

**Rational Corporate Risk Management Policy: An Extension of  
Traditional Risk Management Theory to Incorporate Observed  
Managerial Behavior**

**Russell Paul Roselle**

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Dr. T. Nicolaus Tideman, Committee Chair

Dr. Richard A. Ashley, Committee Member

Dr. Sheryl B. Ball, Committee Member

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**ABSTRACT**

There is qualitative and anecdotal evidence that corporate management deviates from received risk management theory. These deviations include: an overall hesitancy to accept projects with greater levels of total risk, increased return requirements compensating for firm-specific risk, employment of hedging strategies, the insuring of diversifiable risks, corporate diversification outside of the industry constraint, and the utilization of portfolio and other variance reducing methods. The literature primarily contributes these behaviors to principal/agent conflicts.

Evidence from studies on these deviations support strong arguments based in resource scarcity, cost and availability of capital, employee/community stability, and the increases in bankruptcy costs that these risk management deviation are in the interest of shareholders. When considered in the context of the long-term impact on value, the observed deviations from received corporate risk management theory contribute substantively to the perpetuation of the firm as a long-term store of value.

This paper supports two hypotheses: (1) the deviation from received risk management theory by corporate managers is broadly practiced, and (2) these deviations are generally in the interest of shareholders.

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## Chapter 1: Introduction

In 1952 Harry Markowitz published a paper that changed the foundations of investment theory. In this article and his subsequent works on the subject, Markowitz provided the theoretical framework that identified the trade-off between risk and return and also identified diversification as a means to achieve more return for a give exposure to risk (Bernstein, 1992, pp.41 – 51). What followed was a series of insights and theory changing the form and function of investment and risk management.

According to modern portfolio theory an investor will not require additional returns for assuming firm-specific risk. If an investor knows he can shield himself from exposure to the firm-specific risk of a particular company through proper diversification (for example, putting an oil company and a bicycle company in the same portfolio) he will then be willing to pay more for those securities, bidding up their prices and reducing the rates of return to them. This leads to the investment rule that the contribution of a security to the riskiness of an investor's portfolio is only the security's marginal contribution to the risk that cannot be diversified away (Trigeorgis, 2000, p. 43). Undiversifiable risk is referred to as systematic risk. Although far more complicated in its application, this idea is the theoretical foundation of modern portfolio theory.

Bloomfield and Michaely (2004) found institutional investors have largely accepted this theory. In their recent study reviewing the *expectations* of institutional investors, they found a security's "beta" was generally accepted by the industry participants surveyed (developed in the 1960's to measure the marginal contribution of a security's systematic risk to the portfolio) as a good proxy for the riskiness of the security (Bloomfield and Michaely, 2004). Additionally, Bloomfield and Michaely found institutional investors believed there was a strong correlation between the size of a security's beta and the expected returns of the security. Although quantitative reviews of *ex post* data are mixed, beta is generally accepted as a good measure of relevant risk to shareholder's (Bodie, Kane, Marcus, 2002, pp. 382-388, Brigham and Houston, 1998, p. 189).

In extending this theory to the capital allocation and risk management decisions of firms, traditional theory requires the treatment of firm-specific risk at the corporate level to be consistent with its treatment at the investment level (Brigham and Houston, 1998, p. 188, and Trigeorgis, 2000, p. 47). The purpose of a firm, and therefore the proper purpose of the actions of its management, is accepted to be the maximization of the value of the equity in the firm (Trigeorgis, p.24). To this end, beta theory, with its foundations in portfolio risk-management, has been applied directly to firm investment decisions. The result is a corporate risk-management framework in which management requires a risk premium only sufficient to compensate the firm for the marginal contribution of a project to the systematic risk in the corporation's returns. Additionally, as presented in Brigham and Houston (p. 180), investment theory asserts that efforts to eliminate or lessen exposure to firm-specific risk will not be rewarded with higher stock prices. Trigeorgis (pp. 4 – 7) illustrates how received capital budgeting theory will not assign greater value to projects that provide greater managerial flexibility. (Managerial or strategic flexibility is a condition that lowers all risks.) Brigham and Houston (p. 180) present the theoretical basis for this conclusion. A well-diversified investor is not exposed to the non-diversifiable risk confronting individual firms in a portfolio and therefore will not require compensatory returns for the assumption of firm risk and will not favorably value expenditures for its management. This eliminates greater return requirements and non-diversifiable risk reduction as a way to add shareholder value.

