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A Study of Risk-Taking Behavior in Investment Banking

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A STUDY OF RISK-TAKING BEHAVIOR

IN INVESTMENT BANKING

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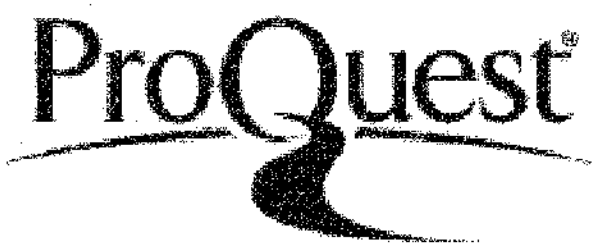

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ABSTRACT

A STUDY OF RISK-TAKING BEHAVIOR
IN INVESTMENT BANKING

Elzotbek Rustambekov, Doctor of Philosophy, 2012
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This dissertation examines corporate risk-taking behavior by investment banks in the United States. This study was sparked by the collapse of Lehman Brothers, one of the largest bankruptcy filings in U.S. history. This dissertation examines the specific factors that drove investment banks such as Lehman Brothers to take excessive risks, and how the deregulation of the US financial services industry towards the end of the 1990s contributed to risk-taking behavior.

I use four theoretical perspectives to examine corporate risk-taking behavior among investment banks. These perspectives include: institutional theory, behavioral theory of the firm, knowledge based view (KBV) of the firm, and agency theory. Risk research in strategic management has mostly tended to adopt three theoretical perspectives: behavioral theory of the firm (Cyert & March, 1963), prospect theory (Kahneman & Tversky, 1979), and agency theory (Jensen & Meckling, 1976). I included institutional theory and KBV perspectives because numerous studies suggest that the regulatory environment (Scott, 2003) and knowledge base of a firm (Grant, 1996b)

matters in corporate risk-taking. A review of the practitioner literature also suggests that regulatory frameworks and lack of firm competence have played a role in firm risk-taking behavior (Pirson & Turnbull, 2011; Summers, 2011; Wallison, 2011).

My analysis suggests that both external and internal factors were associated with excessive corporate risk-taking among investment banks. External factors associated with firm risk-taking include the institutional environment, such as regulation (or absence thereof). Internal factors associated with firm risk-taking include aspirations of executives, level of corporate diversification, knowledge base of company, number of interlocking directorships in the board, size of the board, ratio of insiders to outsiders on the board, and ownership of the stock by board members of investment banks.

The findings of this study contribute to the literature on corporate risk-taking behavior, and suggest that the study of such a complex phenomenon as corporate-risk taking needs to be done using multiple theoretical perspectives.

This dissertation is dedicated to my mother for all her support and for instilling in me that learning is truly a lifelong process.

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1 INTRODUCTION

This dissertation analyzes the antecedents of corporate risk-taking and answers the question: what factors contribute to corporate risk-taking? Specifically it looks at how four sets of factors, including: (1) institutional and industry variables, (2) company's aspirations, (3) firm's knowledge, and (4) corporate governance, contribute to corporate risk-taking (Please see Appendix A). It is established in the literature that all four sets of factors influence corporate risk-taking, yet there is no study that analyzes these factors at once and shows which factors have a stronger effect on risk strategies. While considering all four sets of factors, this dissertation analyzes competing theoretical perspectives on risk, including institutional theory, knowledge-based view, behavioral theory of the firm and agency theory. In the face of the current financial crisis, the importance of corporate risk-taking cannot be overstated; one of the main implications of this research is that any analysis of corporate risk-taking should be performed on a holistic manner using multilayered levels of analysis.

Corporate risk embodies a multitude of policy decisions that are made separately as a reaction to different industry and firm factors that have unbalanced effects on corporate performance, and possibly, corporate survival (Reger, Duhaime, & Stimpert, 1992). Institutional variables include presence or absence of various regulations as well as the number of agencies overlooking particular sectors of the economy, and it is established that changes in regulations result in change in corporate risk levels (Wiseman & Catanach Jr, 1997). The connection between regulations and corporate risk was established not only in the United States, but across the world, including in Central and Eastern European countries (Agoraki, Delis, & Pasiouras, 2009). Regulations such as capital requirements, bank activity restrictions, and boundaries of supervisory power have an independent influence on risk-taking in the banking sector, and that influence is separate from any market power effects of regulatory changes (Agoraki et al., 2009). Therefore, institutional environment clearly influences corporate risk-taking, and that is why it is selected as one of the main factors in the analysis.

The behavioral theory of the firm combines companies' aspirations, performance levels and corporate risk (Bromiley, 1991; Cyert & March, 1963). When performance levels exceed aspirations, companies keep their established routines, as there is no need to change the system that performs well (Augier & Prietula, 2007). Otherwise, when performance levels fall below aspirations, companies search for new ways to operate, because what they are doing is not working (Augier & Prietula, 2007). The difference between aspirations and actual performance is called attainment discrepancy (Lant, 1992). The higher this discrepancy is, the larger the company's pressure to take risk (Bromiley, 1991). Aspirations can be measured in two ways: (1) as company's past

performance, and (2) as company's peer groups' performance (Cyert & March, 1963), and both of those will be measured in this dissertation.

The resource-based view argues that a valuable, rare, inimitable and nonsubstitutable set of resources provides a sustained competitive advantage for a company (Barney, 1986b, 1991, 2001). Resources not only provide competitive advantage, but also influence corporate risk-taking (Wang, Barney, & Reuer, 2003). In turn, particular corporate risk-taking practices send a positive signal to the market and can attract more resources in the form of investment to the company (Wang et al., 2003). Corporate resources consist of various productive systems, including physical capital, legal capital, intangible assets and human talent (Mahoney & Pandian, 1992). In human talent Mahoney and Pandian (1992) include top management teams as a crucial resource that generates rent. Das and Teng (1998) divided resources into four categories, including: financial, technological, physical and managerial, and showed an interactive effect of resources with risk (Das & Teng, 1998). Managerial resources include knowledge and expertise, and they will be analyzed using knowledge-based view of the firm, which is an extension of resource-based view (Felin & Hesterly, 2007). Knowledge-based view argues that the key to any company's success lies in its ability to integrate various types of knowledge and apply it to new problems, products and services (Grant, 1996b). Knowledge-based view puts forward the idea that a company's success and survival depend on its ability to combine, generate and apply relevant knowledge (Conner & Prahalad, 1996; Kogut & Zander, 1993, 1996). Hierarchical organizations are particularly good at combining, sorting and applying knowledge, thus developing "path dependent" capabilities and intellectual assets (Athanassiades, 1973).

The relationship between corporate governance and corporate risk-taking is well established (Eling & Marek, 2011; John, Litov, & Yeung, 2008). Variations of corporate governance systems across countries, like the market-based corporate governance system of the U.K. and the control-based corporate governance system of Germany, produce variations in corporate risk-taking, and evidence of this is well established (Eling & Marek, 2011). Corporate risk-taking choices are partly determined by managers' explicit ownership of a company and various compensation schemes, such as stock-ownership, by top management teams (John et al., 2008). Other things that determine corporate risk-taking are board members' behavior, access to relevant information and ability to process knowledge (Pirson & Turnbull, 2011) as well as presence and scope of responsibilities of audit and risk management committees (Brown, Steen, & Foreman, 2009). All this evidence suggests that differences in corporate governance systems between companies and across nations clearly influence corporate risk-taking. In this dissertation, additional factors such as interlocking directorships and the number of independent directors on the board will be examined.

Four sets of factors contribute to corporate risk-taking, including: (1) institutional and industry variables, (2) firm aspirations that are based on past performance and industry average, (3) specific resources and a particular type of resource – knowledge, and (4) corporate governance. The strength of these factors could vary across situations, but in order to have a clear picture of how to stimulate effective risk management systems in corporations it is crucial to look at all four sets of factors simultaneously. This simultaneous view allows us to see the interactions, and the

analysis of factors related to agency theory permits us to rank board of directors parameters by their strength of influence.

This dissertation's results are of interest not only to academia, but to the world of practitioners, because they give managers information on how the external environment and internal factors, including governance mechanisms, influence risk-taking of companies, and what role knowledge base plays. Government and regulatory bodies can benefit from this research because their role as rule setters is covered under the institutional and industry levels of analysis.

2 LITERATURE REVIEW AND THEORETICAL MODEL

2.1 Risk, Measures of Risk and Strategy

Risk has been the focus of much theoretical and practical research for decades. Both executives and academics have tried to develop practical concepts and techniques for assessing risk. Singhvi (1980) notes that "risk, like beauty, lies in the eyes of the beholder," which means that under similar internal and external circumstances, various people and companies draw different risk pictures.

One of the first to make the distinction between risk and uncertainty in economic terms was Knight (1921), who argues that "certainty" takes place when decision outcomes can have finite probabilities, like one or zero. "Risk," therefore, is defined as the probability distribution of all the existing outcomes that can be projected when probabilities shift from zero to one. When probability distribution cannot be estimated "risk" turns into "uncertainty" (Knight, 1921). While very logical, Knight's definition and argument have not been widely accepted by researchers in economics and other fields, such as psychology, that study organizations (Bromiley & Johnson, 2005). The muddle around risk and uncertainty was well noted by Bettis (1982) who said: "Technically, there is a distinction between risk and uncertainty... Almost all authors after noting this distinction ignore it and use risk and uncertainty interchangeably." Not only do different fields that study organizations have different views on risk, but

practitioners also understand risk in a fashion contrary to Knight (Baird & Thomas, 1990; March & Shapira, 1987). For instance, for managers risk seems to be more of a downside concept – specified in terms of failure to perform at a given level. Downside is more relevant to practicing managers than performance variability, which includes both upside and downside outcomes (Miller & Reuer, 1996). Singhvi (1980) defined risk as "the estimated degree of uncertainty with respect to realization of the expected return or outcome." This description of risk includes approximations of uncertainty as typically defined (Nohria & Stewart, 2006).

2.1.1 Risk and Performance Relationship

Risk is a multi-dimensional concept, and it leads to various perspectives on what risk-taking is. For example, in the literature risk may include financial leverage[1] of the company (Combs & Ketchen Jr, 1999; Gale, 1972; Hall & Weiss, 1967), level of corporate diversification (Jensen, 1989; Lang & Stulz, 1993; Ramanujam & Varadarajan, 1989), variability of the income stream (Haurin, 1991; Miller & Bromiley, 1990), and perceptions of top executives (Miller & Friesen, 1986; Sitkin & Weingart, 1995; Weber, Blais, & Betz, 2002).

In the strategic management discipline, seminal study is the work of Bowman (1980) who found a negative relationship between risk and return. This relationship was particularly strong for companies with below-average performance. Labeled as

[1] Also called Debt-to-Equity ratio and denoted D/E

"risk/return paradox," this finding was contrary to the positive risk-return relation that was established in the field of finance for decades. As a proxy for risk, Bowman employed the variance of the return-on-equity[2] (ROE) from annual reports. Bowman's (1980) explanations for the risk/return paradox include: (1) variations in managerial talent enabled companies with high-quality management teams to consistently have both higher performance and lower risk, as compared to companies with management teams of lower quality; (2) the pattern of investment decisions of some companies reflected more risk-seeking than risk-avoiding decisions; (3) companies with lower profitability assumed risks that companies with higher profitability avoided altogether; (4) market dominance of a company seems to permit both higher profits and lower risk levels.

Most studies in the field of finance found a positive relationship between risk levels and performance (Aaker & Jacobson, 1987; Cardozo & Smith, 1983; Jegers, 1991). Using PIMS database, Aaker and Jacobson (1987) established a positive association between performance and both systematic and unsystematic risks. Risks in that study were defined using accounting data.

Some studies found no relationship between risk and performance (Bettis & Mahajan, 1985). For instance, variance in returns, average returns and risk had associations that changed over time (Figenbaum & Thomas, 1986). Relationship between systematic risk of the company's stock returns and the stock market, which is generally known as beta, and returns measured via accounting tools had no association (Figenbaum & Thomas, 1986).

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[2] After-tax profit divided by stockholder's equity

Literature suggests that risk is a multidimensional concept and should be regarded as such (Haimes, 2009; Resek, 1970). The multidimensional nature of risk implies that there are a number of factors that affect corporate levels of risk. For example, on the firm level, if one applies the view that a firm is a coalition (Cyert & March, 1963), also called relevant stakeholders view (Hannan & Freeman, 1984), it becomes clear that various risk dimensions reflect the multitudes of interests of coalition members. Differences in risk dimensions have bearings on performance; for instance, income stream uncertainty negatively influences corporate performance (Bromiley, 1991; Miller & Bromiley, 1990; Wiseman & Bromiley, 1996), while downside risk positively influences subsequent corporate performance (Miller & Leiblein, 1996a). Many constructs from the behavioral theory of the firm affect corporate risk levels. For example, risk-taking is increased if corporate performance is below the aspirations levels, and there is a strong positive relationship between these constructs, i.e. the larger the gap between corporate performance and aspirations, the higher the risk-taking will be. Interestingly, organizational slack generally reduces risk-taking tendencies (Moses, 1992; Singh, 1986; Su, Xie, & Li, 2009). In accordance with predictions of agency theory, strong corporate governance systems appear to mitigate risk-aversion of managers, whereas, the general effect of stock ownership is increased risk-taking of managers (Palmer & Wiseman, 1999; Rochet, 1999).

2.1.2 Risk Management

A Global Survey of Economist Intelligence Unit [3] questioned 334 financial services executives, and 60% of respondents said that the importance of risk management was not understood throughout their organization (Stringer, 2009). Two thirds are no longer confident that policy makers can produce an adequate and effective response to the economic meltdown. Respondents pronounced that risk management reform within institutions would have to be far-reaching and radical. The survey results show the magnitude of the current problem, and it is especially interesting in light of the research findings that risk management is regarded as one of the most important goals of financial executives (Froot, Scharfstein, & Stein, 1993). From this perspective the global financial crisis can be viewed as a malfunction within an institutional environment, because risk was ignored industry-wide (Johnson & Kwak, 2010). Many key players of the market that constitute the fabric of the institutional environment, such as regulators – including Securities and Exchange Commission, government bodies – including Federal Reserve and Treasury, credit rating agencies – including Standard and Poor's, Moody's and Fitch, were either unaware of risks or were passive in their roles in preventing unrealistic risk exposures (Lucchetti, Scannell, & Shah, 2008).

Going back to the example of global financial crisis, and looking at it on a company level, it becomes apparent that risk management practices within companies emphasized short-term rates of return over long-term risk-adjusted return (McDonald,

[3] From <http://mikhailfedorov.wordpress.com/2009/10/03/after-the-storm-a-new-era-for-risk-management-in-financial-services/> [Accessed 02.19.2011 at 19:34]

2009). For instance, many financial institutions that made a decision to take part in securitization of mortgages, trading in derivatives and collaterized debt obligations[4] ended up going bankrupt or accessed TARM funds (Lo, 2009). Also company level analysis demonstrates that during this financial crisis different financial institutions were affected differently (Ivashina & Scharfstein, 2010). This difference in effect is due to variations in risk management techniques that are at the project and company levels (Bartlett, 2004; Chapman & Ward, 2002). Risk management on a company level consists of three main phases: (1) risk identification, (2) risk assessment and (3) management of risk (Leitch, 2009; Singhal & Singhal, 2009). Risk identification includes source analysis and problem analysis (Pritchard, 2010). Risk assessment consists of impact analysis and probability of the risk analysis (Pritchard, 2010). Management of risk includes four main strategies: (1) risk avoidance, also called elimination, (2) risk reduction or mitigation, (3) risk transfer, which includes outsourcing or using insurance, and (4) risk acceptance, which leads to retention and budgeting. If the company chooses retention, it should set up a contingency for it. (Ranasinghe, 1994; Touran, 2003; Yeo, 1990). How much that contingency should be linked to a company's resource base still remains under debate (Cioffi & Khamooshi, 2008a). Some scholars argue that contingency budgeting is perceived as a waste of resources (Pate-Cornell & Dillon, 2001); others suggest that a company should assign a fixed percentage of total costs as contingency (Yeo, 1990). Application of fixed percentages has been criticized for being inexact in giving the amounts needed should risk materialize (Touran, 2003). Yeo (1990) showed that an arbitrary 10%, 20%, or 30% is usually set aside and suggested using the contingency-

[4] Sometimes called CDOs

estimating system concept. This concept combines aspects of the conventional "classes of estimate" approach with a statistical method, uses range estimates and applies the theory of probability for risk assessment and contingency estimation. A newer scientific method suggests finding optimal contingency allocation using models which take into account total number of risks and severity and probability of each risk (Cioffi & Khamooshi, 2008b; Khamooshi & Cioffi, 2009). This method has an advantage of allowing financial managers to allocate the optimal level of contingency when accepting risks. This evidence suggests that in order to understand the nature and effects of risk, one should look not only at institutional variables, but at company level variables as well.

2.1.3 Measures of Risk

When it comes to the measurement of risk, a variety of risk proxies are used. The most common risk proxies are variability of accounting returns over time, such as return-on-assets (ROA) and return-on-equity (Bromiley, Miller, & Rau, 2001). The majority of measures are the results of (1) availability of data, (2) simplicity of computation, and (3) instances of past usage in other disciplines (Bromiley et al., 2001).

