resources (on a per student basis), quality of education, quality of students, and alumni loyalty. These measures are discussed in more detail in the next section.

Comparing firms on a relative basis reduces systematic biases and using market-based factors reduces other problems associated with accounting-based measures.

Market prices *should* reflect the value participants place on *all* future fundamentals (operational and financial) and should adjust for accounting biases; although, market-based factors have their own problems due to momentum and reversion tendencies (discussed in chapter 2).

Market-based measures include stock prices, which are of paramount importance to stakeholders such as owners and management (who report to owners). However, market prices do not measure performance most relevant to government entities and customers.

As noted in chapter 6, universities are pressured by many constituents including management, customers, government, and "owners." Management includes administrators, staff, and faculty. Government includes state, local, and federal contributors. Customers include students and alumni. Ownership variables are not measured directly. Instead, they are indirectly measured through government, management, and customers.

Since public universities are institutions of the state, government is an indirect owner. Since the state represents the public, which includes management and customers, therefore management and customer factors are also indirect ownership variables. Private universities are less influenced by state governments; however, federal assistance is still provided (medical, engineering, and other professional research areas receive government funding) so government factors remain relevant to private institutions.

Because universities have multiple *powerful* stakeholders, it is important to measure performance that adequately considers all of the constituents. In table 6.c., university variables are classified by type and stakeholder and below their classifications are reviewed in more detail. Most variables are classified by more than one type and stakeholder.

7.2.1. Data Types

Data consist of operational, accounting (financial), and market-based variables. Half of the variables are classified into more than one category.

Operational variables consist of the alumni giving rate, acceptance rate, percent of students in the top ten percent of their high school class, percent of classes with greater than 50 students, revenue excluding tuition per student, past three year change in enrollment growth rate group ranking, public versus private, and turnover.

- The alumni giving rate reflects the quality of the university's product. If alumni are pleased with their experience and successful then they are probably more willing and able to give back. They are loyal in hiring students from, and recommending students to the university.
- Entry standards are based on operational decisions that answer questions such as whom and how many people should we admit? Variables reflecting these decisions include the acceptance rate and percent of students in the top ten percent of their high school class.
- The percent of classes with greater than 50 students reflects the *perception* of the quality of the institution's product. It is assumed that the more access students have to faculty the more positively they perceive their learning experience.
- Revenue outside of tuition per student reflects strength in ancillary operations (research and other operations) and government relations (government funding).
- Enrollment growth reflects operational success. The more successful a university the more students will want to enroll. In the corporate world, growth of operations (selling more products and services) reflects success; albeit, a university could boost enrollment by lowering tuition and entry standards.

- Public and private universities differ because public universities have an additional state government constituent. Public universities are generally considered less flexible than private universities and this is a weakness.
- Turnover is an operational variable that is hypothesized to have different effects on over- and under-reactions in different settings.

Financial, or accounting, variables consist of the alumni giving rate, scholarship per student, tuition per student, revenue excluding tuition per student, past three year change in revenue growth rate group ranking, public versus private, and revenue. All of these variables measure the resources available to a university.

There is not a readily available market-based price factor for universities; although, there are other indicators of market value. These include percent of students in the top 10% of their high school, acceptance rate, scholarship per student, tuition per student, and academic reputation as evaluated by other university administrators.

- Percent of students in the top 10% of their high school class reflects outsiders' views of the university's offerings. If the university is more reputable, demand will probably rise. The best high school students will want to enroll. Also, the better the offering the more people will apply, and assuming that enrollments do not increase proportionately, this will drive down the acceptance rate.
- Tuition per student reflects what students (and parents) are willing to pay for the university's product. The better the university the more it can charge in tuition. Of course, a university may try to attract more and better students by paying them scholarships to enroll. The greater the scholarship per student the lower the market's assessment of a university.
- A direct measure of the market's view of a university is its standing as evaluated (in a survey) by leaders of other universities. This is reflected in the academic reputation variable.

7.2.2. Stakeholders

"The failure of measures of organizational performance to reflect an organization's multiple constituencies may lead the organization to treat the satisfaction of one of its constituencies as the primary goal and the satisfaction of others as pathology" (Trieschmann, Dennis, Northcraft, and Niemi, 2000: 1130). Therefore, the data set for this research considers four stakeholders – customers, management, government, and indirectly, owners.

Customers pay tuition (measured by scholarship per student and tuition per student) and support the university with their resources (measured by alumni giving rate). If customers are happy, their demand will be high - past three year change in enrollment growth rate group ranking, percent of students in the top ten percent of their high school class, and the alumni giving rate will be high, while the acceptance rate will be low. Customers reflect ownership through their indirect influence on state governments that have responsibility, under the Constitution, to support and govern higher education (Duderstadt, 2000). Customers are also impacted by whether a university is public or private because, among other factors that differ, private universities generally charge more in tuition. Finally, size of classes has a direct impact on customers (who attend the classes).

The better the university performance, operationally and financially, the more likely management (administrators, staff, and faculty) is to be well-off. Lower scholarship per student and higher alumni giving, tuition per student, revenue excluding tuition per student, past three year change in revenue growth rate group ranking, and revenues, will result in more resources for management. Management is also an owner. Owners receive payment for their ownership, and depending on the corporate structure, ownership lasts indefinitely (corporation) or for the life of the owner (sole proprietorship). Tenured faculty who are long-term, well paid constituents, are similar to owners. It is common knowledge that top private universities receive substantial funds from their alumni and tend to pay faculty more than public universities. Universities heavily engaged in scientific research with large research budgets (higher revenue excluding tuition per student) are more capable of attracting top research faculty. Academic reputation reflects, in part, faculty's research success. Smaller class sizes are easier for faculty to manage unless, of course, faculty end up teaching more classes per member. Finally, presidential turnover clearly impacts management.

Government provides resources (state, local, and federal funding) to universities. The better the university performs the less the government will need to contribute to finances.

Government is also an indirect owner of public universities, which in part, exist to serve the public. Revenue excluding tuition per student, past three year change in revenue growth rate group ranking, and revenue reflect government contributions. Growth rate in enrollments reflects the public's direct benefit from the university (since it is the public that is enrolled). Public universities have an additional state government constituency versus private institutions which are not organizations of the state.

7.3. Data Transformations

The data was transformed in order to reduce systematic biases, to deal with outliers and missing data, to allow for the fact that the data consists of multiple variable formats that are combined into composites, to allow for declining firms to be deemed successful by paring back on the rate of decline, and to orient the data so that higher values represent strength in operations.

In order to reduce biases caused by systematic shocks to the university system, all universities in the universe were evaluated on a relative scale by converting the raw data into percentiles.

In order to reduce biases caused by outliers and issues associated with different amounts of missing data for various variables, percentile *group* rankings were computed for each university record in the universe for each variable. A university's percentile was placed into one of 50 groups, with group one representing the worst condition and group fifty representing the best condition. Similar to Piotroski (2000) [36], each variable was placed into groups of "good" or "bad" based on their relative ranking within each year; although, all years were combined for the final analyses. If these groups were computed based on the combined data, then this may introduce systematic biases (yearly data can be impacted by different systematic environmental conditions that could influence the percentile group rankings). Of course, a downside to this approach is that outliers may not be appropriately measured. Overall, however, the benefits of this approach outweigh this drawback.

[36] Piotroski classified each firm's nine financial signals as good or bad depending on its implication for future prices and profitability and then summed them into an aggregate composite measure. While this study does not categorize factors as good or bad, it does categorize them into relative levels (50 bins) of good or bad. Piotroski's composite factor has been utilized in other studies including a 2006 paper by Fama and French that appeared in the *Journal of Financial Economics.*

The composites are made up of dichotomous, interval, and ratio variables, which creates a problem. To resolve this issue, each factor was converted to a percentile group ranking before equal weighting them to compute the composite scores. Piotroski (2000) utilized a similar process whereby he converted interval variables to dichotomous figures and then combined them into composite scores.

Equal weights[37] for the observed variables for the composites were chosen for two reasons. When considering the number of observed variables and what each measured (see prior discussion of data type and shareholder type), it appeared that an equal weighting scheme was reasonable in order to make sure that each data and shareholder type was adequately represented. Also, as seen from the prior section and table 6.c., many variables represent multiple stakeholders. From chapter 6, we know that all of these stakeholders are quite powerful so it did not make sense to overweight one or more constituents since it is not clear which one(s) is(are) most influential and important.

The above-described percentile group ranking scheme allows success to be attributed to universities that are declining, but still improving on a relative basis. A firm, in a declining industry, can still achieve relative success within its industry even if the overall industry is deteriorating. Not allowing for this circumstance is a problem with prior research.

Table 7.f. shows the summary statistics for the transformed percentile group sample data.

(Insert Table 7.f.)

Some variables were transformed in one more step in order that higher metrics reflect strength in operations. A percentile group ranking of 50 represents the best outcome and 1 represents the worst situation. For instance, a low acceptance rate reflects strength, thus this variable was transformed so that a low value reflected a high percentile group ranking.

For Current composite variables (REPa, T10, etc.) a percentile group score of 25 reflects the average firm, and for variables that make up composites for Past (REPaChP, T10ChP, etc.) and Future (REPaChF, T10ChF, etc.) a score of 0 reflects the average firm. Except

[37] For observed variables with different scales that are part of the same composite (REV and PUVSPRAdj for Bureaucracy), additional transformations were made so that each observed variable has equal weight.

for past change in acceptance rate ("ACRaChP"), past change in revenue excluding tuition per student ("RNT_EChP"), past and future changes in tuition per student ("T_EChP" and "T_EChF"), percent of classes greater than 50 students ("SRa"), as well as scholarship expense per student ("S_Ea"), all variables are biased slightly toward better performing universities.

7.4. Performance Period

Change in performance three years before and after each "current" period was measured. There are seven years of "current" periods – 1996 through 2002.

Given that the data is annual, we do not know if the succession event occurs at the beginning, middle, or end of the year, so it does not make sense to measure *future* changes in performance over a short time. Furthermore, in a university setting, most activities are in motion well before the school year starts – changes in courses and curriculums are set before the start of the year. These considerations, combined with the fact that it takes time for a new president to impact an organization (he or she must first assess the situation), makes it unreasonable to evaluate future performance over a period shorter than three years.

Conversely, over a period longer than three years, it was determined that too many events unrelated to succession could influence the results.

Three years is also consistent with prior studies that measured reversion tendencies (DeBondt and Thaler, 1985) and CEO research (Karaevli (working paper) and Shen and Cannella (2002)). Three years is a sufficient amount of time for new presidents' initiatives to take place, but not so long that "noise" plays a significant role in outcomes.

Past changes in performance were also measured over three years. The grace period for underperformance is likely at least one year since performance could be affected by random events or bad luck. Further, one year of poor performance is probably not enough time to build a strong coalition to oust or cause a current president to retire or move on. Finally, it takes time to replace a leader – the selection process lasts seven to nine months (Birnbaum, 1988).

7.5. Composite Variables

Please refer to chapter 6 for a review of why various variables were chosen for the composites.

Two performance composites measure the phase of the expectation clock. One composite measures the state of current performance (high or low) and another evaluates past change in performance (improving or deteriorating) over three years prior to each "current" period. Current, Past, and Bureaucracy are independent composites. Succession serves as an independent or dependent observed variable, depending on the test. Future is a dependent composite measured by future changes in performance three years from each "current" period.

Composites for current, past, and future performance include many of the same variables (listed in table 6.c.), but not all of them are the same. Differences are due to missing observations and the need to include all relevant variables in the composites.

As described previously, observed variables include financial resources (revenue, etc.), quality of education (academic reputation and size of class), quality of students (acceptance rate and students in top 10% of class), loyalty of alumni (alumni giving rate), and bureaucracy (size and affiliation). Thus, there is a whole range of variables from operating to financial to market-based that are utilized to evaluate performance for a multitude of stakeholders.

Before discussing the components of the composites, a few additional observations are needed. First, the observation variables for Current are somewhat correlated (see table 7.g.) and the composite for Current is correlated with composites for Past and Bureaucracy (see table 8.i.).[38] Second, as shown in table 7.h., the composites for Current, Future, Bureaucracy, and TOTNAdjTOT all show excess kurtosis. Figures 7.b.-7.e. illustrate the distributions of the data for Future, Current, Past, and Bureaucracy. Notice the peakedness in the data for Current and Future.

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[38] For a further discussion of correlation and how structural equation models account for correlation, see Appendix 3.

(Insert Table 7.g.)

(Insert Table 7.h.)

(Insert Figure 7.b.)

(Insert Figure 7.c.)

(Insert Figure 7.d.)

(Insert Figure 7.e.)

7.5.1. Change in Future Performance

To evaluate future change in performance, the change in the composite of eight performance variables is considered. The variables are listed in table 7.i.

(Insert Table 7.i.)

7.5.2. Measuring Time on the Expectations Clock

Current and past changes in performance determine the position on the expectations clock (see figures 1.a. and 5.a.). As described previously, components of the composites for current performance and past changes in performance are similar to those of the composite for future performance.

Tables 7.j. and 7.k. provide the specifics of the 17 components of the composites Current and Past.

(Insert Table 7.j.)

(Insert Table 7.k.)

7.5.3. Bureaucracy

As noted in chapter 6, complexity and size may influence inertia. Given this, two additional environmental factors make up the composite Bureaucracy. These include REV and PUVSPRAdj. Higher revenue is reflective of the size of a university. Public universities have more constituents than private universities, and are therefore, considered more bureaucratic than private universities (Duderstadt, 2000).

7.5.4. Succession Event

The event for which all other factors are tracked is the year of the presidential succession event. Please note: succession is utilized as a proxy for disruption and change, but I am not arguing that it is the only disruptive or force of change.

Data on the name and title of the president (or chancellor, etc.) for the various universities was gathered from IPEDS.

During the entire time period (1992-2006), there were 564 succession events (including interim successors), or 37.6 events per year for 223 universities. This equates to one event per university every 5.9 years. Given that some presidents may have been in place for some time before the first year of the study, we know that the average tenure is at least 5.9 years.

In order to evaluate performance three years before (for the independent composite Past) and after (for the dependent composite Future) the event, years for the study ranged from 1996 and 2002.[39] During this period, there were 249 succession events for the universe. In order to evaluate a leader's accomplishments for three years after taking over, new leaders who remained in place less than three years were excluded for certain tests. This reduced the number of succession events to 156. For the sample, there were 107 turnover events. The impact of turnover was also considered for situations in which a new leader stayed in place for less than three years. There were 158 of these events in the sample.

[39] 1992 and 2006 were removed because of high levels of missing data. This left data for 1993 through 2005 and the first and last three years were utilized to evaluate Past and Future.

Extant executive succession studies have been improved by controlling for additional contextual factors (see chapter 3) related to the successor. While capturing these variables is beyond the scope of this paper, it may not be beyond the realm of future work. It is also not necessary for this study, since my main interest lies in exploring disruption and learning caused by succession of any type while controlling for the environment. For instance, even in cases with a minimal "degree of succession," whereby a CEO grooms an internal successor to replace him or her when he or she retires, there will still be some level of disruption. It is likely that the new CEO will want to change some strategies, people, and/or procedures to create his or her legacy. Most people who rise to leadership positions are not followers...they are leaders...so they want to put their own stamp of approval on their organizations. Also, since the sample is already divided into four expectation phases, dividing it further based on various contexts of succession would result in very small partitions with which to conduct the tests. Nevertheless, for future work a new composite, "degree of succession," could include additional variables ("antecedents") such as origin of the successor, faculty and executive team character, initiating force (firing, death, retirement, changing jobs), prior leader tenure, leader character, and leader compensation. See Appendix 2 and Karaevli (working paper) for a complete description of these additional variables.

7.6. Regression Method

Because of characteristics of the data, this study makes use of generalized linear models ("GLZM"), as opposed to general linear models[40] ("GLM") in estimating coefficients for the various regressions.[41,42] For hypothesis 3, the dependent variable is a binary variable, thus GLM is not appropriate without additional data transformations. GLZM was chosen in order to utilize one overall method for all of the tests. For tests of hypotheses 1 and 2 and the framework, linear was selected as the scale response and the distribution and link

[40] GLM (not shown) was also utilized to conducted tests of hypotheses 1 and 2 and the framework. Results of these tests were similar to those presented in chapter 8. Instead of conducting tests using the actual scores for the performance composites, dummy variables were created for each expectation phase. Future was regressed on the dummy variables to test reversion, and the interactions of the dummy variables and turnover on Future were measured to test over- and under-reaction.
[41] SPSS 16.0 was utilized as the statistical package with which to conduct these tests.
[42] Structural equation models using the robust maximum likelihood method of estimation were also utilized to test hypothesis 1. Appendix 3 details this analysis. This method is appropriate when data is not normal and if the data is continuous. The rationale for the model is discussed in more detail in Appendix 3, which serves to provide extra evidence for the conclusions of tests of hypothesis 1. Lisrel 8.8 was utilized as the statistical package with which to conduct these tests.

function chosen included normal and identity, respectively. A binary logistic GLZM was selected with which to test hypothesis 3.

General linear models as well as various other models require data with independent observations, linear relationships between the dependent variable and independent variables, and data that has normally distributed errors with constant variance. If the independent variables consist of groups (turnover versus no turnover) then the dependent variable must be normally distributed within each group and the equality of variance assumption implies that the variance for each group is the same. These are stringent assumptions and most data sets would violate at least one of these assumptions. Depending on the violation, different regression models are more or less appropriate (Norušis, 2008). The discussion that follows provides the reader with evidence with which to evaluate how the data stacks up to these assumptions.

The values of the composites for Future are not necessarily normally distributed. Figures 7.f., 8.b., and 8.e. show the histograms and table 7.l. shows the skewness and kurtosis statistics for Future for each of the turnover, phase, and phase/turnover divisions.[43,44] Future shows excess kurtosis for both turnover divisions. For the phase divisions, phases 1 and 3 show skew and all of the phases show excess kurtosis. For the phase/turnover divisions, "1," "4," "5," and "6" show skew and excess kurtosis is apparent in all of the phases except for "6."

(Insert Figure 7.f.)

(Insert Table 7.l.[45])

As shown in the Levine test in table 7.m., variances for Future (and Current, Bureaucracy, Past, and for the two measures of turnover) generally differ between various expectation phases but not for the phase/turnover groups (for Future) and turnover groups (except for TOTNAdjTOT) (significance levels are low).

(Insert Table 7.m.)

[43] The turnover and phase/turnover divisions are for the TOTNAdj variable.
[44] The most relevant divisions for evaluation of the GLM assumptions are those for turnover.
[45] The data for tables 7.l. and 7.m. include the entire sample.

The relationships between the dependent variable, Future, and independent variables are generally unclear (see figure 7.g.). The only relationship that appears somewhat linear is the one for the entire data set between Future and Past; however, when looking at the individual expectation phases the relationships between these two variables are more ambiguous. Given the ambiguous relationships, it is expected that models of other relationships would not produce better results than linear (which was chosen). Not shown are the relationships between Future (as a dependent variable) and the two turnover figures (as independent variables) and Turnover[46] (as a dependent variable) and Bureaucracy, Current, and Past (as independent variables). Since turnover is a binary figure, the relationships between the two turnover variables and the other composites are not linear.

(Insert Figure 7.g.)

Figure 7.h. shows the plots between the regression standardized predicted values and regression standardized residuals for the entire data set and for each phase for tests of hypothesis 1 and the framework. Tests for hypothesis 2 and 3 include Turnover as the sole independent variable and as a dependent variable, respectively, thus the graphs (not shown) are not meaningful. There is limited evidence of heteroscedasticity.

(Insert Figure 7.h.)

While generalized linear regression models provide a useful single methodology for tests of all of the hypotheses and framework, it does have at least one limitation. Most importantly, the simple, easy to understand multiple R^2 statistic for goodness of fit is not available with this method. Instead, other goodness of fit statistics, as discussed in chapter 8, are provided.

[46] The turnover figure referenced is TOTNAdjTOT.

Chapter 8: Results and Discussion

Most of the coefficient estimates for two of the three hypotheses and framework are statistically significant at the 0.10 or 0.05 levels and in the direction predicted. There is strong support for reversion (hypothesis 1) and some support for the hypothesized interaction effect of the expectation phase and succession on over- and under-reaction (hypothesis 2), but there is no support for an inverse relationship between expectations on turnover (hypothesis 3). The relationship between bureaucracy and future performance is variable depending on the expectation phase.

While the coefficients are generally in the direction predicted and many are highly statistically significant, one must remain cautious when making inferences from the results. Correlation does not indicate causation. The results indicate that there is an association between the dependent and independent variables, but a claim cannot be made that the independent variables cause changes in the dependent variables.

Evaluating the estimates of the coefficients was of greatest concern since this study does not intend to create models that completely explain future changes in performance, turnover, etc. Thus, the goodness of fit statistics are secondary. Even so, goodness of fit statistics and other measures for model comparison (see table 8.d.) are computed since models with more statistically significant coefficients may not necessarily indicate better models. For instance, a model with less statistically significant coefficients could still be better if it provides better fit for the relationships modeled.

When reviewing the results, please recall that the composite values for Bureaucracy, Current, Future, and Past were equally-weighted (each composite was computed by adding the values of the observation variables and dividing by the number of observation variables). As a result, the scales of the composite variables are not equal so one has to be careful with interpreting the magnitude of the coefficients (see table 7.h.). For instance, the possible range for Turnover (TOTNAdj) is 0 to 1 with an average of 0.11, while the possible range for Current is 0 to 50 with an average of about 26.75 and the possible ranges for Past and Future are -50 to 50 with averages of about 0 for each. The composite variable Bureaucracy has a possible range of 0 to 1 and an average of 0.59. *Therefore,* *when reviewing the coefficient estimates for relationships between composites, one should evaluate the relationships by taking into consideration their different scales.*

In each of the tables below, the relationship between the composite independent and dependent variables (see column labeled "Coefficient"), the standard error of the coefficients, the significance level, and goodness of fit statistics are shown. This is done for the combined data ("Phase" labeled "All"), and on a select basis, for universities that fit the four expectation phases. Of greatest concern are the tests of the phase data for hypothesis 2 since I contend that succession's interaction with expectations influences future performance. For hypothesis 3, tests of the combined data are the only concern, since it is argued that succession is more likely when current and past performance is low. For the other tests, both the combined data and phase data are relevant. Table 8.a. lists important information relevant to reading tables 8.b. to 8.j.

(Insert Table 8.a.)

In arguments for the hypotheses, in analysis of the data, and in presenting and interpreting the results, certain guides have been followed to help the reader evaluate the quality of the study. McDonald and Ho (2002: 64) detail what is important in presenting results of structural equation models (see Appendix 3), but their discussion seems relevant to any research study. They suggest that every report should "give a detailed justification of the model used, along with plausible alternatives ... Non-normality and missing data problems should be addressed. A complete set of parameters and their standard errors is desirable, and it will often be convenient to supply the correlation matrix ... as well as goodness-of-fit indices..." Previously, significant time was spent discussing the literature review that led to the hypotheses. The components of the composites and composites themselves were shown to fall short of being normally distributed. Missing data was also discussed. The statistical modeling approaches were also highlighted including: utilizing generalized linear models for the tests and, in Appendix 3, the robust maximum likelihood method of estimating coefficients for the structural equation models. Finally, the correlation matrix was also described. Below, the parameter estimates, significance levels, and goodness of fit statistics are reviewed.

The reversion model and framework test relationships between various independent composites (Current, Past, Bureaucracy, and Turnover) and one dependent composite, Future. Since an infinite number of factors could be related to future change in performance, these models cannot be perfect. To minimize this concern, please consider the following arguments. First, as noted earlier, the goal of this research is not to create all encompassing models to predict future changes in performance. The direction and statistical significance of the coefficients that define the relationships between the composites are much more important than the goodness of fit statistics. Second, composites for Current and Past are proxies[47] for all of the variables (observed and incorporated in the composites and unobserved and not incorporated in the composites) that impact a university's present situation. The present situation plus presidential turnover (part of the framework), which is a proxy for disruption to the present situation, encompasses a variety of types of performance variables that are relevant to several stakeholders.

The discussion begins with a review of results of tests for hypotheses 1 and 2 and the framework (the combined model of hypotheses 1 and 2). Next, test results for hypothesis 3 are reviewed. Along the way, Bureaucracy's relationships with Future and turnover are discussed. The chapter ends with a review of the research's implications for theories of organizational change.

8.1. Reversion

Hypothesis 1 has strong support.[48] Table 8.b. suggests that the environment reverts for the combined data and for each expectation phase. All of the coefficient estimates for Current and Past are statistically significant at the 0.05 level except for Model H1E (for Current). Also, all of the coefficients are negative (the direction hypothesized).

(Insert Table 8.b.)

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[47] This is especially true for the structural equation models described in Appendix 3. The relationship between the latent composites for Past and Current and their observed variables include error terms that incorporate measurement error.
[48] The structural equation models in Appendix 3 also provide strong support for hypothesis 1.

As noted earlier, one should be careful in interpreting the magnitude of the coefficients; however, Past and Future are in the same scale. For the combined data, Future rises by about a quarter point for each point decline in percentile group ranking for Past. Thus, not only are the results statistically significant, but they are also economically significant.

Table 8.c. shows the output from the Tamhane method for testing differences in mean values (not assuming equal variances) between expectations phases. Mean differences in returns between phases 1 and 3 and between phases 1 and 2 are statistically significant at the 0.05 level. Also, phases 3 and 4 as well as phases 2 and 4 are statistically different (at the 0.10 level), which is not surprising since they revert in different directions. On the other hand, phases 1 and 4 do not have statistically significant differences, but they both revert in the same direction. Furthermore, reversion is weakest during phase 3, so the fact that it is not statistically different from phase 2 (also reverting in a negative direction) was expected.

(Insert Table 8.c.)

Table 8.d. shows the goodness of fit statistics for all models. As noted earlier, statistics such as R^2 are not available for generalized linear models. Instead, various other goodness of fit statistics are computed. Panel A describes the statistics and Panel B provides the values. Goodness of fit statistics including deviance, log likelihood ("LL"), Finite Sample Corrected Akaike's Information Criterion ("AICC"), and the Bayesian Information Criterion ("BIC") are displayed. Deviance, AICC, and BIC are each adjusted for model complexity and LL is provided primarily for model comparison (discussed later in the section on the framework). The BIC and AICC are very similar. For LL, AICC, and BIC lower values are better, and for deviance / *df* numbers closer to 1.0 are better.

(Insert Table 8.d.)

The most significant observation from table 8.d. is that the goodness of fit statistics are generally better for the individual expectation phases (models H1B to H1E) than they are for the combined data (H1A). This indicates that there is extra information value obtained by dividing the universe into four phases.

There is ample empirical evidence that future performance is negatively associated with current and past changes in performance – performance appears to revert. Given these results, a new leader should be more beneficial when the expectations are high (expectation phase 3) than when expectations are low (expectation phase 1) in order to bring new ideas and question old ways to combat natural reversion tendencies.

Performance reversals are seen in the combined data and for the four expectation phases. The latter observation is especially important. Level of performance (and expectations) appears to be *sticky*. As shown in figure 8.a., if Current is high and Past is deteriorating (expectation phase 4), Future actually improves. Also, if Current is low and Past is improving (expectation phase 2), Future generally deteriorates. Low performing universities tend to rotate between low/deteriorating and low/improving, and generally do not advance to the high expectation phases, and the opposite is the case for the high performing universities. Figure 8.b. displays the histograms of Future for each expectation phase. *Stickiness has not been analyzed before so it is a significant contribution to literature on performance reversals.*

(Insert Figure 8.a.)

(Insert Figure 8.b.)

Since expectations are sticky, the actual expectations clock needs to be modified from figures 1.a. and 5.a. The modified sticky clock is shown in figure 8.c.

(Insert Figure 8.c.)

As figure 8.c shows, firms may cycle (see dual circles) or oscillate (see teeter-totter) between phases 3 and 4 and phases 1 and 2. Stickiness indicates that it is unlikely for companies in the bottom half of the performance universe to improve to top half performers, which generally maintain superior performance over time. Is this stickiness the result of the nature of universities or can it be applied to the overall corporate world?

Prior research (discussed in chapter 2) identified reversion in market prices; however, it is possible that these reversals apply to low (expectation phases 1 and 2) and high performing (expectation phases 3 and 4) companies but not to companies crossing the two extremes. In other words, price reversals are not necessarily attributed to companies deteriorating from top half performers to bottom half performers or from improving from bottom half performers to top half performers. Thus, prior research may have misidentified low performing companies (expectation phase 2), based on underlying fundamentals[49], as high performers, based on stock prices, and vice versa. *Underlying fundamentals and corresponding stock prices may not be related.* A "good" company does not necessarily have to become "bad" to experience a price decline and a "bad" company does not necessarily have to become "good" for its stock to appreciate.[50] This observation has implications for value and growth investing.

Given this evidence, more research is needed to fully explore stickiness. These results indicate that stock performance may be less meaningful for the evaluation of and remuneration for corporate management, the architects of underlying fundamental performance. One should be especially critical of executive compensation plans based on market prices. Compensation plans that include a substantial percentage of pay through stock options and other stock-related remuneration could reward (or penalize) management for price appreciation (or depreciation) that is out of line with fundamental improvements (deteriorations).

In chapter 2, three reasons were provided to explain reversion. Below, these concepts are applied to universities.

First, fundamental cycles may cause reversion. These cycles include life and economic cycles. As discussed in chapter 2, universities tend to be mature and defensive organizations. On the other hand, it is possible that even mature and defensive universities have growth and economically sensitive divisions. For instance, there may be younger units with high growth (this growth eventually slows as the units mature) and units that are more economically sensitive such as those that require government funding for support (technological research programs). Some universities may have more growth and/or economically sensitive units than mature and defensive units even though the entire

[49] Fundamentals are defined as earnings, cash flow, business profile, management quality, return on equity, etc.
[50] A good company is defined as a firm with strong fundamentals and a bad company has poor fundamentals.

sample is mature and defensive. For these universities, maturing growth and/or economic cycles may influence their reversion.

Second, competitive forces may cause reversion. If a university has a good product that attracts top students and results in a positive learning environment (expectation phase 3), then other universities will likely try to copy it. They not only do this to improve performance, but as discussed in chapter 3, they also isomorph to the top performing firms in order to gain acceptance and confidence.

As noted in chapter 6, universities have multiple stakeholders – students, government, faculty and staff (management), alumni, and employers – who demand excellence. Students demand the best learning environment so they are concerned with progress. The government pushes for the best learning environment in order to please its constituents (the public) and create a work force that is most suited to provide a productive labor supply to spur economic growth. Employers' interests are somewhat aligned with government. Raises and growth in faculty and staff may be tied to student admissions and revenues so they are concerned about success. Alumni, who may attribute part of their identity to their schools and provide funding for universities as well as hire its students, may lead the charge for universities to make continual improvements.

Unfortunately, for the phase 3 universities (or companies), additional competition from weaker players jeopardizes their leadership positions over the long-term as others copy their success strategies. Sharing successful strategies may result in reversion. Furthermore, leaders, or more likely executive team members, of top universities may be hired by competing universities. This drains talent from the best universities and invigorates competitors.

On the opposite end of the spectrum are phase 1 universities. These universities may also revert. Forces of isomorphism and other competitive forces drive phase 1 universities away from the strategies that put them in phase 1. As a result, remaining phase 1 universities eventually face less competition. Even though phase 1 strategies were deemed unsuccessful, they are probably attractive to at least some people (students, management, government, employers, and alumni). Thus, without doing anything, poorly performing universities that do not change may gain business from people who seek their services from a smaller pool of phase 1 universities. The remaining phase 1 universities may revert to phase 2 without any investment!

The final reason for reversion is derived from behavioral concepts (see chapter 4). Past success may result in inertia so phase 3 companies do not foresee changes in the future. Thus, they are inadequately prepared for additional competition that pushes them toward reversion. Given universities' many stakeholders, it would not be surprising that, in order to institute changes which result in learning, a university would have to jump over extra hurdles with respect to pleasing and convincing various constituents to change. Thus, it may be difficult for a phase 3 university to implement change to avoid reversion. On the other extreme, phase 1 universities have low expectations and inertia so there is substantial incentive to learn from past mistakes to break the status quo. For these universities, their many constituents, who push for success, are a powerful force for change when the environment is poor.

Table 8.b. also offers insight into the association of bureaucracy with reversion. Except for phase 2, all of the coefficients are statistically significant at the 0.05 level, and except for phase 3, all of the coefficients are negative. Bureaucracy should be negatively related to future performance when expectations are low, moderate, and high. Except for the cases in which an organization reverts to phase 2 from phase 1 because it is the only remaining institution or for industries that are very stable and show little reversion, some level of learning would almost always be appropriate to overcome behavioral biases and competition. Thus, lower levels of bureaucracy may be appropriate in almost all situations. Lower levels of bureaucracy should especially be welcomed when natural forces of reversion are high (when firm performance is high). Less bureaucracy may make it easier to implement changes that result in learning to avoid reversion. However, during phase 3, bureaucracy is positively related to Future. This may be partly due to the fact that reversion is weakest during phase 3; nevertheless, more research is called for to explore this situation further.

8.2. Over- and Under-Reaction

Is there a way to reduce stickiness when stickiness is not wanted (expectation phases 2) and to increase stickiness when stickiness is wanted (expectation phases 4)? Possibly. By replacing, or better yet not replacing, leaders at key points one may be able to reduce the probability of reversion during expectation phases 2 and 3 and increase the probability of reversion in expectation phases 1 and 4.

Table 8.e. provides moderate support for hypothesis 2. The relationships of Turnover with Future vary depending on expectation phases and are only positive in one instance. This is during phase 3, but the levels of statistical significance of the coefficients are not consistently high. On the other hand, there does appear to be a difference (+0.200) in mean changes in future performance between turnover (when the new leader remains in place for three years) and no turnover in expectation phase 3 (+0.118) and phase 1 (-0.082) (see figure 8.d. and table 8.f.) and this appears to provide evidence supporting hypothesis 2.

(Insert Table 8.e.)

(Insert Figure 8.d.)

(Insert Table 8.f.)

Table 8.g. provides more evidence that turnover's[51] relationship with future varies between phases 1 and 3. The mean values of Future for phase 3/no turnover ("5") and phase 1/no turnover ("1") are statistically different. Figure 8.e. displays the histograms for various combinations of turnover and no turnover for the expectation phases.

(Insert Table 8.g.)

(Insert Figure 8.e.)

In tables 8.e. and 8.f. and in figure 8.d., turnover's relationship with Future is shown for all turnover events (TOTNAdjTOT) and for the special case when new leaders remain in place for at least three years (TOTNAdj) (the performance period that measures Future). For the combined data, turnover is negatively related to Future in both cases (H2A and $H2A^1$); however, the level of statistical significance is stronger and the size of the coefficient is more negative with TOTNAdjTOT than with TOTNAdj. A higher frequency

[51] This statement applies to TOTNAdj.

of leader change is more negatively associated with future changes in performance – there is more disruption and over-reaction. Consistent with Grusky's findings (1963), this implies that frequent leadership change is dysfunctional.

All of the coefficient estimates for the combined and phase data except one are in the direction hypothesized; although, only one of the coefficients for TOTNAdj and TOTNAdjTOT are statistically significant at levels of 0.10 or better for phases 1 and 2, and TOTNAdj is not statistically significant for H2D (phase 3). It appears that the results of the tests are better using all of the turnover events rather than just succession events when the new leader remains in place for at least three years.

While there appears to be a difference between no turnover and turnover for expectation phase 3 versus phase 1, the regressions coefficients only provide lukewarm evidence showing whether turnover is better during expectation phase 3 than during phase 1. In only one of the two phase 3 models ($H2D^1$) is the coefficient statistically significant, but it is in the opposite direction (negative) hypothesized. Also, the coefficients for phase 1 are not statistically significant and both are near zero.[52] On the other hand, the coefficients for phase 2 and 4 show a greater level of statistical significance and are sufficiently different from zero. In support of hypothesis 2, there is only one model whereby the coefficient for turnover is positive and this is for phase 3 (H2D). This suggests that turnover's interaction with expectations is different for phase 3 (when the new leader does not change regularly) than for other phases. While succession appears to be positive during phase 3 when the new leader remains in place for three or more years (H2D), succession is negative when there are multiple succession events over that three year period ($H2D^1$).