Although, according to Bloomfield and Michaely (2004), the professional finance community fully agrees with the application of portfolio and capital pricing theory to the specification of risk-reward trade-offs in securities selection, evidence points to firm risk management policy and practice, with respect to projects and strategic initiatives, deviating from theory. That is, management will seek to eliminate, manage for, or require compensatory returns when confronted with firm-specific risk. Whether in the simple case of an industrial conglomerate that diversifies across industries to lower risk, or in the complex equations of hedging commodity risk, any action taken by managers to increase value by managing firm-specific risk is considered contrary to traditional portfolio-based capital budgeting theory. The literature has explained this behavior as a

principle/agent problem and has studied it as such (Broussard, Buchenroth, and Pilotte, 2004). Moreover, Haushalter (2000) states,

“Despite the prevalence of corporate risk management and the effort that has been devoted to developing theoretical rationales for hedging, there are no widely accepted explanations for risk management as corporate policy.”

In a post Enron, Tyco, and World Com world, it would be silly for anyone to dismiss managerial hubris and egocentrism as contributory to corporate decision-making. However, it is equally unfounded to assert *all* or even the majority of managers are guided by any other impulse than excellence in their jobs. Even those colorful managers who are self-aggrandizing can usually accept the consistent creation of value as the fastest way to legacy. In Donaldson and Lorsch (1983, p.21) the vast majority of the senior managers of the twelve companies they reviewed did not regard their own financial compensation as a primary consideration in decision-making.

So why not consider the possibility that most managers are setting and executing policies consistent with the long-run creation of shareholder value? The central thesis of this paper is two-fold: (1) Managerial behavior consistently deviates from the risk management behavior is currently regarded as theoretically correct, and (2) there is logical support based in resource scarcity, earning power, strategic flexibility, and the associated effect on firm value for a shareholders value oriented deviation of managerial behavior from received theory.

The purpose of this paper is not to provide a theorem or method that a practitioner can apply to capital budgeting problems and corporate decision analysis. Nor is it an attempt to amend the excellent work compiled in financial securities risk management and portfolio theory. The purpose of this inquiry is to present a logical argument to support the need to adapt current theory for application to corporate risk management and decision analysis. In essence, the widely accepted principles of securities pricing and

portfolio management and the broadly observed policies and actions of management are two compatible elements of the value maximization process.

This paper is organized into two sections. The first presents anecdotal and qualitative evidence of a broad and consistent deviation in managerial practice from traditional capital budgeting theory. The second section presents a logical defense of this practice, arguing for an adaptation of risk theory to corporate planning reflecting the shareholder-value oriented rationale for observed behavior.

## **Chapter 2: Evidence that corporate management deviates from traditional capital budgeting theory**

Capital budgeting theory suggests managers will accept capital investment projects whenever their marginal return is greater than the marginal weighted average cost of capital. The theory says in the absence of other considerations, such as market strategy, product strategy and financial covenants, the consistent application of this general methodology to capital budgeting will result in the optimal portfolio of acceptable projects financed by the optimal balance sheet (Brigham and Houston, 1998, pp. 476 – 479).

However, there is evidence of projects with positive net present value consistently going unfunded and that balance sheets often falling short of complete optimization by the criteria of received theory (Parrino, Poteshman, and Weisbach, 2005). Further, managers inefficiently invest in diversifying strategies, enter into hedging and insurance relationships, and seek opportunities to increase the longevity of the company to the detriment of short-run optimization (Donaldson and Lorsch, 1983, p.21, Doukas and Kan, 2004, Barnett and Meulbroek, 2000, and Haulshalter, 2000). All of these activities are contrary to traditional portfolio-based capital budgeting theory. Risk mitigating behaviors such as these have resulted in extensive inquiry concerning principal/agent problems.

Agency costs are the economic cost to shareholders of the behaviors and choices of management not resulting in greater shareholder wealth (Jensen and Meckling, 1976). The door is left open in popular corporate finance texts like Brigham and Houston (1998, pp. 460 – 461, 471) for the possibility of other considerations requiring traditional theory to be adapted. Trigeorgis (2000, pp. 121 – 124) supports the value of managerial flexibility (the hedging effect of deferred decisions making) as a means to reduce risk and increase return. The tendencies of management to engage in risk-mitigating behavior for unsystematic risk are generally considered an agency problem (Broussard, Buchenroth, and Pilotte, 2004). This section presents evidence of broad disparity between corporate risk policy and theory.