As a measure of risk, most studies that followed the research direction of using the variance of the return-on-equity (Bowman, 1982; 1980; Fiegenbaum & Thomas, 1985) employed standard deviation of the return-on-equity (Baucus, Golec, & Cooper, 1993; Gooding, Goel, & Wiseman, 1996; Jegers, 1991), variance of the return-on-equity

(Fiegenbaum & Thomas, 1988; Jegers, 1991), variance of the return-on-equity around the time trend (Oviatt & Bauerschmidt, 1991), adjusted variance of the return-on-equity (Marsh & Swanson, 1984), standard deviation of the return-on-assets (Baucus et al., 1993; Cool, Dierickx, & Jemison, 1989; Jemison, 1987), variance of the return-on-assets (Fiegenbaum, 1990; Fiegenbaum & Thomas, 1990; Palmer & Wiseman, 1999), standard deviation of the return-on-sales (Cool et al., 1989), and the standard deviation of the annual percentage change in earnings (Balakrishnan & Fox, 1993). To overcome concerns about the measurement quality of standard deviation and variance, several researchers introduced distinctive measures based on accounting returns, including an adjusted risk measure for autocorrelation within firms over time (Marsh & Swanson, 1984), the sum of absolute deviations around each firm's average return-on-equity over four years (Woo, 1987), the estimation of accounting betas by fitting accounting-return data to the capital asset pricing model (Aaker & Jacobson, 1987), returns variability around a time trend (Oviatt & Bauerschmidt, 1991; Wiseman & Bromiley, 1991), the standard deviation of annual percentage changes in earnings (Balakrishnan & Fox, 1993), and the mean-quadratic-differences over a five-year time slot and the variance of return-on-equity around the median (Lehner, 2000).

When the stock market data is available, the most common tools that researchers use to account for risk are the estimates of systematic and unsystematic risk from the Capital Asset Pricing Model (CAPM) (Sharpe, 1964; Treynor, 1961, 1962). Systematic and unsystematic risks capture risk from the perspective of stock-owners. Other common measures of risk derived from the Capital Asset Pricing Model are: accounting beta using return-on-equity (Aaker & Jacobson, 1987) and Jensen's beta for estimation of

unsystematic risk (Amit & Wernerfelt, 1990). Scholars in strategic management questioned the meaningfulness of the Capital Asset Pricing Model's risk measures and implications of those measures (Bromiley et al., 2001). For instance, contrary to the predictions of the Capital Asset Pricing Model, general managers do try to minimize unsystematic risk (Bettis, 1983). The relevance of Beta for the strategic management field was challenged and criticized on the grounds of small empirical support for CAPM (Chatterjee, Lubatkin, & Schulze, 1999; Ruefli, Collins, & Lacugna, 1999).

Additional interesting measures of risk include: annual report content analysis (Bowman, 1984), standard deviation of EPS forecast (Bromiley, 1991; Deephouse & Wiseman, 2000; Palmer & Wiseman, 1999; Wiseman & Bromiley, 1996), Beta Altman's Z (D'Aveni & Ilinitch, 1992), and entropy measure derived from shifting rank within an industry (Collins & Ruefli, 1992).

To account for the multidimensional nature of risk several researchers used more than two risk measures at once. For example, Woo (1987) used the sum of absolute deviation around average return-on-equity, variability in market share around time trend, and price-cost gap. Cool and Schendel (1987) measured risk with standard deviation of market share, weighted segment share and return-on-sales, absolute value of percentage change from average past return-on-equity, return-on-assets, current ratio, and sales to total assets. Fiegenbaum and Thomas (1990) employed absolute value of percentage change from average past return-on-equity, return-on-assets, current ratio, and sales to total assets, standard deviation of return-on-assets, standard deviation of return-on-equity, standard deviation of analysts' earnings-per-share forecasts, and coefficient of variation of analysts' earnings-per-share forecasts. Miller and Bromiley (1990) simultaneously

used beta, unsystematic risk, debt-to-equity ratio, capital intensity and R&D intensity. Wiseman and Bromiley (1991) utilized variance in return-on-equity and variance in return-on-assets, variance in return-on-equity and variance in return-on-assets around a time trend, RLPM using stock returns, RLPM using return-on-assets and return-on-equity, downside beta, probability of falling below industry average earnings to price ratio and return-on-assets. Miller and Reuer (1996) applied standard deviation of return-on-assets, return-on-equity Beta, unsystematic risk, coefficient of variation of forecasted earnings-per-share, and Altman's Z. Miller and Leiblein (1996a) employed RLPM based on return-on-assets, standard deviation of return-on-assets, standard deviation around return-on-assets trend, and absolute value of year-to-year change in return-on-equity. Lehner (2000) employed mean of quadratic difference in return-on-equity and variance of return-on-equity around the median. Reuer and Leiblein (2000) used RLPM using return-on-assets, return-on-equity and downside beta.

2.2 Deregulation

Starting in the late 1970s many nations including the United States substantially liberalized key parameters of their banking regulations (Feldmann, 2012). More deregulations followed in the 2000s, leading the banking sector to a situation where it is largely stripped of most restrictions, some of which had been in place for many decades (Feldmann, 2012). A few examples of deregulations include elimination of controls of interest rates, removal of barriers to entry for foreign banks, decrease in state ownership and loans issued for political reasons with lower than market rates to specific sectors of the economy (Feldmann, 2012; Fuentelsaz, Gomez, & Polo, 2002).

The question of the effects of deregulation is important because of its long term and far reaching effects and, even more so, because of the global financial crisis of 2007-2009. As a result of this crisis, which increased unemployment around the world and in the United States, banking regulation has been reviewed and substantially tightened (Ashcraft & Adrian, 2012). Most literature on deregulation is in support of deregulatory initiatives. Let us review some of the main reasons for supporting deregulations.

2.2.1 Deregulation and Economic Growth

Deregulation is linked directly to economic growth. The removal of bank branch restrictions in the United States was a good setting to examine the relationship (Jayaratne

& Strahan, 1996). Evidence suggested that rates of per capita income growth and aggregate output amplified significantly right after intrastate branch deregulation (Jayaratne & Strahan, 1996). Jayaratne and Strahan (1996) argue that the improvement in economic growth can only be attributed to deregulation of the banking system and nothing else. Economic growth follows enhancements in the quality of bank lending, but not enhancement of the volume of lending, and this effect brings fast economic growth (Jayaratne & Strahan, 1996).

There are many more studies providing evidence that more pro-competitive banking regulation leads to a more efficient banking sector (Fu & Heffernan, 2007; Hasan & Marton, 2003; Huang, 2000). Privatization is the first of the regulations that are considered to be pro-competitive and to increase the efficiency of banks (Beck, Cull, & Jerome, 2005; Berger, Hasan, & Zhou, 2009; Bhaumik & Dimova, 2004; Bonaccorsi di Patti & Hardy, 2005; Hasan & Marton, 2003), while regulations allowing easier entry for foreign banks follow closely in second place (Figueira, Nellis, & Parker, 2009; Li, 2008).

Empirical analysis of financial deregulation in Bangladesh from 1975 to 1995 provides evidence for the theory of endogenous growth (Siddiki, 2002). Siddiki (2002) argues that financial deregulation, accompanied by investments in human capital, improves the growth rate of the economy, thus building the case for deregulation of financial sectors. The study utilized variations of time series techniques, and results were very stable across a multitude of methodologies (Siddiki, 2002).

Mixed results of deregulation on economic growth were shown in the example of the airline industry in the United States (Winston, 1998). Deregulation of airlines started

in 1974, and was completed in nine years, with elimination of control on fares, control on entries and control on exits of airlines. Winston (1998) argues that even 20 years after deregulation, airlines show massive inefficiencies and employ practices that would have been illegal under strict regulations of fares. Thus, deregulated or partially deregulated industries may not achieve immediate efficiencies and instead may continue operating in Pareto sub-optimal ways (Winston, 1998).

Policymakers are pressured to deliver economic growth, which means that if deregulation does not produce immediate results, policymakers tend to reverse deregulation, and reregulate or block any future deregulation (Stiroh & Strahan, 2003). For instance, cable television was deregulated by Congress in 1984 and then reregulated in 1992: this shift from deregulation to reregulation resulted in a decrease in consumer welfare (Crandall & Furchtgott-Roth, 1996). Just a year after the Telecommunications Act of 1996, many policymakers were expressing concerns about cable rates not having decreased in 1997, thus arguing that economic welfare was not created by deregulation, and ignoring the time element and the fact that the telecommunications industry was still regulated (Crandall & Furchtgott-Roth, 1996; Hausman & Taylor, 2012).

Deregulation may lead to economic growth via improvements in corporate governance, which leads to more innovativeness in companies (Winston, Corsi, Grimm, & Evans, 1990). Railroad deregulation led to employment of managers that were younger, better educated and had fewer years of company service, suggesting they were more creative, which eventually improved economic welfare (Winston et al., 1990). In a similar fashion, there is evidence that deregulation in airlines led to employment of

managers that were more entrepreneurial and more creative, and this eventually led to improvement in economic growth (Kole & Lehn, 1997; Meyer & Oster Jr, 1984).

After reviewing deregulation effects in six industries including airline, less-than-truckload trucking, truckload trucking, railroads, banking and natural gas, the main reasons for economic growth were increase in productivity and reduction of costs (Winston, 1998). Real operating costs in the six industries studied were on average reduced from 25 to 75 percent, and this cost reduction led to economic welfare creation (Winston, 1998).

The impact of deregulation on banks is examined, and deregulation allowing interstate acquisitions and statewide branching is linked to a decrease of both costs and prices of the services provided by banks (Jayaratne & Strahan, 1998), thus leading to a more efficient banking system and economic growth.

2.2.2 Deregulation and Capital Flows

This section will review studies that link deregulation with capital flows, because enhancement of capital flows often used as a reason for deregulation (Reddy, 2012). The majority of studies examining deregulation and capital flows obtain moderately favorable results, and this fact distinguishes them from the papers on deregulation and economic growth from the previous section and from the papers on labor market and deregulation that will be reviewed in the next section. Employing the panel causality method to test if

deregulation can influence the level of capital-flight, which indicates the level of accumulation of foreign assets by private companies, no significant relationship of causality was shown (Yalta & Yalta, 2011). Data was gathered from 21 nations with emerging markets for the period of 1980 to 2004, and no evidence of causal relationship was established (Yalta & Yalta, 2011). Interesting was the fact that values of capital-flight that were logged in the model appeared to increase its present level, suggesting characteristics that can be described as self-reinforcing (Yalta & Yalta, 2011). The conclusion that Yalta and Yalta arrived at was that financial deregulations may not prevent in any way the appearance of capital-flight (Yalta & Yalta, 2011).

The second study tries to answer if volatility of capital flows changes after financial deregulation, and it utilizes the panel data set based on 22 developing and industrial nations from 1981 to 2010 (Neumann, Penl, & Tanku, 2009). The data set had overlapping values, and researchers examined how financial deregulation is affected by the reactions of foreign direct investment, flows of debt and portfolio. The variables that measured financial deregulation were borrowed from Kaminsky and Schmukler's index (Kaminsky & Schmukler, 2003). One of the findings was that financial deregulation influences various capital flows differently, and while foreign direct investment demonstrated a large gain in volatility, portfolio flows were unaffected (Kaminsky & Schmukler, 2003). Results that deregulation had mixed effects were particularly strong for emerging nations.

2.2.3 Deregulation and Employment

Improvement of employment is often used as a reason for deregulation (Ebell & Haefke, 2009). One should note that the number of empirical studies analyzing the effects of deregulation and employment is relatively low, and most of them have data sets based on the United States' deregulations. At the beginning of the 1980s deregulation in the state of Delaware was linked to the reduction of unemployment rates in that state by 0.5% (Butkiewicz & Latham, 1991). Analysis of the data set of deregulated banking branching across the United States from 1970 to 1988 suggested that employment was higher in the states that deregulated and allowed interstate banking (Krol & Svorny, 1996).

In a research study with a model of a small open economy that had two-period inter-temporal set up, deregulation and financial freedom increased aggregate employment after all the adjustment processes (Battle, 1997).

It is theoretically established that deregulation is linked to the variation of banks' ability to generate loans, and the ability to generate loans is linked to variations of employment rates (Acemoglu, 2001). According to the model of Acemoglu (2001), in the economies with flexible credit markets, arrival of new technologies leads to quick channeling of funds to new companies that utilize new technologies, therefore avoiding the adverse effect of job loss by companies that suffer the negative effects of the technological shock. Dissimilarly, in economies with highly controlled and inflexible credit markets, it is harder for entrepreneurs to have access to funds that are required to

start up new companies. This leads to continuous decrease in employment (Acemoglu, 2001).

Similar to Acemoglu, Wasmer and Weil (2004) argue that credit frictions raise the equilibrium level of employment. Wasmer and Weil propose an equilibrium model that incorporates imperfections of both the labor and credit markets. Researchers demonstrate that low levels of employment may be the outcome of credit and labor frictions at moderate levels. Wasmer and Weil's model shows that financial deregulation decreases transaction costs in the form of search costs for banks; as a result more financiers are attracted to credit markets, which then reduce unemployment by attracting a higher number of entrepreneurs. Thus, Wasmer and Weil proposed that the ability to provide loans can be diminished when credit frictions from an over-regulated banking sector exist, and this condition was linked to a raise of equilibrium unemployment (Wasmer & Weil, 2004).

Since 1978, deregulation of American banking has been linked to an increase of the growth rate of self-employed income and optimized access for financial resources for previously underserved small businesses (Demyanyk, 2008; Demyanyk, Ostergaard, & Sørensen, 2007). Deminyak (2008) also points to the existence of a possible transmission link via which more pro-competitive regulation for banks acts as an improving mechanism for the labor market. The transmission link may include improved quality of financial intermediaries (Demyanyk, 2008; Zhang, Wang, & Wang, 2012), larger entry of new firms (Denizer, 1997; Laeven, 2003) and quicker capital accumulation (Levchenko, Rancière, & Thoenig, 2009).

Utilizing the data from both pre- and post- deregulation periods, researchers examined the changes in the cost structure of banks, employing a translog cost function to see if economies of scale and scope exist (Rezvanian, Rangan, & Grabowski, 2011). The results provide evidence that on average the cost curve remained U-shaped, but became flatter as time passed, suggesting an increase of the optimal bank size. Economies of scope that took place before the introduction of deregulation became exhausted once deregulation was in place (Rezvanian et al., 2011). Another study of interstate deregulation of the banking industry in the United States in the 1980s provided evidence that regulation dampened volatility for firm-level employment (Correa & Suarez, 2007).

The time effect of deregulation was examined in a study assessing outcomes after 15 years of intrastate branching deregulation in the United States. The evidence suggested that deregulation increased the rate of employment by two percentage points (Beck, Levine, & Levkov, 2010). A more recent study again showed that more restrictive banking regulations lead to increased unemployment (Feldmann, 2012).

Even though most research papers provide support for the positive effect of financial deregulation on employment, there is one paper that finds contrary evidence. Deregulation in the U.K. increased unemployment from 1979 to 2005 (Baddeley, 2008). An empirical study by Baddeley (2008) is the exception to all the other studies.

The effect of deregulation on the labor market around the world shows that deregulation has a different effect in different nations (Botero, Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2004). In the study of 85 countries where the effect of financial

deregulation is modeled via employment, collective relations and laws governing the social security system, heavier regulation was associated with higher unemployment and lower labor participation (Botero et al., 2004). The results are strongest for younger people. Countries with socialist, French and Scandinavian legal origins had drastically higher levels of regulation and higher unemployment, as compared to nations with common law (Botero et al., 2004).

2.3 Level I: Institutional Perspective and Industry Variables

One of the largest institutional failures of current times took place when a number of United States banks overleveraged their capital structures and took positions in toxic assets. This strategy brought those banks to the verge of bankruptcy and put the United States' government in a position where it was forced to bail them out using Troubled Asset Relief Program funds, also known as TARP money (Ausubel & Cramton, 2008; Bebchuk, 2009). TARP money for "troubled assets" is defined as money for "(A) residential or commercial mortgages and any securities, obligations, or other instruments that are based on or related to such mortgages, that in each case was originated or issued on or before March 14, 2008, the purchase of which the Secretary determines promotes financial market stability; and (B) any other financial instrument that the Secretary, after consultation with the Chairman of the Board of Governors of the Federal Reserve System, determines that the purchase of the instrument is necessary to promote financial market stability, but only upon transmittal of such determination, in writing, to the appropriate committees of Congress."[5] A number of new regulations have been passed following this financial crisis, including limits on the leverage levels by financial institutions, thus changing the institutional environment and so reducing the overall risk within the economy (Lerner, 2011).

Started by Selznik (1957), old institutionalism emphasized that companies will change and adapt, acting as adaptive systems which change in reaction to the traits of

[5] From < http://www.cbo.gov/ftpdocs/100xx/doc10056/06-29-TARP.pdf> [Accessed at 10:12am on 03.06.2011]

people within them and inputs from the external environment. Selznick witnessed how institutionalization takes place among Tennessee Valley Authority officials who gained legitimacy and support by cooptation, and how institutionalization was a mechanism transforming external elements into a decision-making system of the company (Selznick, 1957). Selznick argued that formal structures in organizations serve two purposes: the function of defining roles and symbolic properties. Selznick emphasized that social legitimacy is accentuated by structures that reflect the values of organizations and also provide a connection between core company values and values of a society as a whole (Selznick, 1957). According to Selznik, adaptation was mainly for efficiency reasons, and this view was supported in the work of Chandler (1962), who did historical analysis of four companies, including the energy-production company Standard Oil of New Jersey, the chemical company Du Pont, the automobile producer General Motors, and the retail company Sears Roebuck, and documented the wide spread of multi-divisional or M-form (Rumelt & Teece, 1994).