Some disruption through leadership change appears to be a positive force during phase 3, but constant disruption through several leadership changes during phase 3 is negatively related to Future. Even during phase 3, too much disruption could lead to over-reaction (just as it does for the other phases) versus just eliminating under-reaction to negative stimuli.

[52] The framework, discussed in the next section, provides additional support since the coefficient for TOTNAdj is statistically significant at the 0.05 level and is -0.380.

Overall, some disruption via turnover during phase 3 may be useful and may help eliminate under-reaction; however, in all other phases, turnover is associated with worse performance than no turnover and it appears to be related to over-reaction.

While the levels of statistical significance of the coefficients are not necessarily stronger for the tests of the individual expectation phases than for the combined data, the goodness of fit statistics indicate that dividing the universe by expectation phases has value. Most of the goodness of fit statistics are better (lower) for the phase data than they are for the combined data (see table 8.d.).

Given the return reversals just described, turnover during expectation phases 2 and 4 should and does appear to be associated with negative future performance. For expectation phase 4, when performance is falling there is substantial motivation for faculty and staff to rally for change, thus new leaders can be more disruptive than beneficial if too much change occurs as a result of leader turnover (that invites change) in combination with faculty and staff who are already arguing for change. For expectation phase 2, when the situation is improving but relative performance is still low, the university may be doing something right. Therefore, a new president with new ideas could disrupt the positive momentum.

Consistent with the hypothesis, turnover is somewhat (not statistically significant) negatively related to future performance in poor (expectation phase 1) and moderate (expectation phases 2 and 4) environments and no conclusive negative relationship can be shown (the coefficient is positive for new lasting leaders but it is not statistically significant) to future performance in times of strength (expectation phase 3). The evidence somewhat supports the notion that when performance is strong inertial tendencies are high, and a new long-term leader may be necessary for real learning (to maintain high and improving performance) by disrupting the status quo and eliminating under-reaction to negative stimuli. This may not be a good time to be complacent, since reversals in performance tend to be common. Replacing a leader at the top goes against the common notion that one should not fix what is not broken. The opposite is the case when times are poor.

In addition to reasons cited above, less turnover may be needed when expectations are low because at these times faculty and staff are already rallying for a new direction and the current leader, who is more knowledgeable about the situation than most incoming leaders, has extra flexibility to make needed changes. Also, when performance is poor there is probably already substantial uncertainty, so introducing a new leader may raise concern to a level at which second order learning is not possible and over-reaction to negative stimuli ensues. Further, when performance is poor, current leaders are probably fearful of losing their jobs, so they may be willing to make needed changes (they no longer escalate their past efforts) to protect their jobs.

Another way of interpreting the results is as follows. The action of replacing a leader during phase 1 does not appear to be associated with better future performance than not replacing the leader. Common notion is that replacing a leader when performance is poor is a good strategy. The results imply that the action of replacing a leader during phase 1 is not associated with a benefit, and therefore the action appears to be an over-reaction to the negative circumstances. No statistically significant association also provides evidence that leadership is not relevant for future performance. With respect to phase 3, most people would likely assume that leadership succession represents a negative event. While the results do not show a statistically significant positive relationship, as hypothesized, between turnover and future performance during phase 3, the fact that the association is not statistically significant and negative (for TOTNAdj) provides some evidence that common notion is on shaky ground. The action of replacing a leader during phase 3 does not appear to be associated with negative future performance, thus it may reduce under-reaction to negative stimuli.

See figures 8.a. and 8.d. It is important to note that future changes in performance are positive, on average, during phase 1 for turnover events as well as for no turnover; although, they are slightly less positive for turnover than for no turnover. Reversion appears to be the most powerful of the two forces – reversion and disruption through turnover. Unfortunately, the fact that performance improves may give firms, if the turnover event was due to firing a leader, a false indication that changing the leader was the best course of action during phase 1 even though it is not for the average firm. This may be why the framework, discussed next, provides more evidence for over- and under-reaction than the model of over- and under-reaction alone. Turnover is also associated with negative future changes in performance, versus no turnover which has a positive relationship, during phase 4. Furthermore, turnover appears to be more negatively associated future changes in performance, versus no turnover, during phase 2. The only time the average future changes in performance are better for turnover than no turnover is during phase 3 (for TOTNAdj).

The results provide some support for the modified learning curve presented in chapter 3. There may be an optimal amount of disruption for learning. The optimal level may occur between extremes of complacency and turmoil. Complacency is related to under-reaction to negative events and turmoil is related to over-reaction, but between these two extremes leaders may have the right perspectives with which to lead their firms.

In chapter 3, adaptive learning is described as a type of learning based on coping. It is a reactive type of learning. On the other hand, anticipatory and deuteron learning are associated with proactive learning. It may be less painful to be proactive than reactive. Future change in performance is negatively associated with expectations in phase 1 (see tests of hypothesis 1). However, it would be better to never have to experience the painful environment of expectation phase 1. If one changes a leader, or incorporates other proactive learning methods, when the environment is strong (expectation phase 3), one may be able to reduce the probability of reversion to a worse state. Inertia is high during expectation phase 3, but the negative consequences (moving to worse expectation phases) of not being prospective may *feel* just as great or greater than the rewards of phase 3 (since losses are associated with greater pain than gains are associated with gratification (Kahneman and Tversky, 1979)).

Overall, it appears that succession is negatively related to future performance, but there may be a difference in the relationship when expectations are high and improving (expectation phase 3) and when the expectations are lower (expectations phases 1, 2 and 4). Also, too many turnover events may lead to too much disruption when expectations are high (phase 3) even though one turnover event over a three year period appears to be positively (or at least not conclusively negatively) associated with future changes in performance. Disruption, via turnover, appears to be associated with an over-reaction in all expectation phases except phase 3; therefore, phase 3 appears to be the only time when succession may be related to real organizational learning. During the other phases *learning may take place, but introducing a new leader could disrupt the natural learning processes already underway.*

Demonstrating how expectations of the future, which are related to current and past changes in performance, combined with succession are associated with future performance (and over- and under-reaction) is an important contribution of this paper to the body of existing knowledge. Therefore, the expectations clock may be a practical unified model for explaining reversion and over- and under-reaction and in rising to Fama's challenge (1998) to create a model that simultaneously predicts over- and under-reaction.

8.3. Framework

The tests support the framework. This model confirms hypothesis 1 and 2 and it provides even stronger evidence for the hypothesized relationships and support for the prior statements regarding bureaucracy.

See table 8.h. All of the coefficients, except one, are in the directions hypothesized and only three coefficients are not statistically significant at the 0.10 level. The only coefficient that is in opposition to the hypotheses is related to turnover in expectation phase 3. This coefficient is slightly negative but it is not necessarily indicative of opposition to hypothesis 2. Since it is much less negative than other phases and it is not statistically significant it appears that there may be a different relationship associated with turnover and future changes in performance during expectation phase 3 versus the other phases.

(Insert Table 8.h.)

Table 8.i. shows the correlations between the various composite variables and turnover variables. Future is negatively correlated with Current and Past, but the relationship with the other variables is less clear. In addition, even though there is support of a negative relationship between turnover and Future for the combined data, the correlation statistics for TOTNAdj and TOTNAdjTOT with Future are not significantly significant at the 0.05 level (TOTNAdjTOT is statistically significant at the 0.10 level). This may be due to the interaction of the expectation phases with turnover.

(Insert Table 8.i.)

Similar to results for hypotheses 1 and 2, the goodness of fit statistics for the phase data (see table 8.d.) are mostly better than they are for the combined data and this provides evidence that there is an information component to dividing the data by expectation phase.

Even though the framework appears to support hypotheses 1 and 2, it still may not be better than the individual models for those hypotheses. To test whether this is the case, please see the model comparison columns in table 8.d.

Since the individual hypotheses are nested within their respective framework models, one can compare the log likelihood statistics between these models to determine whether the framework provides better overall models (adjusted for their added complexity). The test statistic is called the likelihood ratio, $LR = -2\ (LL_{reduced\ model} - LL_{full\ model})$, which follows the chi-square distribution with degrees of freedom equal to the difference in the degrees of freedom between the reduced and full model. The significance level is zero or near zero for most of the comparisons. Without even using this ratio, one can see that the full framework models (A-E) are better than the nested models. The framework models have lower (closer to zero) LL values than each of their respective reduced models. The likelihood, or the probability, of the observed results, given the coefficient estimates, is higher for the full models than for the reduced models. Given this evidence, one can conclude that the framework improves upon the relationships of the individual models for hypotheses 1 and 2.

8.4. Turnover

See table 8.j. and H3A in table 8.d. The data provides little support for the third hypothesis. Turnover does not appear to be associated with expectations (Current and Past) or bureaucracy. The coefficients are all near 0.000 and none of the parameter estimates are statistically significant. On the other hand, the goodness of fit statistics are better than the other tests. The deviance to degrees of freedom is close to 1.0 which indicates very good fit, and the LL, AICC and BIC statistics are better for H3A than for any of the other models. Therefore, it appears that Bureaucracy, Current, and Past explain the variance in Turnover (TOTNAdjTOT) somewhat well.

(Insert Table 8.j.)

These results are contrary to numerous prior studies which show that leaders are frequently scapegoats (an over-reaction) in poor performing firms. This is good news for universities since it appears that performance reverses (see results of tests for hypotheses 1) and replacing leaders at the bottom of cycles may not lead to better future performance than not replacing leaders (see results of tests for hypothesis 2). Is this positive outcome due to universities being smarter than other organizations? After-all, they are made up of expert teachers! On the other hand, this also means that universities may under-react when performance is strong by not changing their leaders.

The real reason(s) for the result may be due to one or more of the following three considerations.

First, public corporations that operate in liquid markets, with stocks valued in the market on a daily basis may be more sensitive to removing presidents when performance is poor as compared to universities. Universities tend to be more decentralized (but are becoming more centralized), old, and complex, so they are likely to be very slow to change leaders (expectations are slow to change) when performance deteriorates or, possibly, when they do change leaders, performance has already started to reverse. Except for expectation phase 3, bureaucracy was found to be negatively associated with future changes in performance in tests of hypothesis 1 and the framework.

Second, there could be a variety of reasons for turnover and circumstances surrounding the succession event. Reasons include death, retirement, and leaving for a better job, in addition to being fired for poor performance. As noted previously, controlling for these factors is beyond the scope of this paper. These variables and other circumstantial considerations associated with the degree of succession are discussed in more detail in Appendix 2 (see also Karaevli, working paper).

Third, the performance factors for this research include operational variables and reflect additional stakeholders beyond other studies that typically measure market and/or financial factors and focus only on shareholders. The inclusion of these additional stakeholders and data types, which makes this research more comprehensive than other studies, may also be influencing these results.

Since succession does not appear to be related to performance alone, does this mean that leaders of universities do not have to fear for their jobs (unlike leaders of other organizations) when they under-perform? One would hope that they are motivated to perform well without this added incentive.

8.5. Organizational Change

This study provides support for the adaptation, population ecology, and random transformation theories of organizational change.

The impact of leaders on future performance does not appear to be random. Organizations may be able to adapt. The impact of new leaders is somewhat predicable based on the expectation phase (determined by performance) while future performance is also reasonably predictable based on current and past performance states. Performance conditions appear to reverse, and when times are good or bad a new leader may be positively and negatively related, respectively, to future performance. The fact that change, via leader turnover, does not have a definitive negative relationship with future changes in performance during expectation phase 3 provides moderate support for the adaptation theory; however, the fact that leader turnover is not positively associated with future changes in performance during the other phases supports the ecology perspective on organizational change.

Due to fundamental and market (price) cycles (and reversion), one could argue that performance is random and that these cycles support the random transformation theory. While it appears at the highest level, that performance is random, the expectations clock provides a unified model to explain why performance (and corresponding expectations) may move through certain stages. Performance and expectations may not be random. People may be predictably irrational and have predictable behavioral biases that cause them to take actions that result in forecastable cycles.

Performance reversion may be due to phase 1, 2, and 4 companies being compelled to adapt to a prevailing model (phase 3 organizations). As phase 1, 2, and 4 firms copy phase 3 organizations, competition may intensify and phase 3-type growth and profits may be shared among more players. Thus, phase 3 companies may suffer and phase 1, 2, and 4 companies may be better off not investing to become like the phase 3 model. These interactions are not adequately explained by the adaptation theory of isomorphism but they are consistent with the expectations clock (they explain why phase 3 companies are associated with reversion). Conversely, if most phase 1 companies seek to become like phase 3 firms, then the remaining phase 1 companies may share their profits with fewer players. This means that overall per firm phase 1 profits could rise (assuming that phase 1 profits are not in a steep downward direction). Thus, without any new investments, phase 1 companies may get better (revert).

There is some evidence that leadership change is more important for adaptation and learning during expectation phase 3 than during other phases. Due to reversion tendencies, phase 3 companies may be somewhat bound for phase 4; however, succession may be able to stem the decline since it is positively associated (but not statistically significant) with future changes in performance (see tests of hypothesis 2 in which the leader stays in place for three years). On the other hand, if there are multiple phase 3 leadership changes, the actions are associated with negative future performance. It appears that too much disruption (an over-reaction) may make it difficult to overcome reversion. During phases 4 and 1 the forces for adaptation may be in place regardless of whether or not a new leader orchestrates changes that result in learning. Actually, it appears that introducing a new leader during those phases could disrupt the natural learning processes and lead to over-reaction since succession is negatively related to future changes in performance. The story is a little more complicated for phase 2. During this phase, the natural (without disruption through succession) tendency is for performance to decline. This means that once an underperforming firm begins to improve, the next step is a decline (further adaptation and learning reverses). Perhaps, inertia sets in when management senses that the environment is improving (phase 2 is better than phase 1) and incentives to continue on the path that led to improvement disappear. Unfortunately, introducing a new leader during phase 2 does not appear to help the problem. It actually exacerbates the situation since it is negatively related to future changes in relative performance. This means that both the natural forces for reversion and the forces resulting from phase 2 succession disruption are associated with a firm that is worse off in the future.

Based on performance, the timing of successions for universities does not appear to be predictable. This result is contrary to prior research. The discrepancy may be due to the characteristics of universities, which may have more inertia than other companies due to their mature, large, and complex nature. This observation supports the random transformation theory. In addition, it appears that people have the wrong expectations, given that they are related to performance that reverts, which also supports the random transformation theory. *It appears that people would be better off if their actions are inversely related to their expectations.*

As noted, organizations may be able to adapt. Changing leaders appears to be related to future performance. Unfortunately, it also appears that organizations often make the wrong adaptations since succession is negatively (not necessarily statistically significant) related to future performance in three of four expectation phases. When expectations are lowest, extant research shows that organizations often remove current leaders, and vice versa. If performance reverts, this indicates that they over-react to negative events. Firms may not be capable of making the right decisions regarding succession (assuming it results from a firing), which provides support for the random transformation theory. On the other hand, universities tend to buck the trend of succession when conditions are poor since expectations do not appear to be associated with turnover.

Perhaps, because universities tend to be decentralized (currently becoming more centralized), it makes sense that the "buck does NOT stop here" when it comes to university presidents. Presidents do not appear to be changed and maybe they should not be blamed for performance. Or, maybe they are blamed, but the troops, given their decentralization, are not organized enough to rise up and fire the leaders. As a final explanation, maybe this study is missing a performance factor. University presidents may receive as much blame for poor performing football teams as they do for poor academic and financial matters.

The population ecology theory suggests that the fittest organizations are those that survive. This theory has some support. There is little motivation to change if performance reverts over time. The best one can do is to make the most of the current situation. As shown during phase 1, 2, and 4, it does not appear to be beneficial to alter current leadership.

The expectations clock provides support for the adaptation and ecology theories, so it is a unifying theory, depending on the performance environment. Furthermore, the performance environment appears to only be random in the sense that the future may not resemble current and past changes in performance (which influence expectations). In reality, the future appears to be somewhat predictable (at least in the sense that it will not resemble today's performance), over long periods, although expectations of the future may be incorrect. It seems that people's expectations are predictably wrong, but fortunately, there may be ways of fixing this problem through leadership succession (or refraining from succession) at key points.

To conclude, while the population ecology theory postulates that the fittest will survive, I agree with Marquardt (1996: 1) that "the survival of the fittest is quickly becoming the survival of the fittest to learn" and one way to learn (and to successfully adapt) may be to insert or refrain from disruption through succession at key points in the expectations cycle.

Chapter 9: Research Implications

"If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too...
Yours is the earth and everything that's in it...
-- Author: Rudyard Kipling

Benjamin Franklin said, "The only things that are certain in life are death and taxes." Perhaps we need to add change to this list. Change happens no matter how much we try to deny it, ignore it, or prevent it, but not all change results in learning. Thousands of years ago, Heraclitus (540BC – 480BC) showed that resisting change is futile when he said "Nothing endures but change." How we manage change may have significant ramifications on our beliefs, expectations, actions, future performance, and learning.

This research provides evidence that performance reverts – it changes. The study also shows that these changes may be influenced by disruptive events such as turnover, and depending on initial expectations, these disruptive events may be negative and possibly positive forces. It may be hard to accept the results of this research since they are contrary to common "knowledge" and are possibly controversial. They have significant implications for how managers behave and operate their businesses in different performance environments, for how corporate boards react to stakeholder pressures to replace managers during poor times, and for how various stakeholders should view firm and CEO performance in light of evidence for reversion and stickiness in level of performance.

The remainder of this chapter highlights this study's contributions to research related to finance, management, and psychology. Suggestions for future studies in each of these areas and limitations of this research are also noted. The thesis ends by providing recommendations for management and for future multidisciplinary research, and summarizes the contributions of the expectations clock to behavioral finance.

9.1. Finance

This research provides evidence that reversion may not limited to the stock market (and the corporate setting). Reversion appears to also apply to variables that measure financial and operational performance and that reflect stakeholders other than shareholders (including management, government, and consumers). More research exploring reversion in other settings outside of the stock market and corporate setting would add to the overall body of knowledge on reversion.

Reversion has significant implications for how corporate leaders should operate businesses. Armed with knowledge that performance reverts, companies may be able to better plan corporate investments and restructurings. If fundamentals and security markets revert, then it may be best to not change when the environment is poor and it may be most important to change when the environment is strong. If a firm times fundamental cycles correctly, it may be able to sell "great" businesses for premiums at cyclical peaks (lofty values can be obtained from buyers who mistakenly expect the future to be just as good as the recent past) and buy (or invest more in) cheaply reverting businesses at cyclical bottoms (when there is an overabundance of sellers exiting for fire sale prices). Selling high and buying low is always a good policy, and given evidence for reversion, buying and selling against the cycle seems quite reasonable. Future research may wish to identify companies with countercyclical spending plans to see if these firms earn, over entire cycles, above average stock returns and other measures of financial success.

Of course, investing counter to the cycle is very difficult and may require one to take a stand and risk much to do what is "right" and just. This is especially true in a world such as the one in which we live with a focus on short-term performance. But, do not doubt because one "who doubts is like a wave of the sea, blown and tossed by the wind" (James 1:6).

A significant contribution of this research is its identification of evidence for stickiness in the level of performance. While firms may improve and deteriorate, and thus revert, stickiness implies that good firms are unlikely to become bad firms and it is unlikely for bad firms to improve to the realm of good firms. More research on stickiness is called for to explore this phenomenon in greater detail.

If fundamentals are sticky and stock prices are not, then this creates an important disconnect between expectations, implied in valuation, and underlying fundamentals. This may have meaningful implications for how to structure a firm's compensation plans since management stock ownership incentives may be misdirected. Initial results of tests on an alternative corporate data set[53] indicate that the relationships between CEO turnover and relative changes in stock returns and relative changes in fundamentals during different expectation phases are not necessarily of the same sign (positive or negative). These tests also provide evidence of stickiness in the corporate setting. As noted in chapter 8, stickiness implies that stock prices could move up as performance improves even if a firm remains a bottom half performer. Boards should be careful to structure stock compensation plans to avoid rewarding less than stellar relative performance and performance that they do not intend to reward.[54] For instance, if performance is sticky and boards reward phase 2 company management with stock incentives it may do so just before the firm reverts back to phase 1. Finally, if stock prices positively correlate with fundamentals, stickiness indicates that one could invest in bad and good companies and make and lose money as fundamentals teeter-totter between improvement and deterioration. This may have significant implications for investment management. Contrary to common belief, owning bottom-half performing companies may be as viable of a strategy as owning top-half performing firms.

9.2. Management

Common knowledge leads people to conclude that one should not fix something if it is not broken and that if it is broken, it must be because of bad management (the scapegoat, see chapter 3). This study indicates that these may be common *mis*perceptions. Performance appears to reverse. Change through leadership turnover may be disruptive, but the disruption shows a less conclusive negative (and possible positive) relationship to future performance when current and past changes in performance are strong (to reduce under-reaction and supporting the adaptive theory of organizational change) than when current

[53] The data set includes CEO turnover, ROE, operating margin, P/B, and a composite of fundamental, valuation, and stock return information for Standard & Poor's 500 companies from 1996-2003.

[54] Of course, improvement is something to celebrate even if the level of performance is poor and high incentives may be necessary to attract top managers to poor performing companies, but it may be even better to reward improvement from high levels of performance. It appears to be difficult to maintain great performance and poor performing firms tend to improve. There may be a lot of "low hanging fruit" associated with poor performing companies and improvement may be *relatively* easy for those firms to achieve. I caution boards to be careful to create incentive plans to reward what they intend to reward.

and past changes in performance are weak (resulting in over-reaction and supporting the population ecology theory of organizational change). *This is exactly opposite of common judgment!*

As noted in the section on learning in the chapter on management, it appears that there may be an optimal level of disruption, consistent with the modified learning curve (figure 3.c), in which learning, and hence less over- and under-reaction, may take place. Leadership appears to matter for performance since this research suggests that changing leaders may have ramifications on future performance. Results of this study's tests of over- and under-reaction and reversion indicate that future succession research needs to control for environmental circumstances. Perhaps, doing so may help to explain conflicting results from prior succession research that explored the relationship between turnover and future performance.

Because of stickiness in reversion, good phase 4 companies appear to be more likely to become phase 1 firms by replacing their leaders, but with or without succession bad phase 2 firms appear to be less than likely to continue to improve. Actually, replacing phase 2 leaders could be detrimental to performance. If a firm finds itself in phase 2, it may be important to keep pushing forward for long-term continuous improvement and not rest on the laurels of past signs of advancement (movement from phase 1 to phase 2).

It may surprise many readers to learn that turnover when conditions are poor (phase 1) is not associated with future improvement in performance and turnover when conditions are good (phase 3) is not necessarily negatively associated with future performance. Action, such as leadership change, during phase 1, appears to be associated with an over-reaction since it is not related to improvement in performance, and action, such as leadership change, in phase 3, is not necessarily associated with negative future performance trends so it may be related to reduction in under-reaction to negative stimuli.

When the situation is poor, one should not necessarily replace the CEO because he or she may fear (rightly so) being fired and may be willing to change; however, when performance is stellar the CEO should possibly make changes to the current strategy and processes or performance may slip and then he or she may be fired! On the other hand, it appears that this situation is less relevant for universities than other data settings since it is not clear whether expectations are related to succession.

No relationship was found between bureaucracy, and current and past changes in performance and succession for universities, so it may be interesting to explore the causes of university president succession in follow-up research. The model provided explains succession (the goodness of fit statistics are better for this model than the other tests), but the coefficients are not statistically significant and are near zero. Perhaps, by incorporating the degree of succession factors outlined in Appendix 2, future research could shed light on why this research conflicted with prior studies which indicate that there is a negative relationship between performance (past and/or current) and succession. Furthermore, results of phase 3 tests of turnover on under-reaction were not as conclusive as tests of over-reaction for the other phases. Maybe incorporating the degree of succession variables would improve these results as well. Finally, it is conceivable that the reason this research differs from extant studies is because of the data setting (universities) and because its performance factors include operational performance variables and reflect stakeholders besides shareholders (see limitations of the research below).

9.3. Psychology

There appears to be an expectations clock. The implications of the clock are that one should not trust his or her emotions, which are based on the current situation and past changes in performance, for his or her expectations of the future. If there is reversion, when the situation is poor one should be optimistic and when it is good one should be pessimistic. It may pay to be a skeptic! Performance driven expectations may reverse. If one is not a skeptic, then he or she may under-react or over-react to negative stimuli when the performance is strong and improving (representing "good times") and poor and declining ("bad times), respectively. The consequence of under- and over-reaction may be deteriorating "good times" or "bad times" getting worse or improving less rapidly.

In this study, expectations were related to current and past changes in performance and how they, along with disruption through succession, are associated with future performance. As time moves on, future performance becomes current and past changes in performance. Then, again, there may be an interactive effect between expectations and turnover on future performance, and so on. This brings to light a very interesting situation whereby expectations and performance may be intertwined in long-term actions and reactions. For instance, the fall 2008 world financial crisis has been blamed, in part, on emotional reactions to poor credit conditions which resulted in credit conditions worsening, and so on. Herein is a problem. Is it expectations that influence performance or performance that relates to expectations (as discussed in chapter 4)? In addition, perceptions of management quality (or expectations of management) may influence management productivity, and consequently, performance. Therefore, perceptions of management could influence performance which could influence perceptions of management, and so on. Exploration of these linkages through very long longitudinal studies would be beneficial, which would add to the knowledge of efficacy performance spirals and reflexivity discussed in chapter 2 and the random transformation theory of organizational change discussed in chapter 3.

The expectations clock provides a model to explain how emotions may transition through a clock-like cycle based on performance conditions. Behavioral concepts described in chapter 4 such as self attribution, overconfidence, prospect theory, escalation of effort, herding, confirmation bias, and anchoring are represented in the clock. Importantly, the clock provides a model to illustrate bounded rationality, which was first described by Herbert Simon in the 1950s. Future researchers may want to expand on the concepts theorized by the clock, empirically test the clock in other settings, and create other unifying models to describe human expectations tied to varying environmental conditions and over- and under-reaction.

9.4. Limitations of the Research

One must limit his or her enthusiasm for these results before extrapolating them to all settings. Universities are somewhat unique due to their many stakeholders. Also, the sample analyzed was slightly stronger than the entire universe. Furthermore, the performance variables, since they are of several types and represent multiple stakeholders, may make it difficult to extrapolate the results of this study to other settings. As discussed in chapter 3, universities tend to be large and complex, which are characteristics generally associated with inertia. The greater the inertia the larger the reversion expected; although, relative performance reversion could be muted if all universities are slow to change.

Universities are also defensive and this is not related to reversion (see chapter 2). From chapter 6, we know that university presidents are generally insiders, thus one would expect the results of hypothesis 2 to be stronger in other settings. Finally, universities' inherent inertia and bureaucracy probably dampens results for hypothesis 3.

On the other hand, the positives of this setting are numerous. The fact that the data reflects several stakeholders and is of several types is a positive and makes the study a useful positive addition to literature on reversion, over- and under-reaction, and succession. Also, the results for universities may be easier to generalize to other settings than it would be for other data settings because universities are inherently bureaucratic: faculty (who are tenured) have substantial control over leaders (who are temporary). If leader succession in this setting is related to future performance, then leader turnover in other settings where leaders likely have more control over corporate change would probably be related to future performance as well. For example, initial tests performed on an alternative corporate data set (discussed earlier in this chapter) show that selected results for hypotheses 1 and 2 resemble those presented in this paper.

One can always find exceptions to the associations noted in this study. For example, one could develop scenarios and find instances when succession is positive during phase 1 and negative during phase 3. There may be uncontrolled factors that are influencing the results of this study. For instance, maybe the reason future performance appears to be better (not statistically significant) after turnover, versus no turnover, during phase 3 is because leaders prefer to retire when conditions are good (this is consistent with prospect theory which suggests that people tend to lock in gains) and trending up and not leave successors with a mess. Furthermore, there are undoubtedly many examples of companies that have been able to avoid reversion for a long time during phase 3 and of organizations that went out of business during phase 1. As noted in the introductory remarks to chapter 8, correlation does not indicate causation; therefore, it can only be concluded that expectations appear to be inversely associated with future performance and that turnover appears to have different relationships with over- and under-reaction depending on the expectation phases.

9.5. Recommendations

Firms may be able to influence reversion by disrupting the status quo through leadership turnover at key points of the expectations clock; however, there may be other solutions to positively influence reversion when it is most needed and reduce reversion when it is not welcome. Succession is utilized as a proxy for disruption, but it is only one type of force for change which ultimately leads to learning. Researchers may want to explore in greater detail the specific relationships between alternative actions (to succession), highlighted below, and reversion.

Instead of replacing (firing) leaders, some successful firms rotate high level decision makers (including leaders). For instance, Mayo Clinic, well-known as a leading health care organization, has a process whereby the Board of Governors, composed primarily of physicians, serve defined and staggered terms. Physicians who lead departments and divisions rotate every eight to ten years. Administrators who work with physician leaders rotate across the divisions every four to seven years. The rotation is "meant to broaden their experience while providing the physician leader and administrative unit new ideas and energy" (Berry, 2004: 238). General Electric, one of the largest companies in the world, also has a management rotation strategy. While this strategy is undoubtedly in place to groom new leaders, it has positive secondary effects on decision-making. If one rotates managers, then this means that the people who made initial decisions are not the same people who will make decisions on whether to continue with the prior plans. California Public Employee Retirement System ("CALPERS"), the largest pension plan in the world with assets over $200 billion, replaces its Chief Investment Officer every five years. Rotating leaders from time to time may reduce biases to escalate efforts, which over the long-term, may lead to poor performance and over-reaction as the organization eventually attempts to realign with the environment.

In addition to rotating decision makers to promote questioning of the status quo, a firm may want to consider a reward system and a culture in which dissenters, instead of "yes men," are encouraged to speak up. Introducing scenario analysis may also improve the decision-making process. Staw (1981: 585) also suggests seeking and following the advice of outsiders "who can assess the relevant issues of a decision situation without being responsible for previous losses or subject to internal or external needs to justify past actions."

Books on leadership and organizational learning provide many prescriptions for success. In a short article in the publication, *Leadership Excellence*, Barry suggests several simple to say, yet perhaps complex to do, ways to escape "corporate gravity" (Barry, 2008: 14). First, a leader who attempts to institute change should be clear about the vision and intent of the initiative. He or she must explain to others why change is needed. Second, he or she must learn from experiments. When an experiment fails, the person must at least learn a lesson. Third, the leader must make sure that those implementing change are well supported since other people will probably resist. Finally, the leader must make sure the initiatives do not lose momentum. For instance, this research indicates that universities tend to revert from expectation phase 1 to 2, but the analysis also suggests that they tend to lose momentum and revert again. Leaders must ensure that this second reversion does not happen by not allowing people to feel comfortable with improvement and lose sight of long term goals.

Not only do the results of this study have implications for universities, but they may also be applicable to coaching managers in other settings. For instance, several of the studies from finance and management utilized to form the hypotheses were based on stock market and corporate financial data. Therefore, the results of this study may be additionally useful for investment managers when evaluating corporate managers under different performance-expectation environments. This may lead them to make better investment decisions.

Investors determine the allocation of resources to corporations and can hire and fire corporate managers, who determine the allocation of these resources to projects. Improving either of these stakeholders' decisions can have far reaching benefits. Awareness of cycles and knowledge that expectations are often wrong is the first step toward making improvements. Misallocation of resources reduces economic growth and increases the volatility of cycles, so improving the way corporate and investment managers allocate resources can have significant positive implications for the overall standard of living.

Let us go back to an illustration from chapter 5 of the wolf, sheep, flea and wolf pack leader. Recall, the sheep are the followers (they under-react), the fleas cause performance-induced momentum spirals (that causes very well-fed sheep to move away from the pack to find even "greener" grass), and the wolf waits on the sidelines to capitalize on irrational behavior (it eats the sheep and fleas). My most important advice for investment managers, corporate managers, and university leaders is as follows. Be better than a wolf. Be the wolf pack leader. By realizing that conditions may reverse you can make plans to capitalize on others' behavioral mistakes (by selling at the bottom and buying at the top) instead of making your own. Break the status quo in good times. Replacing leaders may not be necessary and it is certainly not the only way to reduce behavioral biases, but expectations definitely need second guessing. Think opportunistically and ahead to the long-term, and do not get caught up in short-term positive (and under-react) or negative momentum (and over-react). Do the right thing versus simply doing something when performance is poor. If you follow this advice, then you may end up becoming a wolf pack leader that eats both the sheep and the fleas (which are on the sheep) and sleeps peacefully at night with a very full stomach. As the quote at the beginning of the chapter implies, those who keep their heads in the face of pressure to do what is not right will have great rewards (inherit the earth).

Please refer back to the what, who, how and why questions referred to throughout the paper. It appears that "what" happens, or reversion from finance, may apply to settings beyond the stock market and to stakeholders other than shareholders. Furthermore, reversion appears to be sticky. The "who" and "how" of the process often includes leaders who may be affected by a learning model that shows how an optimal level of stress may be associated with learning which may reduce over- and under-reactions to negative circumstances. "Why" do we see these interactions? Psychology tells us that behaviors, producing expectations of the future, are associated with the performance environment setting, as illustrated in the expectations clock. Future multidisciplinary research is needed that simultaneously considers reversion tendencies from finance, disruption through succession and learning models from management, and behavioral considerations associated with performance from psychology.

To conclude, the expectations clock goes beyond explaining reversion, stickiness, and providing a possible unifying model for over- and under-reaction. It is also a model that unifies key concepts from finance, management, and psychology, thereby adding to the multidisciplinary field of behavioral finance.

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Tables

Table 2.a.: Life Cycle Characteristics

Life Cycle Phase	Characteristics
Pioneer	Product acceptance is questionable and implementation of business strategy is unclear. Risk is high and failure is commonplace. Unpredictable and volatiles sales environment.
Growth	Product acceptance is established. Roll-out begins and growth in sales and earnings accelerate. Proper execution of strategy remains an issue.
Mature	Industry trend line growth corresponds to the general economy. Participants compete for share in a stable industry. Moderate sales growth as the market for the company's products mature.
Decline	Shifting tastes or technologies have overtaken the industry, and demand for the firm's products steadily decreases. Sales decrease as customers are attracted to newer, innovative products.