When considering corporate policy deviations from accepted risk management theory, it is necessary to consider the impact of all forms of risk-mitigating behavior. In their deviations from theory, managers require levels of return greater than what is theoretically necessary (Donaldson and Lorsch, 1983, p. 117, and McNulty, Yeh, Schulze, and Lubatkin 2002). And management engages in activities to hedge or eliminate firm specific exposure from incremental cash flows. This can be seen in the Honeywell business case written by Barnett and Meulbroek (2000). The cost of risk includes the internal marginal expenses intentionally incurred in an effort to limit future uncertainty. Although the return of a specific project may not increase on a post-hedging basis, the return necessary to compensate the firm on pre-hedging basis increases, as does the absolute total cash flow required to cover the increase in risk mitigating obligations. Accordingly, deviation from capital theory is defined for this inquiry as any behavior in which management increases return requirements to include a provision for firm-specific risk, falls short of the optimal balance sheet by under funding or over funding projects, accepts endogenous expenses to reduce future firm-specific uncertainties, modifies corporate structure, or engages in other internal capital market strategies to increase protection against risk.

The primary goal of corporate managers is to maximize the creation of value for the shareholders of the corporation. Shareholders can take the returns from their financial

assets and allocate them optimally between current and future consumption, taking account of risk as necessary for the maximization of personal utility (Trigeorgis, 2000, pp. 23 – 24). For a diversified group of shareholders, any attempt to do otherwise would result in sub-optimal benefits for them. When dealing with a disparate and unrelated group of stakeholders, the only reasonable strategy is to identify the common value that unites the group; shareholders are assumed to be mean-variance optimizers (Bodie, Kane and Marcus, 2002, p. 264). Any decision by corporate managers that increases capital appreciation or current return, risk remaining unchanged, will result in the promotion of the corporation's principle purpose.

Managers convey these returns to shareholders through dividends and capital appreciation of the stock price. Accordingly, all activities of corporate management should be focused on optimizing the combination of current dividend payout and the likely size of future dividend payouts, represented as value to shareholders in the form of the appreciation of share-price. The total return over time to shareholders' investment, in the form of dividends and capital appreciation, must compensate the shareholders for the opportunity cost of the use of money and for the portion of the uncertainty of the expected returns that results from un-diversifiable macro-economic events and conditions known as systematic risk (Trigeorgis, 2000, p. 43).

In the excess returns single variable regression equation this is represented by:<sup>1</sup>

$$r_s - r_{rf} = \alpha + \beta(r_m - r_{rf}) + \varepsilon_s$$

Where:

$r_s$  = the return of a stock over time

$r_m$  = the return of the market portfolio over time

$r_{rf}$  = the risk free rate of return proxy for the time value of money

$\alpha$  = the intercept

$\beta$  = the correlation between the return of the stock and the excess return in the market above the risk free rate.

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<sup>1</sup> The equation is referenced from Bodie, Kane and Marcus (2002) P.294. However it is found in many economic and corporate finance texts.

$\varepsilon_s$  = the portion of the variation of return not explained by the movements in the market portfolio

The conclusions from this single factor model are used to construct the anticipated or expected rate of return required for a security. The required return on investment is the risk-free rate plus the market premium for risk multiplied by  $\beta$ . Accordingly, any increase in the uncertainty of the returns to shareholders, as long as it results from changes in  $\varepsilon_s$ , will have no impact on the expected rate of return required by shareholders. Applying this theory to project selection yields a conclusion suggesting corporate managers should accept all projects which compensate for the systematic risks assumed with the particular project because the shareholders only require compensation for systematic risk (Trigeorgis, 2000, p. 47, and Brigham and Houston, 1998, p. 478). The evidence presented in this paper highlights the tendency of corporate managers to take account of all risks, both those that are diversifiable and therefore incorporated into  $\varepsilon_s$  and those that are systematic, in making capital allocation decisions.

Higher required rates of return for corporate investment are supported by the real options work of Trigeorgis (2000, p. 1) who describes a failure in traditional capital budgeting methodology to account for the value of management flexibility. Limiting the selection of capital projects to flexible ones has the effect of increasing the mean return, by reducing probability of a negative outcome. When pervasive throughout the capital planning of a corporation, flexibility premiums, as proposed in Trigeorgis, have the effect of increasing the minimum rate of return for a project to qualify for funding.

This category of deviations of behavior from theory can be classified as strategic imperatives. In studies conducted by Donaldson and Lorsch and summarized in their book, *Decision Making at the Top* (1983, pp. 7-8), the primary considerations of the executives questioned were the long-term survivability of the company and corporate wealth. Corporate wealth as used in Donaldson and Lorsch is an expansion on the modern concept of Enterprise Value. Corporate wealth adds to financial assets the value of supplier relationships, employee relationships, and market position. Donaldson and

Lorsch (1983, pp. 162-163) concluded that corporate wealth gives managers the greatest self-sufficiency in relation to capital markets and therefore the greatest command over factors of production.