Over time the idea changed and scholars suggested that environment is socially constructed (Meyer & Rowan, 1977). If society rewards companies that are efficient, operate in rational ways, and demonstrate ability to take risks, it will value companies whose structures reflect those values best, regardless of whether actual behavior in the companies is consistent (Meyer & Rowan, 1977). This put forward the idea that social perceptions are important for companies' successes. Meyer and Rowan (1977) argue that external social perceptions were at times more powerful than internal processes of production. The value of social legitimacy of observed organizational structures, even when structures were dysfunctional, often surpassed observed outcomes of performance

(Meyer & Rowan, 1977). As a consequence of this finding, various resources would flow to companies that demonstrate the highest levels of isomorphic consistency with the environment that they are operating in. Interestingly, the flow of resources would occur despite possible inefficiencies of those companies (Meyer & Rowan, 1977). This is especially important for not-for-profit companies and public sector organizations, many of which, in order to be successful, develop the ability to act in accordance with the "legitimacy rule." And it all takes place because companies are legitimated externally on bases other than production efficiencies (Meyer & Rowan, 1977). Isomorphism is defined along two dimensions: (1) boundary-spanning connections between companies and the environment are the outcome of technology exchanges and forced diffusion of institutional practices, myths and norms (Thompson, 1967), and (2) socially constructed realities are mirrored by organizational structures (Berger & Luckmann, 1967).

DiMaggio and Powell (1983) suggested that companies converge over time in the legitimacy dimension, becoming more similar rather than more heterogeneous. Organizational change takes place due to the vectors forcing companies to assimilate, but not necessarily become more efficient, they argued (DiMaggio & Powell, 1983). DiMaggio and Powell (1983) suggested that in the environments with high levels of uncertainty, managers observe the behavior of other managers, particularly those from highly legitimate companies, in order to implement organizational change.

DiMaggio and Powell argued that convergence happens through isomorphism that can have three forms: (1) coercive isomorphism – a result of formal and informal pressures exerted on the company by other organizations on which it is dependent, (2) mimetic isomorphism – a result of companies voluntarily modeling themselves after

organizations that are perceived to have higher status, i.e. more legitimacy, and (3) normative isomorphism – a result of professionalization and formal education, which via socialization leads to conformity on informal rules, customs and various patterns of communication and interaction (DiMaggio & Powell, 1983; Mizruchi & Fein, 1999).

The theoretical foundations of institutional isomorphism are based on the notion that companies compete for more than clientele or resources; they compete for political influence and institutional legitimacy (Garcia-Pont & Nohria, 2002; Park & Luo, 2001). The organizational field is a set of companies that constitute an area of institutional life that can be recognized, making it similar to the notion of organizational population (Hannan & Freeman, 1984; Hannan & Freeman, 1978). DiMaggio and Powell (1983) suggested that as time goes by, various inventions are diffused in the society, and slowly continuing adoption is done not for productivity enhancements but for legitimacy reasons. Over time the aggregate result of organizational change is to lessen the diversity of organizations. DiMaggio and Powell (1983) argued that the rationale for organizational change includes the following: traits of companies are changed to enhance compatibility with the traits of the environment, the number of companies in the population is a function of the carrying capacity of the population, and the variety of organizational types is isomorphic to the variety of environmental surroundings. When two companies depend on each other, that dependence promotes isomorphism, in order to enhance the exchange relationship between the two (Nelson & Gopalan, 2003). Environmental uncertainty forces isomorphism when less successful companies try to copy more successful organizational forms (DiMaggio & Powell, 1983). Sets of companies where a high degree of reliance on professionalism prevails will have higher

levels of isomorphism (DiMaggio & Powell, 1983). Environments with highly concentrated resources stimulate isomorphism. Power is measured by the company's ability to 'determine' or 'change' social myths and results from a high degree of legitimacy of a particular company.

Summarizing the main research work pieces on institutional theory, one can say that organizations are legitimated externally by society rather than in terms of their performance (Meyer and Rowan,1977). Over time organizational changes occur because of processes that make organizations more similar, but not necessarily more efficient (DiMaggio and Powell, 1983). Also, institutions consist of cognitive, normative, and regulative "pillars" that provide meaning to social behavior (Scott, 2001).

2.3.1 Players in the Institutional Environment: Credit Rating Agencies

Credit rating agencies (CRAs) are important players and contributors to the institutional dimension of the environment of financial systems, and were extensively criticized before and especially after the current crisis. Due to their business objectives, credit rating agencies have conflicting goals, such as preserving large customers and signaling to the market the credit worthiness of banks (Carl, 2009; Matthew & Lawrence, 2009; Powell, Rigobon, & Cavallo, 2009). Conflict of interests can result in credit rating agencies being in a position where they are reluctant to rate larger banks as riskier investments due to the banks' economic influence, and they are only too eager to rate

them favorably (Griffin & Tang, 2011; Lipszyc, 2011). In addition, banks can choose CRAs, and so they can shop around for the most favorable credit rating (Cantor & Packer, 1995; Lipszyc, 2011). CRAs suggested that their ratings are stable because they measure the default risk over the long investment horizon and only incorporate information that is likely to be enduring (Cantor, 2001; Cantor & Mann, 2003). Ironically, because of the scale of potential impact on the economy, ratings of larger banks should be examples of accuracy and precision (Griffin & Tang, 2011). It may be because of conflicts of interest of CRAs that the United States and world economy is going through one of the worst financial calamities since the Great Depression.

There are 64 credit rating agencies worldwide[6]; in the United States the largest ones are: Moody's, Standard & Poor's, and Fitch. The SEC currently designates 6 agencies as "nationally recognized statistical rating organizations" (NRSROs). They have letter designations for credit ratings such as AAA, BB, or CC. Credit rating agencies have been criticized for large losses in the Collaterized Debt Obligations (CDO) (Fong, Hong, Kacperczyk, & Kubik, 2011). Examples of such losses can be $340.7 million worth of CDOs issued by Credit Suisse Group that added up to about $125 million. This security was rated AAA by Fitch. Another major criticism is that CRAs do not downgrade firms promptly enough; for instance, Enron's rating remained at investment grade four days before the company went bankrupt (De Lange & Arnold, 2012; Lundblad & Davidson, 2011). Current reliance on CRAs increased due to: (1) financial market complexity and (2) borrowers' diversity (Cantor & Packer, 1995).

[6] From < http://en.wikipedia.org/wiki/Credit_rating_agency> [Accessed 02.22.2011 at 23:58]

CRAs addressed criticisms of being slow in adjusting their ratings, stating that they use the through-the-cycle methodology (Griffin & Tang, 2011). According to Moody's, through-the-cycle ratings are stable because they are intended to measure default risk over long investment horizons, and because they are changed only when agencies are confident that observed changes in a company's risk profile are likely to be permanent. Credit rating agencies were compared to banks because both consider similar risk factors (Griffin & Tang, 2011; Treacy & Carey, 2000), and both rely heavily on judgment and cultural elements (Carl, 2009), rather than on detailed and mechanical guidance and procedures (Treacy & Carey, 2000). However, CRAs publish supplementary rating descriptions of rating criteria that are much more detailed than banks' internal guidelines.

Some good news is that some researchers observed secular tightening of rating agency standards (Blume, Lim, & Mackinlay, 1998). Yet this paper contradicts findings that leverage ratios deteriorated and default rates rose within rating categories (Cantor & Packer, 1995). Unrealistic panel regression estimates of rating determinants implicitly assume that ratings adjust instantaneously to new information (Altman & Rijken, 2004). Rating migration policies of the agencies do not follow "point-in-time" rating practices (Altman & Rijken, 2004). Agency ratings are stable because they are intended to measure the default risk over the long investment horizon and only when observed changes in a company's risk profile are likely enduring (Cantor, 2001; Fons, 2002; Cantor & Mann, 2003).

2.3.2 The Gramm-Leach-Bliley Act

After the passing of The Gramm–Leach–Bliley Act, also known as the Financial Services Modernization Act of 1999, or the Citigroup Relief Act that overturned the Glass–Steagall Act of 1933, deregulation of investment banking took place (Mamun, Hassan, & Van Lai, 2004). This regulatory change destroyed safety mechanisms, or as George Soros referred to it: "the principles of oil tanker design ... if they're compartmentalized, the risk of crisis is much lower"; thus, deregulation eliminated compartmentalization of the financial system that was ensuring against large scale financial calamities (George Soros, 2011). Among other things, this deregulation allowed banks to borrow extensively and have leverage ratios as high as 1 to 30, and created an environment with less regulatory framework (Mamun, Hassan, & Maroney, 2005; Neale & Peterson, 2005).

Environments with fewer regulations would lead to organizational forms that operate with more freedom and thus are accustomed to a higher degree of autonomy and risk-taking (Van Den Bosch, Volberda, & De Boer, 1999). Not only a small number of regulations, or absence of particular laws, would promote risk-taking tendencies among sets of companies, but also environments where few regulatory agencies exist would have a similar effect (Gilardi, 2002). Regulatory agencies act as watchdogs, and when their relative number is low, the ability of regulatory agencies to effectively conduct surveillance and enforce regulations decreases, effectively creating an environment with fewer regulations (Gilardi, 2002). A high number of risk-taking companies in the environment with few regulations would lead to the institutionalization of risk-taking

behavior across the board. Less successful firms would want to imitate more successful "highly-risk-loving" companies, and eventually larger degrees of risk-taking would be manifested as a norm (DiMaggio, 2011; DiMaggio & Powell, 1983). One of the ways in which environmental change can be measured is the introduction of a new law that can substantially limit freedom in risk taking strategies that companies have. Other examples of this can be regulations that relate to reserve levels of banks, in essence affecting the level of debt that banks can have in their capital structure (Keister, 2010). The level of debt of financial institutions is called leverage, and is one of the indications of risk (Adrian & Shin, 2010), so change in such regulation changes risk levels across the board. To measure the change of the regulatory environment we need to look for the event that reshaped it, and a good example is the introduction of a new law such as the Sarbanes–Oxley Act[7] of 2002 (Sarbanes, 2002; Zhang, 2007) or introduction of deregulation such as The Gramm–Leach–Bliley Act (Mamun et al., 2005; Neale & Peterson, 2005). The Gramm–Leach–Bliley Act was a good example of the deregulation that led to more freedom in decision-making, and it leads us to the first Hypothesis.

Hypothesis 1. *Deregulation of an industry will be associated with higher corporate risk-taking in that industry.*

[7] Known in the Senate as the 'Public Company Accounting Reform and Investor Protection Act' and in the House as 'Corporate and Auditing Accountability and Responsibility Act.' This act is a federal law of the United States that set revised standards for all American publicly traded companies, their boards of directors, executive teams and public accounting corporations.

Change in regulation will have two effects. One is a direct effect of regulatory change, and the other is the effect of changes in norms, customs and beliefs. And while the first effect would be immediate, change in norms would take longer and would become more pronounced with the passage of time (Scott, 1995, 2001, 2003).

Institutional theory emphasizes mimetic isomorphism as a response mechanism to reduce uncertainty, which according to DiMaggio and Powel (1983, p. 151) is a low-cost variety of problemistic search. Later empirical research has established this correlation by demonstrating that mimetic behavior is stronger when uncertainty is higher (Haunschild, 1994). Extensions to institutional theory are being made by scholars studying the interaction effects between mimetic processes and problemistic search (Chuang & Baum, 2003; Rao, Greve, & Davis, 2001). The new institutional theory argues that legitimacy provides competitive edge (Scott, 1995, 2001, 2003) and rests on three pillars that do not need to be present simultaneously: (1) cognitive – alignment with cognitive maps manifested in values, language, customs, religious view, etc.; (2) normative – alignment with particular professional norms, such as the integrity component of the accounting profession (Grey, 2002, 2004); (3) regulative – alignment with requirements that define the legal landscape of business environments, such as antitrust laws. Deregulation in legal framework would lead to changes in norms, beliefs and performance expectations over time, thus:

Hypothesis 2. *After deregulation, over time, corporate risk-taking will increase.*

Deregulation may also increase competition as there are more companies with similar profiles, i.e. of the same size, similar financial profile, similar talent pool, and with market commonalities and resource similarities (Chang & Xu, 2008). This happens because there would always be struggle for change in status quo, thus promoting highly competitive and more un-collaborative behavior (Nalebuff & Brandenburger, 1996). Institutional theory outlines how a company adapts to a symbolic environment of cognitive maps and regulatory framework of rules, and while doing so, it emphasizes (1) bounded rationality, (2) uncertainty avoidance, (3) loose coupling and (4) decision-making under uncertainty (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). All of these are borrowings of institutional theory from behavioral theory of the firm (Argote & Greve, 2007), which will be discussed in the next chapter

2.4 Level II: Behavioral Theory of the Firm

This section starts with the review of bounded rationality in human behavior (Gigerenzer & Selten, 2002). Concepts from the bounded rationality of humans allow us to better understand their aspirations and are considered by some researchers as the foundation to the behavioral theory of the firm (Bromiley & Papenhausen, 2003). After bounded rationality, prospect theory was reviewed (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992), because along with behavioral theory of the firm, prospect theory is considered a major theory on risk in strategic management (Holmes Jr, Bromiley, Devers, Holcomb, & McGuire, 2011). Then, behavioral theory of the firm is laid out and hypotheses relevant to corporate aspirations are developed. While classical behavioral theory of the firm links aspirations with performance, in this dissertation, aspirations are linked with corporate risk-taking, and this is a major novel contribution.

2.4.1 Bounded Rationality

Bounded rationality of individuals leads to a series of limitations when making decisions, and this effect was noticed by psychologists and practitioners of decision-making (Simon, 1947). Simon examines the internal decision-making processes of corporations and outlines how values of companies affect decision-making of people working for them, by establishing consistency of decisions and ensuring that decisions

are compatible with overarching company goals. March and Simon (1958) argue that analysis of people's behavior within companies should include various aspects of human behavior and must consider motivational, rational and attitudinal dimensions. This means that the science of organizations is based on two streams - first, the research of economists on the planning process and, second, the research of psychologists on organizational communication and abilities to solve-problems (Pfeffer, 1993).

"Bounded rationality assumes that individuals easily satisfied; that is they select the first alternative that is good enough because the costs of optimizing in terms of time and effort are too great" (Ackoff, 1981; p. 22). This means there is a limit on the level of rationality that a human may demonstrate. "A theory of bounded rationality also assumed that individuals develop shortcuts, rules of thumb, or heuristics, to make decisions in order to save mental activity" (Nelson & Quick, 2006; p. 314). These notions have following implications for organizational behavior: "Given the limitations and systematic biases of the individual, those operating from a behavioral perspective tend to view the organization as a more efficient information processor than any individual. The firm is considered to be an institutional response to uncertainty and bounded rationality at the individual level" (Eisenhardt & Brown, 1992; p. 107). This means that under challenging circumstances companies will try to make satisfactory instead of optimal decisions.

2.4.2 Prospect Theory

Prospect theory describes how individuals make decisions under risk (Tversky & Kahneman, 1992). This theory explains how people evaluate potential gains and losses. There are many anomalies and effects based on prospect theory. It is particularly interesting to look at the pseudocertainty effect, which is the study of individuals being risk-averse or risk-loving depending on if the gamble relates to gaining or losing, and on the amounts involved (Tversky & Kahneman, 1981, 1986). Pseudocertainty effect suggests that people are more sensitive to losing a given amount than to gaining the same amount.

Behavior of executives of investment banks when they manipulate earnings can be looked at from the prospect theory point of view (Bartov & Mohanram, 2004). There is evidence that people consider it ethically more acceptable when earnings are manipulated down, rather than up, and for small amounts rather than large ones (Dechow, Sloan, & Sweeney, 1996). For executives in power, prospect theory suggests that managers would be more inclined to manipulate if there is a chance that earnings will decrease, because this usually leads to immediate negative consequences for them (Beneish, 1999). Several papers prove this idea. Burgstahler and Dichev (1997) found evidence that companies manage earnings so as to avoid sudden decreases or losses, and pointed to prospect theory as an explanation of such behavior.

Matsumoto (2002) argues that managers try to avoid negative earnings by employing positive abnormal accruals and forecasts that are lower than expected. He also

finds that firms that have higher institutional ownership, greater reliance on implicit claims with stakeholders, and higher value-relevance of earnings were more inclined to exceed earnings expectations. Kasznik (1996) investigates the connection between voluntary disclosure of companies and management's good judgment over accounting decisions (Kasznik, 1996). Earnings management was used as a tool to correct management's earnings projection errors (Bergstresser, Desai, & Rauh, 2006). Empirical results suggest that managers, who are intimidated by the possibility of costly litigations by shareholders or credibility failure leading to the loss of reputation, use accounting techniques to reduce their forecast inaccuracies (Rosner, 2003).

Managers also make operating decisions to avoid reporting losses (Bergstresser et al., 2006). Those decisions include price discounts to temporarily increase sales to meet annual numbers, or overproduction, which in reports decreases the cost of goods sold (Roychowdhury, 2006). However, manipulation of real activities is less likely to take place in the presence of sophisticated investors, who can spot activities which do not contribute to long run profitability.