Table 2.b.: Growth versus Value

Category	Characteristic	Value	Growth
Business	Competition	High	Low
Business	Products and Markets	Less Important	More Important
Business	Production and Distribution	More Important	Less Important
Business	Government Regulation	More Likely	Less Likely
Business	Labor	Unions	Stock Options
Business	Quality	Lower	Higher
Business	Assets	More Tangibles	More Intangibles
Business	Research and Development	Less Important	More Important
Business	Business Plan	Worse	Better
Business	Management	Worse	Better
Financial	Growth Rate	Low to High	Average to High
Financial	Payout	High	Low
Financial	Financial Leverage	High	Low
Financial	Asset Utilization	Low	High
Financial	Margins	Low	High
Financial	Life Cycle	Mature/Decline	Pioneer/Growth
Financial	Economic Sensitivity	Cyclical/Defensive	Growth/Defensive
Valuation	Types	P/S, P/CF, P/B, P/E	Price and EPS Mo, P/E
Valuation	Level	Low	High
Investor Base/Stock Character	View	Reversion to Mean	Trend is My Friend
Investor Base/Stock Character	Time horizon	Long	Short to Long
Investor Base/Stock Character	Patience of Investors	High	Low
Investor Base/Stock Character	Consensus Expectations	Low/Out of Favor	High/In Style
Investor Base/Stock Character	Trading	Supply Liquidity	Pay up for Liquidity
Investor Base/Stock Character	Value-Added	Find Catalysts for Change	Identify Trends
Investor Base/Stock Character	Previous Stock Performance	Low	High
Investor Base/Stock Character	Mistakes of PMs	Buy/Sell Too Early	Expectations Too High

Tables

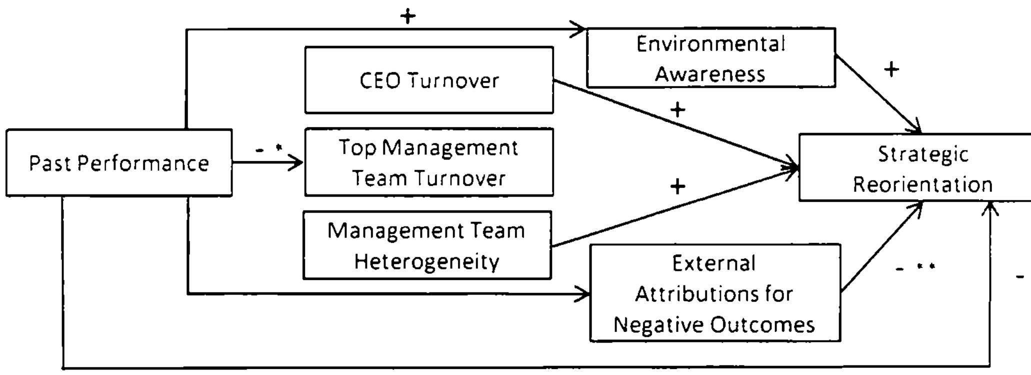
Table 3.a.: Conjunctive Research

Panel A: Study and Source			
#	Study	Authors	Year
1	Leadership and Organizational Performance: A Study of Large Corporations	Lieberson and O'Connor	1972
2	CEO Succession and Stockholder Reaction: The Influence of Organizational Context and Event Context	Friedman and Singh	1989
3	Executive Success and Organization Outcomes in Turbulent Environments: An Organizational Learning Approach	Virany, Tushman and Romanelli	1992
4	The Role of Managerial Learning and Interpretation in Strategic Persistence and Reorientation: An Empirical Exploration	Lant, Milliken and Batra	1992
5	Performance Changes Following Top Management Dismissals	Denis and Denis	1995
6	Executive Succession, Strategic Reorientation and Performance Growth: A Longitudinal Study in the US Cement Industry	Tushman and Rosenkopf	1996
7	Organizations in Changing Environments: The Case of East German Symphony Orchestras	Almendinger and Hackman	1996
8	Incremental Organizational Change in a Transforming Society: Managing Turbulence in Hungary in the 1990s	Czaban and Whitley	2000
9	Organizational Transformation During Institutional Upheaval	Newman	2000
10	Succession Effects in Radically Different Environments: A Study in Turkish Banking Before and After Liberalization	Usdiken and Ozmucur	WP
11	Performance Consequences of New CEO "Outsiderness": Moderating Effects of Pre- and Post-Succession Context	Karaevli	WP

Panel B: Hypotheses and Results	
#	Hypotheses and Results (in parentheses)
1	This study did not test specific hypotheses. The study showed that the year (economic effects), industry, and company factors are more important in explaining performance than leadership changes, but leadership change has an important influence on the remainder of the performance fluctuations. The influence of these factors also varies based on the performance goal (sales, net income, or profit margin) and these influences vary widely based on industry.
2	a) Stock reacts positively to succession when prior performance is poor (support). b) The lower the prior performance the more likely boards initiate succession (support). c) Succession associated with board or CEO initiation causes negative/positive stockholder reaction when performance has been good/poor (support when performance poor, no support when performance good). d) Succession caused by death or disability results in sudden change and negative stockholder reaction (some supported– statistical significance issue). e) The better the prior performance the more likely the successor originates from inside (no support) the firm and positive stockholder reactions are associated with inside successors when performance good, and vice versa (some support – statistical significance issue). f) The better the prior performance the more likely the departing CEO maintains ties with the corporation (support).

Tables

Table 3.a.: Conjunctive Research continued

3	a) In turbulent environments, there is no relationship between CEO change or executive team change alone and future performance (no support). b) In turbulent environments, the combination of CEO and executive team change is positively related to future organizational performance (no support). c) In turbulent environments, the impact of a combination of CEO and executive team change on future performance is accentuated if combined with strategic change (support). d) In turbulent environments, the positive relationship between combined CEO and executive succession on future performance is improved if the new CEO is internally sourced (support). e) In turbulent markets, consistently high performing organizations will experience lower CEO turnover, but the same number of executive team and strategic changes as other companies (support).
4	The authors provide a figure (reproduced below) in their study to show the hypotheses, relationships, and results.  + and - indicate correlations * Significant at $p < 0.10$, other relationships at least $p < 0.05$ ** Significant for software industry only
5	The authors showed that prior performance (ROA and stock price) is negatively correlated with turnover (especially forced and especially for CEOs) and that future performance (ROA and stock price) following the turnover event improves. Further, the authors provide evidence that new CEOs engage in post succession restructuring (more so for forced resignations) in assets, employees, and capital expenditures and engage in more corporate takeover activity.
6	a) In stable contexts, CEO change will lead to positive future performance (support). b) In stable contexts, executive team succession will lead to positive future performance (no support – support for exits but not entrants). c) In stable contexts, strategic reorientations will be negatively associated with future performance (support). d) In stable contexts, the combination of CEO and executive change will be negatively associated with future performance (support). e) In turbulent contexts, CEO turnover combined with executive succession will be more positively associated with future performance than in stable contexts (support). f) In turbulent contexts, reorientation will be more positively associated with performance than in stable contexts (no support). g) In turbulent contexts, CEO and executive change, by themselves, will be more negatively associated with future performance than in stable contexts (support for CEO but not for executive change).

Tables

Table 3.a.: Conjunctive Research continued

7	a) How much were East German orchestras buffered by national-level political and economic changes post WWII and in the late 1980s? (they were not buffered). b) How did orchestra operations and the life and work of orchestra members change after the two major political-economic events? (they were stable). c) What factors allowed orchestras to adapt successfully and what were the factors that impacted those that failed? (the standing before reunification and the number of changes leaders and players made after the events mattered; orchestras that changed leaders and technical directors performed worse but they were also performing poorly prior to reunification).
8	The study did not test conjunctive research hypotheses; nevertheless, the conclusions deserve mention. When the former states in Eastern Europe liberalized and privatized one would have expected large changes in the way their firms operated. Most companies reduced employment, but the only companies that changed processes and organizational structures and products were those with foreign ownership controlled by foreign managers who were relatively new to their positions and originated from outside the organizations. The conclusions imply (financial performance data not shown) that without substantial organizational change, initiated by outsiders, firms were destined to flounder.
9	This study reviewed prior studies and made certain propositions concerning the ability to change during severe institutional upheaval. While new managers may be able to impact change, they may be ineffective (not influence performance positively) during upheaval since they are unlikely to have capabilities needed for radically different environments *unless* they have knowledge of the new markets *and* of the current business. The rate of organization change is likely to be an increasing function of environmental change. Although the effectiveness of organizational change will increase up to a point of environmental change, after that point it will decline.
10	a) Short-term, executive succession in a liberalized context is more negatively associated with performance than in a state-denominated and regulated context (support). b) Relative to the short-term, long-term performance effects of executive succession are less positive in the liberalized environments than in state-denominated and regulated contexts (support).
11	a) New CEO outsiderness is more positively associated with future performance in turbulent markets than in stable contexts (no support). b) New CEO outsiderness is more positively associated with future performance in munificent contexts than in non-munificent environments (support). c) New CEO outsiderness is more positively associated with future performance when prior performance is low (support). d) New CEO outsiderness in combination with fewer strategic changes is more positively associated with future performance than if there were more strategic changes (support). e) New CEO outsiderness in combination with more senior executive changes is more positively associated with future performance than if there were less executive turnover (support).

Panel C: Data and Method

#	Feature	Details
1	Data	a) 13 industries were explored, including 167 larger companies from 1946-1965. b) Data drawn from Moody's Industrial and Transportation Manuals for performance, and S&P's Register of Corporations, Directors and Executives for leadership change. c) Considered economic (year), industry (SIC code), and company factors, in addition to tracking leadership change (the remainder term associated with a new president or chairman). The authors considered 13 characteristics to categorize companies (some of these characteristics are correlated). Performance variables included sales, net income, and profit margin.

Tables

Table 3.a.: Conjunctive Research continued

	Method	Calculated performance variance attributed to leadership change using a multi-step process to eliminate year, industry, and company variation first. Leadership impact was determined by considering the error term remaining after the other effects were considered.
2	Data	a) Fortune 500 companies were evaluated. b) Data included surveys to Fortune 500 industrial and service companies (1000 firms) (235 surveys returned), key informants at companies, public announcements in the Wall Street Journal, COMPUSTAT tapes for accounting performance information and size (control factor), and CRSP tapes for prices.
	Method	Stockholder reaction is the dependent variable in the multivariate regressions. To test the relationships among various variables the authors created multiple models from which they removed factors systematically.
3	Data	a) Companies included 59 microcomputer firms, founded 1968-1971 and tracked until 1980. b) Data was gathered from 10Ks, annual reports, industry journals, business-press, and industry contacts. Two independent teams created and then compared data from alternative sources. c) Some of the variables included: strategy – products and markets, structure – executive team's titles, organizational performance – ROA, dummy variables included to control for prior performance and secular trends.
	Method	Utilized a two-stage least squared approach to correct for autocorrelation and heteroscedasticity. The transformed data was then pooled and analyzed using a single generalized least squared ("GLS") regression.
4	Data	a) 40 furniture companies and 69 computer software companies selected in 1982 were tracked from 1982 to 1984. b) Data was gathered from Compustat Industrial Database and 10Ks. c) Some of the variables included: strategic reorientation – changes in business strategy and one or more other key organizational variables, performance – ROA, managerial interpretation of environment from 10Ks, CEO turnover – CEO or President, management turnover – percentage change variable, and management heterogeneity.
	Method	Regressions were performed to test the hypotheses.
5	Data	a) Data included 1,689 firms covered by Value Line Investment Survey in 1984 b) 908 non-takeover-related top management changes (CEO and other management changes) were analyzed over the period 1985-1988 c) Announcements obtained from the Wall Street Journal for type (forced or resignation) of turnover, data for type of manager was obtained from S&P's Register of Corporations, Directors, and Executives, the CRSP database was utilized for stock price data, the Wall Street Journal Index was used to determine the date of turnover, and Compustat data was utilized for the calculation of ROA. d) Some of the variables included: performance – stock price (days -250 to -2, -2 to +1, and + 12 months), ROA (-3 year to + 3 year), restructuring – capital expenditures, assets, employee base, and corporate activity, type of succession – forced versus retirement determined.
	Method	Correlations were compared to evaluate various hypotheses. In addition, mean and median changes in performance variables were measured. Several variables were industry-adjusted and some were market-adjusted.

Tables

Table 3.a.: Conjunctive Research continued

6	Data	a) Data included 291 companies in the US cement industry from 1918-1986. b) Data was obtained from an industry resource (1901-1986) and technical and trade journals. c) Some of the variables included: organizational performance - ROA (industry-adjusted), performance crisis – ROA over prior 3 years, if ROA down two years in a row = crisis, reorientation – consider strategy, structure, power, and control (Tushman and Romanelli, 1985) and if two changes over less than two years = reorientation, turbulence – binary variable for changes in technology, regulation, or war, dummy variables for several control factors.
	Method	A two-stage least squared approach was used to correct for autocorrelation and heteroscedasticity. The transformed data was then pooled and analyzed using GLS regression. Several models (regressions) were evaluated to test various hypotheses.
7	Data	a) Data included East German symphony orchestras during the turbulent environment after WWII and during the reunification of Germany. This focused on the period between 1985 and 1990. The authors gathered data from East Germany, West Germany, the US, and the UK (all for 1985-1990, and East Germany for first period) for 78 orchestras in total. b) Data included interviews, observations, archive data (concert programs, rosters, financial data, and attendance), social and regulatory data through interviews with the government agency responsible for orchestras, a spokesman for East German Minister of Culture, etc.
	Method	Quantified various qualitative factors and utilized other quantitative data to compare various characteristics of orchestras in four countries and performed in-depth analysis of East German orchestras to answer specific questions.
8	Data	a) 18 Hungarian companies were analyzed from 1993-4 and 1996. b) Data was obtained from detailed interviews with senior managers of eighteen companies for ownership, control, products and markets, and organizational restructuring, interviews with senior managers of another ten companies as well as interviews of employees and middle managers of fourteen of the eighteen original companies were conducted to confirm the data from the original eighteen firms, interviews of civil servants, politicians, and representatives of interest groups were also conducted. Data collected from interviews were confirmed with secondary sources.
	Method	Study descriptive in nature – no statistical tests.
9	Data	Review of past studies.
	Method	Study descriptive in nature – no statistical tests.
10	Data	a) Data included commercial banks under private and state ownership from 1970-1989. There were 27 banks in total, but only 18 in the investigation. b) Data was obtained from the Turkish Union of Banks for financial and operating performance and data on board chairmen and managers and additional information was obtained from personnel archives of corporations. c) Some of the variables included: organizational performance – ROA, control variables include economic (openness of economy and financial deepening), strategic (fund and revenue generation, and fund transfers), and organizational variables (size and ownership).

Tables

Table 3.a.: Conjunctive Research continued

	Method	The study utilized a three stage least squares approach. It combined SURE (seemingly unrelated regression equations) with two-stage least squares approach to eliminate various problems with the data.
11	Data	a) The data includes mid-size to large public companies in the airline, paints, varnishes, and allied products, and industrial inorganic chemical industries (as defined by SIC codes) from 1972-2002. Only single-business firms were included in final sample of 90 firms. b) For CEO succession, data gathered from biographies. Senior executive lists were obtained from the S&P Register of Corporations, Directors, and Executives, Dun & Bradstreet Reference Book of Corporate Management, Who's Who in Finance and Industry, the Wall Street Journal CEO turnover announcements, and corporate annual reports. Data for strategic change, demand instability, environmental munificence, firm operating performance and market-based performance for the industry, and firm size were gathered from Compustat and other published sources such as US Industry Outlook, US Census of Manufacturers, and the annual report of the Airline Transportation Association. c) Some of the variables included: organizational performance - industry-adjusted ROA and total shareholder return 3-yr forward, CEO outsiderness – firm and industry tenure, turbulence – a measure of volatility of revenue per passenger mile or volume of shipments, munificence – slope of the turbulence regression equation, strategic change – six financial factors, controlled for industry with dummy variable and additional controls were made for time period, the fact that a firm's risk of succession may be related to its event history, CEO/Chair separation, board size, ratio of outside directors, and others.
	Method	To correct for the fact that succession is more likely to occur in poor performing companies the author used the Heckman selection model (Heckman, 1979 – see Zajac and Westphal, 1996). They note that this is a two stage procedure that corrects for selection bias. The author first estimated the likelihood of succession and then incorporated the estimates from that model into a second-stage ordinary least squares model to predict performance for those firms experiencing succession.

Panel D: Limitations of Studies	
#	Issues with study
1	The study did not address whether leadership change had a positive or negative impact on performance. It only showed that it helped explain the variance in performance. The performance variables were not measured on a per share basis, so a company could, for instance, grow sales but lower sales per share and this would have been considered positive. ROA (return on assets), ROE (return on equity), stock-based, and other performance measures were not considered. The scheme for isolating the leadership impact is unique (the remainder term), but what would happen if leadership was considered at the beginning or middle stages of the process rather than the end – would the results change? The authors did not adequately explain why their results vary by industry and characteristic. The authors also did not consider how these characteristics explain environmental duress.
2	The authors evaluated short-term stockholder reaction (showed the 5-day interval only). It would have been useful to also measure long-term stockholder reaction and financial performance. The returns were risk-adjusted using beta, but it would have been useful to consider industry-relative returns since beta is backward looking. The time period was not specified so one cannot ascertain if this impacted the results.

Tables

Table 3.a.: Conjunctive Research continued

3	ROA was utilized to judge performance; however, it may not be the best and is definitely not the only good measure with which to evaluate public companies. It does not reflect the return (or earnings) on equity, or what returns ultimately accrue to shareholders (to whom management reports). ROA is likely more stable than ROE, which may be a positive except for the fact that it was utilized to evaluate performance during an environment that was considered turbulent. The authors assume that the entire period studied was turbulent and, of course, even when an industry is turbulent some companies are likely stable. Except for tests of the last hypothesis, analysis of ROA did not consider differences between firms with different levels of initial performance so we do not know whether the results apply to high performing or low performing companies for four of the hypotheses.
4	The authors used ROA to measure management performance. See limitations cited in #3 for issues with this measure. This study did not consider many companies and only considered two industries. Furthermore, the years of the study were limited (performance just for 1982-4). The authors only tested strategic reorientation and did not state anything concerning whether it positively impacted performance or not. The authors assumed that the entire period and all companies in the furniture industry were stable and all computer software companies were turbulent. This is a lofty assumption since some furniture companies were likely laggards and some software companies likely performed well. Tests for difference in turbulence between furniture and computer software were based on sales, but other factors may be more appropriate since sales does not vary as much as other financial factors such as earnings. Managements' interpretations of the environment (coded from a review of 10Ks) are subjective. The period chosen for the study was one characterized by substantial economic turbulence in the US, so even if furniture was considered less turbulent than computer software, the whole period was impacted by extreme systematic conditions.
5	The authors used ROA to measure management performance. See limitations cited in #3 for issues with this measure. Stock price performance was only tracked for one year following the event and it could take longer than one year for a new leader to impact performance. Only companies existing in 1984 (during an economic recovery) were analyzed. The authors did not differentiate the impact of succession between the initial high performers and low performers so we do not know whether the mean reverting performance and restructurings are related to a subset of low or high performing companies.
6	The authors used ROA to measure management performance. See limitations cited in #3 for issues with this measure. The authors did not divide the universe into cohorts based on the initial level of performance so we do not know how the results differ between relatively high and low performing firms.
7	The study only considered changes impacting performance from 1990 to 1991, so the impact of leadership successions may not have had time to influence results. The authors noted that companies that changed leaders scored low on various factors following turnover but they had scored low beforehand. Few financial data points were analyzed and one specific financial variable, "adequacy of resources," was based on a qualitative player survey.
8	The study is not rigorous from a statistical standpoint. Regressions and statistical tests of various relationships were not performed. Performance (accounting or stock-based) resulting from changes was not specifically discussed so it is difficult to evaluate the type of organization (crises state owned enterprise, stable state owned enterprise, manager controlled, or foreign controlled) that performed best.
9	The paper is descriptive in nature (no empirical tests), so there are no tests of the author's claims with which to evaluate the study.

Tables

Table 3.a.: Conjunctive Research continued

10	The authors used ROA to measure management performance. See limitations cited in #3 for issues with this measure. The entire periods pre and post privatization were segmented as stable and volatile, respectively, and it is easy to imagine that there were volatile sub-periods during the "stable" period and stable sub-periods during the "volatile" period. There were very few companies in the investigation. Performance was not adjusted to consider how the results would be influenced by segmenting the firms into cohorts based on initial level (high or low) of performance.
11	The author utilized ROA to measure management performance. See limitations cited in #3 for issues with this measure. The study improved existing research by considering the level of CEO outsiderness, but there are other limitations to the data set. The author excluded diversified business. Restructurings of these businesses could be one way for a new CEO to show his or her worth. Environmental turbulence/munificence were estimated by a measure of volatility/growth of sales and volume for the chemical, paints, and airline industries. Based on my experience as an investment manager, I surmise that these industries' earnings are highly sensitive to small changes in sales because of their high fixed costs structures – if sales go up or down by small amounts earnings can change wildly. Swings will differ among companies based on their relative fixed cost structures. Thus, this study's consideration that small sales changes represent a stable environment is suspect. It would have been useful to consider other variables such as earnings when determining turbulence and munificence.

Tables

Table 4.a.: Behavioral Biases

Behavioral Bias	Description
Self Attribution	The tendency to attribute success to one's contributions and failure to outside forces
Overconfidence	Overestimation of knowledge and ability to control the situation, underestimation of risks
Prospect Theory	People tend to take more risks in loss situations than in situations with gains
Escalation of Effort	Devoting extra resources to a failing strategy even when the likelihood of recovery is low
Herding	Tendency for people to conform and follow the crowd
Confirmation Bias	Tendency to look for and recognize information that confirms one's existing beliefs
Anchoring	Reflects the degree to which the initial judgment about an event or situation prohibits one from deviating from that position

Table 6.a.: University President Roles

Summary of Responses for all Presidents and all Board Chairpersons				
	Presidents		Board Chairpersons	
Role Dimension	Mean	Rank	Mean	Rank
Visionary	1.30	1	1.36	1
Trustee Rapport Builder/Advisor	1.32	2	1.58	3
P.R. Specialist/Image Builder	1.43	3	1.52	2
Fund Raiser	1.50	4	1.59	4
Financial Manager	1.54	5	1.75	6
Administrator/Executive	1.79	6	1.60	5
Consensus Builder	1.89	7	2.05	7
Marketer/Salesperson	2.15	8	2.14	9
Faculty Advocate	2.22	9	2.09	8
Educational Advocate	2.24	10	2.39	12
Symbol/Ceremonial Official	2.25	11	2.35	11
Academic Planner/Innovator	2.27	12	2.22	10
Community Leader	2.35	13	2.76	17
Government Liason	2.51	14	2.56	15
Interinstitutional Diplomat	2.62	15	2.50	14
Student Liason/Mentor	2.67	16	2.66	16
Alumni Liason/Motivator	2.54	17	2.48	13
Physical Plant/Property Overseer	2.98	18	3.14	19
Scholar/Teacher	3.29	19	3.48	20
Labor Relations Specialist	3.42	20	3.06	18

Tables

Table 6.b.: What Do Presidents Do?

Area or Activity	Daily	Once or Twice a Week	Once or Twice a Month	Less than Once a Month	Not Applic -able	Not Repor -ted
Panel A: How often do you attend to these various activities?						
Fund raising (all aspects)	52.7%	38.4%	6.0%	0.5%	0.1%	2.2%
Budget/finance	44.4%	43.5%	9.2%	0.7%	0.0%	2.4%
Educational Leadership	40.6%	32.1%	19.0%	4.3%	0.7%	3.4%
Personnel	37.8%	39.0%	16.9%	3.7%	0.3%	2.4%
Student life	28.1%	46.1%	19.8%	3.4%	0.1%	2.5%
Writing (speeches, reports, etc.)	22.8%	49.5%	20.5%	4.5%	0.1%	2.6%
Strategic/institutional planning	22.8%	40.4%	27.1%	7.3%	0.0%	2.4%
Relations with governing board	16.4%	43.6%	28.1%	9.2%	0.3%	2.5%
Town-growth relations	13.9%	35.5%	30.8%	15.4%	1.7%	2.7%
Enrollment engagement	12.6%	46.6%	25.5%	12.8%	0.3%	2.2%
Alumni relations	8.8%	35.7%	39.7%	13.7%	0.0%	2.1%
Athletics	4.7%	40.3%	36.9%	11.3%	4.6%	2.2%
Relations with political leaders	4.3%	22.6%	39.0%	29.1%	2.5%	2.5%
Relations with chancellor or equivalent (if multicampus system)	2.5%	11.0%	11.1%	4.2%	58.6%	12.6%
Technology/security	2.1%	23.3%	47.0%	24.1%	1.2%	2.4%
Panel B: In general, how often do you talk to or meet with each of the following?						
Provost	52.7%	37.6%	1.3%	0.1%	5.8%	2.5%
Chief financial officer (or equivalent)	49.1%	47.1%	2.1%	0.1%	0.0%	1.6%
Director of development/advancement	42.7%	51.3%	3.1%	0.3%	0.7%	2.0%
Head of student affairs	18.2%	62.2%	14.1%	3.0%	0.4%	2.1%
Head of enrollment/admissions	17.8%	52.6%	21.5%	6.3%	0.1%	1.7%
Chief information officer (or equivalent)	8.1%	41.2%	33.9%	11.5%	3.5%	1.7%
General counsel	5.8%	23.7%	29.7%	29.2%	9.7%	2.0%
Athletic director	2.6%	30.5%	39.3%	20.3%	5.6%	1.7%
Chair of the board (or equivalent)	1.4%	40.2%	41.1%	13.6%	2.0%	1.7%
Chancellor or equivalent (if multicampus system)	1.0%	8.4%	13.6%	4.6%	60.9%	11.5%
Chair of faculty senate (or equivalent)	0.9%	20.0%	49.5%	21.6%	6.5%	1.4%
Head of alumni association	0.5%	5.9%	38.6%	51.8%	1.8%	1.3%
Head of student government	0.4%	13.2%	57.5%	26.8%	1.0%	1.0%
Lawmakers	0.1%	11.3%	35.3%	44.8%	6.4%	2.1%

Tables

Table 6.c.: Variables

Variable	Description	Source	Type	Stakeholder
Performance Variables				
AGR	Alumni giving rate	USN	Op, Fin	Mgt, Cust
T10	% of students in top 10% of high school class	USN	Mkt, Op	Cust
ACR	Acceptance rate for applications	USN	Mkt, Op	Cust
S_E	Scholarship expense per student	IPEDS	Fin, Mkt	Mgt, Cust
T_E	Tuition revenue per student	IPEDS	Mkt, Fin	Mgt, Cust
SR	Student to faculty measure of size of average class	USN	Op	Cust, Mgt
REP	Academic reputation as evaluated by other university administrators	USN	Mkt	Mgt
RNT_E	Revenue excluding tuition per student	IPEDS	Fin, Op	Mgt, Gov
RCh	Past 3-year change in revenue growth rate group ranking	IPEDS	Fin	Mgt, Gov
ECh	Past 3-year change in enrollment growth rate group ranking	IPEDS	Op	Cust, Gov
REV	Revenue	IPEDS	Fin	Mgt, Gov
Bureaucracy				
PUVSPRAdj	Public vs. private university	USN	Op, Fin	Mgt, Gov, Cust
REV	Revenue	IPEDS	Fin	Mgt, Gov
Turnover				
TOTNAdj and TOTNAdjTOT	Coded to indicate whether succession takes place	IPEDS	Op	Mgt
Mkt = Market; Fin = Financial, Op = Operational; Cust = Customer; Mgt = Management; Gov = Government				
Source: USN = *U.S. News & World Report*; IPEDS = Integrated Postsecondary Education System				

Notes:

- In later tables, if ChP follows the term this refers to 3-yr past growth rate and where ChF appears this refers to future 3-yr growth rate.
- In later tables, if the letter "a" follows the term then the data was adjusted so that a higher percentile group ranking represents strength.
- TOTNAdj and TOTNAdjTOT were coded as 1 for turnover and 0 for no turnover. TOTNAdj represents turnover where the new leader remains for three or more years and TOTNAdjTOT represents all turnover events.
- PUVSPRAdj was coded as 1 for public and 0 for private affiliation.

Tables

Table 7.a.: Universe Raw Data

Panel A							
Item	Count	% Missing	Average	Median	Standard Deviation	Skew	Kurtosis
TOTNAdj	1561	0%	0.10	0.00	0.29	2.84	6.10
PUvsPr	1561	0%	0.35	0.00	0.48	0.63	-1.61
REP	1561	0%	107.2	106.0	63.2	0.09	-1.12
REPChP	1531	-2%	0.34	0.00	13.17	-0.99	55.35
REPChF	1561	0%	-0.09	0.00	12.9	0.07	84.07
T10	1394	-11%	39.1%	30.0%	25.6%	0.96	-0.28
T10ChP	1286	-18%	0.5%	0.0%	6.4%	-0.36	5.95
T10ChF	1368	-12%	1.0%	0.0%	5.6%	0.13	4.92
ACRT	1544	-1%	68.2%	73.0%	19.4%	-1.13	0.79
ACRTChP	1499	-4%	-1.6%	-2.0%	10.6%	0.34	8.57
ACRTChF	1535	-2%	-2.6%	-3.0%	10.2%	0.26	16.15
EChg	1561	0%	1.9%	1.9%	7.4%	0.03	4.64
SR	1467	-6%	11.2%	11.0%	6.3%	0.48	0.00
SRChF	1445	-7%	0.2%	0.0%	3.4%	-0.27	9.05
AGRT	1536	-2%	17.9%	15.0%	11.1%	1.74	5.28
AGRTChF	1511	-3%	-0.7%	-1.0%	6.7%	-2.22	45.20
REV	1527	-2%	$592,366,729	$359,806,000	$582,643,409	2.51	8.72
RChg	1507	-3%	21%	19%	28%	3.90	27.48
T_E	1520	-3%	$7,029	$4,378	$5,071	1.01	-0.02
T_EChP	1471	-6%	23%	15%	154%	25.14	688.33
T_EChF	1505	-4%	24%	20%	45%	10.56	158.02
RNT_E	1520	-3%	$38,108	$21,399	$73,809	9.92	121.54
RNT_EChP	1492	-4%	21%	17%	34%	2.99	15.67
RNT_EChF	1517	-3%	22%	15%	30%	1.00	6.26
S_E	1520	-3%	$3,231	$2,157	$2,302	1.53	1.87
S_EChP	1493	-4%	32%	24%	80%	9.60	130.30
S_EChF	1519	-3%	34%	26%	78%	10.79	150.13

* If ChP follows the item this refers to 3-yr past growth rate and where ChF appears this refers to future 3-yr growth rate.

** See table 6.c. for variable definitions.

Tables

Table 7.a.: Universe Raw Data continued

Panel B	
Item	Count
University-Years	1561
Universities	223
Universities by Year	
1996	223
1997	223
1998	223
1999	223
2000	223
2001	223
2002	223

Tables

Table 7.b.: Sample Raw Data

Panel A						
Item	Count	Average	Median	Standard Deviation	Skew	Kurtosis
TOTNAdj	932	0.11	0.00	0.32	2.42	3.87
PUvsPr	932	0.38	0.00	0.49	0.50	-1.76
REP	932	92.3	86.0	57.6	0.28	-0.95
REPChP	932	-0.08	0.00	11.46	4.19	73.90
REPChF	932	-0.25	0.00	8.4	-0.52	5.00
T10	932	42.0%	32.0%	26.0%	0.81	-0.61
T10ChP	932	0.7%	0.0%	6.0%	0.00	5.38
T10ChF	932	1.2%	1.0%	6.0%	-0.22	5.47
ACRT	932	65.8%	71.0%	21.0%	-0.92	0.07
ACRTChP	932	-2.0%	-2.0%	10.4%	0.47	15.50
ACRTChF	932	-2.8%	-3.0%	9.0%	2.07	20.77
EChg	932	1.8%	1.7%	8.5%	1.19	9.33
SR	932	11.7%	11.0%	6.2%	0.54	0.15
SRChF	932	0.2%	0.0%	2.8%	0.66	6.83
AGRT	932	19.2%	16.0%	11.0%	1.61	4.43
AGRTChF	932	-0.7%	-1.0%	5.8%	-3.28	62.50
REV	932	$686,171,873	$437,260,000	$703,024,979	2.74	12.29
RChg	932	20%	19%	26%	1.90	15.78
T_E	932	$7,858	$4,814	$6,007	0.92	-0.27
T_EChP	932	20%	15%	42%	10.93	166.55
T_EChF	932	24%	19%	29%	4.29	45.00
RNT_E	932	$42,597	$22,905	$73,206	7.90	84.50
RNT_EChP	932	20%	17%	34%	1.85	10.36
RNT_EChF	932	25%	16%	68%	8.16	97.91
S_E	932	$3,691	$2,451	$2,891	1.40	1.55
S_EChP	932	31%	24%	67%	11.67	191.27
S_EChF	932	32%	26%	51%	8.16	97.84

* If ChP follows the item this refers to 3-yr past growth rate and where ChF appears this refers to future 3-yr growth rate.
** See table 6.c. for variable definitions.

Tables

Table 7.b.: Sample Raw Data continued

Panel B	
Item	Count
University-Years	932
Universities	191
Universities by Year	
1996	73
1997	94
1998	141
1999	132
2000	151
2001	169
2002	172

Tables

Table 7.c.: Difference Between Sample and Universe Raw Data

Panel A									
Item	Count	% Diff	Average	T-test Difference of Mean p-value	Median	Standard Deviation	F-statistic Difference of Variance	Skew	Kurtosis
TOTNAdj	-629	40%	0.01	36.9%	0.00	0.03	10.4%	-0.42	-2.24
PUvsPr	-629	40%	0.03	13.3%	0.00	0.01	54.0%	-0.13	-0.15
REP	-629	40%	-14.9	0.0%	-20.0	-5.7	0.2%	0.20	0.17
REPChP	-599	39%	-0.42	39.9%	0.00	-1.71	0.0%	5.18	18.56
REPChF	-629	40%	-0.17	67.8%	0.00	-4.4	0.0%	-0.59	-79.07
T10	-462	33%	3.0%	0.6%	2.0%	0.5%	42.4%	-0.15	-0.32
T10ChP	-354	28%	0.2%	47.7%	0.0%	-0.4%	71.2%	0.36	-0.57
T10ChF	-436	32%	0.2%	43.0%	1.0%	0.4%	17.9%	-0.35	0.54
ACRT	-612	40%	-2.4%	0.0%	-2.0%	1.5%	0.0%	0.21	-0.72
ACRTChP	-567	38%	-0.5%	27.8%	0.0%	-0.1%	68.4%	0.13	6.94
ACRTChF	-603	39%	-0.2%	66.7%	0.0%	-1.2%	3.6%	1.80	4.62
EChg	-629	40%	-0.1%	79.5%	-0.2%	1.2%	17.3%	1.16	4.69
SR	-535	36%	0.5%	5.5%	0.0%	-0.2%	70.5%	0.05	0.15
SRChF	-513	36%	0.0%	94.1%	0.0%	-0.5%	0.2%	0.92	-2.21
AGRT	-604	39%	1.2%	0.6%	1.0%	-0.1%	93.4%	-0.13	-0.86
AGRTChF	-579	38%	0.1%	83.7%	0.0%	-0.9%	24.6%	-1.07	17.30
REV	-595	39%	$93,805,143	0.1%	$77,454,000	$120,381,569	0.1%	0.23	3.57
RChg	-575	38%	-1%	63.6%	0%	-2%	81.4%	-2.00	-11.69
T_E	-588	39%	$829	0.1%	$436	$937	10.5%	-0.09	-0.25
T_EChP	-539	37%	-3%	33.8%	0%	-112%	0.0%	-14.22	-521.78
T_EChF	-573	38%	0%	94.6%	-1%	-16%	0.0%	-6.27	-113.02
RNT_E	-588	39%	$4,489	13.5%	$1,506	-$603	18.4%	-2.03	-37.04
RNT_EChP	-560	38%	-1%	67.4%	0%	-1%	12.1%	-1.14	-5.30
RNT_EChF	-585	39%	3%	32.1%	1%	38%	0.0%	7.17	91.66
S_E	-588	39%	$460	0.0%	$294	$589	2.5%	-0.14	-0.32
S_EChP	-561	38%	-1%	77.7%	0%	-13%	8.6%	2.08	60.98
S_EChF	-587	39%	-2%	44.6%	-1%	-27%	0.0%	-2.63	-52.29

* If ChP follows the item this refers to 3-yr past growth rate and where ChF appears this refers to future 3-yr growth rate.
** See table 6.c. for variable definitions.

Tables

Table 7.c.: Difference Between Sample and Universe Raw Data continued

Panel B		
Item	Count	% Diff
University-Years	-629	40%
Universities	-32	14%
Universities by Year		
1996	-150	67%
1997	-129	58%
1998	-82	37%
1999	-91	41%
2000	-72	32%
2001	-54	24%
2002	-51	23%

Tables

Table 7.d.: Sample Data by Expectation Phase

Expectation Phase	All	Percentage	1996	1997	1998	1999	2000	2001	2002
1	230	25%	16	29	36	35	38	40	36
2	189	20%	11	15	28	24	29	39	43
3	303	33%	38	23	53	42	51	50	46
4	210	23%	8	27	24	31	34	39	47

Table 7.e.: Analysis of Turnover

Item	1992-2006	1996-2002	1996	1997	1998	1999	2000	2001	2002
Universe									
All Turnover Events	564	249	37	28	35	30	23	59	39
Net Turnover Events *	496	224	34	28	31	29	18	53	35
Turnover Events w/ New Leader 3 or > yr	224	156	25	20	24	15	12	37	28
Sample									
Turnover Events w/ New Leader 3 or > yr		107	13	7	17	11	7	30	22
Difference from Universe		-49	-12	-13	-7	-4	-5	-7	-6
% Missing		31%	48%	65%	29%	27%	42%	19%	21%
By Expectation Phase	1	32	3	2	6	5	2	8	6
	2	25	4	0	4	2	2	6	7
	3	31	5	3	5	3	3	10	2
	4	19	1	2	2	1	0	6	7

* Net turnover: turnover events less events where an interim president takes over in the succeeding year.