Deviations from theory such as those described by Trigeorgis (2000) and Donaldson and Lorsch (1983) are frequently dismissed as agency costs resulting from self-aggrandizement, empire building, shirking, information asymmetries, disequilibrium in the compensation of corporate managers, and inappropriate risk aversion (Broussard, Benchenroth, and Pilotte, 2004, Parrino, Poteshman, and Weisbach, 2005). Contrary to these explanations, Donaldson Lorsch (1983, p. 21 - 22) found all but one group of managers in the sample said personal financial conditions were not a factor in decision-making and the desire to “excel” was paramount in each case. These points are confirmed in Collins (2001, pp.21, 49), citing commitment to ambition for the company, and no correlation in compensation and performance in what Collins refers to as “Level Five Leaders.” It is important to note, the stock returns of his “Good to Great” companies outperformed the general market 8.4 to 1 from 1965 to 2000 (Collins, 2001, p. 4).

In one case in the Donaldson and Lorsch (1983, p. 42) study the statement “make an annual return on our sales and our invested capital as good or better than any other company in the industry” is listed tenth on a list of ten governing principles of the company. According to traditional capital budgeting theory, there are fundamental errors in this principle. The required return is being determined by an industry standard and not by market-related risk correlation. Unless the industry is mature, with few growth opportunities, such a statement could compel this firm to seek excess returns as standard operating policy. This type of decision-making could be described as risk management by benchmarking. Theory would require the firm to quantify only that portion of its risk that is attributable to systematic conditions (since firm-specific and industry risk are eliminated through diversification) and calculate the appropriate compensating factor. Further, as first presented in Sharpe (1964), the relevant risk is not even the whole

systematic risk, but only the marginal contribution of systematic risk to the market portfolio which would certainly be substantially different from industry bench-marking.

Another deviation from theory explored in Donaldson and Lorsch (1983, pp. 50, 162) is management's general preference for independence from the capital market for marginal cash requirements of the current business. Theory would require new capital from the capital markets to be secured until the marginal cost of new capital exceeds the marginal benefits of new projects. Donaldson and Lorsch (pp. 69, 72-73) say that management will often prefer market share and industry rank measurements as their primary external bench-mark for success, and will calculate required rates internal to the firm, as discussed above, rather than turning to the securities markets and market performance for guidance.

The final point of the Donaldson and Lorsch (1983, p. 73) work is management generally uses established belief systems as a basis for decision making. These beliefs are built on a history of achievement both in the capital markets and in the industries in which they compete. On the basis of these accumulated beliefs, emphasis is consistently placed on managing firm-specific risk so that it does not impact return or long-term stability. This point is supported by the assertion in McNulty, Yeh, Schulze, and Lubatkin (2002), because management can control risk through sound practices and principles they will require greater returns. McNulty, Yeh, Schulze and Lubatkin is anticipated in the literature by Trigeorgis (2000, pp. 121-123) in the presented concept of "expanded NPV."

Further evidence exists in legal precedent. The legal cases of *Brane v. Roth*<sup>2</sup> and *Compaq Securities Litigation*<sup>3</sup>, discussed in Smithson (1998, pp. 493 - 497), are cases dealing with risk management policy. In *Brane v. Roth* the Indiana Court of Appeals held at fault corporate management and directors for not adequately hedging and controlling for financial risk. In *Compaq Securities Litigation*, although settled before

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<sup>2</sup> 590 N.E. 2d 587 (ind. Ct. App. 1992)

<sup>3</sup> 848 F. Supp. 1307 (S.D. Tex. 1993)

going to trial, the courts agreed to hear the case on the same premise as *Bane*. For a court to rule directors or managers culpable in a business decision where there is no evidence of criminal behavior, the absence of the application of solid business judgment in the execution of their duties must be shown (Smithson, p. 493). To reach this conclusion, the court must determine the natural and normal actions of management in general to be to inform themselves of the means to control for these risks. In *Brane v. Roth*, as 90% of the income resulted from grain sales, the courts determined that a failure to hedge was due to a failure to be informed about hedging opportunities (Smithson, p. 494). This is an important statement, because it implies that the typical prudent manager, if properly informed, will control for firm-specific risk in this circumstance. At issue in the case of *Brane v. Roth* was the firm-specific risk of grain price variability. Although it is certainly possible for courts to get it wrong from their lack of financial sophistication, it is also true the process of discovery and defense in a case like *Brane* is significant. It is therefore likely all relevant points were considered, and the Indiana court ruled in favor of the plaintiff in the original case and on appeal.