An interesting empirical work tested if publicly held financial companies would report fewer earnings decreases over a 12 year period (Beatty, Ke, & Petroni, 1999). Researchers discovered that publicly held banks with earnings near zero were substantially less likely to report low earnings in comparison to private banks. In that research, control variables were bank size, differences in given loans and cash flow streams. A peculiar finding was that after controlling for the length of cash flows, the length of the stream of consecutive earnings increases was greater for public financial

institutions (Beatty et al., 1999). Researchers concluded that public banks' managers face higher pressure and incentive to report higher earnings than private banks' managers.

Research papers in this section are evidence supporting prospect theory and explaining the reason why managers of investment banks that are not doing well manipulate earnings more eagerly, more often and on a larger scale (Swartz & Watkins, 2003; Unerman & O'Dwyer, 2004; Zandstra, 2002).

2.4.3 Risk Taking and Organizational Aspirations

Cyert and March's (1963) BTOF[8] inspired a number of studies by Bromiley (Bromiley, 1991; Bromiley, 1999; Wiseman & Bromiley, 1991) and his students (Miller, 1998; Miller & Bromiley, 1990; Miller & Leiblein, 1996b; Wiseman & Bromiley, 1996; Wiseman & Catanach, 1997). The core of BTOF is the search for strategies reducing uncertainty, and it provides a platform to build a theory about organizational risk. The explicit link between risk and behavioral theory of the firm was made by March and Shapira (1987; 1992), as well as some modifications to the initial theory. Behavioral theory of the firm suggests two approaches to risk taking; the first is based on the work of Cyert and March (1963), and the second is based on March and Shapira (1987; 1992).

March and Shapira (1987; 1992) interviewed a number of managers and concluded that executives navigate using two reference points: (1) a possibility of

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bankruptcy and (2) aspiration level. If executives fear that their company is set to go bankrupt, they will make highly risky decisions in order to avoid the disaster. Companies with higher performance and a miniscule chance of going bankrupt will have a different reference point and will make decisions that will reduce risk and probability of bankruptcy. March and Shapira (1987) argued that most executives use industry average or performance in the past as a benchmark for their reference point. So, for the majority of companies operating near aspiration levels, risk taking will be low, but it would increase proportionally as performance distances from aspirations. Companies operating below aspirations take chances as an attempt to reach aspirations.

From the behavioral perspective, a company is represented as a coalition of various constituencies (Cyert & March, 1963), and all organized business activities are actually emerged into unpredictability and ambiguity. Managers face the challenge of constantly balancing competing and conflicting goals (Vibert, 2004). Most scholars doing research in behavioral theory of the firm believe that executives can be effective in their balancing attempts. Fulfilling the goals of "stakeholders (shareholders, customers, employees, unions, managers) is possible if managers make decisions to integrate and mediate the interests of shareholders, employees and customers" (Eisenhardt & Brown, 1992; p. 107). Still, now and then the complexity of balancing can be overwhelming, considering that the interests of members of the ruling coalition are dynamic and constantly changing, while the makeup of the coalition members changes, too (Vibert, 2004).

The actual process of decision-making was emphasized by behavioral theorists Cyert and March (1963), who provide extensive observations of the routines of decision-

making in organizations. A process-oriented and empirically enhanced theory of decisions in economic terms by various companies suggested by Cyert and March (1963) stood the test of time, and they are credited with presenting the basics of the behavioral theory of the firm, which up until today stays relevant in strategic management and economics. Business decisions are characterized by unique dimensions, including: quasi resolution of conflict, problematic search, avoidance of risks and learning within organizations (Cyert & March, 1963).

In behavioral theory of the firm the relationship of companies' aspirations and performance levels is examined. When performance surpasses aspirations the company continues to operate in accordance with established norms and routines (Bromiley et al., 2001). However, when performance falls below aspirations, executives search for ways to improve performance. This difference between aspirations and performance is sometimes referred to as attainment discrepancy (Lant, 1992). The organizational search for new ways increases corporate risk (Bromiley, 1991; Wiseman & Bromiley, 1991). Behavioral theory of the firm argues that extremely high levels of corporate performance lead to innovation via availability of slack. Innovative risk taking does not increase the risk of performing below aspirations (Bromiley, 1991; Wiseman & Bromiley, 1991).

Cyert and March (1963) argue that organizational aspirations are desired performance levels in specific organizational outcomes and that organizations adjust their aspirations based on past experience. Since past performance is judged as aspirations, firms are expected to select new strategies to increase performance (Cyert & March, 1963). The aspirations level depends on comparisons to the firm's own past performance (Cyert and March, 1963), thus:

Hypothesis 3. *Investment banks with aspirations above performance will be associated with higher corporate risk-taking, as compared to investment banks with aspirations equal to or below performance.*

Behavioral theory of the firm led to the rise in research in both evolutionary economics and in organizational learning (Argote & Greve, 2007). "A key assumption of the behavioral theory of the firm is that firms adjust their behavior in response to their experience rather than acting on their expectations of future states of the world" (Lant & Shapira, 2008; p. 60). The aspirations level depends on comparisons to other relevant companies, or peer group, which constitutes the industry (Bromiley, 1991; Lant 1992). Companies with performance below industry averages will aspire to outperform those averages, while companies with performance above industry averages will tend to improve very little, if at all (Lant, 1992). High aspirations, caused by performance of the peer group, lead to new strategies that are generally assumed to involve increased risk levels of companies (Bromiley, 1991), thus

Hypothesis 4. *Investment banks with higher aspirations will be associated with higher corporate risk-taking, as compared to investment banks with lower aspirations.*

Aspiration level depends on two kinds of comparison: comparison to the firm's own past and comparison to the relevant others (Cyert & March, 1963). Because this model depends on both comparison to the company's past and comparison to relevant others, the risk function is assumed to be non-linear. In general, risk taking increases as companies fall more and more below the industry norms. For companies that outperform the norms, risk taking is purely a function of relative past performance (Lant, 1992).

Behavioral theory of the firm is relevant to investment banking because one of the effects of deregulation was newly set high aspirations that were coming from past performance and observations of performance of peer group banks; thus, aspirations in investment banks were forcing executives to increase corporate risk-taking. Behavioral theory of the firm led to organizational learning theory (Argote & Greve, 2007; Huber, 1991; Miner & Mezias, 1996), as well as evolutionary economics (Nelson & Winter, 2002). The organizational learning and knowledge part of it will be analyzed in the next chapter of this dissertation.

2.5 Level III: Resources and Knowledge

So far we have seen that the more general macro perspective of industry view partially explains the predisposition to corporate risk-taking. A more focused view of companies' aspirations also partially explains corporate risk-taking. What about corporate resources? Research suggests that companies with more resources of a particular type, for instance, financial resources like liquid assets, can employ more sophisticated risk management systems and are perceived as less risky (Venter, 2009). Not only do financial resources allow companies to employ more sophisticated risk management systems, but also the simple presence of liquid assets like cash sends a signal that the company will not have short-term solvency issues (Rochet, 1999). This section will start with the history of resource based view, then the evolution of resource based view into knowledge based view will be discussed, and a set of hypotheses will be introduced.

A number of researchers follow Ricardian perspective (Ricardo, 1817), which was later developed into a "resource-based view," which argues that picking the right resources is the main way to generate economic wealth (Barney, 1986a, b, 1991; Mata, Fuerst, & Barney, 1995; Penrose, 1959). According to the Ricardian work, variations in performance are attributed to ownership of resources that have a degree of difference in productivity, or as Ricardo puts it: "original, unaugmentable, and indestructible gifts of Nature" (Ricardo, 1817). Most of these early studies focused on economic aspects of owning land (Barney & Arikan, 2001). Because the supply of land is fixed and does not fluctuate depending on changes in price, demand for land as a factor of production is

totally inelastic (Hirshleifer, 1958). This inelastic supply allows owners of land to enjoy an economic rent, i.e. a payment to the owner of the factor of production in excess of the cost of the factor (Hirshleifer, 1958; Hirshleifer, Glazer, & Hirshleifer, 2005).

The foundations of the resource-based view are attributed to the industrial organizational economist Edith Penrose (1959), who in her book *The Theory of the Growth of the Firm* argues that a firm is a "bundle of resources." Penrose, acknowledging that companies operate in the environments where attracting human and financial capital is a constant struggle, takes the analytical framework inside the firm to understand what principles govern corporate growth. Penrose (1959) suggests that the principles of the firms' growth are rooted in the excess resources and argues that corporate expansion is a natural process when companies have excess resources, while absence of resources may be the largest limiting factor to growth. Penrose (1959) suggests that along with being viewed as bundles of resources, companies should also be viewed as administrative systems linking and coordinating the efforts of many individuals. According to Penrose (1959), the main task of managers is to use the bundle of resources under the company's control via the employment of the administrative framework that exists in the company. Limitations for the company's growth lie in (1) the productive opportunities that are present as a function of the bundle of productive resources under the company's control, and (2) the administrative system in place to coordinate the employment of these resources (Penrose, 1959).

Penrose (1959) makes two main contributions to organizational science; first – she proposes that firms can combine resources in different ways, and second – she outlines that resources have a lumpiness element to them, and that lumpiness leads to

excesses that drive companies' growth. While developing RBV, Penrose (1959) proposes that: (1) bundles of resources can vary significantly among firms – making firms even within one industry heterogeneous, (2) productive resource should have a broad definition – thus moving from a Ricardian focus on land, and adding managerial teams, groups of top executives and entrepreneurial abilities, and (3) admitting that even within extended typologies there are more sources of corporate heterogeneity. Penrose (1959) views entrepreneurial abilities as one of the productive resources, arguing that some managers are more resourceful, able to fund-raise better, have more ambition, and possess stronger cognitive skills to exercise better judgment than other managers. Penrose (1959) explains possible motivations for diversification as an excess capacity and provides rationale for the direction of diversification. While she describes in some detail how resources lead or constrain the growth process of companies, she never addressed how fast growth can happen, or what companies can do to expedite growth.

The question of how firms come to own resources with heterogeneous productivity levels remained open for quite some time. It was addressed in 'strategic factor market' theory (Barney, 1986b). The gist of that theory is that there is only one non-random and methodical way for a company to come to own the set of resources capable of creating higher than average levels of return: the company should possess resource-picking skill superior to its competitors (Barney, 1986b). This can be done by developing methodically more precise expectations about the future value of resources than other players in the resource market (Barney, 1986b). One important inference of Ricardian based theory is that the decisions related to creating economic rent take place before the acquisition of resources. So, companies either have superior resource-picking

skill or possess unique information about the resources. Resource-based view emphasizes company-specific capabilities and assets and the existence of dividing devices as the basic determinants of company performance (Barney, Wright, & Ketchen, 2001; Birger, 1984; Penrose, 1959; Rumelt, 1984). Resource-based view recognizes the nature of the isolating devices that allow entrepreneurial returns and competitive advantage to be unrelenting (Birger, 1984).

Daft (1983) puts forward the idea that resources include not only capital, labor and machinery, but also various organizational processes, capabilities, firm attributes, information, knowledge, procedures and methods of doing things within the company that enable the organization to develop strategies geared toward improvement of efficiency and effectiveness. Wernerfelt (1984) argues that a company's competitive advantage is based on and is a direct function of the application of the bundle of resources that are valuable and under that firm's direct control.

Barney (1991) puts forward the idea that in order to have sustainable competitive advantage, companies need to possess special resources, and those resources must be: (1) heterogeneous in nature – if resources are homogeneous, they will not provide substantial advantage to the company; and (2) not-perfectly mobile – if resources are easily mobile, then it will be possible for other companies to move needed resources from other locations. In that same paper Barney (1991) developed VRIN framework, suggesting that not all resources would lead to competitive advantage but only those that are: (1) valuable – in order to provide competitive advantage resources should possess value; (2) rare – those resources should be rare, meaning that the number of those who want to possess them must be higher than the available resources; (3) inimitable – it

should be hard to imitate those resources for competitors by means of backward engineering, etc.; (4) non-substitutable – there should not be strategic substitutes of those resources. Barney (1991) argues that strategic substitutes can have two forms: (1) similar resources – one type of plastic similar to another; and (2) strategic substitutes – composite material can be a strategic substitute to metal, or sun energy can be a strategic substitute to oil energy, if the price of those energy types will be comparable.

Priem and Butler (2001) criticize Barney's framework, suggesting that resource-based view is a theory of sustainability and not a theory of competitive advantage. They argue that resource-based view is: (1) tautological and self-satisfying; (2) has circular logic which makes it operationally invalid; (3) different combinations of resources can produce the same outcome and thus be competitive advantage; (4) not a theory of competitive advantage, but a theory of sustainability; (5) the effect of product markets are not developed enough; and (6) it lacks a dynamic element, giving it few prescriptive implications. Barney (2001) responds to Priem and Butler's (2001) criticisms, stating that: (1) using the logic of Priem and Butler it can be shown that any strategic management theory is tautological and has circular logic; and (2) equifinality – Barney argued that if different combinations of resources produce the same output, they by definition are not valuable and become homogeneous (since there is an infinite number of combinations to achieve that), and that his theory deals with heterogeneous resources, and (3) Barney agrees that not enough work has been done in the dynamic aspect and suggests that more studies should be undertaken.

Nair, Trendowski, and Judge (2008) criticized resource-based view for the lack of testability, suggesting that to develop theoretical principles and establish logical

connections, mostly histories were used. Researchers emphasized that testing resource-based view remains problematic because constructs such as entrepreneurship and management are defined too broadly (Nair et al., 2008).

Barney and Aakan (2001) conduct a meta analysis and review all empirical testing of resource-based view. They studied 166 research papers and concluded that only four were not supporting resource-based view, and the remaining 162 (or almost 98%) were supporting resource-based view. Newbert (2007) decides to check the above assertion of Barney and Aakan. He conducts a more refined search of articles based on keywords such as: Barney, resource-based view, VRIN, etc. He also adds 12 additional key words and searches for articles in major management journals using AIB/Inform. In addition, Newberg hires proofreaders to thoroughly check if the selected articles are within the resource-based view frame. He ends up with a sample of 55 articles and 87 statistical tests/sets. His findings were more humble, suggesting that only 53% of articles actually supported resource-based view, and that the extent of that support varies.

2.5.1 Knowledge as a Resource and a Capability

Resource-based view led to development of dynamic capabilities framework (Teece 1997, Makadok 2001). While dynamic capabilities explain competitive advantage in high-velocity environments, researchers are still arguing on what to include into this construct; some suggest the product development routines of Toyota or the design

routines of IDEO, and how to measure them (Please see Appendix B). Due to the very nature of dynamic capabilities in highly competitive and fast changing environments they have the ability to improvise, which makes studying them yet harder (Vibert, 2004).

There were also interesting works linking resource-based view to capabilities in general, with capabilities lifecycle or CLC framework. This framework suggests that there can be dynamic resources which are different from dynamic capabilities.

There were some research works which challenged Ricardian perspective by Schumpeterian perspective (Schumpeter, 1950), which some authors believe was later developed into "dynamic capabilities view" (Amit & Schoemaker, 1993; Dierickx & Cool, 1989; Mahoney & Pandian, 1992). Schumpeterian dynamic capability framework draws attention to the significance of the alternative return generating system – capability-building – which has several distinctions from resource-picking. To make the discussion of 'resource' and 'capability' clear, let us review some definitions. Amit and Schoemaker (1993) referred to dynamic capabilities as: "A firm's capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end. They are information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm's resources. They can abstractly be thought of as 'intermediate goods' generated by the firm to provide enhanced productivity of its resources, as well as strategic flexibility and protection for its final product or service."

There are two main attributes distinguishing all other types of resources from a capability. First, the capability is company-specific, and it is rooted in organizational

processes, while other resources may not be. And because of this rootedness, capability may not be easily transferrable from one firm to the other without also transferring ownership of the firm, or at least a self-contained subsidiary of the organization. In this regard, Teece et al. (1997a) stated: "that which is distinctive cannot be bought and sold short of buying the firm itself, or one or more of its subunits." This suggests that if the company was to entirely disappear its resources can be preserved in the hands of new owners while its capabilities would also dissolve. For instance, if AMD Corporation disappeared, then its microprocessor patents would continue to exist and would just change owners, but its skill in designing new architecture of processors would vanish. AMD Corporation could easily transfer the rights of its microprocessor patents to a different corporation, but it cannot easily transfer the capability or the skill of devising new processors, unless it was willing to lose a core part of itself. The second distinctive attribute of a capability is to improve the efficiency of other resources that the company possesses – or so-called 'intermediate goods' equivalence (Amit & Schoemaker, 1993). This distinction between a resource and capability is similar to distinctions between 'systemic' and 'discrete' resources (Miller & Shamsie, 1996), or 'elementary' and 'higher-level' resources (Brumagin, 1994), or 'traits' and 'configurations' (Black & Boal, 1994).

An important distinction between resource-picking and capability-building is timing. The resource-picking mechanism creates economic profits before the acquisition of resources. On the contrary, capability-building generates economic rent after the resources are possessed. And no matter how great a company's capabilities are, if the company fails to obtain needed resources it will not be able to utilize its capabilities.

Resource-based view evolved into knowledge-based view, which argues that knowledge, both implicit and explicit, contributes to a company's performance (Grant, 1996a). Knowledge-based view, according to some researchers, is the special case of resource-based view, and that is one of the criticisms of knowledge-based view (Felin & Hesterly, 2007; Vibert, 2004). Via knowledge-based view, resource-based view can be linked to transaction cost economics in the sense that knowledge, which is a particular type of resource, can substantially decrease transaction costs (Williamson, 1975, 1985; Williamson, 1981), and full knowledge on the side of principal can reduce agency problem, thus linking to agency theory (Eisenhardt, 1989a; Jensen, 1983; Jensen & Meckling, 1976).