Tables

Table 7.f.: Percentile Group Transformed Sample Data

Panel A						
Item	Count	Average	Median	Standard Deviation	Skew	Kurtosis
TOTNAdj	932	0.1	0.0	0.3	2.42	3.87
TOTNAdjTOT	932	0.2	0.0	0.4	1.76	1.12
PUVSPRAdj	932	0.6	1.0	0.5	-0.50	-1.76
REPa *	932	28.8	30.0	13.3	-0.21	-1.07
REPaChP *	932	0.2	0.0	2.9	-1.59	71.39
REPaChF *	932	0.1	0.0	1.9	0.55	5.51
T10	932	27.4	28.0	14.0	-0.14	-1.12
T10ChP	932	0.2	0.0	5.1	-0.10	8.03
T10ChF	932	0.5	0.0	4.3	-0.32	5.71
ACRa *	932	26.7	27.0	14.5	-0.06	-1.22
ACRaChP *	932	-0.4	0.0	8.8	-0.36	4.89
ACRaChF *	932	0.2	0.0	7.1	-0.59	5.81
ECh	932	25.3	25.0	13.6	0.01	-1.14
SRa *	932	24.4	24.0	14.1	0.03	-1.18
SRaChF *	932	0.1	0.0	6.1	-0.08	3.90
AGRT	932	27.5	28.0	13.8	-0.13	-1.13
AGRChF	932	0.4	0.0	7.2	-0.25	4.90
REV	932	27.8	29.0	14.0	-0.16	-1.17
RCh	932	25.8	27.0	14.3	-0.04	-1.20
T_E	932	27.4	28.0	13.9	-0.11	-1.16
T_EChP	932	-0.1	0.0	5.1	-0.01	14.54
T_EChF	932	-0.1	0.0	4.4	1.12	10.44
RNT_E	932	27.7	28.0	13.8	-0.18	-1.07
RNT_EChP	932	-0.1	0.0	5.7	-1.67	14.41
RNT_EChF	932	0.1	0.0	6.6	0.33	14.56
S_Ea *	932	23.0	22.0	13.8	0.16	-1.12
S_EaChP *	932	0.1	0.0	6.5	-0.17	15.93
S_EaChF *	932	0.2	0.0	5.8	-1.45	14.40

* Indicates that the data was adjusted so that higher values indicate strength in operation.
** If ChP follows the item this refers to 3-yr past growth rate and where ChF appears this refers to future 3-yr growth rate.
*** See table 6.c. for variable codes.

Tables

Table 7.f.: Percentile Group Transformed Sample Data continued

Panel B	
Item	Count
University-Years	932
Universities	191
Universities by Year	
1996	73
1997	94
1998	141
1999	132
2000	151
2001	169
2002	172

Tables

Table 7.g.: Correlations

Correlation Matrix									
	Panel A:								
	Observation Variables for Current Performance								
	REPa	T10	ACRa	Sra	AGRT	REV	T_E	RNT_E	S_Ea
REPa	**1.00**								
T10	**0.68**	**1.00**							
ACRa	**0.57**	**0.61**	**1.00**						
SRa	**-0.30**	**-0.15**	**-0.01**	**1.00**					
AGRT	**0.44**	**0.45**	**0.40**	**0.11**	**1.00**				
REV	**0.75**	**0.40**	**0.41**	**-0.37**	**0.16**	**1.00**			
T_E	**0.36**	**0.38**	**0.42**	**0.43**	**0.40**	**0.11**	**1.00**		
RNT_E	**0.69**	**0.59**	**0.47**	**-0.14**	**0.38**	**0.71**	**0.27**	**1.00**	
S_Ea	**-0.41**	**-0.55**	**-0.43**	**-0.32**	**-0.46**	**-0.13**	**-0.67**	**-0.51**	**1.00**
REPaChP	0.11								
T10ChP	0.06	0.15							
ACRaChP	0.11	0.11	0.33						
ECh	-0.13	-0.03	-0.08	-0.23					
RCh	0.03	0.11	0.08	-0.06	-0.02				
T_EchP	0.02	-0.03	0.02	0.03	0.02	0.06			
RNT_EChP	-0.04	-0.03	-0.04	0.06	-0.03	0.07	0.02		
S_EaChP	0.01	-0.02	-0.03	-0.09	-0.05	0.00	-0.01	-0.06	
REPaChF	-0.08								
T10ChF	0.12	-0.17							
ACRaChF	0.02	-0.02	-0.25						
SRaChF	0.02	0.07	0.08	-0.21					
AGRChF	0.11	0.06	0.00	-0.04	-0.29				
T_EChF	-0.03	-0.06	-0.04	0.07	0.07	-0.01			
RNT_EChF	0.03	0.01	0.06	0.03	0.02	-0.11	0.07		
S_EaChF	0.01	0.01	-0.03	-0.07	-0.03	0.00	-0.09	0.06	
TOTNAdj	-0.03	-0.05	-0.04	0.03	-0.02	-0.02	0.00	-0.03	0.01
PUVSPRAdj	-0.22	-0.42	-0.37	-0.47	-0.46	0.04	-0.79	-0.21	0.74

Tables

Table 7.g.: Correlations continued

Correlation Matrix								
	Panel B: Observation Variables for Past Changes in Performance							
	REPaChP	T10ChP	ACRaChP	ECh	RCh	T_EchP	RNT_EChP	S_EaChP
REPa								
T10	0.09							
ACRa	0.05	0.08						
SRa	-0.05	-0.06	-0.04					
AGRT	0.05	0.04	0.08	-0.18				
REV	0.04	0.08	0.03	-0.13	0.11			
T_E	-0.03	-0.03	0.07	-0.27	0.02	0.18		
RNT_E	0.04	0.06	0.06	-0.22	0.11	0.02	0.21	
S_Ea	-0.02	0.00	-0.12	0.22	-0.04	0.06	-0.06	0.22
REPaChP	**1.00**							
T10ChP	**0.15**	**1.00**						
ACRaChP	**0.06**	**0.15**	**1.00**					
ECh	**0.01**	**-0.01**	**0.01**	**1.00**				
RCh	**0.05**	**0.00**	**0.01**	**0.25**	**1.00**			
T_EchP	**0.04**	**-0.01**	**-0.03**	**-0.18**	**-0.02**	**1.00**		
RNT_EChP	**0.07**	**0.00**	**0.01**	**-0.14**	**0.57**	**-0.01**	**1.00**	
S_EaChP	**-0.04**	**-0.01**	**-0.06**	**0.14**	**-0.12**	**0.15**	**-0.28**	**1.00**
REPaChF	-0.20							
T10ChF	-0.06	-0.17						
ACRaChF	-0.05	-0.08	-0.33					
SRaChF	0.00	-0.01	0.06	-0.02				
AGRChF	0.02	0.04	0.05	0.03	0.06			
T_EChF	0.04	-0.03	0.02	0.06	0.04	-0.33		
RNT_EChF	-0.05	0.02	0.03	-0.05	-0.35	-0.02	-0.56	
S_EaChF	0.03	-0.02	0.06	0.04	0.03	-0.05	0.09	-0.34
TOTNAdj	-0.07	0.02	-0.03	-0.02	-0.07	0.01	-0.01	0.01
PUVSPRAdj	0.03	0.04	-0.08	0.18	-0.03	-0.01	0.01	0.02

Tables

Table 7.g.: Correlations continued

Correlation Matrix										
	Panel C:								Panel D:	
	Observation Variables for Future Changes in Performance								Other	
	REPaChF	T10ChF	ACRaChF	SRaChF	AGRChF	T_EChF	RNT_EChF	S_EaChF	TOTNAdj	PUVSPRAd
REPa										
T10	0.00									
ACRa	0.04	0.01								
SRa	0.07	-0.09	0.00							
AGRT	0.02	0.03	0.02	0.07						
REV	-0.01	0.12	0.02	-0.02	0.07					
T_E	0.07	0.04	0.06	0.06	0.03	-0.14				
RNT_E	-0.04	0.05	0.00	-0.03	0.07	-0.02	-0.27			
S_Ea	-0.04	-0.05	-0.04	-0.04	-0.01	-0.07	0.03	-0.24		
REPaChP										
T10ChP	0.05									
ACRaChP	0.00	0.08								
ECh	0.04	0.02	0.04							
RCh	-0.04	0.03	0.03	-0.05						
T_EchP	-0.04	-0.03	-0.01	-0.01	-0.01					
RNT_EChP	-0.07	0.02	0.03	-0.12	0.06	0.03				
S_EaChP	-0.02	-0.08	-0.04	0.03	0.02	-0.09	0.08			
REPaChF	**1.00**									
T10ChF	**0.13**	**1.00**								
ACRaChF	**0.08**	**0.22**	**1.00**							
SRaChF	**0.04**	**-0.02**	**-0.07**	**1.00**						
AGRChF	**-0.01**	**0.06**	**0.08**	**-0.04**	**1.00**					
T_EChF	**-0.03**	**0.06**	**-0.04**	**0.01**	**-0.07**	**1.00**				
RNT_EChF	**0.10**	**0.04**	**-0.03**	**0.11**	**-0.02**	**0.02**	**1.00**			
S_EaChF	**-0.03**	**0.02**	**-0.02**	**-0.03**	**-0.02**	**0.16**	**-0.25**	**1.00**		
TOTNAdj	0.02	0.00	0.03	-0.05	-0.01	-0.02	-0.01	-0.03	1.00	
PUVSPRAdj	-0.04	0.03	-0.05	-0.08	-0.01	-0.05	-0.05	0.06	-0.01	1.00
* See table 6.c. for variable definitions.										

Tables

Table 7.h.: Descriptive Statistics for Composites

Composite	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Future	17.375	-8.500	8.875	0.170	2.044	0.017	0.080	1.488	0.160
Bureaucracy	0.990	0.010	1.000	0.588	0.285	-0.482	0.080	-0.961	0.160
Current	31.778	11.222	43.000	26.748	6.993	0.358	0.080	-0.577	0.160
Past	18.000	-7.531	10.469	0.022	2.012	-0.255	0.080	2.061	0.160
TOTNAdj	1.000	0.000	1.000	0.115	0.319	2.421	0.080	3.867	0.160
TOTNAdjTOT	1.000	0.000	1.000	0.170	0.375	1.764	0.080	1.115	0.160

Tables

Table 7.i.: Future Change in Performance

Variable		Source	Explanation
Quality of Education	REPaChF	US News	This figure is inverted so that a better reputation ranking (closer to #1) receives a higher percentile group ranking. Academic reputation is determined by a survey of leaders of universities. This figure, according to the person who conducts the survey, is relatively stable over time.
Student Quality	ACRaChF	US News	This figure is inverted so that a higher acceptance rate receives a lower percentile group ranking. A lower acceptance rate indicates strong demand for the school per given spot.
	T10ChF	US News	The larger the proportion of students in the top 10% of their class who enroll the better the university's perceived value.
Quality of Education	SRaChF	US News	This figure is inverted so that a greater number of students per class receives a lower percentile group ranking. The fewer students per class the more an instructor is available, the greater the interaction of students, etc.
Alumni Loyalty	AGRChF	US News	Theoretically, the more an alumnus credits a university for his or her success the greater the probability that he or she will give back to the university monetarily and in other ways. Also, the more a person is able to give back the more likely that the individual has been successful in his or her career.
Quality of Education and Resources	T_EChF	IPEDS	The more a university can charge in tuition the greater the perceived value of the education by the students. Also, the greater the revenue per student the more resources there are to provide the students with a good education.
	RNT_EChF	IPEDS	Revenue excluding tuition is a measure of the financial health of an institution. There should be a relationship between these external sources and the perceived capabilities of a university.
	S_EaChF	IPEDS	This figure is inverted so that more scholarships per students receive a lower percentile group ranking. Scholarships are utilized by universities to attract quality students; however, scholarships are a sign of weakness showing the university's curriculum is not sufficient to attract these students.
* See table 6.c. for variable definitions.			

Tables

Table 7.j.: Past Change in Performance

Variable		Source	Explanation
Quality of Education	REPaChP	US News	This figure is inverted so that a better reputation ranking (closer to #1) receives a higher percentile group ranking. Academic reputation is determined by a survey of leaders of universities. This figure, according to the person who conducts the survey, is relatively stable over time.
Student Quality	ACRaChP	US News	This figure is inverted so that a higher acceptance rate receives a lower percentile group ranking. A lower acceptance rate indicates strong demand for the school per given spot.
	T10ChP	US News	The larger the proportion of students in the top 10% of their class who enroll the better the university's perceived value.
Quality of Education	EChP	IPEDS	A high enrollment growth rate represents strength in the university. Of course, this could be offset by an increasing acceptance rate and declining tuition per student.
Quality of Education and Resources	T_EChP	IPEDS	The more a university can charge in tuition the greater the perceived value of the education by the students. Also, the greater the revenue per student the more resources there are to provide the students with a good education.
	RNT_EChP	IPEDS	Revenue excluding tuition is a measure of the financial health of an institution. There should be a relationship between these external sources and the perceived capabilities of a university.
	S_EaChP	IPEDS	This figure is inverted so that more scholarships per students receive a lower percentile group ranking. Scholarships are utilized by universities to attract quality students; however, scholarships are a sign of weakness showing the university's curriculum is not sufficient to attract these students.
	RChP	IPEDS	A high revenue growth rate represents strength in the university and more resources for students, especially if revenues expand faster than enrollment.
* See table 6.c. for variable definitions.			

Tables

Table 7.k.: Current Performance

Variable		Source	Explanation
Quality of Education	REPa	US News	This figure is inverted so that a better reputation ranking (closer to #1) receives a higher percentile group ranking. Academic reputation is determined by a survey of leaders of universities. This figure, according to the person who conducts the survey, is relatively stable over time.
Student Quality	ACRa	US News	This figure is inverted so that a higher acceptance rate receives a lower percentile group ranking. A lower acceptance rate indicates strong demand for the school per given spot.
	T10	US News	The larger the proportion of students in the top 10% of their class who enroll the better the university's perceived value.
Quality of Education	SRa	US News	This figure is inverted so that a greater number of students per class receives a lower percentile group ranking. The fewer students per class the more an instructor is available, the greater the interaction of students, etc.
Alumni Loyalty	AGR	US News	Theoretically, the more an alumnus credits a university for his or her success the greater the probability that he or she will give back to the university monetarily and in other ways. Also, the more a person is able to give back the more likely that the individual has been successful in his or her career.
Quality of Education and Resources	T_E	IPEDS	The more a university can charge in tuition the greater the perceived value of the education by the students. Also, the greater the revenue per student the more resources there are to provide the students with a good education.
	RNT_E	IPEDS	Revenue excluding tuition is a measure of the financial health of an institution. There should be a relationship between these external sources and the perceived capabilities of a university.
	S_Ea	IPEDS	This figure is inverted so that more scholarships per students receive a lower percentile group ranking. Scholarships are utilized by universities to attract quality students; however, scholarships are a sign of weakness showing the university's curriculum is not sufficient to attract these students.
Resources	REV	IPEDS	The greater the revenue resources the more the flexibility. Also, the institution would not be large if it has not had some success and, if the university is a public institution, it is more difficult to let a large institution fail than a small one.
* See table 6.c. for variable definitions.			

Tables

Table 7.1.: Descriptive Statistics for Phase/Turnover

Variable	Division	Descriptives	Statistic	Std. Error
Panel A: Turnover				
Future	0	Mean	0.190	0.072
		Skewness	0.028	0.085
		Kurtosis	1.585	0.170
	1	Mean	0.014	0.182
		Skewness	-0.152	0.234
		Kurtosis	0.285	0.463
0 = No Turnover; 1 = Turnover				
Panel B: Phase				
Future	1	Mean	0.515	0.142
		Skewness	0.830	0.160
		Kurtosis	1.630	0.320
	2	Mean	-0.114	0.151
		Skewness	-0.166	0.177
		Kurtosis	0.007	0.352
	3	Mean	-0.058	0.116
		Skewness	-0.717	0.140
		Kurtosis	1.477	0.279
	4	Mean	0.377	0.128
		Skewness	0.184	0.168
		Kurtosis	1.639	0.334
1 = Phase 1; 2= Phase 2; 3 = Phase 3; 4 = Phase 4				

Tables

Table 7.1.: Descriptive Statistics for Phase/Turnover continued

Variable	Division	Descriptives	Statistic	Std. Error
Panel C: Phase/Turnover				
Future	1	Mean	0.527	0.156
		Skewness	0.946	0.173
		Kurtosis	1.788	0.344
	2	Mean	0.445	0.342
		Skewness	-0.331	0.414
		Kurtosis	-0.575	0.809
	3	Mean	-0.072	0.162
		Skewness	-0.319	0.190
		Kurtosis	0.068	0.377
	4	Mean	-0.395	0.433
		Skewness	0.821	0.464
		Kurtosis	0.539	0.902
	5	Mean	-0.070	0.124
		Skewness	-0.666	0.148
		Kurtosis	1.392	0.294
	6	Mean	0.048	0.321
		Skewness	-1.390	0.421
		Kurtosis	3.114	0.821
	7	Mean	0.437	0.136
		Skewness	0.155	0.176
		Kurtosis	1.702	0.350
	8	Mean	-0.230	0.352
		Skewness	0.169	0.524
		Kurtosis	0.354	1.014
1 = Phase 1, No Turnover; 2 = Phase 1, Turnover; 3 = Phase 2, No Turnover; 4 = Phase 2, Turnover; 5 = Phase 3, No Turnover; 6 = Phase 3, Turnover; 7 = Phase 4, No Turnover; 8 = Phase 4, Turnover				

Tables

Table 7.m.: Tests for Homogeneity of Variances

Composite	Levene Statistic	df1	df2	Sig.
Panel A: Turnover				
Future	0.263	1	930	0.608
Current	1.727	1	930	0.189
Bureaucracy	0.896	1	930	0.344
Past	0.000	1	930	0.986
TOTNAdjTOT	32.251	1	930	0.000
Panel B: Phase				
Future	1.998	3	928	0.113
Current	54.432	3	928	0.000
Bureaucracy	16.415	3	928	0.000
Past	3.045	3	928	0.028
TOTNAdj	4.830	3	928	0.002
TOTNAdjTOT	6.158	3	928	0.000
Panel C: Phase/Turnover				
Future	1.090	7	924	0.368
Current	23.098	7	924	0.000
Bureaucracy	8.379	7	924	0.000
Past	2.559	7	924	0.013
TOTNAdjTOT	5.324	7	924	0.000

Tables

Table 8.a.: Reading the Tables

Variable codes:

T10 = % of student in top 10% of high school class

REPa = academic reputation as evaluated by other administrators

T_E = tuition revenue per student

AGR = alumni giving rate

SRa = student to faculty ratio

RNT_E = revenue excluding tuition per student

ACRa = acceptance rate for applications

S_Ea = scholarship expense per student

PUVSPRAdj = public vs. private university

RCh = revenue past 3-yr growth rate group ranking
ECh = enrollment past 3-yr growth rate group ranking
REV = revenue

Note: ChP refers to 3-yr past growth rate and ChF refers to future 3-yr growth rate

Composite variable codes:
- Bureaucracy: public (vs. private) and higher relative group percentile ranking for REV denote more bureaucracy
- Current: relative percentile group ranking for REV, REPa, T10, ACRa, SRa, AGRT, T_E, RNT_E, S_Ea
- Past: relative percentile group ranking for past 3-year growth in REPaChP, ACRaChP, T_EchP, T10ChP, RNT_EChP, S_EChP, RCh, ECh
- Future: relative percentile group ranking for future 3- year growth in T10ChF, REPaChF, T_EChF, AGRChF, SRaChF, RNT_EChF, ACRaChF, S_EaChF
- Turnover: TOTNAdj reflects turnover where the successor remained in place for at least three years and TOTNAdjTOT reflects all turnover events

Phase codes:

Phase 1 = low performance and deteriorating

Phase 2 = low performance and increasing

Phase 3 = high performance and increasing

Phase 4 = high performance and deteriorating

Tables

Table 8.b.: Reversion ("H1")

Tests of reversals. The dependent variable in the tests is the composite Future and the independent variables consist of composites for Current, Past, and Bureaucracy. Panel A shows the tests for the overall data set and Panel B displays the results for the tests controlling for the expectation phases. The observed variables, composites, and phases are defined in the "Reading the Tables" table.

a. Fixed at the displayed value.

Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
Panel A: Tests of Entire Data Set					
Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
H1A	All	(Intercept)	0.716	0.1527	0.000
	All	Bureaucracy	-0.261	0.1158	0.024
	All	Current	-0.014	0.0047	0.002
	All	Past	-0.226	0.0164	0.000
	All	(Scale)	1[a]		
Panel B: Tests of Expectations Phases					
Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
H1B	1	(Intercept)	2.017	0.4636	0.000
	1	Bureaucracy	-1.728	0.2462	0.000
	1	Current	-0.044	0.0208	0.034
	1	Past	-0.230	0.0454	0.000
	1	(Scale)	1[a]		
H1C	2	(Intercept)	2.640	0.5281	0.000
	2	Bureaucracy	-0.375	0.2844	0.187
	2	Current	-0.106	0.0240	0.000
	2	Past	-0.234	0.0675	0.001
	2	(Scale)	1[a]		
H1D	3	(Intercept)	1.589	0.4531	0.000
	3	Bureaucracy	0.945	0.1903	0.000
	3	Current	-0.054	0.0124	0.000
	3	Past	-0.346	0.0442	0.000
	3	(Scale)	1[a]		
H1E	4	(Intercept)	1.062	0.5714	0.063
	4	Bureaucracy	-1.213	0.2755	0.000
	4	Current	-0.011	0.0143	0.460
	4	Past	-0.238	0.0515	0.000
	4	(Scale)	1[a]		

Tables

Table 8.c.: Test of Difference in Mean Values for Phases (variances not assumed equal)

Dependent Variable: Future					
	(I) Phase	(J) Phase	Mean Difference (I-J)	Std. Error	Sig.
Tamhane	1	2	0.630*	0.208	0.015
		3	0.573*	0.183	0.011
		4	0.138	0.191	0.978
	2	1	-0.630*	0.208	0.015
		3	-0.057	0.190	1.000
		4	-0.491	0.198	0.079
	3	1	-0.573*	0.183	0.011
		2	0.057	0.190	1.000
		4	-0.435	0.173	0.071
	4	1	-0.138	0.191	0.978
		2	0.491	0.198	0.079
		3	0.435	0.173	0.071

* The mean difference is significant at the .05 level.

Tables

Table 8.d.: Goodness of Fit and Model Comparison

Goodness of Fit

Deviance

- lower better
- a likelihood-ratios test that compares a model with as many parameters as there are observations (the largest possible log-likelihood value) to the fitted model with independent variables

LL - Log Likelihood

- the log of the probability of the observed results, given the parameter estimates

AICC - Finite Sample Corrected Akaike's Information Criterion (AIC)

- lower is better
- AIC = -2LL + p, where p is the number of parameters in the model; p is added to level the field for models with different number of parameters
- AICC = AIC + [2p(p+1)]/(N-p-1), where N is the sample size; AICC is better for smaller sample sizes

BIC - Bayesian Information Criterion

- lower is better
- BIC = -2LL + ln(N)p

Model Comparison

LR – the Likelihood Ratio (for the Test of Difference in LL)

- since the null models (or reduced models) are nested in the complex model (the framework), one can test for statistical significant differences between the models
- $LR = -2 * (LL_{\text{reduced model}} - LL_{\text{full model}})$, follows the chi-square distribution with degrees of freedom equal to the difference in the degrees of freedom between the reduced and full model

Tables

Table 8.d.: Goodness of Fit and Model Comparison continued

	Goodness of Fit						Model Comparison: Tests of Difference in LL		
Model *	Deviance	*df*	Deviance / *df*	LL	AICC	BIC	LR ***	Diff *df*	Sig. Level
A**	3653.9	927	3.94	-2688.7	5376.8	5400.9	-	-	-
B**	965.0	225	4.29	-693.9	1398.0	1414.9	-	-	-
C**	770.8	184	4.19	-559.1	1128.5	1144.3	-	-	-
D**	1104.8	298	3.71	-830.8	1671.7	1690.2	-	-	-
E**	658.0	205	3.21	-522.0	1054.3	1070.7	-	-	-
H1A	3670.2	928	3.95	-2691.6	5391.1	5410.5	5.8	1	0.020
H1B	968.9	226	4.29	-695.8	1399.8	1413.3	3.8	1	0.051
H1C	774.0	185	4.18	-560.7	1129.6	1142.3	3.2	1	0.074
H1D	1104.8	299	3.69	-830.9	1669.9	1684.6	0.2	1	0.655
H1E	666.6	206	3.24	-526.3	1060.7	1073.9	8.6	1	0.003
H2A	3886.4	930	4.18	-2799.7	5603.3	5613.0	222.0	3	0.000
H2A[1]	3875.6	930	4.17	-2794.2	5592.5	5602.2	-	-	-
H2B	1066.0	228	4.68	-744.3	1492.7	1499.6	100.8	3	0.000
H2B[1]	1066.1	228	4.68	-744.4	1492.9	1499.7	-	-	-
H2C	809.9	187	4.33	-578.6	1161.3	1167.7	39.0	3	0.000
H2C[1]	796.8	187	4.26	-572.1	1148.2	1154.6	-	-	-
H2D	1222.4	301	4.06	-889.6	1783.3	1790.7	117.6	3	0.000
H2D[1]	1218.9	301	4.05	-887.9	1779.8	1787.2	-	-	-
H2E	713.2	208	3.43	-549.6	1103.2	1109.8	55.2	3	0.000
H2E[1]	718.0	208	3.45	-552.0	1108.0	1114.6	-	-	-
H3A	845.1	926	0.91	-423.9	855.9	875.2	-	-	-

* See model tables for model codes

** The alternative model for model comparison

*** LR = -2 (LL(reduced model) - LL (alternative model))

Tables

Table 8.e.: Over- and Under-Reaction ("H2")

Tests of turnover's impact on future performance. The dependent variable in the tests is the composite Future and the independent variable is turnover. Panel A shows the tests for the overall data set and Panel B displays the results for the tests controlling for the expectation phases. The observed variables, composites, and phases are defined in the "Reading the Tables" table.

a. Fixed at the displayed value.

Panel A: Tests of Entire Data Set					
Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
H2A	All	(Intercept)	0.190	0.0348	0.000
	All	Turnover (TOTNAdj)	-0.176	0.1028	0.086
	All	(Scale)	1[a]		
H2A[1]	All	(Intercept)	0.225	0.0359	0.000
	All	Turnover (TOTNAdjTOT)	-0.324	0.0873	0.000
	All	(Scale)	1[a]		

Panel B: Tests of Expectations Phases					
Phase	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
H2B	1	(Intercept)	0.527	0.0711	0.000
	1	Turnover (TOTNAdj)	-0.081	0.1905	0.670
	1	(Scale)	1[a]		
H2B[1]	1	(Intercept)	0.521	0.0737	0.000
	1	Turnover (TOTNAdjTOT)	-0.029	0.1648	0.859
	1	(Scale)	1[a]		
H2C	2	(Intercept)	-0.072	0.0781	0.359
	2	Turnover (TOTNAdj)	-0.323	0.2147	0.132
	2	(Scale)	1[a]		
H2C[1]	2	(Intercept)	0.026	0.0811	0.746
	2	Turnover (TOTNAdjTOT)	-0.719	0.1833	0.000
	2	(Scale)	1[a]		
H2D	3	(Intercept)	-0.707	0.0606	0.249
	3	Turnover (TOTNAdj)	0.118	0.1897	0.533
	3	(Scale)	1[a]		
H2D[1]	3	(Intercept)	-0.010	0.0624	0.876
	3	Turnover (TOTNAdjTOT)	-0.316	0.1601	0.048
	3	(Scale)	1[a]		
H2E	4	(Intercept)	0.437	0.0724	0.000
	4	Turnover (TOTNAdj)	-0.667	0.2406	0.006
	4	(Scale)	1[a]		
H2E[1]	4	(Intercept)	0.424	0.0743	0.000
	4	Turnover (TOTNAdjTOT)	-0.342	0.2000	0.087
	4	(Scale)	1[a]		

Tables

Table 8.f.: Differences in Mean Future Associated With Turnover

Dependent Variable: Future				
Panel A: TOTNAdj				
TOTNAdj	Phase	Mean	Std. Deviation	N
0	1	0.527	2.196	198
	2	-0.072	2.068	164
	3	-0.070	2.039	272
	4	0.437	1.879	191
	Total	0.190	2.064	825
1	1	0.445	1.932	32
	2	-0.395	2.165	25
	3	0.048	1.785	31
	4	-0.230	1.533	19
	Total	0.014	1.887	107
Total	1	0.515	2.158	230
	2	-0.114	2.078	189
	3	-0.058	2.012	303
	4	0.377	1.857	210
	Total	0.170	2.044	932
Panel B: TOTNAdjTOT				
TOTNAdjTOT	Phase	Mean	Std. Deviation	N
0	1	0.521	2.198	184
	2	0.026	2.019	152
	3	-0.010	2.032	257
	4	0.424	1.895	181
	Total	0.225	2.050	774
1	1	0.492	2.012	46
	2	-0.693	2.244	37
	3	-0.326	1.894	46
	4	0.082	1.596	29
	Total	-0.099	2.001	158
Total	1	0.515	2.158	230
	2	-0.114	2.078	189
	3	-0.058	2.012	303
	4	0.377	1.857	210
	Total	0.170	2.044	932

Tables

Table 8.g.: Test of Difference in Mean Values for Phase-Turnover (variances not assumed equal)

Dependent Variable: Future

	(I) PhaseTO	(J) PhaseTO	Mean Difference (I-J)	Std. Error	Sig.
Tamhane	1	2	0.081	0.376	1.000
		5	0.596*	0.199	0.017
		6	0.478	0.357	0.710
	2	1	-0.081	0.376	1.000
		5	0.515	0.363	0.659
		6	0.397	0.468	0.953
	5	1	-0.596*	0.199	0.017
		2	-0.515	0.363	0.659
		6	-0.118	0.344	1.000
	6	1	-0.478	0.357	0.710
		2	-0.397	0.468	0.953
		5	0.118	0.344	1.000

* The mean difference is significant at the 0.05 level.

1 = Phase 1/No Turnover, 2 = Phase 1/Turnover, 5 = Phase 3/No Turnover, and 6 = Phase 3/Turnover, where turnover is defined as succession events where the new leader stays in place for three years or more.

Tables

Table 8.h.: Framework

Tests of the framework. The dependent variable in the tests is the composite Future and the independent variables consist of composites for Current, Past, and Bureaucracy and the variable turnover. Panel A shows the tests for the overall data set and Panel B displays the results for the tests controlling for the expectation phases. The observed variables, composites, and phases are defined in the "Reading the Tables" table.

a. Fixed at the displayed value.

Panel A: Tests of Entire Data Set					
Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
A	All	(Intercept)	0.756	0.1536	0.000
	All	Bureaucracy	-0.266	0.1158	0.022
	All	Current	-0.015	0.0047	0.002
	All	Past	-0.227	0.0165	0.000
	All	Turnover (TOTNAdj)	-0.247	0.1029	0.016
	All	(Scale)	1[a]		

Panel B: Tests of Expectations Phases					
Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
B	1	(Intercept)	2.121	0.4666	0.000
	1	Bureaucracy	-1.796	0.2486	0.000
	1	Current	-0.045	0.0208	0.031
	1	Past	-0.234	0.0454	0.000
	1	Turnover (TOTNAdj)	-0.380	0.1930	0.049
	1	(Scale)	1[a]		
C	2	(Intercept)	2.725	0.5302	0.000
	2	Bureaucracy	-0.388	0.2845	0.172
	2	Current	-0.107	0.0240	0.000
	2	Past	-0.239	0.0675	0.000
	2	Turnover (TOTNAdj)	-0.385	0.2150	0.073
	2	(Scale)	1[a]		
D	3	(Intercept)	1.586	0.4533	0.000
	3	Bureaucracy	0.948	0.1913	0.000
	3	Current	-0.054	0.0124	0.000
	3	Past	-0.347	0.0442	0.000
	3	Turnover (TOTNAdj)	-0.039	0.1912	0.837
	3	(Scale)	1[a]		
E	4	(Intercept)	1.027	0.5715	0.072
	4	Bureaucracy	-1.216	0.2755	0.000
	4	Current	-0.008	0.0143	0.599
	4	Past	-0.241	0.0515	0.000
	4	Turnover (TOTNAdj)	-0.705	0.2413	0.003
	4	(Scale)	1[a]		

Tables

Table 8.i.: Correlations of Composite Variables

Variable	Statistic	Future	Bur-eaucracy	Current	Past	TOTN-Adj	TOTN-Adj-TOT
Future	Pearson Correlation	1.000	-.045	-.073*	-.230**	-.028	-.059
	Sig. (2-tailed)		.170	.026	.000	.402	.069
	N	932	932	932	932	932	932
Bur-eaucracy	Pearson Correlation	-.045	1.000	-.082*	.057	-.018	-.008
	Sig. (2-tailed)	.170		.012	.081	.590	.799
	N	932	932	932	932	932	932
Current	Pearson Correlation	-.073*	-.082*	1.000	.117**	-.030	-.013
	Sig. (2-tailed)	.026	.012		.000	.353	.681
	N	932	932	932	932	932	932
Past	Pearson Correlation	-.230**	.057	.117**	1.000	-.040	-.020
	Sig. (2-tailed)	.000	.081	.000		.226	.549
	N	932	932	932	932	932	932
TOTN-Adj	Pearson Correlation	-.028	-.018	-.030	-.040	1.000	.797**
	Sig. (2-tailed)	.402	.590	.353	.226		.000
	N	932	932	932	932	932	932
TOTN-AdjTOT	Pearson Correlation	-.059	-.008	-.013	-.020	.797**	1.000
	Sig. (2-tailed)	.069	.799	.681	.549	.000	
	N	932	932	932	932	932	932

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 8.j.: Expectations' Impact on Turnover ("H3")

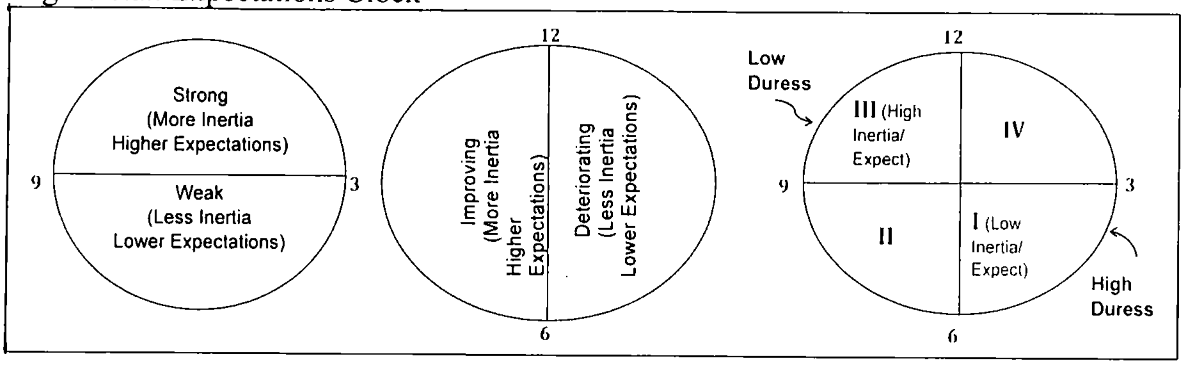
Tests of the environment's impact on turnover. The dependent variable in the tests is turnover (TOTNAdjTOT) and the independent variables consist of composites for Current, Past, and Bureaucracy. The observed variables, composites, and phases are defined in the "Reading the Tables" table.

a. Fixed at the displayed value.