*Compaq Securities Litigation* is somewhat less relevant to the point as it was primarily a securities case and was ultimately settled out of court (Smithson, 1998, p. 495). However, it provides an example in which shareholders perceived a failure of *Compaq* to disclose a substantial un-hedged exposure to foreign currency risk as material because it would otherwise have influenced shareholders decisions on how to invest. These cases provide strong support for the proposition management generally and broadly accounts for and seeks to control all forms of firm-specific risk and the disclosure of such risk is important to the investment decisions of shareholders. In both cases, for the behavior of the directors to be acceptable by the business judgment rule, they would have had to show how they were familiar with all firm risks and had availed themselves and investors of all information regarding opportunities to eliminate or protect against such risk.

Although the law does not require management to accept one specific option over another, it does require management to avail itself of all reasonable information regarding

likely options (Smithson, 1998, p. 494). Brane is a clear example of the courts considering the management of firm-specific risk as a realistic option requiring must research and consideration. Compaq is additional example of the court being willing to hear a similar case. In other words Brane is not an isolated example.

Whether dealing in financial risk management or the mitigation of any other firm specific risk, actions by management to lesson the impact of risk or to require greater rates of return to compensate for the diversifiable portion of risk is simply contrary to generally accepted financial budgeting theory. According to Smithson (1998, pp. 477, 481 - 482) British Petroleum, Mobile Oil Corporation<sup>4</sup>, Eastman Kodak, and Dow Chemical all employ a form of financial risk management called Value at Risk. Among the diversifiable risks managed as part of the Value at Risk approaches employed in these companies are: currency risk, oil price risk, and commodity prices, all of which are diversifiable (Smithson, pp. 477, 481 - 482).

Haushalter (2000) presents further evidence from the oil and gas industry. Of the 97 sample firms, 43 employed some form of hedging activity in 1992, 49 of 98 in 1993, and 57 of 97 in 1994. Further, Haushalter presents data from other studies<sup>5</sup> highlighting the extent of hedging in the gold mining industry and in the Fortune 500. In a sample of 48 companies in the gold mining industry 84% used some form of hedging in the years 1990 – 1993. Of the 372 companies in the Fortune 500 having some foreign currency risk 41.4% employ hedging strategies.

The Honeywell corporate risk management story is one of consistent reduction in firm-specific diversifiable risk.<sup>6</sup> The Honeywell case describes the following categories of risk as historically insured, as part of the normal course of business: general liability,

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<sup>4</sup> Now Exxon Mobile

<sup>5</sup> Data for the Mining industry are cited in Haushalter (2000) from Tufano (1996), “Who manages risk? An empirical analysis of risk management practices in the gold mining industry,” *Journal of Finance* 51  
Data for the Fortune 500 companies are cited in Haushalter (2000) from Geczy, Minton, and Schrand (1997), “Why firms use currency derivatives,” *Journal of Finance* 52

Neither the Tufano nor Geczy et al studies are directly reviewed for this thesis.

<sup>6</sup> All information regarding Honeywell’s risk management is cited from Harvard Business School Case 9-200-036 July 12, 2000.

property, product liability, automobile liability, employer liability, ocean marine transit, and workers compensation. Additionally, Honeywell manages the following risk categories: Currency risk, interest rate risk, credit risk, liquidity risk, pension fund risk, operational risk, competitive risk, environmental risk, technological risk, legal risk, market risks, and regulatory risk (Barnett and Meulbroek, 2000). Most of these are firm specific and diversifiable. Although some of these are due to covenants outside of the control of management, competitive risk and environmental risk – listed among the many targeted sources of risk in the Honeywell case – are certainly firm-specific in the most acute definition of the term.

Smithson (1998, pp. 367 - 369) presents similar categories of risk management in a section reviewing a “Trend toward Integrated Risk Measure” in the banking and financial industries. These categories include: transaction processing, liquidity management, organizational structure, personnel, and compliance.

The stated goal of Honeywell’s risk management efforts is to “...minimize earnings volatility and its ‘cost of risk’...” (Barnett and Meulbroek, 2000). Since earnings volatility is the result of both firm-specific and systematic risk it is relevant that Honeywell does not make the distinction between the two in their risk management objectives.