Resource-based view explains diversification strategy well when attention is moved from product-market participants, including customers, suppliers and rivals, to the resource base of the company, such as financial capital, labor, technology, etc. Resource-based view outlines limitations for the corporate growth, arguing that available resources and managerial talent might be limiting possibilities of market entries or administering effective growth (Amit & Wernerfelt, 1990). Resource-based view clarifies motivation for diversification, arguing that it is excessive capacity and unused productive facilities (Penrose, 1959). If excessive capacity drives diversification, then by measuring how diversified a company is we can establish if that company has slack in its system.

The slack of resources in the system, while providing an opportunity to grow via diversification, would also lead to a sense of safety among managers, thus making them act in more risk loving ways in certain divisions, particularly ones exhibiting aggressive risk culture, such as investment banking (Ang, 1991). Resource-based view predicts that

the vector of diversification depends on the quantity and nature of resources available to the firm. Different quantities and bundles of resources may push companies toward either related or unrelated diversification (Chatterjee & Wernerfelt, 1991; Montgomery & Hariharan, 1991). Thus, companies with larger resource bases are more likely to go for unrelated diversification than companies that have lower resource bases.

Resource-based view, along with transaction cost economics (Coase, 1937; Williamson, 1975; Williamson, 1979, 1998) and industrial organizational economics (Bain, 1956; Caves, 1964; Mason, 1939; Porter, 1980) contributed to the development of diversification theory. Resource-based view is used as one of the tools to analyze formations of joint ventures and alliances directly or through the knowledge-based view. Resource-based view is applied and used in conjunction with the network theory (Uzzi, 1996, 1997) in the sense that position within networks with higher centrality score, or access to certain networks, can provide various resources (Tolbert, Simons, Andrews, & Rhee, 1995).

2.5.2 Knowledge-Based View

Rooted in the resource-based view, knowledge-based view develops the idea of Penrose that a firm is a bundle of resources (Penrose, 1959) and emphasizes knowledge as a key aspect of growth and prosperity. Specifically, knowledge-based view proposes the idea that the firm's skills at combining knowledge facilitate sustainable growth and development (Kogut & Zander, 1992; Kogut & Zander, 1993). Knowledge-based view is built on the idea that knowledge is a firm's most important resource (Grant, 1996b). The firm's existence and boundaries can be explained via its unique ability to obtain, build, combine, and retain knowledge (Conner & Prahalad, 1996; Kogut & Zander, 1993, 1996).

Why is knowledge based view applicable to investment banking? Investment banks diversified due to deregulation, but many lacked knowledge of the markets that they entered, in particular, knowledge of the architecture of CDOs and real estate market securities (Griffin & Tang, 2011; Longstaff & Rajan, 2008). It is argued that investment banks that had more experience in the new markets accumulated the necessary knowledge and thus were able to operate in a manner that was safer. One should note that investment banks are hierarchical in nature. Hierarchical organizations are particularly effective for building and combining knowledge, and thereby developing "path dependent" capabilities and knowledge assets (Eisenhardt & Santos, 2001). A firm's distinctive competencies and capabilities are important sources of value creation over time (Amit & Schoemaker, 1993; Prahalad & Hamel, 1990). As such, it is expected that

investment banks that diversified after deregulation into new markets lacked expertise in such markets and therefore would be subject to higher risks.

Hypothesis 5. *Investment banks that were more diversified, will assume more corporate risk.*

One outcome of deregulation (as discussed earlier) was the entry of banks into real estate market due to the growth in these markets. Investment bank entry into these markets was usually through the launch of or investment in real estate investment trusts (REITs) (Frank & Ghosh, 2012; Gyamfi-Yeboah, Ling, & Naranjo, 2012). Knowledge can be a source of a firm's competitive advantage (Berman, Down, & Hill, 2002; Dunning, 2001), and banks that were diversified into (and had knowledge of real estate) would enjoy competitive advantage. However, many of the firms that had diversified into real estate investments within investment banking did not possess knowledge of real estate, therefore it is expected that they would be taking on more risk. This is clear from evidence that some investment banks that have had operations with securities related to real estate for a long time, had accumulated knowledge and better understanding of that particular market (Chang & Chan, 2011).

Hypothesis 6. *Investment banks that were diversified into diversified REIT[9], will assume more corporate risk, as compared to investment banks that were not.*

2.5.3 Knowledge is 'Sticky'

Alfred Marshal, in his comparison of nations, suggested that economic activity was drawn to regions rich in the "atmosphere" of knowledge (Marshall, 1920). Search for knowledge spillovers made substantial success by finding statistical evidence that companies' productivity was linked if those companies were near outstanding universities and other sources of scientific discovery – geographically-localized spillovers of knowledge (Zucker, Darby, & Armstrong, 1998a). Geographically-localized knowledge spillovers were flourishing near great universities, but the presence of outstanding scientists as measured by research productivity was a crucial factor over, above and independent from the presence of those schools and availability of government research funding to them (Zucker, Darby, & Brewer, 1998b). Those outstanding researchers called 'stars' are the scientists who are capable of inventing and commercializing breakthroughs, and by living in a particular place, they create a geographically-localized knowledge cluster.

Neo-institutional theory suggests that by being in close proximity to universities where forward-looking research is taking place, employees of local companies will be the

[9] REIT stands for real estate investment trust, or a business entity deriving value from securities or derivatives whose underlying value is a function of the value of real estate.

first to be exposed to important discoveries and thus be able to use them before others (Zucker et al., 1998b). In a similar fashion, knowledge containing dynamic capabilities will be preserved near places with a high concentration of corporate headquarters. One of the limitations of Zucker's model (1998) is that breakthrough information is treated as a public good, when in reality it may not be so.

Evidence that knowledge is "sticky," and stays restrained within narrow spatial borders, led to the conclusion that plant locations can serve as a major source of competitive advantage, and companies located in innovative regions had better access to new technological knowledge than their spatially remote counterparts (Almeida, 1996; Jaffe, Trajtenberg, & Henderson, 1993).

A contrasting view is that existence of agglomeration economies will motivate top firms not to geographically cluster, because companies contribute to and benefit from the externality in different ways (Shaver & Flyer, 2000). This implies that if companies are heterogeneous, their net benefit from agglomeration will vary (Chung & Kalnins, 2001). Therefore, large companies possessing best technologies, human resources, suppliers and distributors will have an incentive to locate distant from other companies, while smaller companies are likely to agglomerate (Deeds & Decarolis, 1999).

Reexamination of the empirical evidence on the level of spatial spillover between research works of universities and high-technology innovations supported the view that knowledge is geographically-localized (Anselin, Varga, & Acs, 1997). Anselin et al. (1997) examined the potential for gravity and covering indices including Jaffe's "geographical coincidence index," and argued that there is strong evidence of local

spillovers even at a state level. The tacit nature of knowledge leads to technological opportunity suggesting that the suitability of knowledge is a key element for the location of innovation (Feldman, 2000). All this evidence on knowledge stickiness led researchers to conclude that innovative regions can serve as "magnets" to new investments (Almeida & Kogut, 1999).

2.5.4 Types of Knowledge and Time Element

Studies of organizational knowledge systems have distinguished between component and architectural knowledge (Tallman, Jenkins, Henry, & Pinch, 2004). Component knowledge refers to physical aspects of technologies, while architectural knowledge refers to links and connections between these aspects (Finneran, 1999; Henderson & Clark, 1990b). Architectural knowledge contains dynamic capabilities and Eisenhardt & Martin (2000) even termed them 'architectural competence' (Please refer to Appendix B). Capabilities are composed of two main knowledge related parts: (1) a company-specific part and (2) an enhancement of other resources part. The spillovers of company-specific knowledge are beneficial when companies are very similar, or when competitors engage in business intelligence, and a high quantity of company-specific information is used as a competitive tool for strategic decision-making (Liautaud, 2000; Luhn, 2010).

Increasing knowledge intensity, which can be manifested in capacity for R&D, has been underlined as one of the differentiating features of the modern competitive

landscape (Bettis & Hitt, 1995; Teece, 1982). The primary goal of R&D is to generate new knowledge by recombining knowledge that exists (Fleming, 2001; Henderson & Cockburn, 1994; Kogut & Zander, 1992). Geographically-localized spillover effects of local universities on the prosperity of nearby enterprise R&D efforts was found to be positive and significant (Jaffe, 1989).

"Soft" versus "hard" knowledge within investment banks is pertinent to other business functions such as R&D, where informal, also called "soft," information exchanges are crucial (Jaffe et al., 1993). The division between soft and hard information is significant in the incentives literature, providing clarification for the division of management and production. Namely, division is possibly a commitment device to examine the agent less intensively and increase his initiative (Aghion & Tirole, 1997). White-collar networking of investment bankers with consultants and lawyers consists of information intensive exchanges, which are further examples of "soft" information (Holmes, 2005; Holmes & Stevens, 2004). For exchanges of "hard," or easily codified, information, such as financial reports or various statistical measures, geographic distance or industry experience is not an essential factor (Cremer, Garicano, & Prat, 2004; Glaeser, 1999). On the other hand, for exchanges of "soft" information, which contains industry-specific routines, time is highly important, because it is nearly impossible to codify that information and make it available for quick transfer. Thus, over time, it is expected that exchange of "soft" information would increase expertise of investment banks in real estate markets.

Hypothesis 7. *Longer duration of diversification into diversified REIT by investment banks will be negatively associated with corporate risk.*

Knowledge reconfigurations can be within, across or outside of organizational borders (Katila, 2002; Rosenkopf & Nerkar, 2001). Relocations of corporate headquarters serve the desire by organizations' management to tap into the knowledge reconfigurations outside of organizational borders. Various aspects of knowledge used in reconfiguration can lead to distinct technological capabilities resulting in different levels of performance (Arthur, 1989; Stuart & Podolny, 1996; Teece, Pisano, & Shuen, 1997b). Research on R&D suggests that companies where research is centralized pursue R&D that has greater impact on future technological discoveries and spans a wider range of technological domains than do companies where R&D activities are decentralized (Argyres & Silverman, 2004). When R&D alliance partners are direct competitors, they are more likely to restrict their joint activities to 'pure' R&D in final product markets. This is because rivals are particularly reluctant to adding cooperative marketing activities to their R&D collaborations, implying that the competitive consequences of market-related knowledge leakage are a significant concern (Oxley & Sampson, 2003). This suggests that knowledge which spans beyond R&D and contains dynamic capabilities is crucial to corporate success.

Research into the management issues of integration of various types of specialized knowledge has been from the new product development perspective (Nonaka & Takeuchi, 1995). While some innovations are the result of new knowledge application,

others are the result of reconfigurations of existing knowledge to generate "architectural innovations" (Henderson & Cockburn, 1994; Henderson & Clark, 1990a). "Architectural innovations" are based on various dynamic capabilities, and relocations of headquarters can provide the necessary environments, rich in "architectural innovations."

2.6 Level IV: Corporate Governance and Agency Theory

One of the main theoretical perspectives that has received significant coverage in strategic management literature is agency theory (Jensen & Meckling, 1976). It has emerged out of works of Coase (1937) and Arrow (1965, 1971) as analysis of relations in economic systems under uncertainty and partial information. Findings and applications of agency theory are developed and used in research of executive compensations (Barkema & Gomez-Mejia, 1998; Belliveau, O'Reilly III, & Wade, 1996; Boyd, 1994), corporate governance mechanisms (Cuervo, 2002; Finkelstein & D'Aveni, 1994; Walsh & Kosnik, 1993), corporate risk (Bloom & Milkovich, 1998; Wiseman & Gomez-Mejia, 1998), corporate performance (Brush, Bromiley, & Hendrickx, 2000; Donaldson & Davis, 1991; Li & Simerly, 1998), decisions to diversify corporations (Fox & Hamilton, 1994; Kochhar, 1996; Krishnan, Miller, & Judge, 1997), and decisions to merge (Holl & Kyriazis, 1997; Lane, Cannella Jr, & Lubatkin, 1998; Reuer & Insead, 1997) . There are many more studies arguing that corporate governance has direct effects on company risk (Holm & Laursen, 2007; Lee & Yeh, 2004). Examples of changes to risk can be differences in decision-making when the CEO is or is not the chairman of the board, and various perceptions by investors related to this phenomena (MacCrimmon & Wehrung, 1990). Global financial crisis risk management practices are becoming more imperative for top executives, because one of the reasons for the current crisis seem to be the lack of profound comprehension of risk in executive decision-making (Ladd, 2008; Lo, 2009). Massive failure of the largest and most sophisticated financial institutions in the United

States has illustrated that corporate governance systems were ineffective in successful mitigation of risks (Bebchuk, 2008).

The origins of agency theory date back to the 1960s when economists studied risk-sharing behavior of individuals and groups (Eisenhardt, 1989a). The underlying premise of agency theory is that organizational life and behavior of individuals is rooted in self-interest (Hendry, 2005). Agency theory explains and attempts to resolve two problems that arise from principal-agent relationship (Eisenhardt, 1989a). The first of the two problems includes agency problem, which takes place when: (1) there is a conflict between goals of the agent and the principal (Sappington, 1991), and costs of monitoring the agent's actions are high for the principal (Varian, 1990). This means that it is very hard for the principal to verify if the agent is acting in the principal's best interest (Eisenhardt, 1989a). The second problem is the problem of risk-sharing, which arises from the differences in risk tolerance levels between the agent and the principal (Grable, 2000; Sung & Hanna, 1996). This means that even when the goals of principal and agent are aligned, differences in risk tolerance levels would dictate different preferences in decision-making for principal and agent (Eisenhardt, 1989a). In an attempt to resolve these problems agency theory tries to design an optimal contract, which must be efficient (Eisenhardt, 1989a). There are two main types of contracts: behavior-oriented contracts, including merit pay such as salaries (Sturges, Conway, Guest, & Liefooghe, 2005), and outcome-oriented contracts, including commissions, stock option packages and profit sharing arrangements (Ng, Maull, & Yip, 2009; Roth & O'Donnell, 1996).

Jensen and Meckling (1976) argued that there is natural conflict in all corporations – the conflict of principal and agent. This conflict is caused by the

separation of ownership from control, and this separation leads to opportunistic behavior of executives (Lie, 2005). Prevention of opportunistic behavior of executives can be achieved via implementation of monitoring devices that ensure that managers do not ignore their fiduciary duty and act in the best interest of the owners of corporation (Lui, Wong, & Liu, 2009; Tripsas, Schrader, & Sobrero, 1995).

One of the main contributions of agency theory to organizational thinking is that it treats information as a commodity that can be bought and sold (Braunstein, 1981). Implications of the commodity-like nature of information are that companies can invest in development of information systems that will limit opportunism on behalf of the agent (Eisenhardt, 1989a). The next key contribution of agency theory, which treats organizations as entities with an uncertain future, is the risk implications for the future (Eisenhardt & Brown, 1998). Uncertainty in this context refers to the tradeoff between risk and reward and is unrelated to the ability of the corporation to plan (Eisenhardt & Brown, 1998). Barney and Ouchi (1986), under agency theory, emphasized how capital markets may affect the firm. Agency theory assumes the pursuit of self-interest at the individual level and goal conflict at the organizational level (Eisenhardt, 1989b).

Since the analysis focuses on the contract between principal and agent, the theory tries to define the most efficient contract arrangement (Lyons, 1996). Rooted in economics, agency theory, according to Jensen (1983), developed along two directions: positivist and principal-agent. Both streams, as a unit of analysis, take the contract between a principal and an agent. Positivist agency theory focuses on defining situations where principal-agent conflict may take place and then prescribing governance mechanisms that will minimize agents' self-serving behavior (Nilakant & Rao, 1994).

The positivist stream of research is less mathematical and focuses on the governance mechanism (Nilakant & Rao, 1994). The positivist stream was enhanced by researchers asking what the agency theory contributes to organizational theory, and the common solution is to identify the situation where interests of stockholders and executives do not align and then to show that information systems or outcome-based incentives solve the agency problem (Ross & Liu, 2009).

The principal-agent research stream employs abstract mathematics and logical proof of outcomes, and due to this mathematical rigor, this stream is less accessible to organizational scholars (Bhattacherjee, 1998). The focus of the principal-agent literature is on determining the optimal contract under different conditions and a multitude of assumptions that change with the levels of uncertainty (Nilakant & Rao, 1994), risk aversion (Wiseman & Gomez-Mejia, 1998), and availability of information (Bamberg & Spremann, 1989). The principal-agent research stream is more directly focused on the contract between principal and agent, and the underlying assumption is that parties should choose the most efficient contract (Eisenhardt, 1989a). The common approach is to take a subset of agency variables like task programmability (Stroh, Brett, Baumann, & Reilly, 1996), sophistication of the information system (Eisenhardt, 1985; Gurbaxani & Whang, 1991), and outcome uncertainty to predict if the contract is behavior-based or outcome-based (Eisenhardt, 1988).

2.6.1 Wider View on Agency Theory and its Links

Agency theory is linked with other theories in strategic management. Transaction cost economics and agency theory linked in the sense that agency problem increases certain transaction costs, and so acts as friction in the economic development (Beccerra & Gupta, 1999; Kim & Mahoney, 2005). Agency theory has many similarities with the transaction cost perspective (Williamson, 1975; Williamson, 1981, 1998). As noted by Barney and Ouchi (1986), the theories share assumptions of self-interest and bounded rationality. They also have similar dependent variables; that is, hierarchies roughly correspond to behavior-based contracts, and markets correspond to outcome-based contracts. Examples of transaction costs are costs of monitoring agents behavior (Frey, 1993) and costs of designing an optimal contract (Bolton & Scharfstein, 1990).