Model	Phase	Independent Variable	Coefficient	Std. Error	Sig. Level
H3A	All	(Intercept)	1.422	0.4046	0.000
	All	Bureaucracy	0.077	0.3078	0.802
	All	Current	0.005	0.0127	0.716
	All	Past	0.023	0.0436	0.593
	All	(Scale)	1[a]		

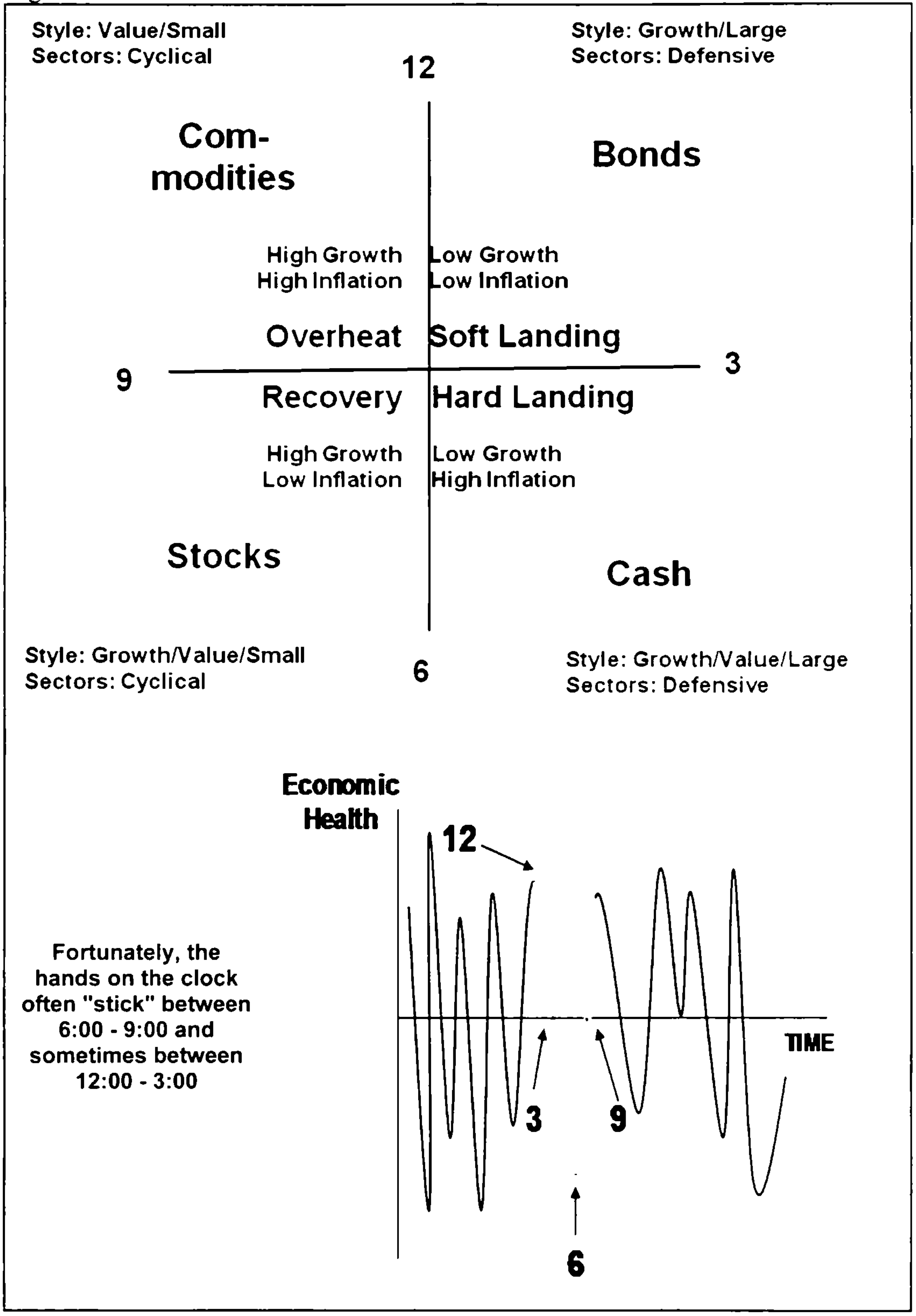
Figures

Figure 1.a.: Expectations Clock



Figures

Figure 2.a.: Economic Clock



Figures

Figure 2.b.: Investment Clock

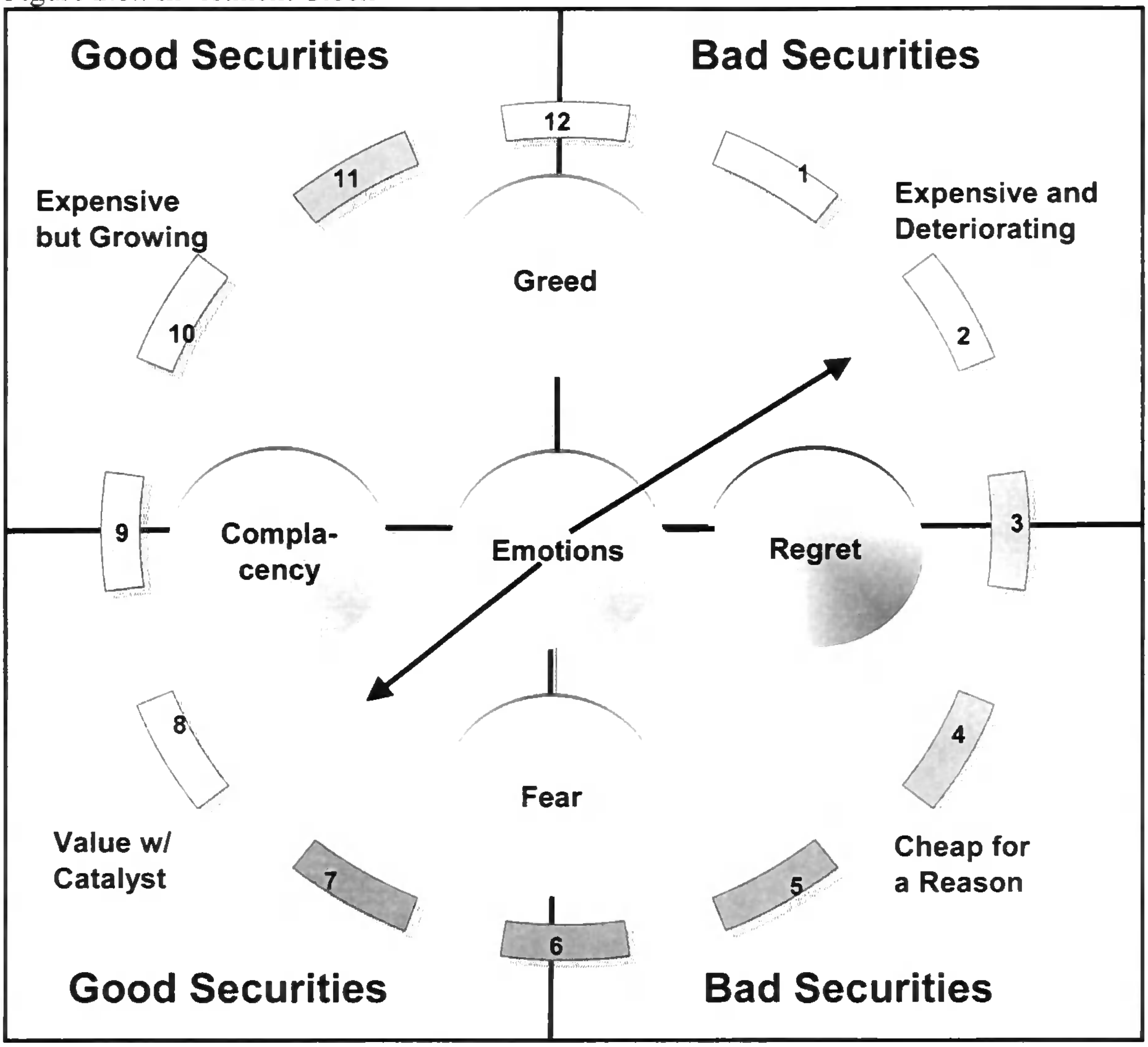
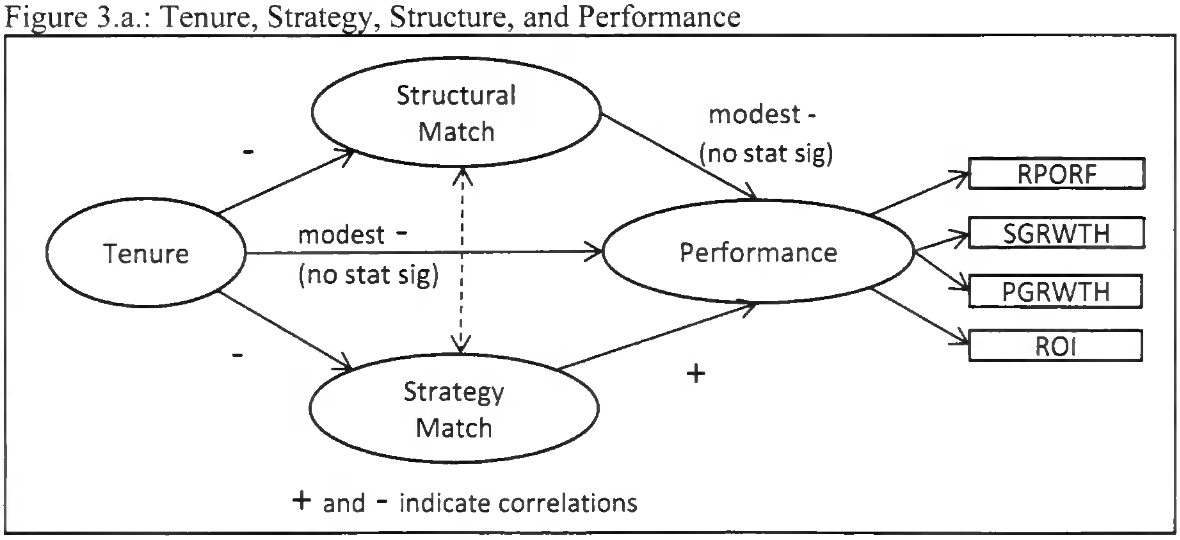


Figure 3.a.: Tenure, Strategy, Structure, and Performance



Figures

Figure 3.b.: Interaction of Old and New Schemes

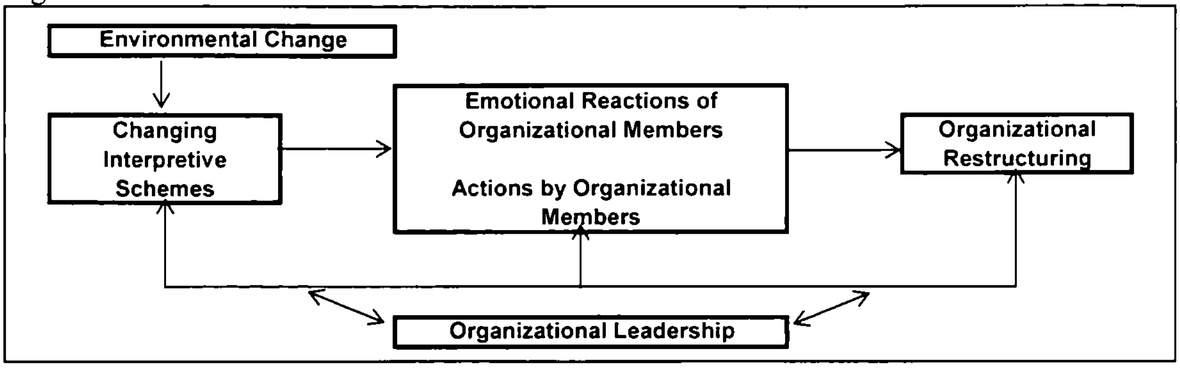


Figure 3.c.: Modified Learning Curve

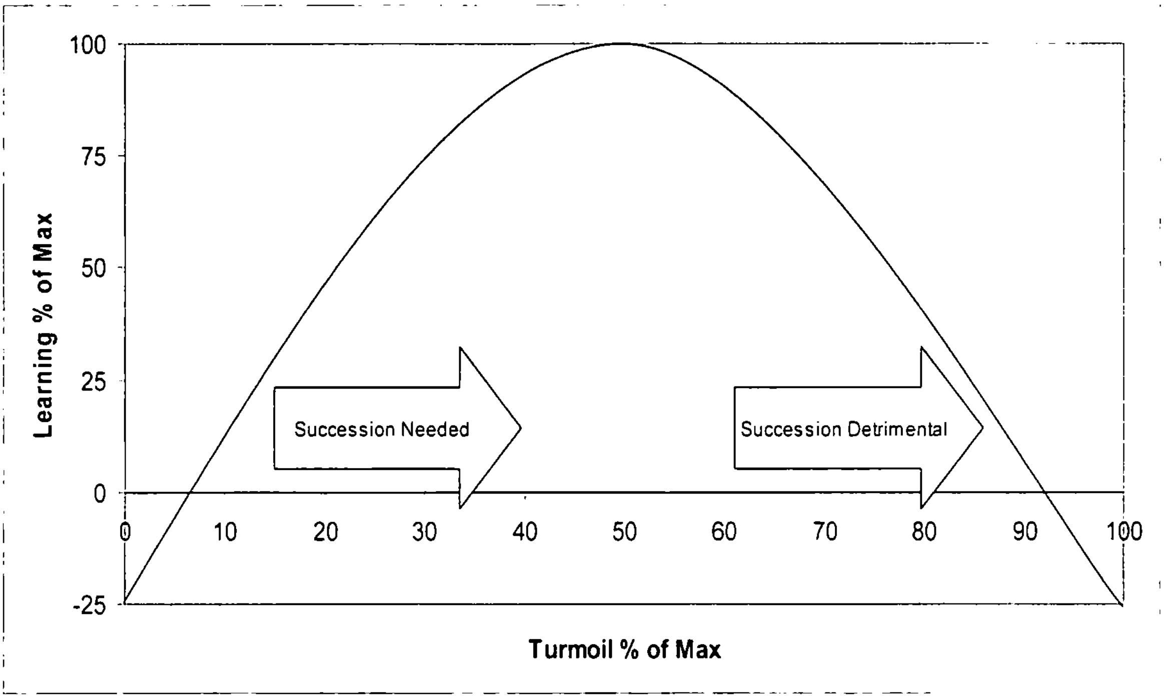
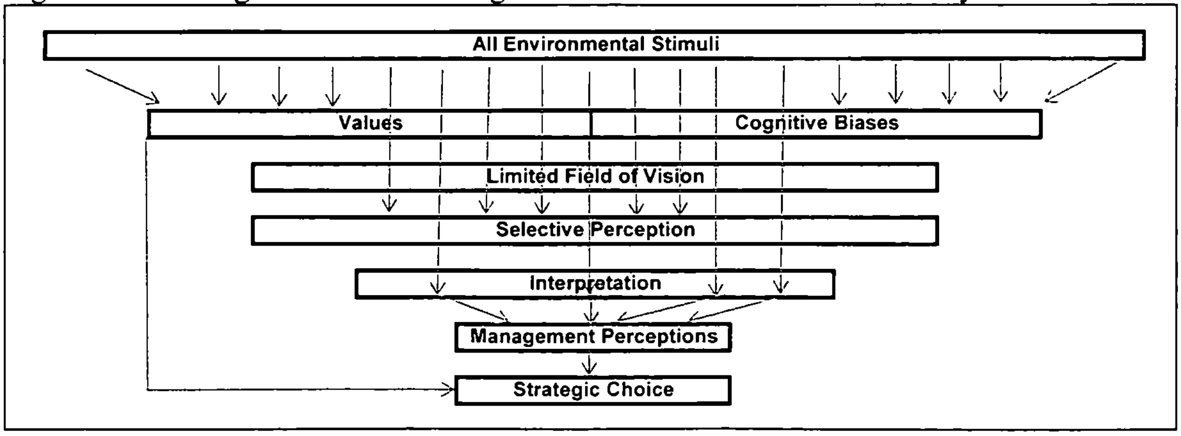
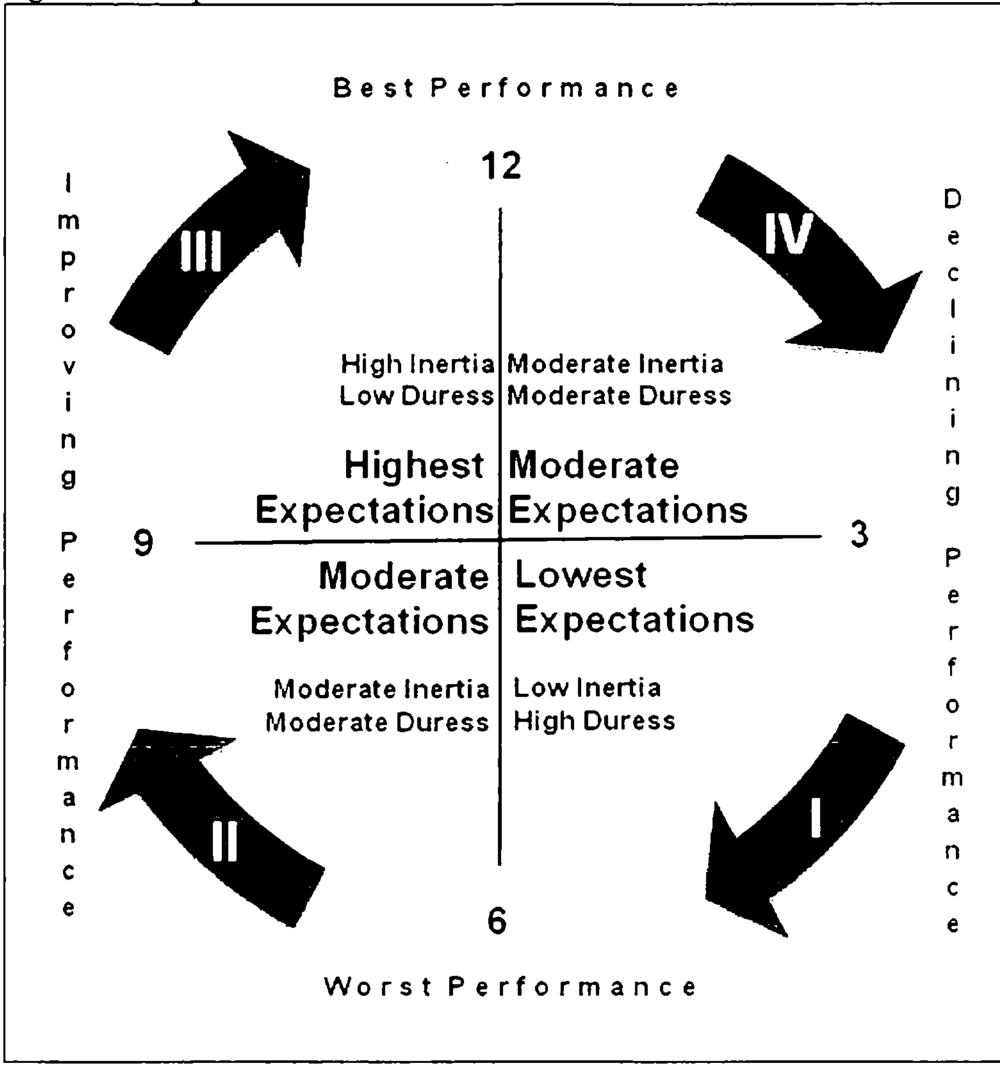


Figure 4.a.: Strategic Decision-Making Process Under Bounded Rationality



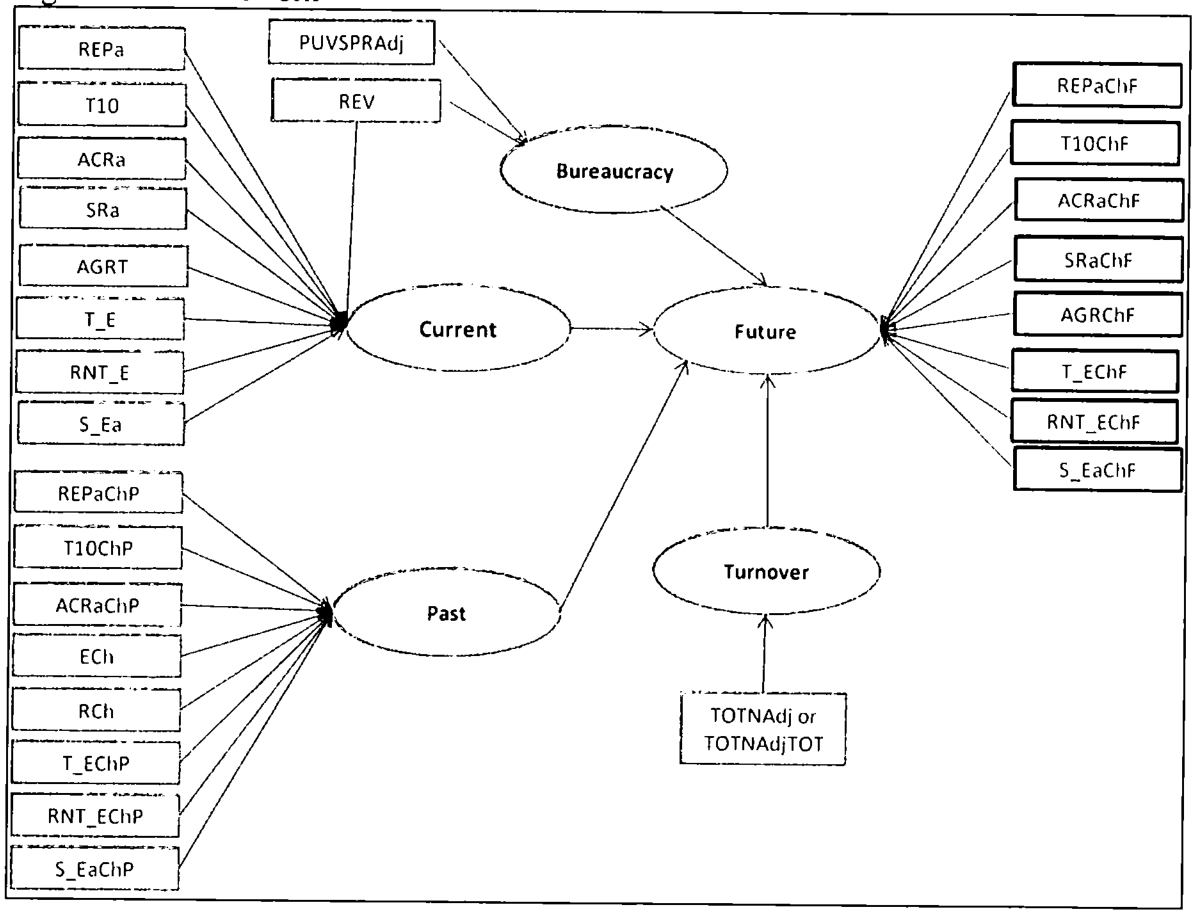
Figures

Figure 5.a.: Expectations Clock



Figures

Figure 5.b.: Framework



Figures

Figure 5.c.: Model of Reversion

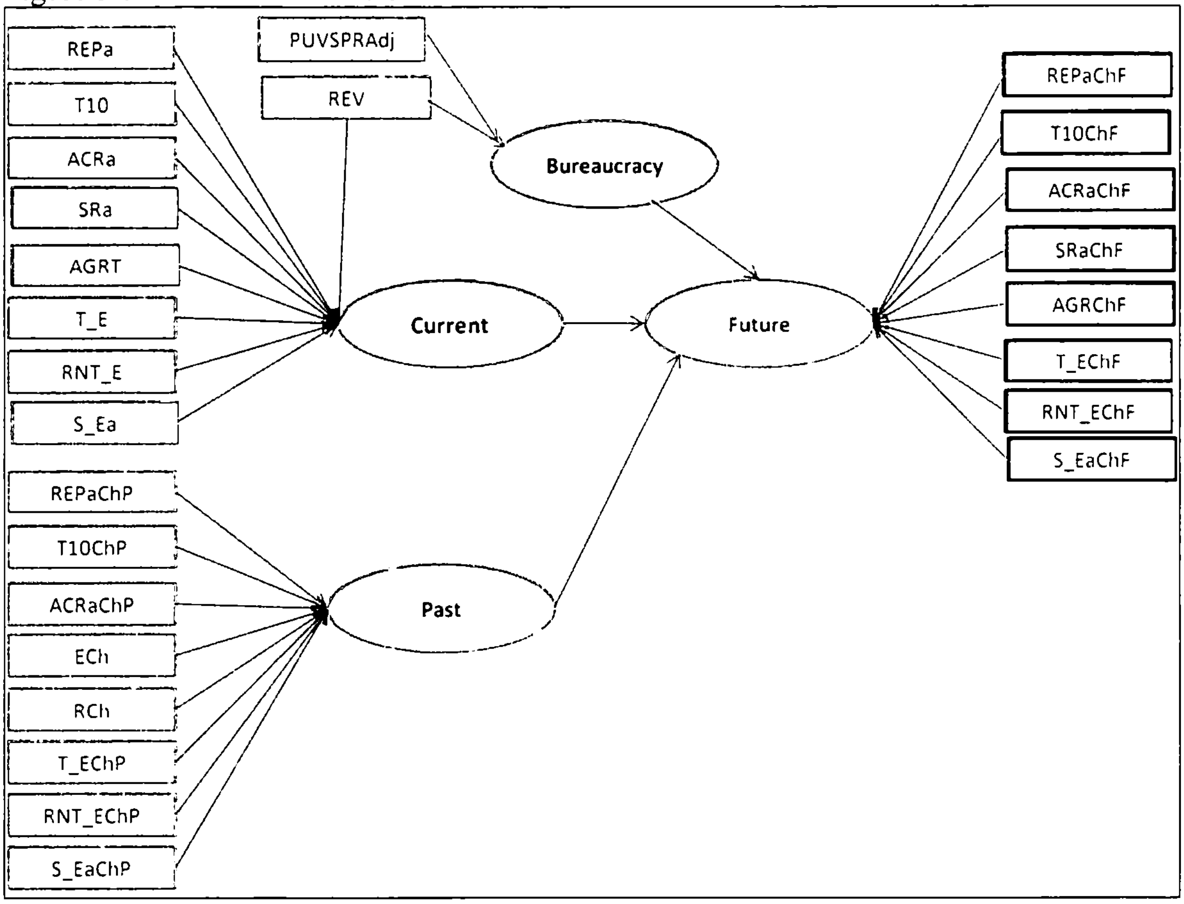
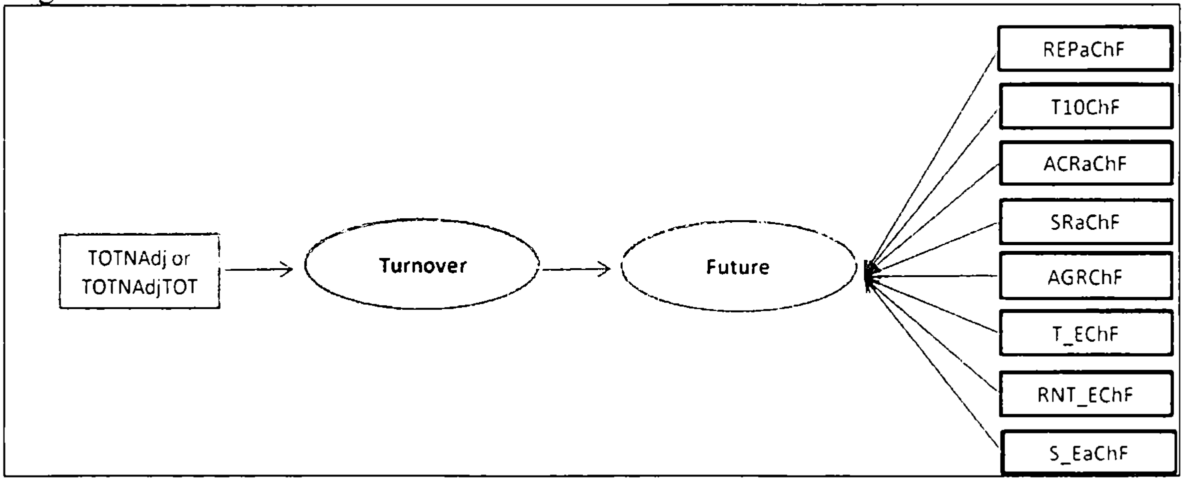
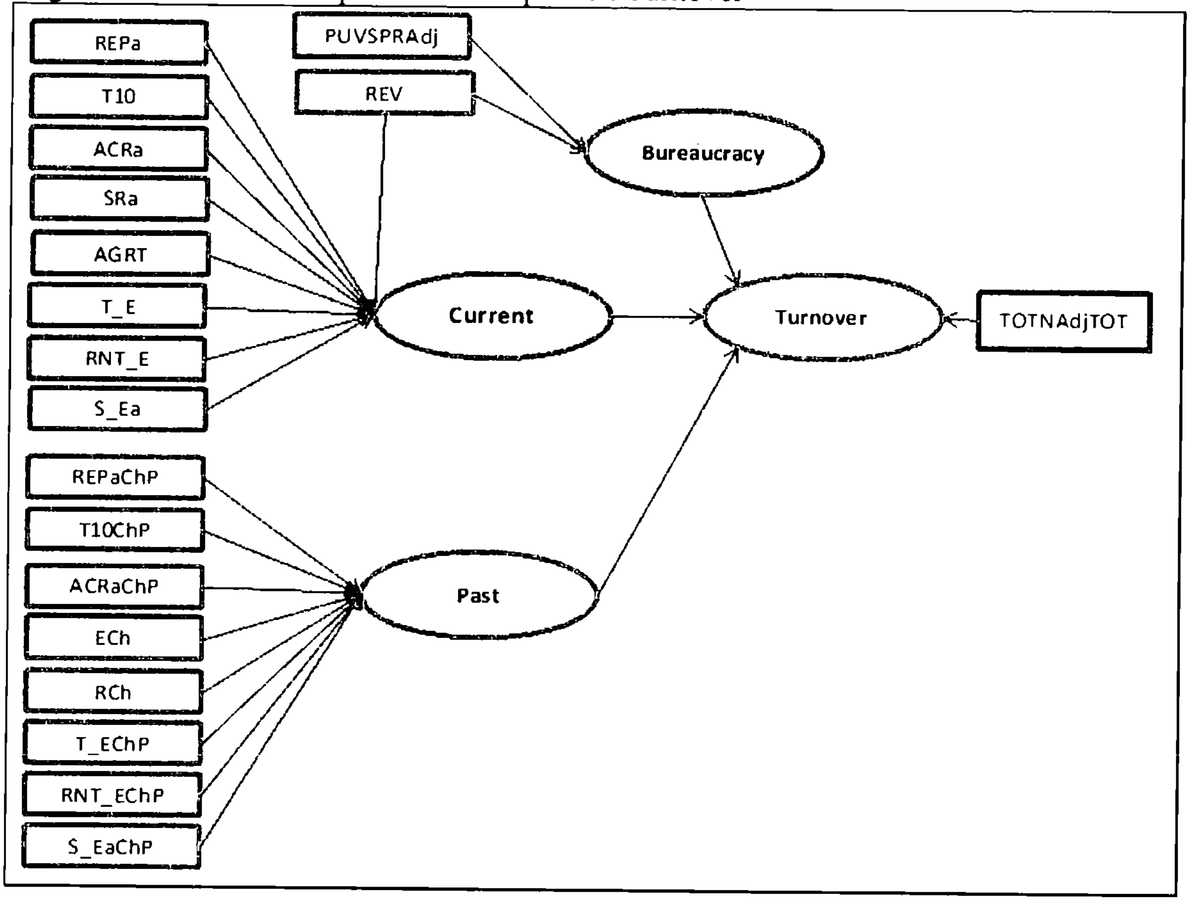


Figure 5.d.: Model of Over- and Under-Reaction



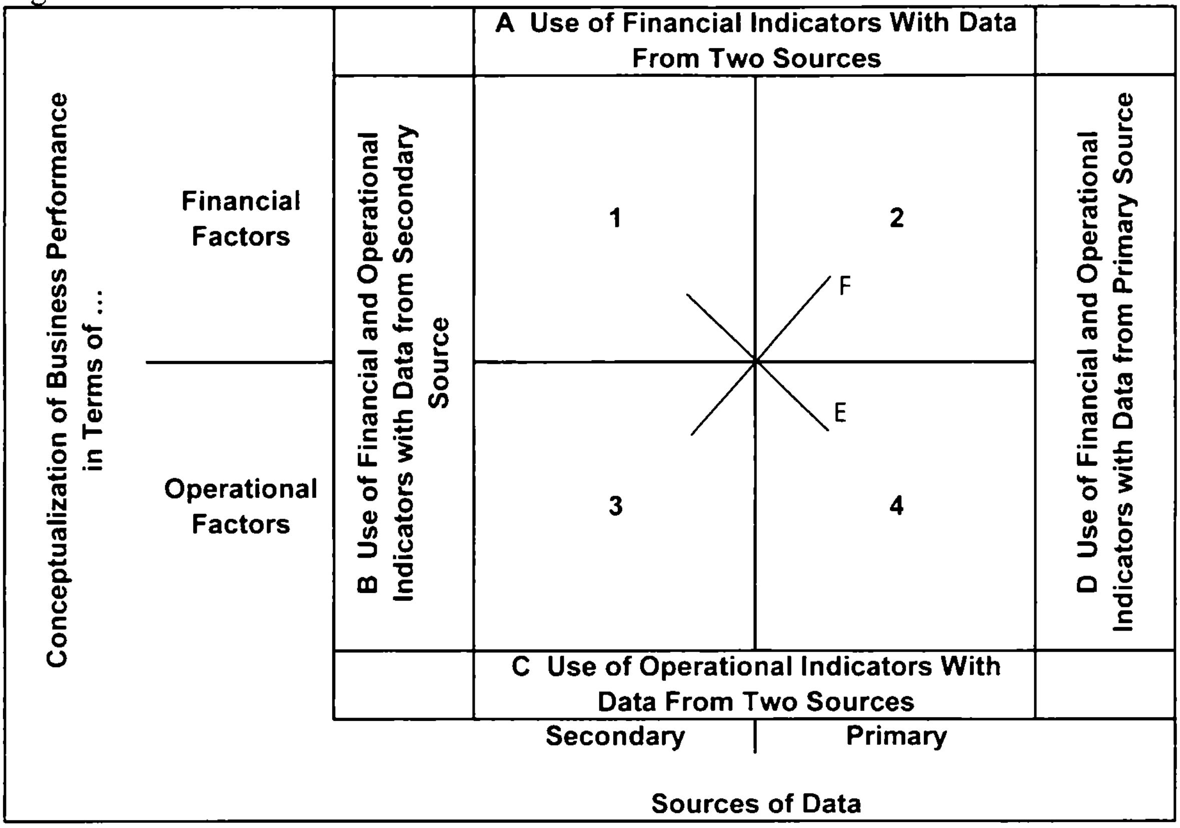
Figures

Figure 5.e.: Model of Expectations' Impact on Turnover



Figures

Figure 7.a.: Performance Evaluation Schemes



Figures

Figure 7.b.: Distribution of Future

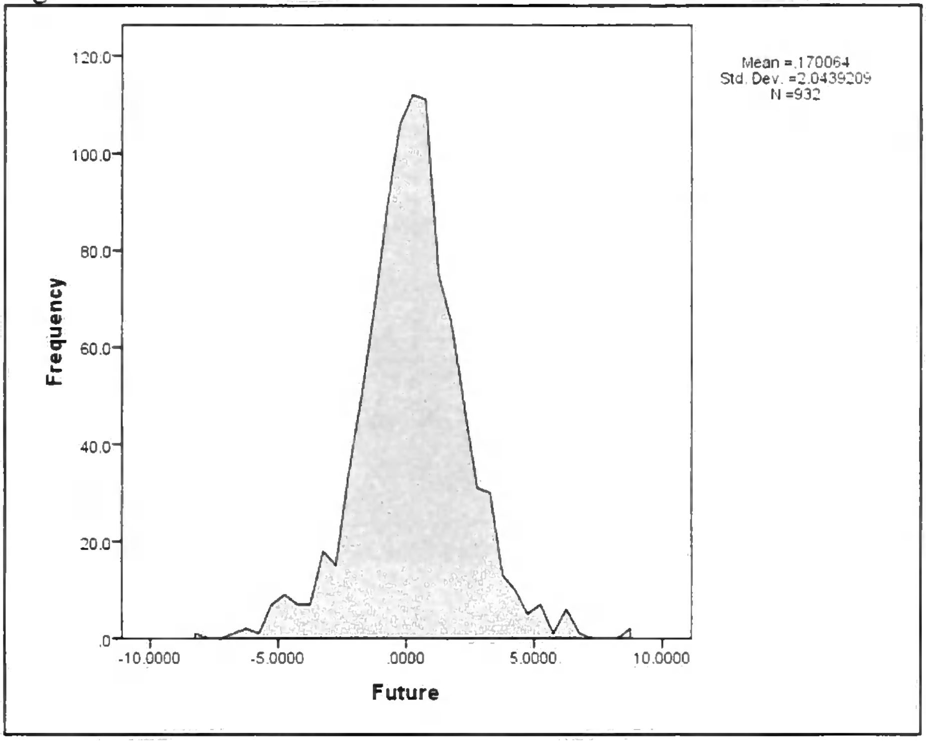
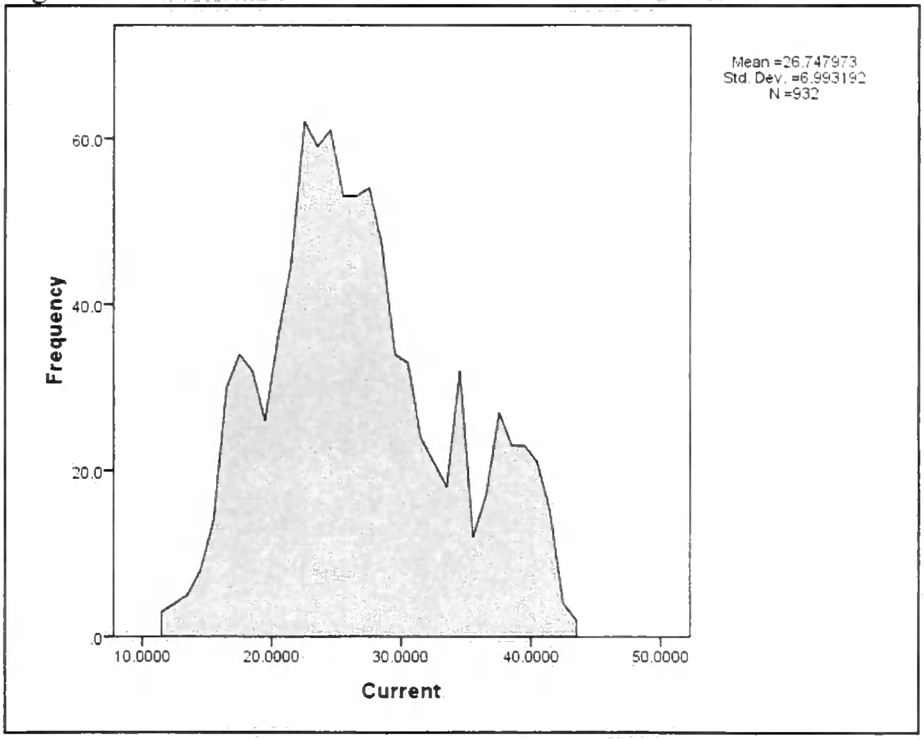