A concept touched upon in the Honeywell case, and then further confirmed by Slywotzky and Drzik (2005), is the emerging field of enterprise risk management. This concept departs from traditional theory in two ways. It is an additional example of a management practice seeking to lessen the impact of firm-specific uncertainty. Under enterprise risk theory, firm risk is managed as a portfolio. All risks, financial, operating, legal, etc. are combined and managed as an aggregated whole (Slywotzky and Drzik, 2005, Barnett and Meulbroek, 2000). Current financial theory implies the portfolio management approach to project risk is inefficient because it will not result in any additional increase in shareholder-wealth, as shareholders will not pay for a service which they can perform for themselves at minimum cost (Ross, Westerfield, and Jaffe,

2002, pp 834 - 835). Portfolio management of risk exposure or risk diversification falls into this category. The conglomerates of the early and mid twentieth century were an early attempt by corporate management to mitigate firm-specific risk through portfolio methodologies. Financial theory treats portfolio risk management and unrelated corporate diversification, as activities resulting in reductions in stock price if they do not achieve some other economic benefit otherwise unavailable to shareholders (Doukas and Kan, 2004, and Ross, Westerfield, and Jaffe, 2002, pp. 834 - 835). But management, even best practices management such as Honeywell, continues to engage in these endeavors.

Agency theory concludes most of these problems occur due to principle-agent conflicts. A body of work studying the effects of tying management closely to the interest of shareholders, so as to eliminate some of the perceived cost of the principal agent problem, has sought to identify correlations between compensation and risk management behavior (Broussard, Buchenroth, and Pilotte, 2004, Parrino, Poteshman, and Weisbach, 2005). The literature is negative to inconclusive as to whether there is compensation-motivated risk aversion in senior management. Collins (2001, p. 49), and Donaldson and Lorsch (1983, pp. 21-22) found no correlation between compensation and corporate decision-making. Parrino, Poteshman, and Weisbach (2005) found a positive relationship between equity compensation and increased risk aversion, accordingly, increasing equity compensation will cause greater departures from theoretically appropriate behavior, inducing managers to take on NPV negative projects that lower overall firm risk. Although the effect they observe was non-linear, the conclusions of Parrino, Poteshman, and Weisbach (2005) are consistent with the Donaldson and Lorsch (p.8) observation managers will seek to increase survivability, a tendency which is increased the greater the level of manager wealth that is invested in the corporation.

Parrino, Poteshman, and Weishach (2005) show that the effect of financially tying management to the well being of shareholders is greater risk aversion. Holding risk-aversion fixed, the NPV positiveness of marginal projects increases exponentially with increases in both the total percentage of the manager's wealth in corporate equity and the

volatility of firm asset values. Although materially weaker, the observation holds for options as well (Parrino, Poteshman, and Weisbach, 2005).

The most meaningful observation in Parrino, Poteshman, and Weisbach (2005) is in the fifteen companies studied managers will accept negative and zero NPV projects if their relative volatility is less than the firm's volatility. This is a clear attempt by management to lower overall firm volatility by portfolio methods. Parrino, Poteshman, and Weisbach (2005) argue the deviation from optimal behavior that arises from management risk aversion has a greater impact on project selection than the deviation due to shareholder/lender conflicts.

A failure to accept NPV positive projects that the company has the financial and operational capacity to fund runs contrary to theory. That management would exacerbate these tendencies in spite of increased compensation in the form of equity compensation provides additional support for the proposition management is determined to engage in risk-mitigating behavior not consistent with received capital budgeting theory. The management of fifteen firms confirms this observation (Parrino, Poteshman, and Weisbach, 2005). Coupled with the qualitative findings in Barnett and Meulbroek (2000), and Haushalter (2000), corporate managers hold that the management of diversifiable risk is in the interest of the corporations.

Additional evidence of management efforts to increase protection against firm-specific uncertainties comes in the form of corporate diversification outside of a single-industry – the classic conglomerate. Dukas and Kan (2004) find Corporations enter into cross-industry investment activities because growth opportunities are constrained for the single industry firm, and by extension, management believes it can do a better job of allocating capital than the public markets, given the same investment opportunities. However, traditional capital budgeting and portfolio theory says investors will not pay a premium for something they are able to do themselves at a minimal cost. Accordingly, many conglomerates trade at a discount compared to what the same group of operating business, if individually traded, would be worth. An additional hypothesis that has been

developed is the inefficient investment hypothesis; not only will investors not pay a premium, but also, management rarely does an adequate job of managing the internal capital market. Ahn and Denis (2004) find evidence in their review of this question to support the inefficient investment hypothesis.