Agency theory assumes that individuals are bounded rationally and that information is distributed asymmetrically (Lawrence & Lorsch, 1967); they both use efficient processing of information as a criterion for choosing among various organizing forms (Galbraith, 1973). Thompson's (1967) and later Ouchi's (1979) linking means/ends relationships and focused goals to behavior versus outcome control is very similar to agency theory's linking task programmability and measurability of outcomes to contract form (Eisenhardt, 1985).

The main idea of the agency theory literature is that the separation of ownership and control leads to opportunistic behavior (Jensen and Meckling, 1976). Most empirical studies in agency theory analyze the separation of ownership from management, using

secondary data that is available for larger corporations (Bass, Bass, & Bass, 2008). Empirical works provide support for the contract between the principal and an agent with (a) information systems (Conlon & Parks, 1990; Eccles, 1983; Parks & Conlon, 1995), (b) outcome uncertainty (Eisenhardt, 1985, 1988; Nilakant & Rao, 1994), (c) outcome measurability (Abrahamson & Park, 1994; Anderson, 1985; Eisenhardt, 1985), (d) time (Carnevale & Conlon, 1988; Lafontaine, 1992), and (e) task programmability (Eccles, 1983; Eisenhardt, 1985; Stroh et al., 1996). Moreover, this support rests on research using a variety of methods including questionnaires, secondary sources, laboratory experiments, and interviews. The common approach in these studies is to use a subset of agency variables such as task programmability, information systems, and outcome uncertainty to predict whether the contract is behavior- or outcome-based. The underlying assumption is that principals and agents will choose the most efficient contract, although efficiency is not directly tested (Eisenhardt, 1989a).

Agency theory is linked with new institutional economics because most principal-agent conflicts take place in settings where a principal-agent relationship exists, and one of such settings is investment banks (Williamson, 2000).

2.6.2 Board of Directors Background

Agency theory portrays managers as agents who are self-interested and for that reason should be closely monitored (Eisenhardt, 1989a; Jensen & Meckling, 1976;

Schulze, Lubatkin, & Dino, 2003). Agency theory suggests that boards of directors influence strategic decision-making by preventing executives from acting selfishly at the expense of owners (Mizruchi, 1983). From this perspective, boards are not initiating and implementing strategies, but rather enhancing the welfare of stockholders by endorsing and monitoring strategic decision-making (Beatty & Zajac, 1994; Goodstein, Gautam, & Boeker, 1994; Jensen & Fama, 1983).

During the last several decades the corporate governance system worldwide has been undergoing a substantial change (Pugliese et al., 2009). First, the globalization of the world economy, then, the liberalization of financial systems, followed by numerous scandals involving board members, culminating in financial crisis, resulting in stronger accountability and transparency, have placed the functions of the board of directors at the core of the corporate governance debate (Ingley & Van Der Walt, 2005; Ingley & Van der Walt, 2001; Kiel & Nicholson, 2003). The appropriate level of involvement of boards remains a question, even though society is pushing for increasing that involvement (Pugliese et al., 2009). In general, both scholars and practitioners recognize the importance of adequate board control and board independence (Baysinger & Hoskisson, 1990; Beatty & Zajac, 1994; Westphal, 1998). However, when it comes to strategic decision-making, the level of optimal board involvement remains controversial (Daily, Dalton, & Cannella, 2003; Golden & Zajac, 2001; Zahra & Pearce, 1989).

In the 1970s boards of directors in the United States were criticized for being passive and not preventing corporate failures (Pugliese et al., 2009). The public demanded that boards take a more active strategic role in order to restore confidence (Clendenin, 1972; Heller & Milton, 1972; Mace, 1976; Machin & Wilson, 1979; Pugliese

et al., 2009; Vance, 1979). This led to corporate governance reforms that brought board members closer to strategic decision-making (Aguilera & Cuervo-Cazurra, 2004; Enrione, Mazza, & Zerboni, 2006; Sheridan, Jones, & Marston, 2006). As the power of institutional investors increased, boards were moved even closer to the strategic decision-making aspect of business (Baysinger & Hoskisson, 1990; Hoskisson, Hitt, Johnson, & Grossman, 2002; Judge & Zeithaml, 1992b). For the first time in history, boards were starting to challenge CEOs and become even more involved in strategy, a purely CEO-dominated domain in the past (Monks, 2008; Ruigrok, Peck, Tacheva, Greve, & Hu, 2006; Ruigrok, Peck, & Keller, 2006). Over time, more and more studies suggest that board members are becoming more aware of their role in strategic decisions (Demb & Neubauer, 1992; Heracleous, 2001a, b; Huse, 2005). Yet, researchers pinpoint multiple disagreements in empirical studies and a wealth of inconclusive evidence defining the relationship between boards and strategic decisions (Dalton, Daily, Ellstrand, & Johnson, 1998; Deutsch, 2005; Johnson, Daily, & Ellstrand, 1996). From one side of research works, boards were shown to be passive and at the mercy of CEOs' dominance and executives' decisions (Herman, 1981; Kosnik, 1987; Lorsch & MacIver, 1989; Mace, 1971). There is also evidence that under certain conditions boards may demolish value when becoming involved directly in strategic decision-making (Fulghieri & Hodrick, 2006; Hitt, Harrison, & Ireland, 2001; Jensen, 1993). Many scholars have shown that the role of the boards in strategic decision-making is becoming more active and involved (Ingley & Van Der Walt, 2005; Ravasi & Zattoni, 2006; Schmidt & Brauer, 2006; Zahra, 1990; Zahra & Filatotchev, 2004). There is also empirical evidence that boards defined certain elements of strategic decision-making, some of which are: (1) the scope of the

firm (Jensen & Zajac, 2004; Tihanyi, Johnson, Hoskisson, & Hitt, 2003); (2) levels of innovative activities and entrepreneurship (Fried, Bruton, & Hisrich, 1998; Hoskisson et al., 2002; Zahra, Neubaum, & Huse, 2000); (3) strategic transformations and adjustments (Carpenter & Westphal, 2001; Filatotchev & Toms, 2003; Johnson, Hoskisson, & Hitt, 1993); (4) strategies for research and development (Baysinger, Kosnik, & Turk, 1991; Kor, 2006); and (5) corporate internationalization (Datta, Rajagopalan, & Zhang, 2003; Sanders & Carpenter, 1998). The above empirical inconclusiveness makes including boards in this study even more interesting.

2.6.4 Size of the Board of Directors

Size of the board of directors simply means the number of people on the board (Judge & Zeithaml, 1992b), and this structural variable has been studied extensively with ambiguous findings (Zahra & Pearce, 1989). Group dynamics literature provides some answers for this ambiguity. It is empirically shown that large groups may suffer from difficulties with group organization, group control (Hackman & Morris, 1974, 1983) and overall low motivation (Herold, 1979). Increases in group size are negatively associated with participation of group members (Gladstein, 1984). This result was replicated in a business setting in a study of Fortune 500 boards, where larger boards were found to be too bulky for effective communication and discussion (Herman, 1981). An analogous finding was with hospital boards, where larger ones were ineffective and delayed the speed of strategic decision-making (Kovner, 1985). Decision-making speed was

increased while individual commitment of members was substantially reduced in oversized boards (Lauenstein, 1977; Reed, 1978). Other studies pointed out that it is more costly for large boards to monitor growth (Jensen, 1993). Similarly, board size was shown to be negatively related to growth opportunities (Lehn, Patro, & Zhao, 2009). Board size and independence decrease with the cost of monitoring and advising (Linck, Netter, & Yang, 2008). In personal interviews of 114 board members accompanied by archival data, board size was negatively related to the board's involvement, while board involvement was positively related to financial performance (Judge & Zeithaml, 1992a). Thus, board size may slow down active participation by members of the board, reduce effectiveness of strategic decision-making, and have a generally negative effect on group dynamics; for that very reason, risk-taking tendencies are argued to increase.

Hypothesis 8. *The size of the boards of directors of investment banks will be positively associated with corporate risk-taking.*

2.6.4 Board of Directors Interlocks

Why did board interlocks matter in investment banking? Social network ties, including board interlock ties, channel social influence as well as information (Burt, 1995; Davis, 1991; Walker, 1985). More connected boards are exposed to more knowledge, political power, and more pressure for higher performance (Hillman, 2005;

Pennings, 1980). In the literature interlocking ties and firm performance had either: (1) no association (Pennings, 1980), (2) positive association (Berkowitz, Carrington, Kotowitz, & Waverman, 1979; Burt, 1983), or (3) negative association (Fligstein & Brantley, 1992). The study of total quality management-related innovations in public hospitals demonstrated that both top executives and their networks determine whether companies adopt innovative strategy (Young, Charns, & Shortell, 2001). Interlocking directorships are the essence of strategic power increases. These connections allow companies to align with other powerful entities in their environment. These connections also permit access to specific knowledge that is circulated in top management teams of other companies, and presence of that knowledge creates an illusion that board members are more aware of trends and can make better decisions. Board members who are interlocked extensively are able to make comparisons between the companies on board of which they sit. Thus, not only interlocking connections provide information, they also put pressure on the board members to push the company to perform better.

Hypothesis 9. *Investment banks with more interlocked boards will be associated with higher corporate risk-taking.*

2.6.5 Board of Directors Shares and Voting Power

A board of directors with more voting power will have stronger influence over corporate strategy, including corporate risk (Hermalin & Weisbach, 1991; Zald, 1969).

Hypothesis 10. *Voting power of board members of investment banks will be negatively associated with corporate risk-taking.*

Ownership of the stock by various groups is a powerful form of corporate governance (Connelly, Hoskisson, Tihanyi, & Certo, 2010). Ownership structure allows either aligning or misaligning the interests of various stakeholder groups (Daily et al., 2003). The relationship between the ownership of the stock of top executives and organizational performance usually shows that firms with larger ownership do not outperform firms with lower ownership. Ownership of the stock by the board of directors can be an effective antitakeover tactic and depending on the situation can support either agency or stewardship theories (Malekzedeh, McWilliams, & Sen, 2011). It is argued that board ownership influences corporate strategy, firm performance and governance processes (Connelly et al., 2010). More specifically ownership of the stock by board members is perceived by investors as an indicator of companies long-term earnings (Certo, Covin, Daily, & Dalton, 2001). Therefore,

Hypothesis 11. *Ownership of stock by board members of investment banks will be positively associated with corporate risk-taking.*

2.6.6 Insiders on Board of Directors

The ratio of insider representation on the board is by far the most widely used variable in corporate governance (Judge & Zeithaml, 1992b). Insiders are defined as "board members who are current or former employees of a firm or who are otherwise closely affiliated with the firm" (Cochran, Wood, & Jones, 1985). Over the last few decades society put pressure on corporations to limit the number of insider directors on the boards, assuming the outsiders perform monitoring and oversight functions better (Judge & Zeithaml, 1992b). Some researchers provided evidence that the number of insiders on the boards decreased from 31 percent in 1980 to 21 percent in 1989 (Heidrick & Struggles, 1990). Scholars observing this decline mostly speculated on how insider representation impacts the behavior of the boards, and empirical results were mostly ambiguous (Zahra & Pearce, 1989). Some researchers argued that insiders benefit boards by being more aware of valuable information and insights and bringing them to the board's discussions (Baysinger & Hoskisson, 1990). Other scholars argued that there should be a balance between informed discussants of strategic choices and impartial monitors of strategic decision-making (Rosenstein, 1987). Further, there is some

empirical evidence in the literature suggesting that there should be internal balance. No study analyzed how number of insiders is associated with corporate risk-taking.

Analysis of Inc. 500 companies' suggested that insider representation was positively related to board involvement in the strategic decision-making process (Ford, 1988). Higher ratio of insiders was positively correlated with involvement of the board in strategic planning, thus making strategic planning more effective (Lauenstein, Tashakori, & Boulton, 1983). Higher ratio of insiders is positively associated with levels of strategic change (Goodstein & Boeker, 1991), levels of R&D expenses in the company (Baysinger et al., 1991), and levels of strategic innovativeness (Hill & Snell, 1988). Ratio of insiders was negatively associated with number of cases when golden parachute strategies were used in Fortune 500 companies (Cochran et al., 1985) and with quality of strategic decision-making (Judge & Zeithaml, 1992b). All these empirical works argue that improved information flows that higher numbers of insiders provide make boards of directors more effective in some cases while less effective in others. Unlike outsiders who may not be as directly impacted by firm performance and failure, insiders' closer ties to firm outcomes may be make them more risk averse. Overall, I expect that increased number of insiders will lower firm risk:

Hypothesis 12. *Number of insiders on board of investment banks will be negatively associated with corporate risk-taking.*

3 METHODOLOGY

3.1 Sample

A sample of financial institutions was obtained from Thomson One Financial database. Initially, data representing Security Brokers and Dealers was extracted, this data set corresponds to SIC code 621 (Security Brokers and Dealers) and the set includes 135 publicly traded United States-based companies. A larger set of 267 companies corresponding to SIC[10] code 62 (Security and Commodity Brokers) was also retrieved and analyzed. However, after preliminary analysis, a data set based on GIC codes was extracted from Thomson One Financial Database. GIC[11] code, being a newer and more advanced classification system (Boni & Womack, 2006), seemed to deliver a cleaner set. In GIC set under the umbrella code of 40 (Financials) the database produces 1507 publicly traded companies. This set included a subset of interest for this study called Diversified Financials that consists of 252 publicly traded companies with database code 4020. The set Diversified Financials, in turn, consists of three subsets: (1) a subset of 50

[10] The Standard Industrial Classification was replaced by the North American Industry Classification System (NAICS) starting in 1997, but several data sets are still available with SIC-based data. Both SIC and NAICS classify establishments by their primary type of activity.

[11] The Global Industry Classification Standard (GICS) is an industry taxonomy developed by MSCI and Standard & Poor's (S&P) for use by the global financial community. The GICS structure consists of 10 sectors, 24 industry groups, 68 industries and 154 sub-industries into which S&P has categorized all major public companies. The system is similar to ICB (Industry Classification Benchmark), a classification structure maintained by Dow Jones Indexes and FTSE Group. GICS is used as a basis for S&P and MSCI financial market indexes in which each company is assigned to a sub-industry, and to a corresponding industry, industry group and sector, according to the definition of its principal business activity. "GICS" is a registered trademark of McGraw-Hill and is currently assigned to S&P.

corresponding to Diversified Financial Services with code 402010; (2) a subset of 63 corresponding to Consumer Finance with code 402020; and (3) a subset of 135 companies corresponding to Capital Markets with database code 402030. GIC codes, due to being a later development, are generally more logical (Boni & Womack, 2006), have more consistent ways in naming categories, and, therefore, analysis proceeded with the set produced by applying GIC codes. During analysis, instead of analyzing only 402030 Capital Markets, which are investment banks, a larger set of 4020 Diversified Financials was analyzed as well, yet controversial results suggested that investment banks have systematic differences from other types of financial institutions, and that differences cannot be accounted for by means of statistical methods. The final data set included 135 publicly traded investment banks that operate in the United States (please see Appendix C).

The sample for the corporate governance part of the analysis included 47 variables pulled from Directors Legacy and Risk Matrix databases under Wharton Research Data Services (WRDS). Board of directors' data was available for 2007 to 2010 for only 41 publicly traded investment banks out of the sample of 135 the was produced by Thomson Reuters Financial (please see Appendix E). Data for all three years was available for 38 investment banks only, and the largest number of observations was recorded for the year 2008.

All investment banks in both samples are publicly traded banks. Inclusion of private investment banks would make this study much more interesting; however, most investment banks that are private very rarely disclose financial information and information on board members (Eccles & Crane, 1988; Servaes & Zenner, 1996).

3.2 Variables and Measures

Research in strategic management was criticized for poor construct measurement (Boyd, Gove, & Hitt, 2005), and, for this reason, for every theoretical perspective more than one indicator variable was used; the smallest number is two and the largest is five.

The variables of interest to this study are the corporate risk-taking variable, which is the dependent variable, and it is standard deviation of free cash flow. Independent variables include: (1) a deregulation dummy, which was coded as 0 before deregulation and 1 after deregulation, (2) a deregulation clock variable, that is, an ordinal variable, corresponding to the number of years since deregulation was introduced; (3) corporate aspirations as average of the past five years; (4) corporate aspirations as industry average, i.e. arithmetic mean; (5) diversification as measured with entropy measure; (6) knowledge of real estate with a dummy, (7) clock variable of time in the real estate, as number of years in that industry; (8) number of interlocking directorships as a sum of all interlocks in the board; (9) ownership of the stock as the ratio of the total number of shares owned by board members to the total stock outstanding; (10) voting power of directors as a sum of voting of stocks; (11) ratio of insiders as a percentage of insiders in the board; (12) board size as a count of people in the board.

Banking regulation strictness is measured by the index developed by researchers at IMF[12] (Abiad, Detragiache, & Tressel, 2009). Their index was composed to measure five dimensions of regulations in banks: (1) interest rate controls; (2) credit controls; (3)

[12] International Monetary Fund

restrictions of competition; (4) state ownership; and (5) supervision of banks. While this deregulation variable is more versatile, it is not available for investment banks, and is used within the umbrella of the World Bank primarily for state banks' analysis.