Figure 7.c.: Distribution of Current



Figures

Figure 7.d.: Distribution of Past

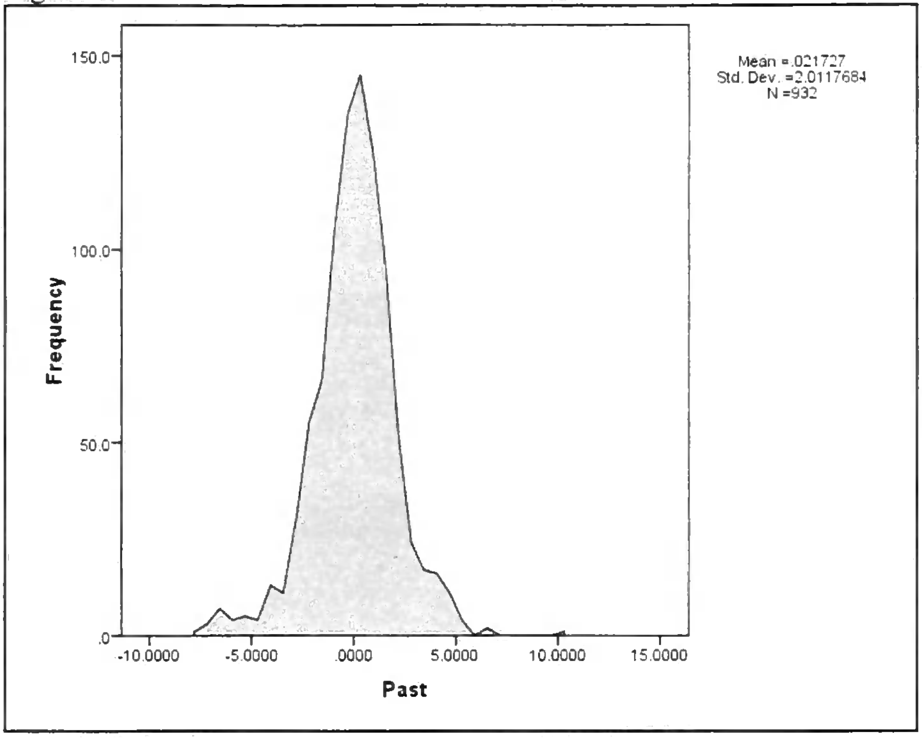
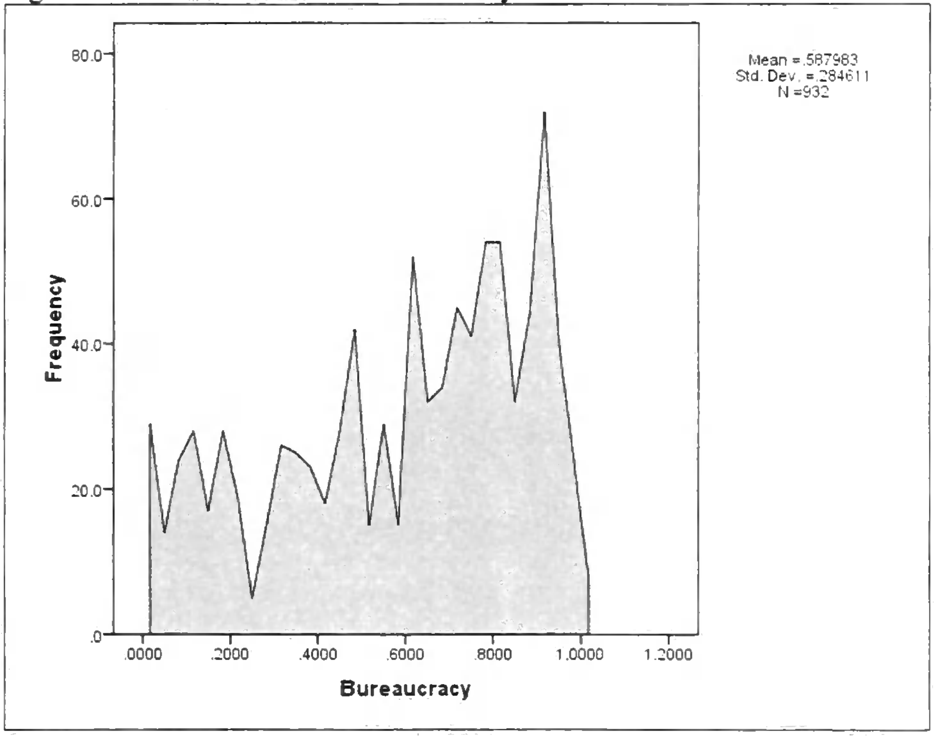
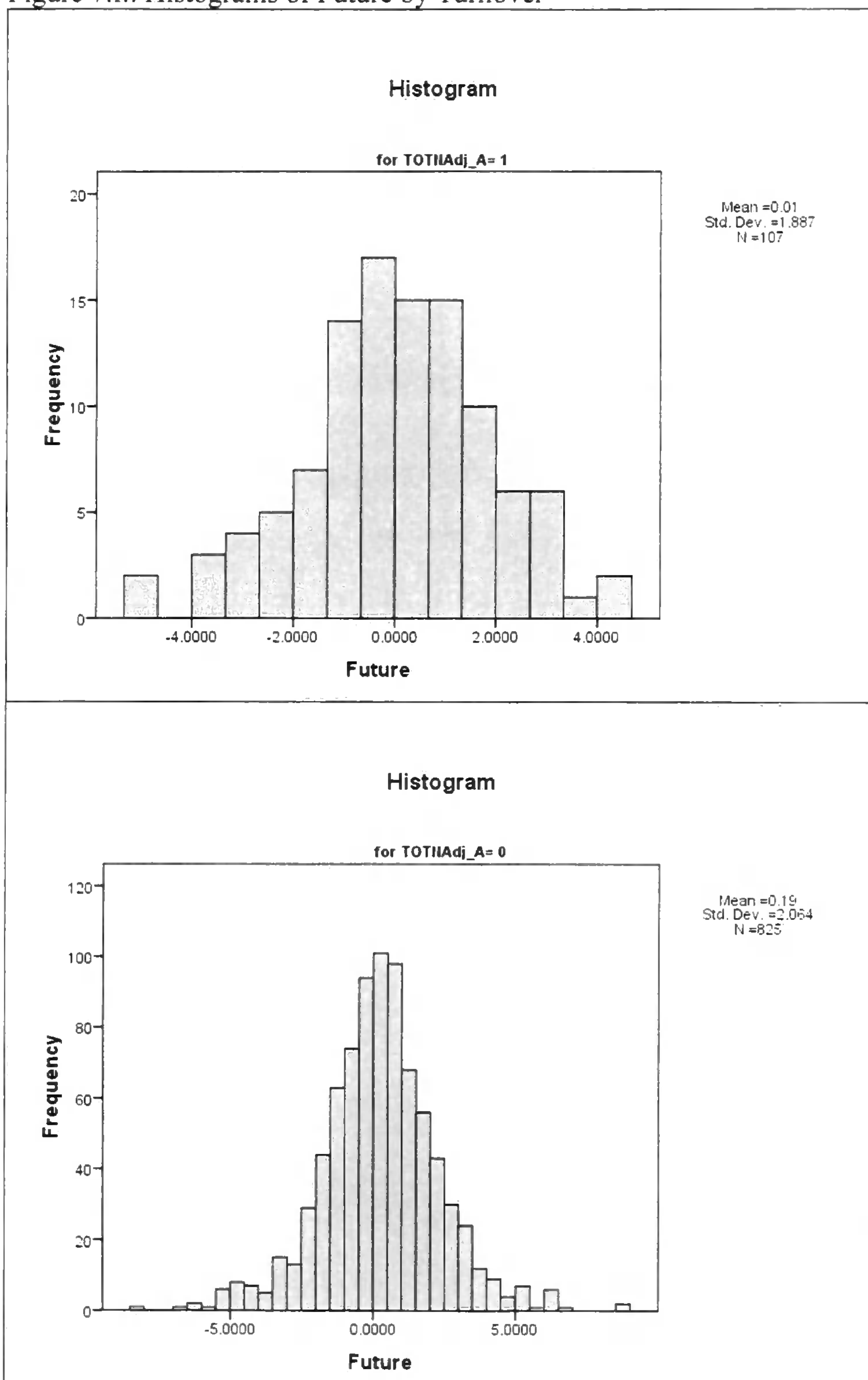


Figure 7.e.: Distribution of Bureaucracy



Figures

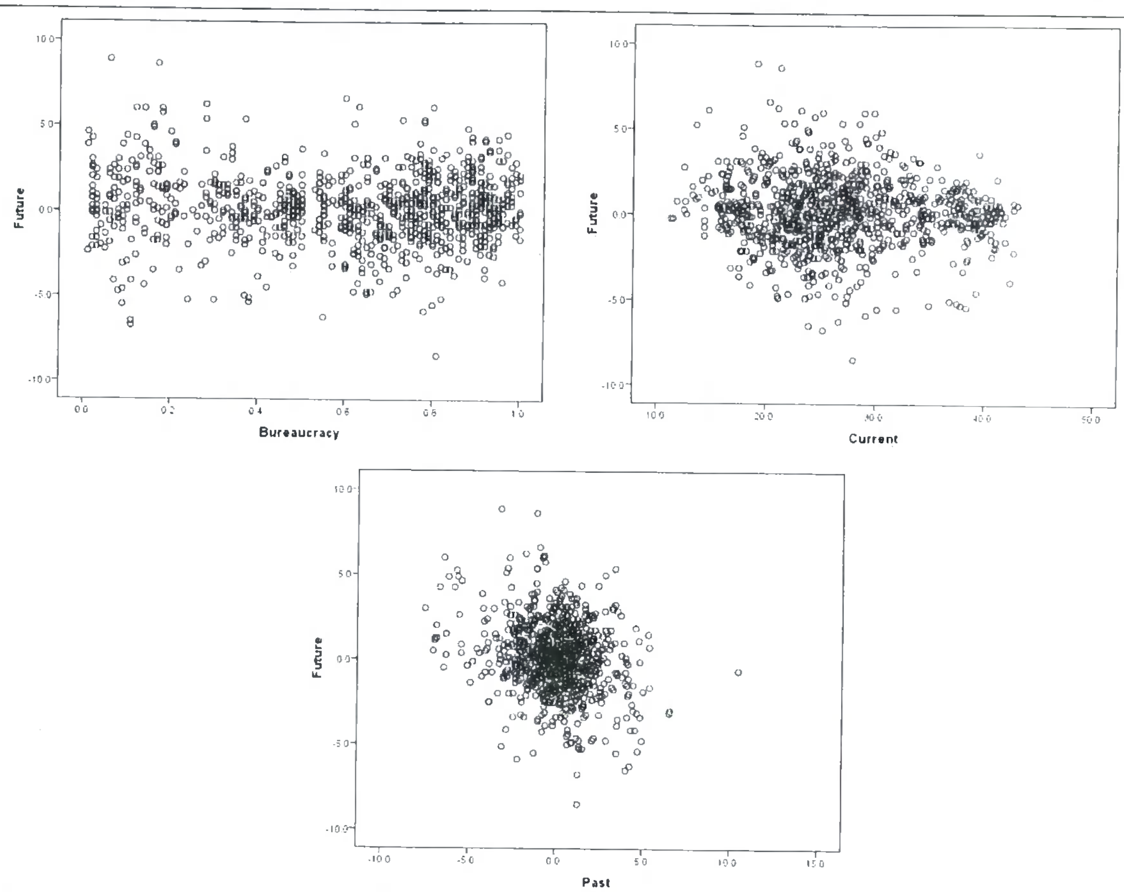
Figure 7.f.: Histograms of Future by Turnover



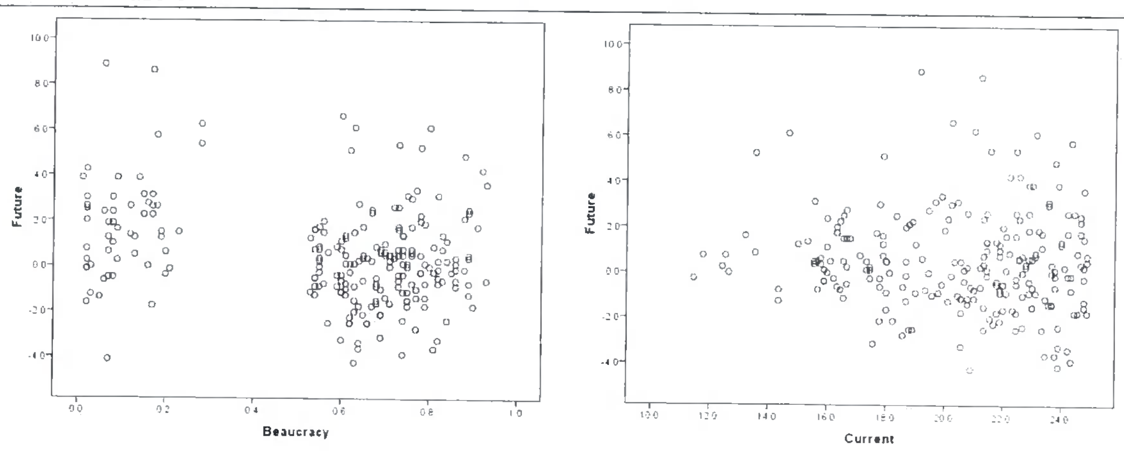
Figures

Figure 7.g.: Scatterplots Between Dependent and Independent Composites

Panel A: Entire Data Set



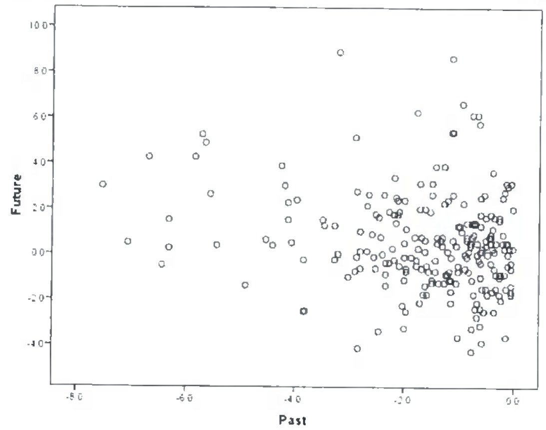
Panel B: Phase 1



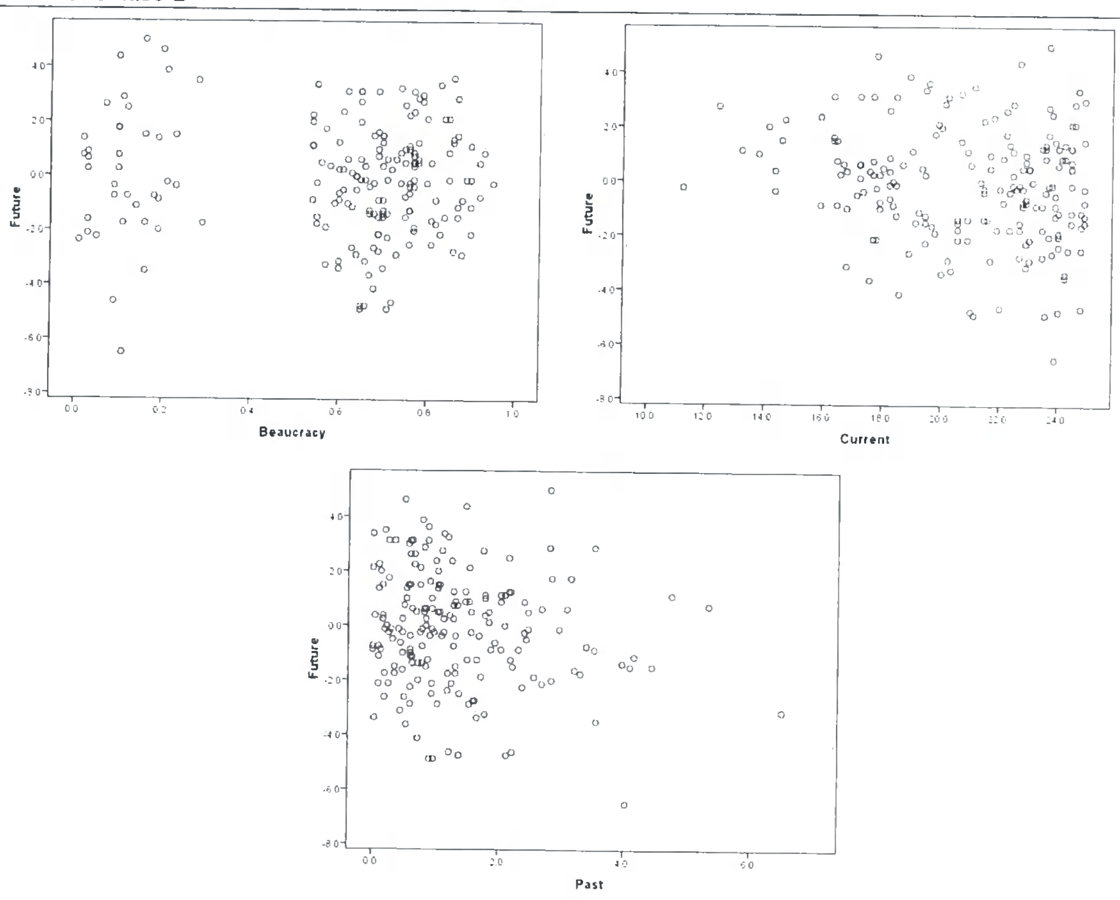
Figures

Figure 7.g.: Scatterplots Between Dependent and Independent Composites continued

Panel B: Phase 1



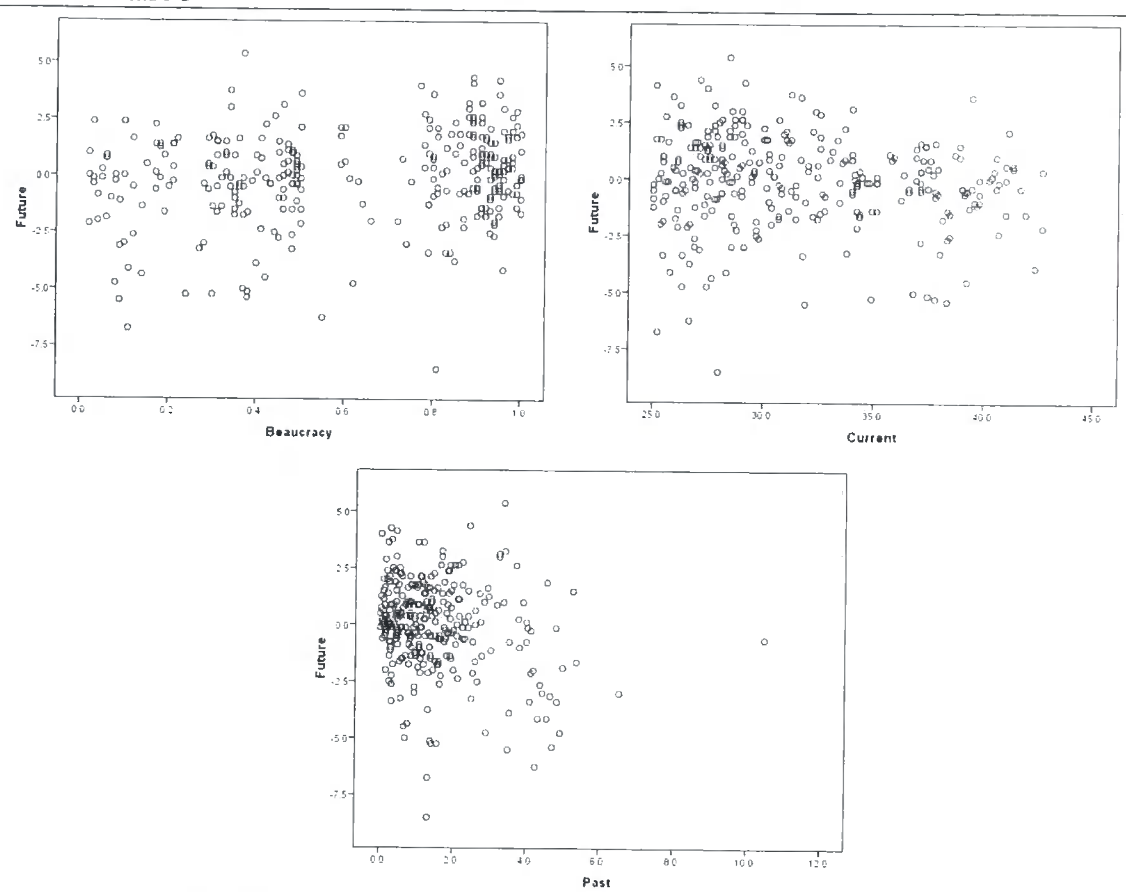
Panel C: Phase 2



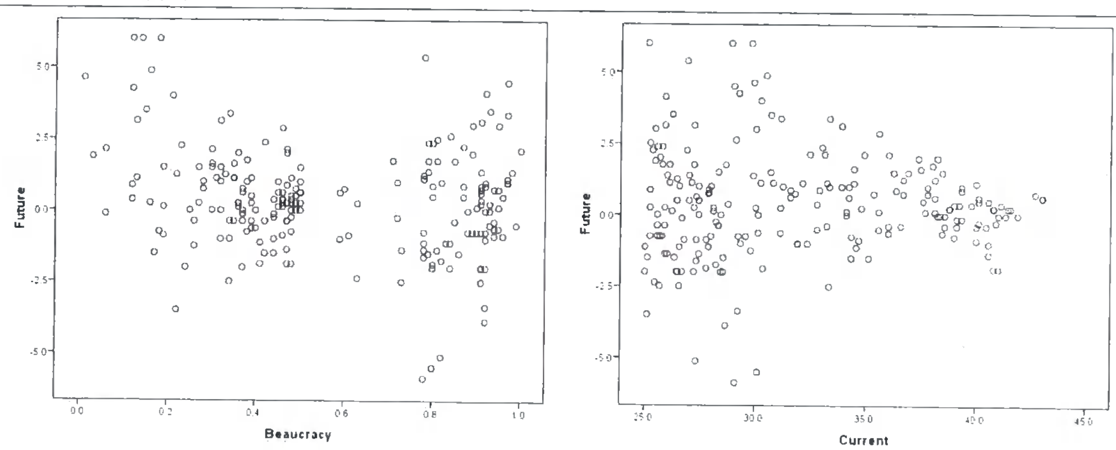
Figures

Figure 7.g.: Scatterplots Between Dependent and Independent Composites continued

Panel D: Phase 3



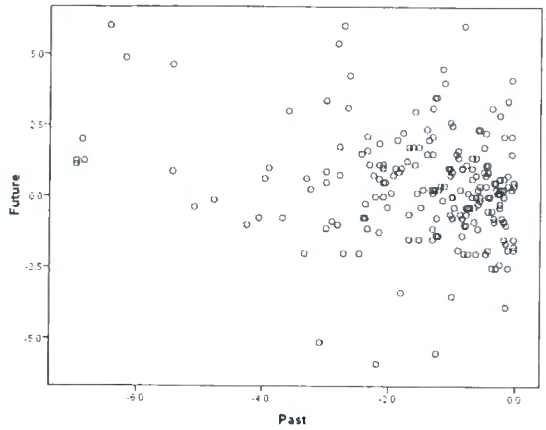
Panel E: Phase 4



Figures

Figure 7.g.: Scatterplots Between Dependent and Independent Composites continued

Panel E: Phase 4

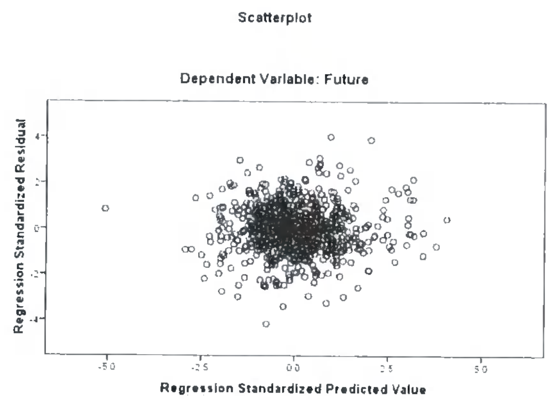


Figures

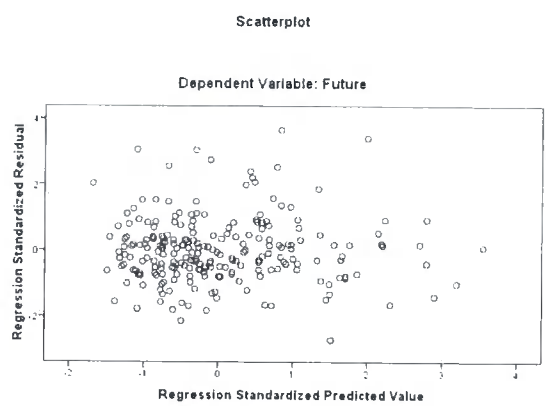
Figure 7.h.: Illustrations of Heteroscedasticity

Panel A: Hypothesis 1

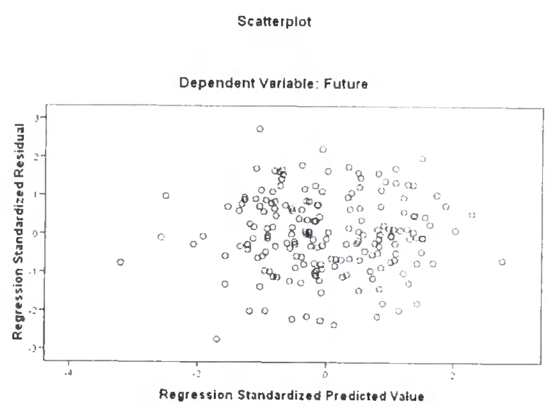
Entire Data Set



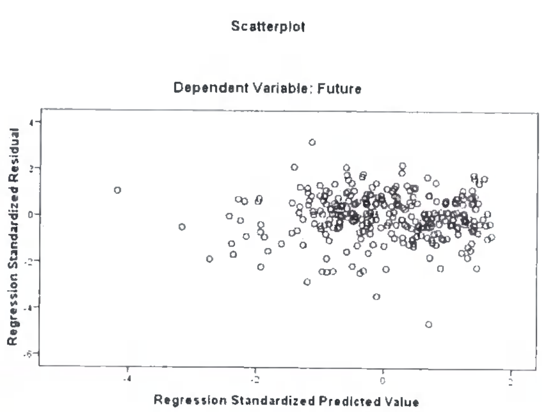
Phase 1



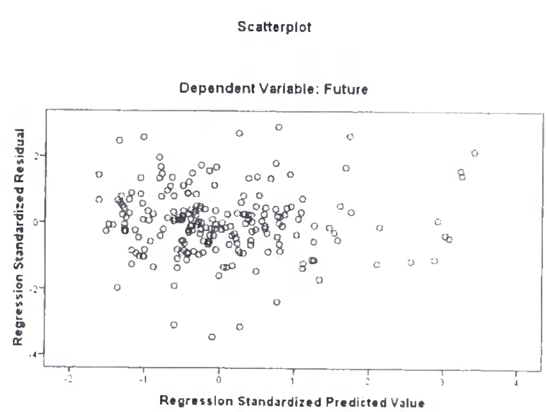
Phase 2



Phase 3



Phase 4

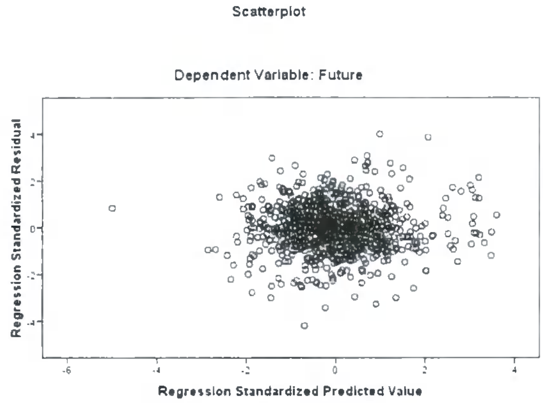


Figures

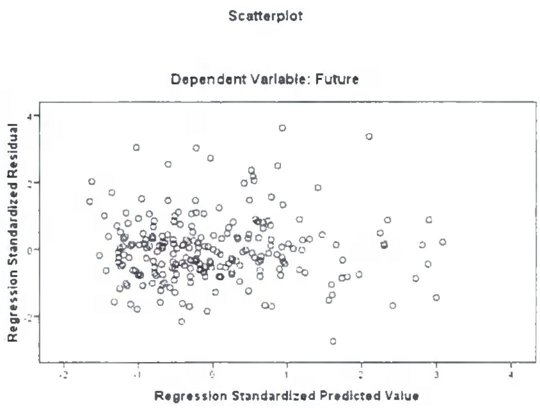
Figure 7.h.: Illustrations of Heteroscedasticity continued