Although this paper is not a defense of corporate diversification as a proper means to reduce exposure to firm-specific risk, the example of corporate diversification adds to the observational evidence of the practice of the management persistently taking actions contrary to traditional investment theory. Of the 10,128 domestic mergers in the period of 1991 – 1997, 742, or roughly 7% of them were mergers executed by firms unrelated to the target company, thus showing the unrelated merger not to be an isolated phenomenon (Doukas and Kan, 2004). Further, as evidenced in Ahn and Denis (2004), internal capital markets allocate assets to divisions having low Tobin's  $Q^7$  ratings in a manner that is statistically similar to the levels of investment by stand-alone firms in the same sector. However, they also found managers systemically under investing in divisions with the highest  $Q$ 's. This shows that managers make capital allocation decisions for reasons other than stand-alone mean-variance trade-off optimization.

Ahn and Denis (2004) also concluded the cost of debt service (interest and principle) and equity service (dividends) are generally allocated uniformly across all divisions of a diversified conglomerate, as opposed to matching debt obligations with the highest  $Q$  opportunities and dividend obligations with the lowest. As these results are consistent across the sample of firms, one can infer the practice of corporate managers treating multiple operating divisions as a portfolio, and not, as theory would have it, as a collection of stand alone business (Ahn and Denis, 2004).

Because Ahn and Denis (2004) focus on firms having done spin-offs, they conclude there may be some bias in the sample towards conglomerates which have

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<sup>7</sup> Tobin's  $Q$  is the ratio of the market value of the firm's stock and debt divided by the replacement cost of the firms assets (Ross, Westerfield, and Jaffe, 2002)

inefficient internal capital markets. Accordingly, the presence of diversification is taken only as suggestive of management behavior contrary to capital theory.

Bates (2005) makes a study of capital allocation decisions in having divested divisions or companies. He says management will hold cash in proportion to the company's history of income volatility. To a certain extent this is appropriate, but Bates offers evidence of infrequently optimal cash retention decisions. This is additional support to conclude management will sacrifice income to achieve stability. Further, Bates supports the conclusions of Parrino, Poteshman, and Weisbach (2005), the greater the alignment of management with the interest of shareholders through equity ownership, the more likely it is that management will adopt decisions to retain the proceeds from the sale of divested assets. Retention despite the possibility of over leverage, under leverage, or over investment is not theoretically optimal, especially in view of the tendency of divesting and retaining firms to invest more than their SIC peer group (Bates, 2005).

Further evidence in Miller, Wiseman, and Gomez-Mejia (2002) suggesting the relationship between the alignment of managers with the interest of shareholders and the level of accepted risk is not linear but concave, that is, decreasing at an increasing rate. The higher the contingent pay of the executive, the lower the firm-specific risk. This relationship is stronger in the case of firm-specific risk than systematic risk.

Miller, Wiseman, and Gomez-Mejia (2002) support two hypotheses regarding the use of performance pay by principals. Holding the extent to which agents can control outcomes fixed, they find principals lower the use of performance pay when firm-specific uncertainty is low. When considered in light of the conclusions of Parrino, Poteshman, and Weisbach (2005) regarding increasing managerial conservativeness with increases in pay for performance, it is clear management not only tends to deviate from theory, but deviates even when shareholders provide compensation schemes penalizing deviation. Supporting this conclusion Miller, Wiseman, and Gomez-Mejia (2002) report managers typically select projects with high management influence over the outcome. Further, these projects typically fall in the range of median firm-specific risk. For managers to

seek projects where all uncertainties can be managed entails a potential selection bias and is consistent with the benefits of managerial flexibility, as suggested in Trigeorgis (2000) and Donaldson and Lorsch (1983) as previously cited.

There is evidence that management makes capital allocation and project selection decisions based on criteria that deviate from standard capital budgeting and asset pricing theories. Evidence supports the view these tendencies are increasing in the presence of alignment of shareholder and management interest through stock or pay-for-performance rules. Additionally, this behavior exists throughout the economy regardless of firm size, history, type and structure of ownership, or quality of management. The question remains: Why is this disparity between theory and practice present, and is it in the interest of shareholders? Section II presents the theoretical case that this deviation in behavior from theory is rational, in the ultimate interests of the shareholders, and not due to a principal/agent conflict.