Introduction of financial deregulation was coded using a dummy variable, and it is a common way to account for deregulation (Kotha & Nair, 1995; Mezias, 1990; Winship & Mare, 1984). Mezias (1990) in his study of applied economic models versus institutional models used dummy variables extensively. A total of seven dummy variables were used to account for different time periods of Fortune 200 companies switching from the deferral method of accounting to the flow-through method from 1962 to 1984. The dummy variable to account for time was used in the analysis of the Japanese machine tool industry over 1979 to 1992 (Kotha & Nair, 1995). In that paper, to account for introduction of the "voluntary restraint agreement" between the United States and Japan, Kotha and Nair (1995) used the dummy variable. Deregulation was coded as a dummy variable in other papers, accounting for it as either pre-deregulation or post-deregulation dummy (Beck et al., 2010; Demyanyk et al., 2007; Reger et al., 1992; Stiroh & Strahan, 2003). Based on all of these studies deregulation was coded as a dummy variable, pre-deregulation was coded as zero and post-deregulation was coded as one. Along with this, a clock variable was also used.

Control variables include the size of investment banks measured as ln of assets, market capitalization and number of employees of the bank. The first variable is calculated, while the second one is available at Thomson Reuters one.

Board of directors variables were downloaded from Directors Legacy dataset in WRDS database. Number of interlocks was a mathematical sum of individual directors' presence on other companies' boards. The number of interlocks ranged from zero to twenty four. Bank Of America Corporation, Bank Of Hawaii Corporation, Bank Of New York Mellon Corporation, First Commonwealth Financial Corporation, and SEI Investments Company had zero interlocks, while Northern Trust Corp had the largest number of twenty four interlocks in the board. Average number of interlocks was 8.61.

The data on the number of directors in the board was extracted from Directors Legacy dataset in WRDS. The number of directors in the boards varied between seven and twenty, for the year 2007, and seven and seventeen for the year 2010. The average number of board members declined from 12.28 in 2007 to 11.66 in 2010, in fact it seemed that financial crisis was correlated with the decline of the number of directors in the board.

Voting power of directors was an arithmetic sum of the voting power of each director individually. The voting power of boards ranged from zero to 34%. Franklin Resources Inc had the board of directors with the largest voting power. The number of investment banks where boards had zero voting power ranged from year to year and was six in 2007, twenty two in 2008, eighteen in 2009 and 2010.

Ownership of the stock data was available as the number of shares that each director possessed. Total number of shares for the board was calculated as an arithmetic sum. Because every company has different number of shares outstanding, the percentage of shares holdings by the board of directors was calculated. The data for the total number

of shares outstanding was downloaded from Reuters stock screen website[13], and numbers were cross referenced with EquitiesTracher.com[14] and Yahoo/Finance[15]. The ownership of the company shares ranged from 0.16% in the board of the Regions Financial Corporation to 36.48% at the board of the Franklin Resources Inc. The average ownership of shares by the boards of directors in the sample of 42 investment banks was 5.19%.

The ratio of independent directors was traced from board affiliation data. In the database each director can have several affiliations, including being (1) independent; (2) employed by the company; (3) being linked to the board in some other way, like having family relations; and (4) being not ascertainable. The number of independent directors was calculated as an arithmetic sum, and then the ratio of independent directors on the boards was computed as a percentage. Presence of independent directors ranged from 50% to 94%. The lowest number of independent directors was at Raymond James Financial Inc. The highest number of independent directors was at Suntrust Banks Inc. Other banks with high ration of independent directors include US Bancorporation with 92%, Northern Trust Corporation with 92%, JP Morgan Chase & Company with 91%, Intercontinental Exchange Inc with 90%, and Comerica Inc with 90%. The average number of independent directors in the dataset was 75.32%.

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[13] From <http://www.reuters.com/finance/stocks/overview?symbol=SEIC.O> accessed on 05/18/2012 at 11:34

[14] From < http://www.equitiestracker.com/> accessed on 05/16/2012 at 9:12

[15] From < http://finance.yahoo.com/q?s=AMP&ql=1> accessed on 05/16/2012 at 10:44

3.3 Data Analysis

All the analysis was performed on PASW Statistics[16] 18. Institutional theory was tested using ANOVA. Due to the fact that deregulation affected all the banks at the same time regression could not been used. The results of the ANOVA suggest that deregulation had no effect on corporate risk taking. And this is a surprising result. In fact it was such a surprise, that results were retested using standard deviation of Earnings, standard deviation of Earnings Before Interest And Taxes, standard deviation of Earnings Before Taxes And Depreciation (Please see the results in Table 3). All these variables are similar to free cash flow and are used extensively to measure corporate risk-taking, even though free cash flow is considered to be a more accurate measure, because it cannot be manipulated as easily as earnings related measures. All the tests were not significant, and the only conclusion was that deregulation had no immediate effect on corporate risk taking.

Board of directors' data was analyzed using multiple linear regressions. The analysis included lag element, when dependent variable was one year after independent variable (Please see the results in Table 4). Strong support was found for hypothesis nine and partial support was found for hypothesis twelve. Year 2007 was an exception, none of the results were significant and no hypotheses were supported. The reason for this may be the fact that current financial crisis started in 2007 and there was a lot of havoc on the market. Examination of data showed that year 2007 had only 27 valid cases, while years 2008, 2009 and 2010 had 42 valid cases each. For the year 2008, significant results were

[16] Also called SPSS

found for the size of the board. And when the lag was used, results were significant for the board size and the ratio of insiders. For the year 2009 and 2010, significant results were for the board size and ratio of insiders, while when lag was used, the significant results were found for the board size only. These results suggest that board size determines corporate risk taking all the time and ratio of insiders half of the time. The number of interlocks on the boards were not significant in any of the eight tests reported and in twenty regressions that were performed in total. Stock ownership was highly correlated with voting rights and both were not statistically significant throughout the tests.

To test cumulative effect of different theories a model including two variables for agency theory, three variables for knowledge based view and two variables for behavioral theory of the firm was constructed. The number of independent variables was seven, and for years 2008, 2009, and 2010 the number of observations was 42. This is within the guidelines of multivariate data analysis, which prescribes that the data set should be at least five times as large as the number of independent variables in the model (Hair, Black, Babin, Anderson, & Tatham, 2006). Hair et al (2006) argued that for statistically significant results, the minimum data set for the model with seven independent variables will be thirty five or higher.

4 RESULTS

Results of this study indicate that deregulation by itself might not have had an impact on the corporate risk-taking, however, it created opportunities to take bigger corporate-risks which many banks started to exploit. Those banks that were taking more risk were performing better and that created peer pressure, which was measured as aspirations based on industry. Those aspirations had statistically significant results however, in year 2010 the sign of the relationship changed. Results of full model suggest that in years 2008 and 2009 it was imitative behavior that led to high corporate risk-taking. Evidence of this comes from aspirations based on peers' variable, called Aspirations Industry Average, was significant. In year 2010, aspirations based on industry average variable again was significant but it reversed the sign. This finding suggests that during times of crisis and market decline, years 2008 and 2009 in the model, aspirations based on peer pressure push companies to act in established ways, those who have positive aspirations, i.e. perform worse than average are prone to take more risk. In fact, as performance deviates from the average, the propensity to increase corporate risk-taking goes up. At the same time, companies with negative aspirations, i.e. companies that are outperforming the industry are not inclined to pursue strategies with higher corporate risk-taking. However, when market decline stopped and recovery started, that is years 2010 and 2011 in the model, companies that were performing better than the industry before, and thus were exhibiting low levels of corporate risk-taking changed their strategies and started to demonstrate more aggressive corporate risk-taking. Data suggests that after the crisis, better performing companies, push the limits of corporate risk-taking, while companies that struggled through the crisis, pursue very safe strategies with low corporate risk-taking. Another explanation may be the fact that

government was involved with many investment banks that were on the verge of going bankrupt and thus forced them to play safe. Also, TARP money was offered to many banks, including the ones that performed well during the crisis, thus encouraging management to use low cost capital and take more risk.

An interesting finding of the full model was that diversification argument was partially supported and showed that more diversified investment banks had lower corporate risk-taking levels. An explanation for this might be that highly diversified banks operate in many lines of business outside of investment banking, while the dependent variable, standard deviation of free cash flow, was measuring free cash flow for the bank as a whole and not distinguishing across different businesses. Portfolio effect of large number of businesses has a smoothing effect on income streams, free cash flows and reported earnings (Skinner & Sloan, 2002).

Size of the board was negatively related to the corporate risk-taking, which is a finding that goes against the conventional wisdom that large boards have weaker communication (Herman, 1981), worse participation of the members (Gladstein, 1984), longer decision-making speeds (Kovner, 1985), worse board involvement levels (Judge & Zeithaml, 1992b), decrease levels of monitoring and advising (Linck et al., 2008), and provide weaker growth opportunities (Lehn et al., 2009). Data suggests that large boards lead to lower corporate risk-taking. One reason for this finding may be the fact that larger boards take longer to make decisions; so many risky decisions are postponed or never made. Another explanation may be the fact that when you have a large group of people, probability that someone has a low risk tolerance level in that group increases. One person with a low risk-tolerance level in the group can block risky decisions and thus lead to lower corporate risk-taking. Ownership of the stock by the board members did not yield significant results in the model.

Ratio of insiders on the board was negatively correlated throughout board of directors model and full model. The relationship was significant and negative for years 2008, 2009 and 2010. This finding suggests that larger number of insiders actually reduces corporate risk-taking. One possible explanation may be the fact that insiders possess more knowledge about the company and so are able to make better decisions that lead to reduction in corporate risk-taking. Another explanation may be the nature of the job security of insiders. Job security of insiders depends on the risk-level of the corporation where they work, so there is a direct incentive to make company safer, and thus reduce corporate risk-taking.

5 DISCUSSION AND CONCLUSION

This study adds to the discussion of corporate risk-taking behavior and asserts that risk-taking by firms is due to multiple factors and we need to develop more complex models to capture effects of all the factors. Comprehensive approach used in this study with different levels of analysis, covering institutional environment or macro level, and firm environment or micro level showed that variables from both levels play into corporate risk-taking and at different times effects of those variables might have different magnitude or change the directions. Theoretical contributions of this work include analyzing corporate risk-taking phenomena with multiple prisms and methods.

This study provides empirical evidence against the conventional notion established in the media that current financial crisis was solely due to deregulation of investment banking. In fact, findings suggest that deregulation had no immediate effect on corporate risk-taking, but rather created an environment with many opportunities. That environment full of opportunities also had peer pressure. It was peer pressure of other investment banks and imitative behavior after "high status" banks that lead to aspirations and eventually to excessive corporate risk-taking. Interestingly, aspirations based on banks own past, were not contributing to the levels of corporate risk-taking. Counterintuitive results were found for the size of the boards of directors, which, while bring many inefficiencies in decision making acts as a reducing factor for corporate risk-taking.

Path dependent knowledge of a particular industry or type of security, like CDOs, according to the data had no effect on corporate risk-taking, while size of the board of directors had a pronounced effect. Results suggest that, while larger boards may be ineffective and expensive to run, they lead to lower corporate risk-taking. This dissertation also combined two types of aspirations into one model, and empirical evidence suggested that aspirations based on peers are more powerful predictors of corporate risk-taking behavior than aspirations based on past performance. According to data, both presence and duration of the presence of specific knowledge of real estate securities that accumulates over time did not have effect on corporate risk-taking.

Overall, results support the idea that corporate risk-taking is a multidimensional concept and needs to be studied from several perspectives.

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APPENDIX A

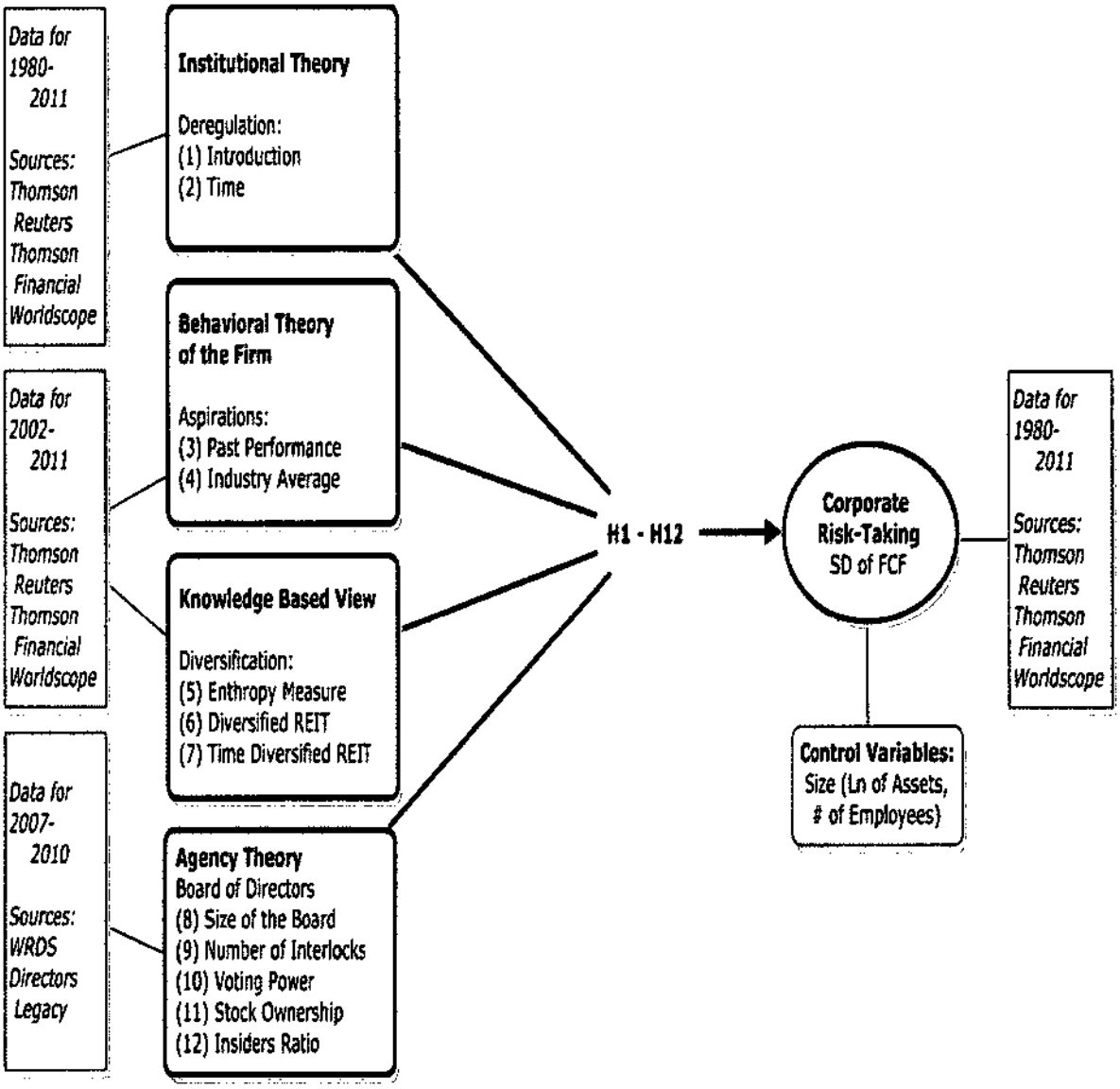

Figure 1. The model and data points.

APPENDIX B

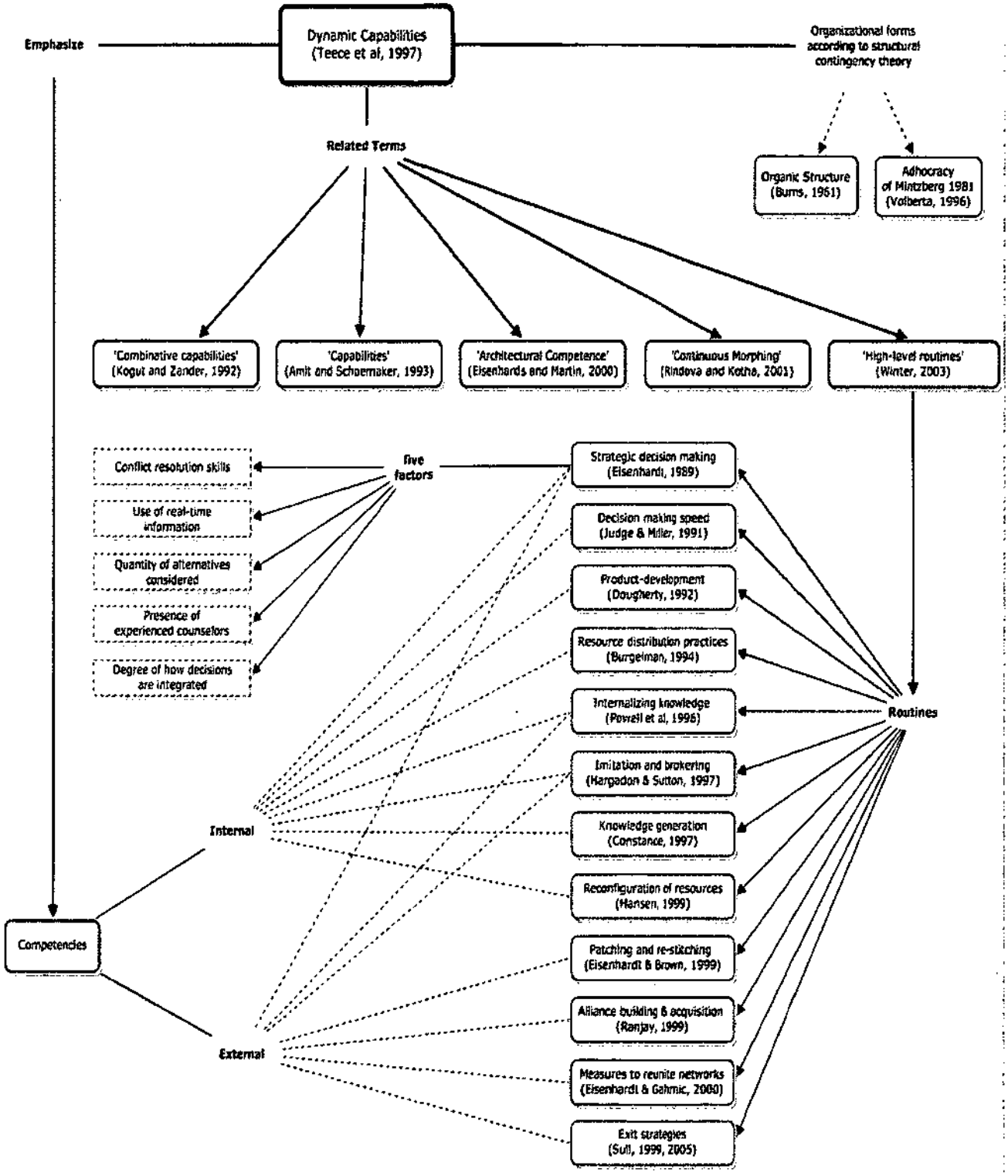

Figure 2. Knowledge base and capabilities.