Panel B: Framework

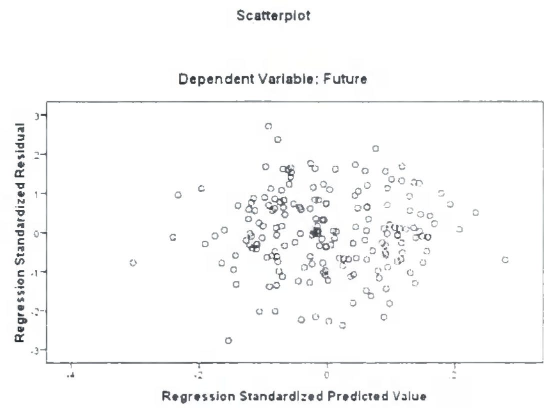
Entire Data Set



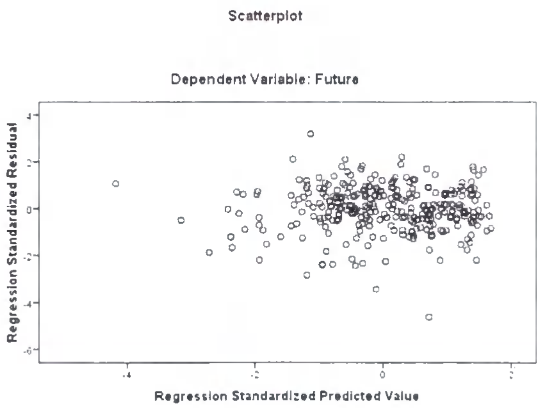
Phase 1



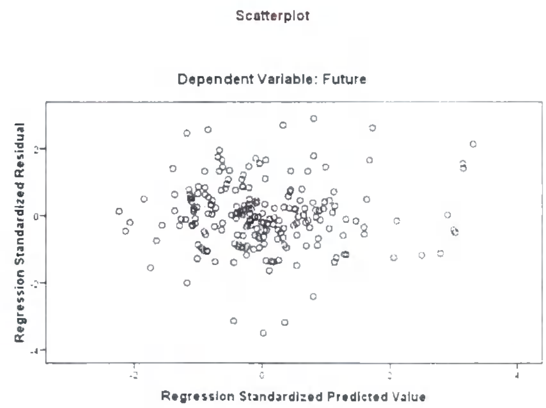
Phase 2



Phase 3

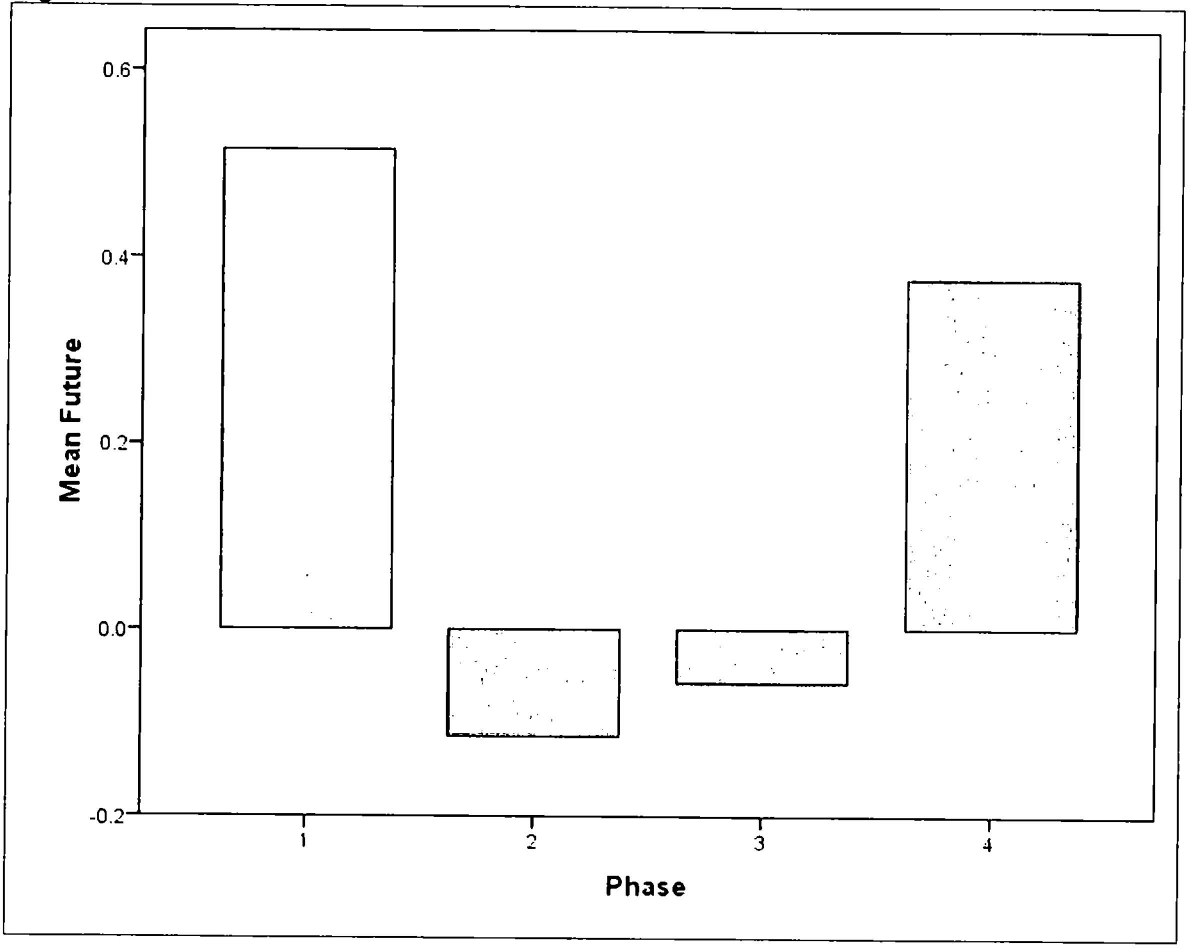


Phase 4



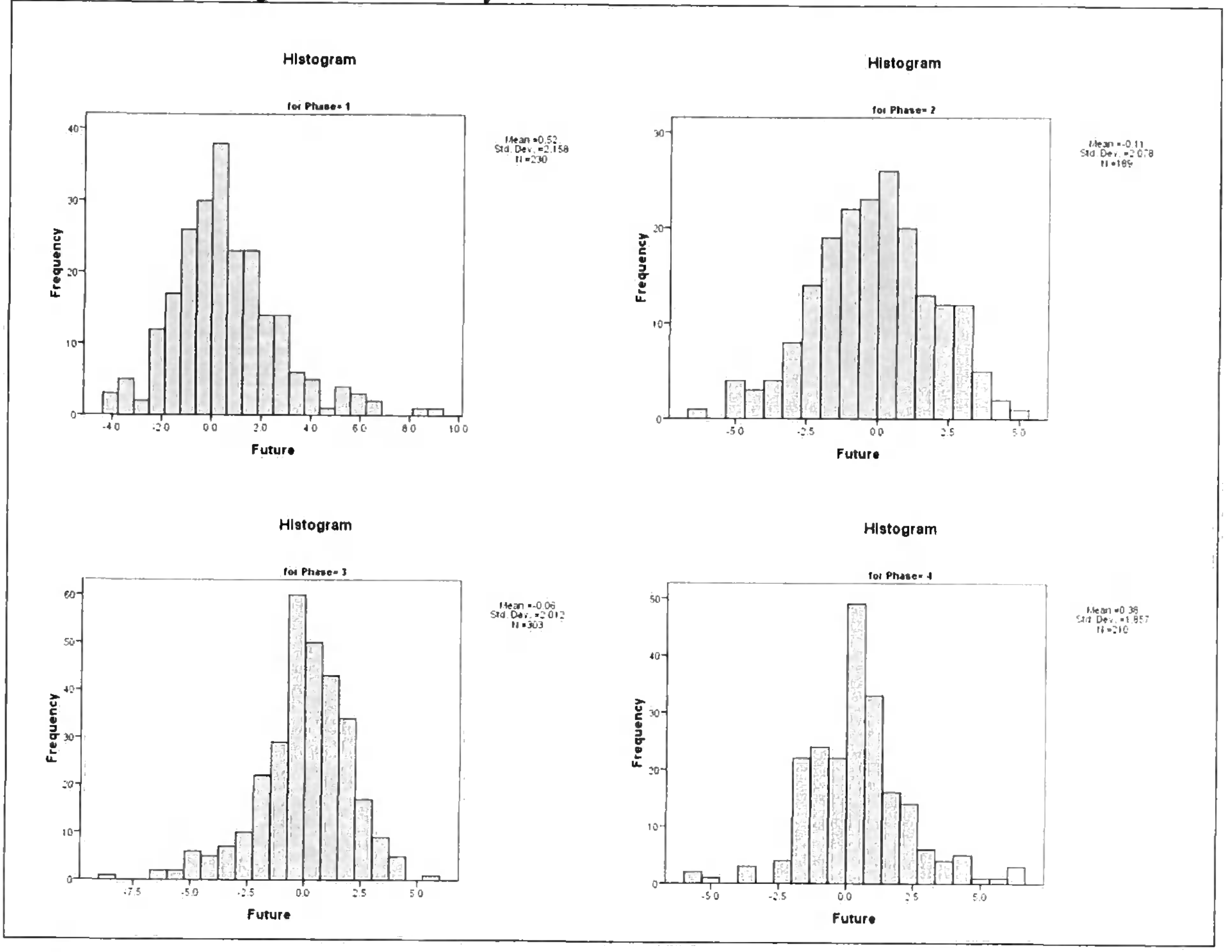
Figures

Figure 8.a.: Reversion



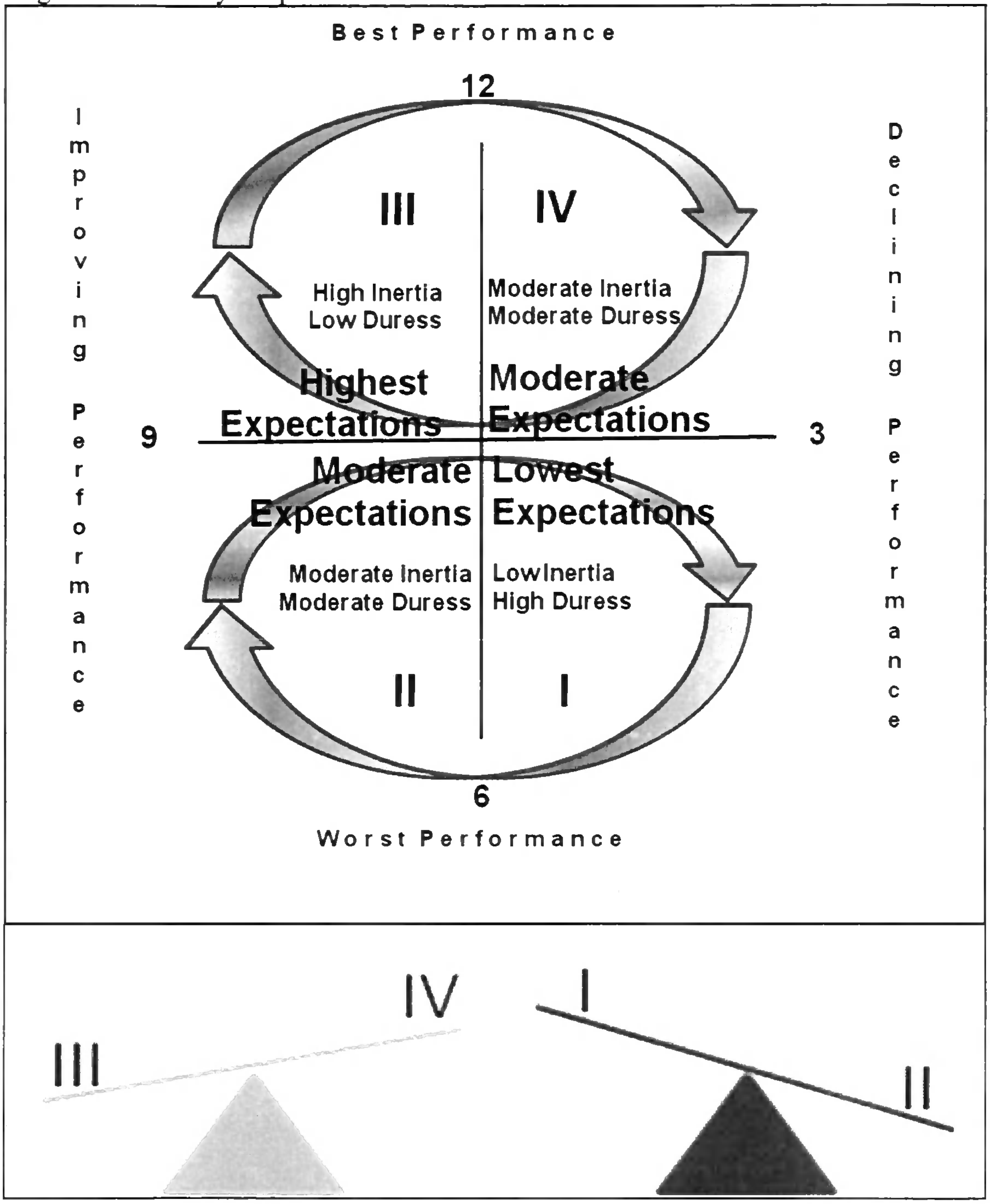
Figures

Figure 8.b.: Histograms of Future by Phases



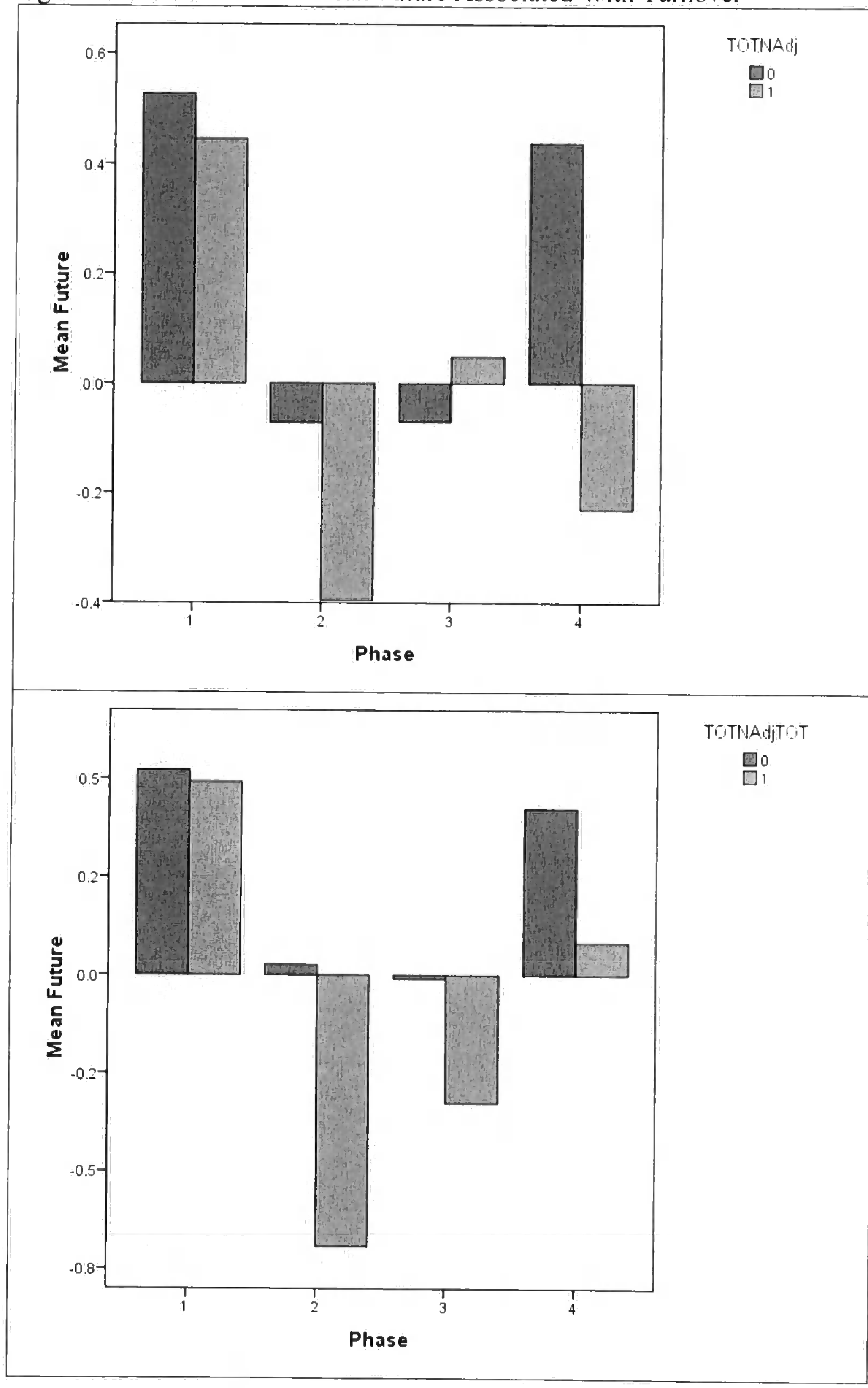
Figures

Figure 8.c.: "Sticky" Expectations Clock



Figures

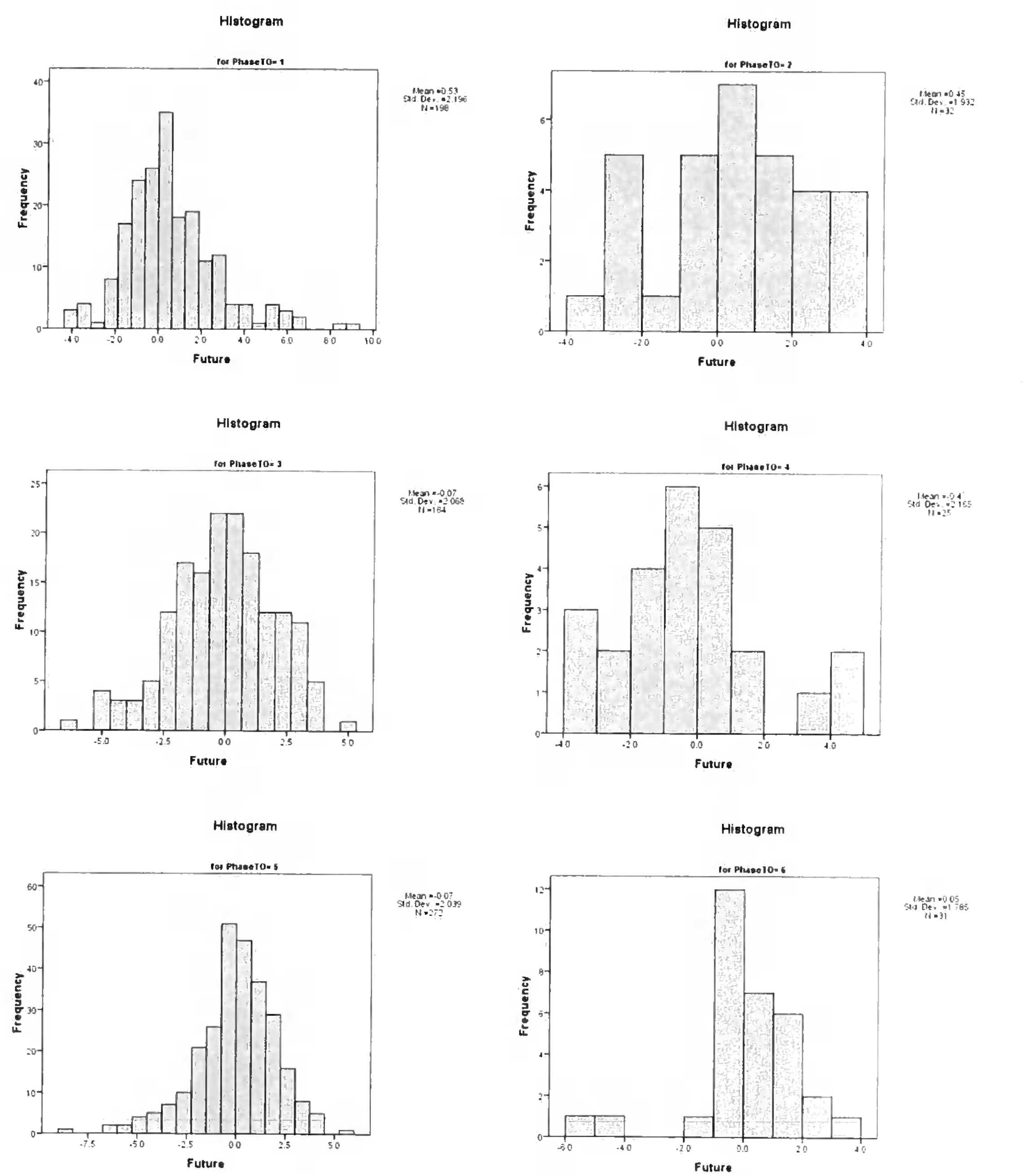
Figure 8.d.: Differences in Mean Future Associated With Turnover



Figures

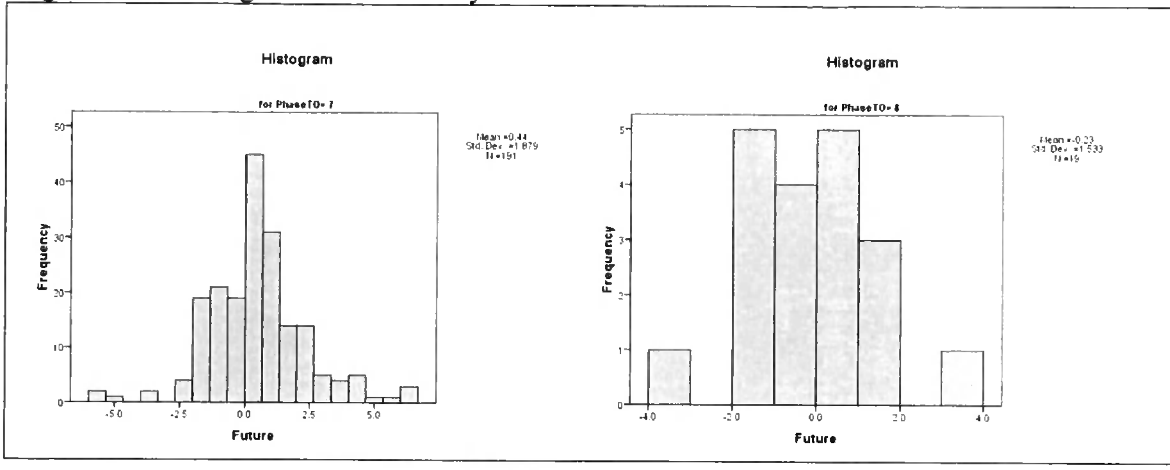
Figure 8.e.: Histograms of Future by Phases/Turnover

1 = Phase 1/No Turnover, 2 = Phase 1/Turnover, 3 = Phase 2/No Turnover, 4 = Phase 2/Turnover, 5 = Phase 3/No Turnover, 6 = Phase 3/Turnover, 7 = Phase 4/No Turnover, 8 = Phase 4/Turnover, where turnover is defined as succession events where the new leader stays in place for three years or more.



Figures

Figure 8.e.: Histograms of Future by Phases/Turnover continued



Appendix 1: Percentile Group Sample Statistics

Total Sample Size = 932

Variable	Mean	St. Dev.	T-Value	Skew-ness	Kur-tosis	Min-imum	Freq.	Max-imum	Freq.
REPa	28.807	13.250	66.372	-0.206	-1.073	1.000	4	50.000	21
REPaChP	0.240	2.858	2.567	-1.591	71.387	-42.000	1	33.000	1
REPaChF	0.067	1.922	1.057	0.548	5.510	-8.000	1	14.000	1
T10	27.370	14.019	59.604	-0.141	-1.124	1.000	10	50.000	18
T10ChP	0.162	5.086	0.972	-0.096	8.030	-32.000	1	28.000	1
T10ChF	0.458	4.263	3.281	-0.320	5.706	-21.000	3	22.000	1
ACRa	26.744	14.480	56.383	-0.064	-1.222	1.000	11	50.000	20
ACRaChP	-0.410	8.830	-1.417	-0.358	4.892	-46.000	1	46.000	1
ACRaChF	0.225	7.084	0.971	-0.591	5.811	-46.000	1	35.000	1
ECh	25.278	13.632	56.610	0.007	-1.140	1.000	10	50.000	12
SRa	24.372	14.086	52.822	0.028	-1.178	1.000	20	50.000	7
SRaChF	0.054	6.073	0.270	-0.076	3.895	-28.000	2	25.000	3
AGRT	27.541	13.823	60.826	-0.128	-1.134	1.000	5	50.000	19
AGRChF	0.359	7.170	1.530	-0.252	4.900	-39.000	1	39.000	1
REV	27.790	13.983	60.672	-0.158	-1.166	1.000	3	50.000	21
RCh	25.795	14.296	55.086	-0.039	-1.198	1.000	18	50.000	17
T_E	27.412	13.945	60.012	-0.105	-1.163	1.000	8	50.000	19
T_EChP	-0.127	5.111	-0.756	-0.015	14.536	-43.000	1	37.000	1
T_EChF	-0.105	4.423	-0.726	1.120	10.442	-21.000	1	37.000	1
RNT_E	27.677	13.800	61.229	-0.180	-1.068	1.000	7	50.000	18
RNT_EChP	-0.084	5.704	-0.448	-1.666	14.407	-46.000	1	33.000	1
RNT_EChF	0.127	6.630	0.583	0.330	14.560	-46.000	1	45.000	1
S_Ea	23.019	13.779	51.000	0.163	-1.119	1.000	20	50.000	10
S_EaChP	0.123	6.533	0.577	-0.169	15.933	-46.000	1	45.000	1
S_EaChF	0.176	5.765	0.932	-1.450	14.397	-46.000	1	31.000	1
TOTNAdj	0.115	0.319		2.421	3.867	0.000	825	1.000	107
TOTNAdjTOT	0.170	0.375		1.764	1.115	0.000	774	1.000	158
PUVSPRAdj	0.620	0.486		-0.496	-1.758	0.000	354	1.000	578

Note: The t-values are associated with means tests of differences from zero values.

Test of Univariate Normality						
	Skewness		Kurtosis		Skewness & Kurtosis	
Variable	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
REPa	-2.563	0.010	-17.146	0.000	300.565	0.000
REPaChP	-14.618	0.000	19.087	0.000	578.004	0.000
REPaChF	6.448	0.000	10.855	0.000	159.409	0.000
T10	-1.761	0.078	-19.961	0.000	401.525	0.000
T10ChP	-1.199	0.231	12.349	0.000	153.935	0.000
T10ChF	-3.915	0.000	10.996	0.000	136.23	0.000
ACRa	-0.799	0.424	-28.509	0.000	813.42	0.000
ACRaChP	-4.359	0.000	10.372	0.000	126.585	0.000
ACRaChF	-6.898	0.000	11.069	0.000	170.121	0.000
ECh	0.091	0.927	-21.012	0.000	441.502	0.000
SRa	0.352	0.725	-23.926	0.000	572.554	0.000
SRaChF	-0.947	0.344	9.444	0.000	90.091	0.000
AGRT	-1.594	0.111	-20.623	0.000	427.848	0.000
AGRChF	-3.114	0.002	10.38	0.000	117.434	0.000
REV	-1.968	0.049	-22.9	0.000	528.266	0.000
RCh	-0.492	0.623	-25.822	0.000	667.035	0.000
T_E	-1.314	0.189	-22.713	0.000	517.62	0.000
T_EchP	-0.186	0.852	14.541	0.000	211.464	0.000
T_EChF	11.527	0.000	13.348	0.000	311.056	0.000
RNT_E	-2.243	0.025	-16.903	0.000	290.736	0.000
RNT_EChP	-15.042	0.000	14.51	0.000	436.8	0.000
RNT_EChF	4.039	0.000	14.546	0.000	227.912	0.000
S_Ea	2.035	0.042	-19.655	0.000	390.46	0.000
S_EaChP	-2.106	0.035	14.857	0.000	225.17	0.000
S_EaChF	-13.771	0.000	14.507	0.000	400.087	0.000

Note: Departures from normality are indicated by significant skewness and/or kurtosis p-values.

Histograms

REPa

Frequency	Percentage	Lower Class Limit
39	4.2	1.000
67	7.2	5.900
96	10.3	10.800
79	8.5	15.700
93	10.0	20.600
99	10.6	25.500
113	12.1	30.400
117	12.6	35.300
122	13.1	40.200
107	11.5	45.100

REPaChP

Frequency	Percentage	Lower Class Limit
1	0.1	-42.000
0	0.0	-34.500
0	0.0	-27.000
1	0.1	-19.500
20	2.1	-12.000
800	85.8	-4.500
106	11.4	3.000
3	0.3	10.500
0	0.0	18.000
1	0.1	25.500

REPaChF

Frequency	Percentage	Lower Class Limit
7	0.8	-8.000
29	3.1	-5.800
91	9.8	-3.600
496	53.2	-1.400
274	29.4	0.800
28	3.0	3.000
5	0.5	5.200
0	0.0	7.400
0	0.0	9.600
2	0.2	11.800

T10

Frequency	Percentage	Lower Class Limit
64	6.9	1.000
83	8.9	5.900
86	9.2	10.800
77	8.3	15.700
105	11.3	20.600
99	10.6	25.500
100	10.7	30.400
106	11.4	35.300
102	10.9	40.200
110	11.8	45.100

T10ChP

Frequency	Percentage	Lower Class Limit
2	0.2	-32.000
5	0.5	-26.000
4	0.4	-20.000
25	2.7	-14.000
137	14.7	-8.000
617	66.2	-2.000
111	11.9	4.000
18	1.9	10.000
10	1.1	16.000
3	0.3	22.000

T10ChF

Frequency	Percentage	Lower Class Limit
7	0.8	-21.000
5	0.5	-16.700
9	1.0	-12.400
72	7.7	-8.100
409	43.9	-3.800
317	34.0	0.500
91	9.8	4.800
15	1.6	9.100
5	0.5	13.400
2	0.2	17.700

ACRa

Frequency	Percentage	Lower Class Limit
79	8.5	1.000
80	8.6	5.900
103	11.1	10.800
83	8.9	15.700
100	10.7	20.600
87	9.3	25.500
87	9.3	30.400
90	9.7	35.300
110	11.8	40.200
113	12.1	45.100

ACRaChP

Frequency	Percentage	Lower Class Limit
6	0.6	-46.000
2	0.2	-36.800
21	2.3	-27.600
60	6.4	-18.400
343	36.8	-9.200
418	44.8	0.000
60	6.4	9.200
15	1.6	18.400
6	0.6	27.600
1	0.1	36.800

ACRaChF

Frequency	Percentage	Lower Class Limit
2	0.2	-46.000
1	0.1	-37.900
5	0.5	-29.800
23	2.5	-21.700
98	10.5	-13.600
533	57.2	-5.500
212	22.7	2.600
48	5.2	10.700
8	0.9	18.800
2	0.2	26.900

ECh

Frequency	Percentage	Lower Class Limit
74	7.9	1.000
98	10.5	5.900
98	10.5	10.800
98	10.5	15.700
104	11.2	20.600
104	11.2	25.500
88	9.4	30.400
111	11.9	35.300
91	9.8	40.200
66	7.1	45.100

SRa

Frequency	Percentage	Lower Class Limit
106	11.4	1.000
105	11.3	5.900
81	8.7	10.800
97	10.4	15.700
101	10.8	20.600
62	6.7	25.500
152	16.3	30.400
79	8.5	35.300
80	8.6	40.200
69	7.4	45.100

SRaChF

Frequency	Percentage	Lower Class Limit
5	0.5	-28.000
8	0.9	-22.700
15	1.6	-17.400
64	6.9	-12.100
219	23.5	-6.800
436	46.8	-1.500
139	14.9	3.800
22	2.4	9.100
15	1.6	14.400
9	1.0	19.700

AGRT

Frequency	Percentage	Lower Class Limit
58	6.2	1.000
80	8.6	5.900
76	8.2	10.800
102	10.9	15.700
103	11.1	20.600
94	10.1	25.500
104	11.2	30.400
95	10.2	35.300
116	12.4	40.200
104	11.2	45.100

AGRChF

Frequency	Percentage	Lower Class Limit
4	0.4	-39.000
4	0.4	-31.200
14	1.5	-23.400
60	6.4	-15.600
287	30.8	-7.800
459	49.2	0.000
80	8.6	7.800
20	2.1	15.600
3	0.3	23.400
1	0.1	31.200

REV

Frequency	Percentage	Lower Class Limit
62	6.7	1.000
76	8.2	5.900
88	9.4	10.800
95	10.2	15.700
76	8.2	20.600
110	11.8	25.500
1	9.9	30.400
106	11.4	35.300
117	12.6	40.200
110	11.8	45.100

RCh

Frequency	Percentage	Lower Class Limit
92	9.9	1.000
81	8.7	5.900
94	10.1	10.800
102	10.9	15.700
81	8.7	20.600
89	9.5	25.500
118	12.7	30.400
90	9.7	35.300
97	10.4	40.200
88	9.4	45.100

T_E

Frequency	Percentage	Lower Class Limit
59	6.3	1.000
78	8.4	5.900
95	10.2	10.800
89	9.5	15.700
99	10.6	20.600
98	10.5	25.500
96	10.3	30.400
102	10.9	35.300
107	11.5	40.200
109	11.7	45.100

T_EchP

Frequency	Percentage	Lower Class Limit
1	0.1	-43.000
1	0.1	-35.000
5	0.5	-27.000
10	1.1	-19.000
170	18.2	-11.000
677	72.6	-3.000
54	5.8	5.000
10	1.1	13.000
2	0.2	21.000
2	0.2	29.000

T_EChF

Frequency	Percentage	Lower Class Limit
5	0.5	-21.000
13	1.4	-15.200
107	11.5	-9.400
651	69.8	-3.600
125	13.4	2.200
20	2.1	8.000
7	0.8	13.800
2	0.2	19.600
1	0.1	25.400
1	0.1	31.200

RNT_E

Frequency	Percentage	Lower Class Limit
66	7.1	1.000
71	7.6	5.900
77	8.3	10.800
81	8.7	15.700
107	11.5	20.600
113	12.1	25.500
99	10.6	30.400
105	11.3	35.300
108	11.6	40.200
105	11.3	45.100

RNT_EChP

Frequency	Percentage	Lower Class Limit
3	0.3	-46.000
1	0.1	-38.100
4	0.4	-30.200
10	1.1	-22.300
41	4.4	-14.400
582	62.4	-6.500
255	27.4	1.400
32	3.4	9.300
3	0.3	17.200
1	0.1	25.100

RNT_EChF

Frequency	Percentage	Lower Class Limit
3	0.3	-46.000
2	0.2	-36.900
4	0.4	-27.800
23	2.5	-18.700
378	40.6	-9.600
472	50.6	-0.500
36	3.9	8.600
7	0.8	17.700
3	0.3	26.800
4	0.4	35.900

S_Ea

Frequency	Percentage	Lower Class Limit
111	11.9	1.000
116	12.4	5.900
94	10.1	10.800
108	11.6	15.700
108	11.6	20.600
92	9.9	25.500
81	8.7	30.400
96	10.3	35.300
76	8.2	40.200
50	5.4	45.100

S_EaChP

Frequency	Percentage	Lower Class Limit
4	0.4	-46.000
3	0.3	-36.900
9	1.0	-27.800
17	1.8	-18.700
338	36.3	-9.600
529	56.8	-0.500
18	1.9	8.600
6	0.6	17.700
4	0.4	26.800
4	0.4	35.900

S_EaChF

Frequency	Percentage	Lower Class Limit
2	0.2	-46.000
2	0.2	-38.300
5	0.5	-30.600
5	0.5	-22.900
35	3.8	-15.200
441	47.3	-7.500
388	41.6	0.200
46	4.9	7.900
4	0.4	15.600
4	0.4	23.300

PUVSPRAdj

Frequency	Percentage	Lower Class Limit
354	38.0	0.000
578	62.0	1.000

TOTNAdj

Frequency	Percentage	Lower Class Limit
825	88.5	0.000
107	11.5	1.000

TOTNAdjTOT

Frequency	Percentage	Lower Class Limit
774	83.0	0.000
158	17.0	1.000

Appendix 2: Degree of Succession

Antecedents for succession and possible data sources for the variables that may be useful to consider for future succession research are noted below. See also Karaevli's (working paper) CEO "outsiderness" factor.

Factor		Explanation and Data Availability
Origin of Successor	Insider • University administrative role at same university • Academic role at same university • University administrative role at another university • Academic role at another university • Promotion from role outside of academia • Lateral move from outside of academia Outsider	Origin of successor has been found to be important factor in management succession research. For university presidents, the vast majority (69%) of the movement to president is from within the academic (versus administrative) career pattern (Wessel and Keim, 1994). In addition, an old study found that the majority (74%) of university presidents are promoted to the position from within the academic setting (as opposed to a lateral move from within or a parallel or promotion from outside the industry) (Stimson and Forslund, 1970). A new president who is promoted from within a university and who originates from the administrative setting would most closely represent a follower or an "insider," while hiring from outside the academic community would most closely reflect hiring a change agent or an "outsider." The more outside the successor the higher the degree of succession. One is more likely to maintain status quo if successor follows a prior CEOs retirement (Shen and Cannella, 2002) or is groomed by the prior CEO (Zajac and Westphal, 1996) since he or she is likely to have similar views, etc. Challenger successors are less likely to maintain status quo because they may have opposed predecessors who were fired (Shen and Cannella, 2002) and boards seldom fire or depart from CEOs expectations so a new CEO may be charged with changing the company (Alderfer, 1986). Outside successors are likely to change strategy (Helmich and Brown, 1972). The hiring of an outside successor may indicate that internal candidates are weak and result in greater disruption following succession (Friedman and Saul, 1991). Outside of industry successors are least likely to be biased since managers within industries tend to think similarly (Norburn and Birley, 1988) and have the least amount of firm-specific and industry-specific knowledge (Karaevli, working paper). Note, it may be interesting to track whether an outsider followed an outsider, and various combinations. Source: Factiva could be utilized to search for articles to ascertain the origin of the successor. Factiva is a search engine with access to more than 10,000 sources (such as newspapers, journals, magazines, news and radio transcripts, etc) from 152 countries in 22 languages, including more than 120 continuously updated newswires.

Factor		Explanation and Data Availability
Faculty	Entrants	Since decisions within universities are often delegated to committees and committees are frequently made up of faculty, the greater the turnover and the younger the faculty the higher the degree of succession. Diversity of management teams can impact herding behavior. (Wiersema and Bantel, 1992). More heterogeneity should lower negative behavioral tendencies and inertia. Norburn and Birley (1988) showed that managers of growing industries are younger, which suggests that in mature industries experience is valued. What matters for managers should matter for board members.
	Exits	
	Net	
	Median age of faculty (determined by when degree earned)	
	# of faculty	The larger the number of faculty the greater the complexity and inertial tendencies within the organization and the lower the degree of succession. Source: IPEDS.
Executive team refers to officers, directors, and trustees and five highest paid employees.		
Exec team character	Tenure	Shorter tenure leads to less inertia and higher degree of succession.
	Median Age	The younger the employees the less set they are in their positions and the less they are accustomed to the "way things are" the greater the degree of succession.
Exec team change	Entrants	The greater the number of changes the higher the degree of succession. Source: Form 990, Part V, Name and Title of Officers, 1998-2006 can be obtained electronically through GuideStar or NCCS, 1996-1997 can be obtained manually online from Form 990 via GuideStar.
	Exits	
	Net	
Initiating Force	Death/ retirement	Death/retirement denotes less degree of succession than resignation/forced. Khurana and Nohria (working paper) and Friedman and Singh (1989) show that the nature of the departure of the prior CEO can influence the degree to which the next CEO can change the company. Resignation versus retirement can be determined by whether CEOs leave before their 62nd birthday. Source: Factiva
	Resignation/ forced	
Prior leader tenure		The longer the tenure the lower the degree of succession because long tenure suggests that the old ways are likely ingrained in the organization. Miller (1991) suggests the longer the tenure of the prior CEO the poorer the match of the company and the environment. Source: Factiva
Nature of the management team		The nature of the management team (upper echelon) is important for strategic change. Wiersema and Bantel (1992) suggests that the younger the executive team, shorter their organizational tenure, higher their educational level, and greater the heterogeneity of their specialization the higher the probability of making strategic change.

Factor	Explanation and Data Availability
Leader character (age, level of education, type of prior institution (public or private))	Greater differences correspond to higher degree of succession. Zajac and Westphal (1996) show that change in CEO character can indicate the degree to which the Board has influence (most likely in change situations). They compared composites of job function, age and education characteristics of the new CEO versus the departing CEO. Bertrand and Schoar (2003) show that executives who are younger and who have MBA degrees tend to have more aggressive strategies. Source: Factiva
Leader compensation	The greater the compensation differential the higher the degree of succession. Large bumps in compensation may indicate that the Board is paying up to make changes within the organization (since the new CEO is worth much more than the departing CEO). Source: Form 990, Part V, Name and Title of Officers, 1998-2006 can be obtained electronically through GuideStar or NCCS, 1996-1997 can be obtained manually online from Form 990 via GuideStar.
Approach of leader	Greiner and Bhambri (1989) performed a case study to show that new CEOs can implement successful strategic changes over the short-term, but their success depends on the CEOs' approaches (comprehensive to limited and unilateral to collaborative), political behaviors of the executive teams (low tenure is beneficial), and the intervention processes (mandates, alternative debates, etc.).
The nature of corporate board influences	Ocasio (1999) suggests that formal rules in corporate governance (corporate boards) influence inertia in the rules of CEO succession. These include limits to open criticism of the CEO and not contacting fellow board members outside of meetings. Informal and formal rules (selection process for new CEOs) and historic precedents (inside or outside selection tendencies) are not easily changed and result in inertia in CEO selection.

Appendix 3: Structural Equation Models ("SEMs") of Hypothesis 1

An alternative method to generalized linear regressions to testing hypothesis 1 is through structural equation models. The results are similar to what was presented previously. Unfortunately, SEMs for the other tests are not as reliable since SEMs work best with the method of estimation chosen (see discussion below for the method) and the method is only reliable when using continuous variables. Thus, results of tests for hypotheses 2 and 3 are not shown; although, they are similar to what was discussed previously.

A structural equation model describes the relationships among latent variables. These latent variables take the form of explanatory (independent) and response (dependent) variables. These variables are not observed. Instead, there are common variables that explain the observed independent ("x") and dependent ("y") variables that "link" to them.

SEMs can be explanatory or confirmatory factor analysis ("CFA") models. Explanatory models are concerned with determining the factors in the model and their relationships, whereas confirmatory models attempt to confirm hypotheses based on prior research (Everitt and Dunn, 1991). This research makes use of CFA-type SEMs.

Eight matrices can be utilized in structural equation modeling. The first four include a (1) matrix associated with the structural equation, (2) a matrix for the relationship between the dependent latent variables (Future and Turnover), and (3) (4) two matrices for the relationships between the observed x and y variables and latent x (Bureaucracy, Current, Past, and Turnover) and y variables. There are also two vectors for the x and y observed variables and two vectors for the dependent and independent latent variables. A general form of these vectors and matrices is explained in a later section on equations.

Four additional matrices are important for "solving" the structural equation problem. They include covariance matrices associated with the (5) independent latent variables, (6) residuals of the structural equation, and (7) (8) two for the errors from the equations that relate the observed x and y observed variables to their respective latent variables.

One final matrix is important in SEMs. This matrix is composed of the eight matrices described above. The *implied* covariance matrix (based on estimates for the freed and constrained parameters and the original fixed parameters) for this final matrix is denoted $\sum$.

Each of the elements in the eight matrices must be specified as "free," "fixed," or "constrained." Freed parameters are those that are solved for, fixed parameters have a denoted metric, and constrained parameters are unknown but equal to one or more other unknown parameters. This research makes use of free and fixed elements.

In models utilizing the entire sample data set, the relationships in (3) and (4) are fixed to be of equal weight (see example in the discussion of equations) and the rest are fixed to zero. For (1) and (2), the elements are either freed (for the ones being modeled) or fixed (to zero). All of the covariance terms in (5), (6), (7), and (8) are freed. The path diagram for hypothesis 1 is shown in a few pages.

A further complexity, which actually simplifies the tests, must be made to describe the tests of the individual expectation phases. For these tests, all of the elements in every matrix except (1) are set to be equal (they are fixed across expectation phases). This is a very important adjustment (and the main reason I chose SEM for this research) that allows me to confidently ascertain whether the results (coefficients of the structural equation) of the different structural equations vary across expectation phases.

I solve for the free parameters in the super matrix $\sum$ from the *sample* covariance matrix **S** using the robust maximum likelihood method of estimation ("RML"). RML maximizes the likelihood of estimated parameters by minimizing the residuals of $\mathbf{S} - \sum$ (Joreskog and Sorbom, 2001). The RML makes use of asymptotic covariance matrices, which is important since, as shown previously, the distribution of the data is not necessarily normal (see chapter 7 and Appendix 1). In a study by Boomsma and Hoogland (2001), RML procedures were shown to perform well with non-normal data, versus some other methods that do not utilize asymptotic covariance matrices and, based on a review of literature, RML appears to be the preferred method for SEMs.

The advantages and disadvantages of SEM *versus* other models are discussed below. Note: all of the advantages and disadvantages are not described since some of them apply to SEM and other approaches.

Appendix 3.1: Advantages

Gefen, Straub and Boudreau (2000: 6), in their characterization of Hair, Tathan, and Black's paper (1998), state that "SEM tools are increasingly being used in behavioral science research for the causal modeling of complex, multivariate data sets in which the researcher gathers multiple measures of proposed constructs." Of course, common use of an approach is not a justification of an approach, so let us look at some of the positives.

Critically important for this research, SEMs allow the researcher to test multiple samples *simultaneously* to determine if there are differences among the results. In this study's use of SEM for hypothesis 1, tests are performed on universities that fit the four expectation phases *at the same time*. To determine if the results vary among the expectation phases, coefficients are freed between independent and dependent composite variables (the latent variables described above are actually composites since the weight was fixed for each of the relationships with their respective observed variables) and all other variables, including error terms, are constant (or fixed) across expectation phases. If the freed coefficients in the expectation phases are different and statistically significant, then one can conclude that different phases have varying relationships with reversion.

Schumacker and Lomax (2004) provide several additional reasons for the growing popularity of structural equation models. Two are highlighted below.

The first reason has to do with a real difference between SEM and other regression models. SEM allows one to make constructs of unobserved (the composites) variables (latent variables) from other observed variables. While the composites could be utilized with other approaches, the original use of latent variables is beyond those methods. What if the parameters of the relationships between the observed variables and the latent variables were not fixed? In this case, one could solve for those relationships in order to determine the best fit model at the same time as determining the coefficients between the latent variables (the structural equation).

Second, please note that there is an error term associated with each observed variable and its respective latent variable. SEM explicitly provides for measurement error, even for the observed variables. These errors are incorporated in the procedure for estimating $\sum$.

Furthermore, some regression approaches are not equipped to handle situations in which various independent variables are correlated. Typically, in regression analysis, one would not free the error terms to allow for correlation (as this research does for the independent observed variables). Allowing correlation can increase the goodness of fit statistics, but doing so does not identify the missing variable(s) that may explain the relationships of the error terms. SEM allows for correlation of error terms, and this is especially important for this research since some of the independent observed variables are, in fact, correlated (see table 7.g.). Additional tests were conducted that did not allow errors terms to correlate and the conclusions of the research did not change.

It makes sense that observed variables should be correlated, since they are explained by common latent composite variables – "Perhaps the most widely accepted premise in classical measurement theory is that indicators positively associated with the same concept should be positively correlated with each other" (Bollen and Lennox, 1991). This positive correlation is most prevalent for the observed variables for Current; however, it is not without exception (S_Ea). It is interesting to note that public universities are associated with lower levels of observed variables of Current except for REV and S_Ea. On the other hand, observed variables for Future, Bureaucracy, and Past show lower levels of correlation and correlations between observed variables for different composites is also low.

The latter sentence in the previous paragraph is notable, since the first hypothesis is that Future is negatively related to Past. Analysis of the individual observed variables that make up Future and Past (see panel C in table 7.g.) show little correlation, yet the results show that the latent variables for Future and Past are correlated (see chapter 8 and table 8.i.). Furthermore, Turnover and the observed variables for Future show little correlation (see panel C in table 7.g.), yet the results show that Turnover is related to Future when one controls for expectations (see chapter 8 and tables 8.e. and 8.h.). These observations exemplify the fact that there is an additive information component to the latent composites of the observed variables to what can be ascertained from analyzing the observed variables alone.

Finally, in typical regressions, one cannot model direct and indirect relationships between latent variables. That is, variable X may be directly related to variable Z and also indirectly related to variable Z through its relationship with Y (and Y's relationship with Z). With SEM, there can be multiple dependent latent variables and these variables can even be dependent on one another (just as the independent latent variables can also be dependent on one another). Please note, hypothesis 1 does not incorporate indirect relationships.

Appendix 3.2: Disadvantages

There are also several disadvantages to structural equation models above and beyond other approaches.

The first is quite simple and of paramount importance. Since some parameters in SEM are fixed, this means that they are specified in advance. If model identification is done ad hoc and without a sound theoretical and/or empirical basis, then use of SEM in research will result in biased conclusions. One may be forced to identify these parameters as well (to avoid the problem of an under-identified model (Goldberg, 1970)).

Second, while freeing the parameters between the latent and observed variables can result in a better fit model, a better fit model, again without a sound basis, could be nothing more than data mining. Everitt and Dunn (1991: 254) explain that "...many statisticians have complained that investigators can choose to rotate factors in such a way as to get the answer they are looking for." This is one reason so much time was spent developing the theoretical and empirical evidence for the hypotheses.

Third, in typical regressions one determines the relationships between independent and dependent variables; however, SEM takes this a step farther. One must first determine the relationships between the observed variables and the latent variables. This added element of complexity, while a positive for the approach, can also result in models that are under-identified (models have more unknown parameters than information to solve them), where finding a solution to the equation is problematic. Sometimes, one can fix additional parameters to resolve the issue but, as described above, if this is not done methodically and with reason, then the model will be biased.

Finally, the inclusion of all important factors to measure latent variables is of particular consequence. Leaving out an important variable can shift the measurement relationships (described in more detail below) (MacCallum and Austin, 2000). Allowing the error terms to correlate (as this study does) may reduce this problem even though it would be better to identify all relevant variables.

Appendix 3.3: Equations

To assist the reader in understanding structural equations models, please consider the SEM corresponding to the first hypothesis (regarding reversion - see figure 5.c.). The typical structural equation (equation 1) looks similar to a typical linear regression equation; however, the dependent and independent variables (F, B, C, and P below) are latent variables (Joreskog and Sorbom, 2001).

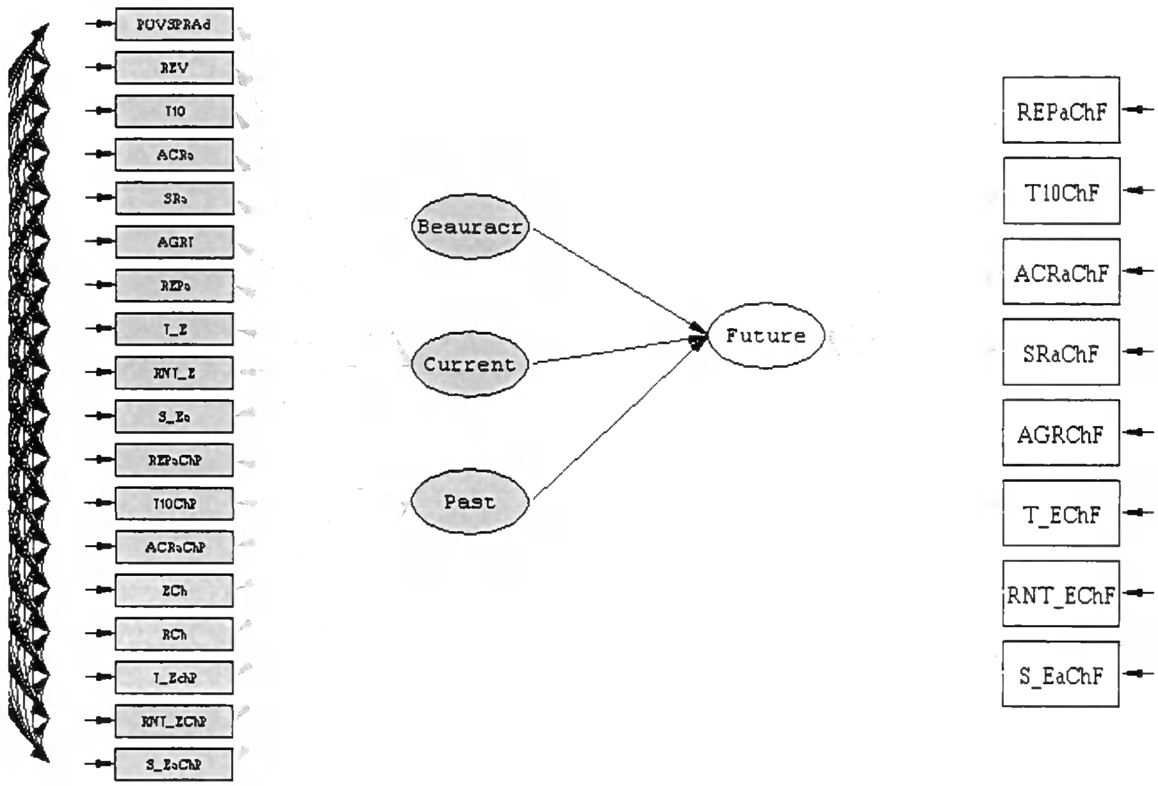
Eq. 1: $F = m * B + n * C + o * P + e,$

where:
1. *m, n, and o* refer to the coefficients representing the relationship between Future and Bureaucracy, Current, and Past,
2. F, B, C, and P denote Future, Bureaucracy, Current, and Past, and
3. *e* refers to the error term of the overall structural equation model (also *error* $term_{model}$).

The path diagram associated with equation 1 is shown below.

The ovals in the figure represent composite variables, with the lighter shaded oval representing the dependent composite and the darker shaded ovals depicting the independent composites. The labels for the composites include: current performance = "Current;" past changes in performance ="Past;" bureaucracy ="Bureaucracy;" and future changes in performance = "Future." The left and right rectangles represent the independent and dependent observed variables, respectively, which make up the composite variables.

The arrows represent influence and the heads of the arrows note the direction of influence. For instance, Bureaucracy affects two independent component variables, PUVSPRAdj and REV. The individual arrows on the left of the left rectangles and to the right of the right rectangles represent error terms and the interlinking arrows to the left of the arrows to the left-most rectangles show the correlation relationships between the variables. Not shown are error terms associated with the dependent latent variables.



The equations making up the independent *explanatory* composites, such as Bureaucracy, have the following relationships:

Eq. 2: PUVSPRAdj = 1 * Bureaucracy + $\textit{error term}_1$, and

Eq. 3: REV = 0.06 * Bureaucracy + 1 * Current + $\textit{error term}_2$.

Each component of the composite variables is standardized so that all components have equal weight. For instance, since PUVSPRAdj ranges from 1 to 2[55] and REV ranges from 0 to 50, Bureaucracy is multiplied by 0.06 for REV versus 1.0 for PUVSPRAdj.

Solving for bureaucracy yields the following two equations:

Eq. 4: Bureaucracy = PUVSPRAdj - $\textit{error term}_1$, and

[55] Changing the dummy to 0 and 1 from 1 and 2 does not change the results. For the generalized linear models, PUVSPRAdj is set to 0 and 1.

Eq. 5: 0.06 * Bureaucracy = REV - Current - *error* $term_2$.

Equations 3 and 5 are a little bit more complicated than other measurement equations since REV is a function of both bureaucracy and current performance.

Rearranging, these equations are simplified to:

Eq. 6: Bureaucracy = [(PUVSPRAdj - *error* $term_{1(i)}$) + (REV – Current - *error* $term_{2(i)}$)] / 1.06.

Past, Current, and Future (a *response* composite) are derived similarly.

Eq. 7: Current = [(REV - 0.06 * Bureaucracy - *error* $term_{2(i)}$) + (T10 - *error* $term_{3(i)}$) + (ACRa - *error* $term_{4(i)}$ + (SRa - *error* $term_{5(i)}$ + (AGRT - *error* $term_{6(i)}$) + (REPa - *error* $term_{7(i)}$) + (T_E - *error* $term_{8(i)}$) + (RNT_E - *error* $term_{9(i)}$) + (S_Ea - *error* $term_{10(i)}$)] / 9

Note: the error term associated with REV in Current is the same error term for REV in Bureaucracy.

Eq 8: Past = [(REPaChP - *error* $term_{11(i)}$) + (T10ChP - *error* $term_{12(i)}$) + (ACRaChP - *error* $term_{13(i)}$) + (0.06 * ECh - *error* $term_{14(i)}$) + (0.06 * RCh - *error* $term_{15(i)}$) + (T_EChP - *error* $term_{16(i)}$) + (RNT_EChP - *error* $term_{17(i)}$) + (S_EaChP - *error* $term_{18(i)}$)] / 6.12

Eq. 9: Future = [(REPaChF - *error* $term_{1(d)}$) + (T10ChF - *error* $term_{2(d)}$) + (ACRaChF - *error* $term_{3(d)}$) + (SRaChF - *error* $term_{4(d)}$) + (AGRChF - *error* $term_{5(d)}$) + (T_EChF - *error* $term_{6(d)}$) + (RNT_EChF - *error* $term_{7(d)}$) + (S_EaChF - *error* $term_{8(d)}$)] / 8

Substituting equations 6 through 9 into equation 1 yields:

Eq. 10: [(REPaChF - *error term*$_{1(d)}$) + (T10ChF - *error term*$_{2(d)}$) + (ACRaChF - *error term*$_{3(d)}$) + (SRaChF - *error term*$_{4(d)}$) + (AGRChF - *error term*$_{5(d)}$) + (T_EChF - *error term*$_{6(d)}$) + (RNT_EChF - *error term*$_{7(d)}$) + (S_EaChF - *error term*$_{8(d)}$)] / 8 = *m* * [(PUVSPRAd - *error term*$_{1(i)}$) + (REV - Current - *error term*$_{2(i)}$)] / 1.06 + *n* * [(REV - 0.06 * Bureaucracy - *error term*$_{2(i)}$) + (T10 - *error term*$_{3(i)}$) + (ACRa - *error term*$_{4(i)}$ + (SRa - *error term*$_{5(i)}$ + (AGRT - *error term*$_{6(i)}$) + (REPa - *error term*$_{7(i)}$) + (T_E - *error term*$_{8(i)}$) + (RNT_E - *error term*$_{9(i)}$) + (S_Ea - *error term*$_{10(i)}$)] / 9 + *o* * [(REPaChP - *error term*$_{11(i)}$) + (T10ChP - *error term*$_{12(i)}$) + (ACRaChP - *error term*$_{13(i)}$) + (0.06 * ECh - *error term*$_{14(i)}$) + (0.06 * RCh - *error term*$_{15(i)}$) + (T_EChP - *error term*$_{16(i)}$) + (RNT_EChP - *error term*$_{17(i)}$) + (S_EaChP - *error term*$_{18(i)}$)] / 6.12 + *error term*$_{mode}$.

It may be easier to visualize the above equation in matrix form.

There are eighteen x (*observed*) variables as indicators of the three independent (*explanatory*) composites ($\mathcal{E}_1$, $\mathcal{E}_2$, and $\mathcal{E}_3$) and eight y (*observed*) variables as indicators of the one dependent (*response*) composite ($\mathcal{N}_1$):

x_1 = PUVSPRAdj	x_7 = REPa	x_{13} = ACRaChP	y_1 = REPaChF
x_2 = REV	x_8 = T_E	x_{14} = ECh	y_2 = T10ChF
x_3 = T10	x_9 = RNT_E	x_{15} = RCh	y_3 = ACRaChF
x_4 = ACRa	x_{10} = S_Ea	x_{16} = T_EChP	y_4 = SRaChF
x_5 = SRa	x_{11} = REPaChP	x_{17} = RNT_EChP	y_5 = AGRChF
x_6 = AGRT	x_{12} = T10ChP	x_{18} = S_EaChP	y_6 = T_EChF
			y_7 = RNT_EChF
			y_8 = S_EaChF

There are eighteen independent observed variables. These include two for Bureaucracy, x_B, where B equals 1 and 2, nine for Current (one is also an observed variable for Bureaucracy), x_C, where C equals 2, 3, 4 … 10, and eight for Past, x_P, where P equals 11, 12, 13 … 18. There are eight dependent observed variables, y_F, where F equals 1, 2, 3 … 8, for dependent observed composite, Future.

Each of the independent and dependent variables has one error term. There are two for Bureaucracy, i_B, where B equals 1 and 2, nine for Current (one is the same as one for Bureaucracy), i_C, where C equals 2, 3, 4 … 10, and eight for Past, i_P, where P equals 11, 12, 13 … 18. There are eight error terms, d_F, where F equals 1, 2, 3 … 8, for dependent observed variable, Future.

The error terms for the observed variables are known at the outset since the weights for the observations to their respective composites are fixed. Thus, using the robust maximum likelihood model of estimation, the SEM is solved for the coefficients *m*, *n*, and *o*, while minimizing the residual of the overall model, $error\ term_{model}$.

Let $\mathcal{N}_1$ denote Future and $\mathcal{E}_1, \mathcal{E}_2, \mathcal{E}_3$, denote Bureaucracy, Current, and Past, respectively.

Since all of the parameters between the observed and explanatory and response composites are fixed to one (except for three parameters), the *measurement models* for the x and y variables simplify to:

$x_1 = \mathcal{E}_1 + i_1$	or $\mathcal{E}_1 = x_1 - i_1$	$y_1 = \mathcal{N}_1 + d_1$	or $\mathcal{N}_1 = y_1 - d_1$
$x_2 = 0.06*\mathcal{E}_1+\mathcal{E}_2+i_2$	or $\mathcal{E}_1 = (x_2-\mathcal{E}_2-i_2)/0.06$	$y_2 = \mathcal{N}_1 + d_2$	or $\mathcal{N}_1 = y_2 - d_2$
	or $\mathcal{E}_2 = (x_2-0.06*\mathcal{E}_1-i_2)$	$y_3 = \mathcal{N}_1 + d_3$	or $\mathcal{N}_1 = y_3 - d_3$
$x_3 = \mathcal{E}_2 + i_3$	or $\mathcal{E}_2 = x_3 - i_3$	$y_4 = \mathcal{N}_1 + d_4$	or $\mathcal{N}_1 = y_4 - d_4$
$x_4 = \mathcal{E}_2 + i_4$	or $\mathcal{E}_2 = x_4 - i_4$	$y_5 = \mathcal{N}_1 + d_5$	or $\mathcal{N}_1 = y_5 - d_5$
$x_5 = \mathcal{E}_2 + i_5$	or $\mathcal{E}_2 = x_5 - i_5$	$y_6 = \mathcal{N}_1 + d_6$	or $\mathcal{N}_1 = y_6 - d_6$
$x_6 = \mathcal{E}_2 + i_6$	or $\mathcal{E}_2 = x_6 - i_6$	$y_7 = \mathcal{N}_1 + d_7$	or $\mathcal{N}_1 = y_7 - d_7$
$x_7 = \mathcal{E}_2 + i_7$	or $\mathcal{E}_2 = x_7 - i_7$	$y_8 = \mathcal{N}_1 + d_8$	or $\mathcal{N}_1 = y_8 - d_8$.
$x_8 = \mathcal{E}_2 + i_8$	or $\mathcal{E}_2 = x_8 - i_8$		
$x_9 = \mathcal{E}_2 + i_9$	or $\mathcal{E}_2 = x_9 - i_9$		
$x_{10} = \mathcal{E}_2 + i_{10}$	or $\mathcal{E}_2 = x_{10} - i_{10}$		
$x_{11} = \mathcal{E}_3 + i_{11}$	or $\mathcal{E}_3 = x_{11} - i_{11}$		
$x_{12} = \mathcal{E}_3 + i_{12}$	or $\mathcal{E}_3 = x_{12} - i_{12}$		
$x_{13} = \mathcal{E}_3 + i_{13}$	or $\mathcal{E}_3 = x_{13} - i_{13}$		
$x_{14} = 0.06 * \mathcal{E}_3 + i_{14}$	or $\mathcal{E}_3 = (x_{14} - i_{14}) / 0.06$		
$x_{15} = 0.06 * \mathcal{E}_3 + i_{15}$	or $\mathcal{E}_3 = (x_{15} - i_{15}) / 0.06$		

$x_{J6} = \mathcal{E}_3 + i_{16}$ or $\mathcal{E}_3 = x_{J6} - i_{16}$

$x_{J7} = \mathcal{E}_3 + i_{17}$ or $\mathcal{E}_3 = x_{J7} - i_{17}$

$x_{J8} = \mathcal{E}_3 + i_{18}$ or $\mathcal{E}_3 = x_{J8} - i_{18}$

Based on the aforementioned discussion, the matrices equation that correspond to equations 4 and 5 (Bureaucracy B) is:

$$\text{Matrices}_B: \begin{pmatrix} x_1 - i_1 \\ (x_2 - \mathcal{E}_2 - i_2)/0.06 \end{pmatrix} = \begin{pmatrix} \mathcal{E}_1 \\ \mathcal{E}_1 \end{pmatrix}, \text{ or W = B'.}$$

Similarly, the matrices that correspond to Current (C), Past (P), and Future (F) are:

$$\text{Matrices}_C: \begin{pmatrix} (x_2 - 0.06 * \mathcal{E}_1 - i_2) \\ x_3 - i_3 \\ x_4 - i_4 \\ x_5 - i_5 \\ x_6 - i_6 \\ x_7 - i_7 \\ x_8 - i_8 \\ x_9 - i_9 \\ x_{10} - i_{10} \end{pmatrix} = \begin{pmatrix} \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \\ \mathcal{E}_2 \end{pmatrix}, \text{ or X = C',}$$

$$\text{Matrices}_P: \begin{pmatrix} x_{11} - i_{11} \\ x_{12} - i_{12} \\ x_{13} - i_{13} \\ (x_{14} - i_{14})/0.06 \\ (x_{15} - i_{15})/0.06 \\ x_{16} - i_{16} \\ x_{17} - i_{17} \\ x_{18} - i_{18} \end{pmatrix} = \begin{pmatrix} \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \\ \mathcal{E}_3 \end{pmatrix}, \text{ or Y = P', and}$$

$$\text{Matrices}_F: \begin{pmatrix} y_1 - d_1 \\ y_2 - d_2 \\ y_3 - d_3 \\ y_4 - d_4 \\ y_5 - d_5 \\ y_6 - d_6 \\ y_7 - d_7 \\ y_8 - d_8 \end{pmatrix} = \begin{pmatrix} \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \end{pmatrix}, \text{ or } Z = F'.$$

Matrices B, C, and P are multiplied by scalar factor, m, n, and o, respectively, in equation 1. Then, to this sum, the overall structural equation error term, call it e, is added to matrices F. Thus, the matrices equation for the overall structural equation model' is shown below:

$\text{Matrices}_{SEM'}$:

$$\begin{pmatrix} \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \\ \mathcal{N}_1 \end{pmatrix} = \begin{pmatrix} y_1 - d_1 \\ y_2 - d_2 \\ y_3 - d_3 \\ y_4 - d_4 \\ y_5 - d_5 \\ y_6 - d_6 \\ y_7 - d_7 \\ y_8 - d_8 \end{pmatrix} = m * \begin{pmatrix} x_1 - i_1 \\ (x_2 - \mathcal{E}_2 - i_2) / 0.06 \end{pmatrix} + n * \begin{pmatrix} (x_2 - 0.06 * \mathcal{E}_1 - i_2) \\ x_3 - i_3 \\ x_4 - i_4 \\ x_5 - i_5 \\ x_6 - i_6 \\ x_7 - i_7 \\ x_8 - i_8 \\ x_9 - i_9 \\ x_{10} - i_{10} \end{pmatrix} + o * \begin{pmatrix} x_{11} - i_{11} \\ x_{12} - i_{12} \\ x_{13} - i_{13} \\ (x_{14} - i_{14}) / 0.06 \\ (x_{15} - i_{15}) / 0.06 \\ x_{16} - i_{16} \\ x_{17} - i_{17} \\ x_{18} - i_{18} \end{pmatrix} + e \cdot$$

The general form of $\text{Matrices}_{SEM'}$ is shown in equation 11.

Eq. 11: $Z = m * W + n * X + o * Y + e$

Equation 11 is equivalent to $F' = m * B' + n * C' + o * P' + e$, which looks very similar to equation 1; however, one must be careful with adding matrices of dissimilar sizes.

A solution to this situation is to add one equation, $0 * \mathcal{N}_9 = 0 * y_9 + 0 * d_9$ or $0 = 0$, to F'. Likewise, add seven and one similarly constructed equation(s) to B' and P', respectively. There is one additional equation for the dependent equations and eight additional equations for the independent equations. If we do this, then we can add the equations; however, the resulting matrix equation still does not equal equation 1. To compute a solution that is the same as equation 1 one must multiply F' by the scalar 1 / 8 to get F", B' by 1 / 1.06 to compute B", C' by 1 / 9 to derive C", and P' by 1 / 6.12 to arrive at P".

The general form of the matrix equation representing equation 1 ($\text{Matrices}_{\text{SEM}}$) is shown below:

$\text{Matrices}_{\text{SEM}}$:

$$\begin{pmatrix} (1/8)*(y_1 - d_1) \\ (1/8)*(y_2 - d_2) \\ (1/8)*(y_3 - d_3) \\ (1/8)*(y_4 - d_4) \\ (1/8)*(y_5 - d_5) \\ (1/8)*(y_6 - d_6) \\ (1/8)*(y_7 - d_7) \\ (1/8)*(y_8 - d_8) \\ 0 \end{pmatrix} = m * \begin{pmatrix} (1/1.06)*(\chi_3 - i_3) \\ (1/1.06)*((\chi_2 - \mathcal{E}_2 - i_2)/0.06) \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} + n * \begin{pmatrix} (1/9)*(\chi_2 - 0.06 * \mathcal{E}_1 - i_2) \\ (1/9)*(\chi_3 - i_3) \\ (1/9)*(\chi_4 - i_4) \\ (1/9)*(\chi_5 - i_5) \\ (1/9)*(\chi_6 - i_6) \\ (1/9)*(\chi_7 - i_7) \\ (1/9)*(\chi_8 - i_8) \\ (1/9)*(\chi_9 - i_9) \\ (1/9)*(\chi_{10} - i_{10}) \end{pmatrix} + o * \begin{pmatrix} (1/6.12)*(\chi_{11} - i_{11}) \\ (1/6.12)*(\chi_{12} - i_{12}) \\ (1/6.12)*(\chi_{13} - i_{13}) \\ (1/6.12)*(\chi_{14} - i_{14}) \\ (1/6.12)*(\chi_{15} - i_{15}) \\ (1/6.12)*(\chi_{16} - i_{16}) \\ (1/6.12)*(\chi_{17} - i_{17}) \\ (1/6.12)*(\chi_{18} - i_{18}) \\ 0 \end{pmatrix} + e$$

Shorthand, this equals:

Eq. 12: $F'' = m * B'' + n * C'' + o * P'' + e$.

The coefficients and the error term in equation 12 create the equality between the dependent and independent composites. A good model will produce statistically significant coefficients; however, as discussed in the chapter 8, this research is less concerned about the models' fit statistics. In other SEM research (at least in operations management), Shah and Goldstein (2006: 158) found that researchers focused too much time on model fit and overlooked important information about the parameters: "A model with good overall fit but yielding nonsensical parameter estimates is not a useful model." MacCallum and Austin (2000: 218) state, "Thus, it is critically important to pay attention to parameter estimates (in SEM), even when the fit is very good." Furthermore, I expect that I could have improved the goodness of fit statistics by freeing the coefficients between the observed and composite latent variables. Overall, the results indicate that future performance is related to Current, Past, and Bureaucracy, and the goodness of fit statistics are reasonable given the study's goals.

Appendix 3.4: Results

The results from structural models for hypothesis 1 are shown in the table below. They are similar to what was presented earlier. The coefficients are all negative and statistically significant (except for bureaucracy) at the 5% level. This means that there is support for reversion during each expectation phase, supporting the notion of stickiness, and for the overall data set. It also appears that there is additional information in dividing the universe by expectation phase, as the goodness of fit statistics adjusted for degrees of freedom are better for the phase data (R5) than for the combined data.

With SEM, one improvement was made over the generalized linear regressions. For the "phase" coefficient estimations (R5), all pathways were "fixed" between the latent independent and dependent composites and their component variables and their error terms to be equal, but the directional paths were "freed" between the latent independent and dependent variables for each phase. Essentially, this study estimated the exact same model across all sub-samples *simultaneously*. This way, one is able to isolate the influence of expectations on the results. I believe this methodology is superior to and more conservative than other approaches where one would perform regressions for each of the expectation phases separately. Those tests would produce different error terms for each regression and each regression would be "fitted" to the data. This method computes one error term and one set of goodness of fit statistics across all expectation phases.

Reversion (with Structural Equation Modeling) ("R")

Tests of reversals. The dependent variable in the tests is the composite Future and the independent variables consist of composites for Current, Past, and Bureaucracy and combinations of these composites. Panel A shows the tests for the overall data set and Panel B displays the results for the tests controlling for the expectation phases. The observed variables, composites, and phases are defined in the "Reading the Tables" table.

Panel A: Tests of Entire Data Set					
Model	Phase	Independent	Coefficient	T-Value	Sig @ 5% Level
R1	All	Current	-1.31	-5.64	*
	All	Error Term	-1.37	-2.46	*
R2	All	Past	-0.75	-6.92	*
	All	Error Term	-0.15	-0.80	
R3	All	Current	-1.08	-5.32	*
	All	Past	-0.73	-6.77	*
	All	Error Term	-1.36	-2.97	*
R4	All	Bureaucracy	0.02	1.32	
	All	Current	-1.08	-5.31	*
	All	Past	-0.73	-6.77	*
	All	Error Term	-1.35	-2.96	*

Panel B: Tests of Expectations Phases					
Model	Phase	Independent	Coefficient	T-Value	Sig @ 5% Level
R5		Common Error	-0.36	-2.27	*
	1	Past	-1.30	-6.21	*
	2	Past	-0.93	-6.00	*
	3	Past	-0.74	-4.34	*
	4	Past	-0.41	-2.72	*

Goodness of Fit

χ^2 = Chi-Square
- lower better

RMSEA = Root Mean Square Error of Approximation
- lower better
- $\sqrt{[(\chi^2/df - 1)/(N - 1)]}$

SRMR = Standardized Root Mean Square Residual
- lower is better
- measure of the standardized difference between the observed covariance and predicted covariance

AGFI = Adjusted Goodness of Fit Index
- higher is better
- GFI is interpreted as the amount of variances and covariances accounted for by the model
- AGFI adjusts GFI for degrees of freedom

SEM	χ^2	df	χ^2 / df	RMSEA	SRMR	AGFI
R1	1362.39	98	13.9	0.10	0.07	0.78
R2	1012.26	90	11.2	0.07	0.09	0.84
R3	1995.58	161	12.4	0.08	0.07	0.74
R4	2084.13	168	12.4	0.08	0.07	0.73
R5	2495.09	495	5.0	0.08		