APPENDIX C

Table 1. The list of 135 Publicly Traded Investment Banks in the Large Sample

#	Entity Name	Quote Symbol
1	AB Watley Group Inc	ABWG-5
2	Alliance Financial Corp.	ALNC-O
3	Alliancebernstein Holding Limited Partne	AB-N
4	Ameriprise Financial Inc	AMP-N
5	Arlington Asset Investment Corp.	AI-N
6	Banctrust Financial Group Inc	BTFG-O
7	Bank Of America Corp.	BAC-N
8	Bank Of Hawaii Corp.	BOH-N
9	Bank Of New York Mellon Corp.	BK-N
10	Berkshire Hills Bancorp Inc	BHLB-O
11	BGC Partners Inc	BGCP-O
12	Blackrock Inc	BLK-N
13	Capital Financial Holdings Inc	CPFH-U
14	Century Bancorp Inc	CNBKA-O
15	Charles Schwab Corp.	SCHW-N
16	Chemung Financial Corp.	CHMG-U
17	Cigna Corp.	CI-N
18	Citigroup Inc	C-N
19	Citizens Republic Bancorp Inc	CRBC-O
20	City Capital Corp.	CTCC-5
21	City National Corp.	CYN-N
22	Cobiz Financial Inc	COBZ-O
23	Comerica Inc	CMA-N
24	Commerce Bancshares Inc	CBSH-O
25	Community Bank System Inc	CBU-N
26	Cowen Group Inc	COWN-O
27	Cross Timbers Royalty Trust	CRT-N
28	Crown Financial Holdings Inc	CFGI-5
29	Cullen Frost Bankers Inc	CFR-N
30	Duff & Phelps Corp.	DUF-N
31	E*trade Financial Corp.	ETFC-O

32	Eastbridge Investment Group Corp.	EBIG-U
33	Eastern Virginia Bankshares Inc	EVBS-O
34	Edelman Financial Group Inc	EF-O
35	Endovasc Inc	EVSC-5
36	Evercore Partners Inc	EVR-N
37	FBR & Company	FBRC-O
38	Federated Investors Inc	FII-N
39	Fifth Third Bancorp	FITB-O
40	First Bancorp	FBP-N
41	First Busey Corp.	BUSE-O
42	First Citizens Bancshares Inc	FCNCA-O
43	First Citizens Bancshares Inc	FIZN-5
44	First Commonwealth Financial Corp	FCF-N
45	First Community Corp.	FCCO-O
46	First Horizon National Corp.	FHN-N
47	First M & F Corp.	FMFC-O
48	First Mid-Illinois Bancshares Inc	FMBH-U
49	First Montauk Financial Corp.	FMFN-5
50	First Niagara Financial Group Inc	FNFG-O
51	Franklin Resources Inc	BEN-N
52	Fulton Financial Corp.	FULT-O
53	Fxcm Inc	FXCM-N
54	Gain Capital Holdings Inc	GCAP-N
55	Gamco Investors Inc	GBL-N
56	German American Bancorp Inc	GABC-O
57	GFI Group Inc	GFIG-N
58	Gilman Ciocia Inc	GTAX-5
59	Gleacher & Company Inc	GLCH-O
60	Global Capital Partners Inc	GCPL-5
61	Great Northern Iron Ore Properties	GNI-N
62	Greenhill & Company Inc	GHL-N
63	Heartland Financial USA Inc	HTLF-O
64	Heritage Financial Group Inc	HBOS-O
65	Huntington Bancshares Inc	HBAN-O
66	Imperial Credit Industries Inc	ICII-5
67	Interactive Brokers Group Incorporation	IBKR-O
68	Intercontinental Exchange Inc	ICE-N
69	International Fcstone Inc	INTL-O
70	Investment Technology Group	ITG-N

71	Investors Capital Holdings Limited	ICH-A
72	Iron Mining Group Inc	IRNNQ-5
73	Jacksonville Bancorp Inc	JXSB-O
74	Janel World Trade Limited	JLWT-U
75	Jefferies Group Inc	JEF-N
76	Jesup & Lamont Inc	JLIC-5
77	JMP Group Inc	JMP-N
78	Jordan American Holdings Inc	JAHI-5
79	JP Morgan Chase & Company	JPM-N
80	KBW Inc	KBW-N
81	Kent Financial Services Inc	KENT-5
82	Kentucky Bancshares Inc	KTYB-U
83	Keycorp	KEY-N
84	KKR Financial Holdings LLC	KFN-N
85	Knight Capital Group Inc	KCG-N
86	Ladenburg Thalman Financial Services	LTS-A
87	Lehman Brothers Holdings Inc	LEHMQ-5
88	LPL Investment Holdings Inc	LPLA-O
89	M & T Bank Corp.	MTB-N
90	Macatawa Bank Corp.	MCBC-O
91	Marketaxess Holdings Inc	MKTX-O
92	Merriman Holdings Inc	MERR-5
93	MF Global Holdings Limited	MFGLQ-5
94	Morgan Stanley	MS-N
95	Morningstar Inc	MORN-O
96	National Holdings Corp.	NHLD-U
97	Network 1 Financial Group Inc	NTFL-U
98	North State Bankcorp	NSBC-U
99	Northern Trust Corp.	NTRS-O
100	Oppenheimer Holdings Inc	OPY-N
101	Oregon Pacific Bancorp	ORPB-U
102	Oriental Financial Group Inc	OFG-N
103	Paulson Capital Corp.	PLCC-O
104	Penns Woods Bancorp Inc	PWOD-O
105	Penson Worldwide Inc	PNSN-O
106	Peoples Bancorp Inc	PEBO-O
107	Peoples Bancorp Inc	PEBC-5
108	Peoples United Financial Inc	PBCT-O
109	Pinnacle Financial Partners Inc	PNFP-O

110	Piper Jaffray Companies	PJC-N
111	PNC Financial Services Group Inc	PNC-N
112	Potomac Bancshares Inc	PTBS-U
113	Premier West Bancorp	PRWT-O
114	Raymond James Financial Inc	RJF-N
115	Regions Financial Corp.	RF-N
116	Rockville Financial Inc	RCKB-O
117	Rodman & Renshaw Capital Group	RODM-O
118	SEI Investments Company	SEIC-O
119	Siebert Financial Corp.	SIEB-O
120	Southern Trust Securities Holding Corp.	SOHL-U
121	Starinvest Group Inc	STIV-5
122	State Street Corp.	STT-N
123	Stifel Financial Corp.	SF-N
124	Suntrust Banks Inc	STI-N
125	SWS Group Inc	SWS-N
126	SY Bancorp Inc	SYBT-O
127	TCF Financial Corp.	TCB-N
128	TD Ameritrade Holding Corp.	AMTD-O
129	The Goldman Sachs Group Incorporated	GS-N
130	Tidelands Royalty Trust	TIRTZ-5
131	Track Data Corp.	TRAC-5
132	United Bancorp Inc Ohio	UBCP-O
133	United Bankshares Inc	UBSI-O
134	United Community Banks Inc	UCBI-O
135	US Bancorp	USB-N

APPENDIX D

Table 2. The list of 42 Publicly Traded Investment Banks

#	Entity Name	Quote Symbol
1	Ameriprise Financial Inc	AMP-N
2	Bank Of America Corp.	BAC-N
3	Bank Of Hawaii Corp.	BOH-N
4	Bank Of New York Mellon Corp.	BK-N
5	Charles Schwab Corp.	SCHW-N
6	Cigna Corp.	CI-N
7	City National Corp.	CYN-N
8	Comerica Inc	CMA-N
9	Commerce Bancshares Inc	CBSH-O
10	Community Bank System Inc	CBU-N
11	Cullen Frost Bankers Inc	CFR-N
12	Fifth Third Bancorp	FITB-O
13	First Commonwealth Financial Corp	FCF-N
14	First Horizon National Corp.	FHN-N
15	First Niagara Financial Group Inc	FNFG-O
16	Franklin Resources Inc	BEN-N
17	Fulton Financial Corp.	FULT-O
18	Greenhill & Company Inc	GHL-N
19	Huntington Bancshares Inc	HBAN-O
20	Intercontinental Exchange Inc	ICE-N
21	Investment Technology Group	ITG-N
22	Jefferies Group Inc	JEF-N
23	JP Morgan Chase & Company	JPM-N
24	Keycorp	KEY-N
25	M & T Bank Corp.	MTB-N
26	Morgan Stanley	MS-N
27	Northern Trust Corp.	NTRS-O
28	Peoples United Financial Inc	PBCT-O
29	Piper Jaffray Companies	PJC-N
30	PNC Financial Services Group Inc	PNC-N

31	Raymond James Financial Inc	RJF-N
32	Regions Financial Corp.	RF-N
33	SEI Investments Company	SEIC-O
34	State Street Corp.	STT-N
35	Stifel Financial Corp.	SF-N
36	Suntrust Banks Inc	STI-N
37	SWS Group Inc	SWS-N
38	TCF Financial Corp.	TCB-N
39	The Goldman Sachs Group Incorporated	GS-N
40	Track Data Corp.	TRAC-5
41	United Bankshares Inc	UBSI-O
42	US Bancorp	USB-N

APPENDIX E

Table 3. ANOVA results

	N	F	Sig.
Standard Deviation of Free Cash Flow	153	0.2680	0.6050
Standard Deviaiton of Earnings	153	1.0080	0.3150
Standard Deviation of Earnings Before Interest And Taxes	153	1.1480	0.2990
Standard Deviation of Earnings Before Taxes And Depreciation	153	0.6370	0.8310

APPENDIX F

Table 4. Descriptive Statistics of the Board of Directors Data

	Independent Variable	N	Min	Max	Mean	S.D.
2007	Size of the Board	27	7	20	12.28	3.49
	Number of Interlocks		0	31	12.11	8.84
	Voting Power		0.00%	33.40%	8.47%	10.90%
	Stock Ownership		0.12%	42.28%	6.89%	8.02%
	Independent Ratio		44.00%	92.00%	74.02%	13.33%
2008	Size of the Board	42	7	20	12.20	2.90
	Number of Interlocks		1	26	10.80	7.16
	Voting Power		0.00%	34.00%	5.32%	9.16%
	Stock Ownership		0.15%	37.94%	5.72%	7.81%
	Independent Ratio		44.44%	92.86%	75.85%	12.20%
2009	Size of the Board	42	7	17	11.72	2.58
	Number of Interlocks		0	25	9.51	6.41
	Voting Power		0.00%	32.77%	5.14%	8.05%
	Stock Ownership		0.16%	36.99%	5.44%	7.93%
	Independent Ratio		50.00%	92.86%	75.21%	12.46%
2010	Size of the Board	42	7	17	11.66	2.70
	Number of Interlocks		0	24	8.61	6.38
	Voting Power		0.00%	89.64%	6.66%	15.08%
	Stock Ownership		0.16%	36.48%	5.19%	7.60%
	Independent Ratio		50.00%	94.12%	76.18%	12.58%

N = 153 observations, 42 boards of directors, four years

APPENDIX G

Table 5. Results of the Regression on the Board of Directors Data only

	Independent Variable	N	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
2007	*R Square*	27	*0.1113*	*0.1734*			
	Size of the Board		0.2814	-0.0339			
	Number of Interlocks		0.1076	0.0730			
	Voting Power		0.3350	-0.6804			
	Stock Ownership		-0.2559	0.3689			
	Insiders Ratio		0.0159	-0.0592			
2008	*R Square*	42		*0.3200*	*0.2418*		
	Size of the Board			**-1.3516***	**-0.2919***		
	Number of Interlocks			1.2817	0.4359		
	Voting Power			-0.2480	-0.4610		
	Stock Ownership			-0.3170	0.0694		
	Insiders Ratio			0.1284	**-0.1316***		
2009	*R Square*	42			*0.2903*	*0.3294*	
	Size of the Board				**-0.0261***	**-0.1995****	
	Number of Interlocks				0.3315	0.5977	
	Voting Power				-0.1965	-0.4973	
	Stock Ownership				0.0658	0.0850	
	Insiders Ratio				**-0.2179***	-0.3172	
2010	*R Square*	42				*0.3049*	*0.3282*
	Size of the Board					**-0.0389***	**-0.0951***
	Number of Interlocks					0.1744	0.2689
	Voting Power					0.5933	-1.0771
	Stock Ownership					-0.5961	0.7789
	Insiders Ratio					**-0.4553****	0.4847

* $p \leq .05$; ** $p \leq .01$;

N = 153 observations, 42 boards of directors, four years

APPENDIX H

Table 6. Results of the Regression (Full Model)

	Independent Variable	N	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
2007	*R Square*	27	*0.1058*	*0.0976*			
	Aspirations Past Performance		-1.7963	-1.7018			
	Aspirations Industry Average		1.6991	1.5978			
	Diversification Entropy		-0.0593	-0.1063			
	Diversification into Diversified REIT		0.2596	-0.0962			
	Years of Diversification into Diversified REIT		0.3032	0.1061			
	Size of the Board		0.0893	0.1296			
	Insiders Ratio		-0.0369	0.0562			
2008	*R Square*	42		*0.1409*	*0.0843*		
	Aspirations Past Performance			-0.0521	-0.0348		
	Aspirations Industry Average			**0.0782***	0.0658		
	Diversification Entropy			-0.1051	**-0.1825***		
	Diversification into Diversified REIT			0.2963	0.1503		
	Years of Diversification into Diversified REIT			0.0543	0.0774		
	Size of the Board			**-0.0382***	-0.0343		
	Insiders Ratio			**-0.1775***	**-0.2430***		
2009	*R Square*	42			*0.1821*	*0.2341*	
	Aspirations Past Performance				0.1517	0.1317	
	Aspirations Industry Average				**0.3123****	**0.2615***	
	Diversification Entropy				-0.1828	**-0.2572***	
	Diversification into Diversified REIT				0.1243	0.0651	
	Years of Diversification into Diversified REIT				0.0528	-0.0077	
	Size of the Board				**-0.0166***	-0.1232	
	Insiders Ratio				**-0.2469***	**-0.3260***	
2010	*R Square*	42				*0.1285*	*0.2044*
	Aspirations Past Performance					0.0237	0.6079
	Aspirations Industry Average					**-0.1108***	-0.8287
	Diversification Entropy					-0.1945	**-0.2998***
	Diversification into Diversified REIT					0.1437	0.0808
	Years of Diversification into Diversified REIT					0.0105	0.0407
	Size of the Board					0.0997	0.7271
	Insiders Ratio					**-0.2500***	**-1.5756***

* $p \leq .05$; ** $p \leq .01$;

N = 153 observations, 42 boards of directors, four years

VITA

Elzotbek Rustambekov is originally from Uzbekistan where he earned his BBA in Finance and Management Summa Cum Laude from Tashkent State Technical University. Elzotbek holds an MBA in Finance from Zarb School of Business at Hofstra University, New York, where he was on Presidential Scholarship of Uzbekistan. Elzotbek holds an MSc in International Strategy and Economics with Distinction from School of Economics and Finance at the University of St Andrews, Scotland, where he was on a Chevening/OSI Scholarships of British Foreign Office.

Prior to starting his PhD, Elzotbek worked at the Ministry of Finance of Uzbekistan under Tashkent City Hall, as a deputy head for foreign currencies operations, and supervised some of the largest government contracts with foreign partners including Mercedes Benz corporation, European Bank for Reconstruction and Development and World Bank. Elzotbek worked for United Nations Development Program (UNDP) in various roles, the last one being a research coordinator on knowledge based economy in Central Asia.

Elzotbek has extensive teaching experience in the United States, United Kingdom and Uzbekistan. Elzotbek taught at Old Dominion University, Oregon State University, University of St Andrews, Westminster University in Tashkent and International Business School "Kelajak Ilmi."

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