### **Chapter 3: Support of Disparity in Risk Management Theory and Practice**

Evidence presented in Section I of this review illustrated a departure by corporate managers from conventional risk management theory. This departure is generally attributed in the literature to principal agent conflicts between equity shareholders and corporate managers (Miller, Wiseman, and Gomez-Mejia, 2002; Broussard, Buchenroth, and Pilotte, 2004; and Parrino, Poteshaman, and Weisbach, 2005). It appears management will require greater rates of return than are theoretically appropriate and spend firm resources and capital on the management of firm-specific risk, risk theory asserts should not be managed at the firm level because investors can diversify it away. There is a strong case to be made supporting the primary reason for these disparities is management is generally committed to the purpose of their work (the maximization of shareholder wealth) and the requirement of greater returns for riskier projects and the management of firm-specific risk are in the interest of shareholders.

This thesis supports the following hypothesis. There is an economically coherent case for a departure from the traditional theory of the capital planning and risk management processes at the firm level, as an extension of existing capital market theory. This proposition is not a refutation of the work in this area that has been compiled over the past fifty years. Well-diversified investors will not require a compensatory return for the assumption of firm-specific risk when pricing financial assets. Moreover, as reflected in capital pricing models such as the CAPM and the arbitrage-pricing model, well-diversified investors will only consider the marginal contribution of the undiversifiable risk of an asset (Brigham and Houston, 1998, p. 168, and Trigeorgis, 2000, pp. 43-44). However, neither the complete elimination of compensatory returns for firm-specific risk nor the elimination of risk management methods for the management of the same risk at the firm level is appropriate when allocating real assets within a business. In addition to being broadly observed in the policies of corporate management as presented in Section I, this deviation from theory in risk management policies benefits shareholders. According to Miles (2002, p. 21), upon acquiring new subsidiaries Warren Buffett, Chairman of Berkshire Hathaway instructs operating managers of those companies as follows:

“...we give our managers a simple mission: Just run your business as if: (1) you own 100% of it; (2) it is the only asset in the world that you and your family have or will ever have; and, (3) you can't sell or merge it for at least a century...”

With the stipulations in this quotation, Mr. Buffett is instructing his managers to act in direct contravention to received financial theory. Under the hypothetical conditions described, managers must manage for all risks in decision-making and capital budgeting policies. With over 40 non-financial, wholly owned subsidiaries<sup>8</sup> and dozens of large capital positions in common equity, debt, and structured financial operations, Berkshire Hathaway is certainly well diversified. So, why would its Chairman ask its subsidiary executives to manage as if they were stand-alone entities containing 100% of their families' wealth? The combination of the widespread practice of firm-specific risk management exhibited in Section I and the affirming opinions from the investment

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<sup>8</sup> Source: [www.berkshirehathaway.com](http://www.berkshirehathaway.com) ; accessed 11/28/2005

community suggesting the management of all risks may be appropriate risk management policy. Factors affecting the economics of the firm and the capital budgeting process combine with these qualitative observations and statements to suggesting traditional security pricing theories are incomplete with respect to capital budgeting and corporate risk management.

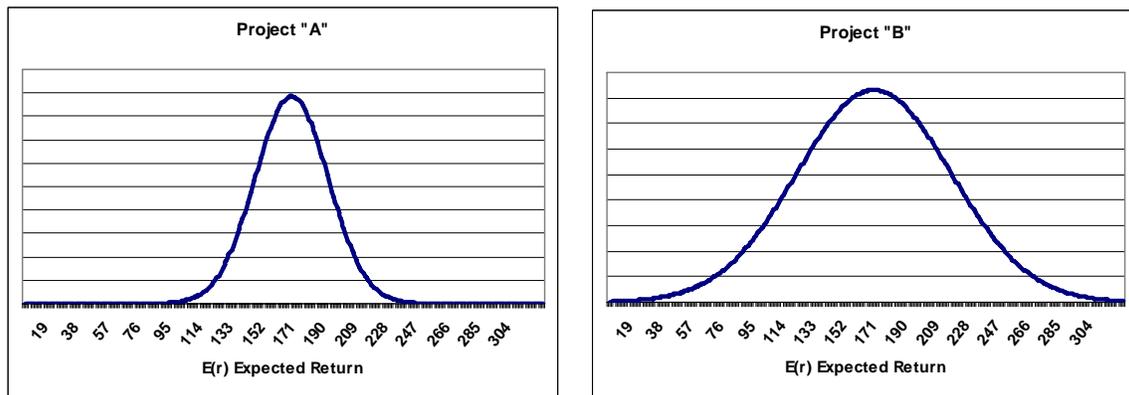
### Section I. Current Theory

Traditional theory states investors will only require returns compensating them for the marginal addition of systematic risk of a specific investment opportunity (Sharpe, 1964). Systematic risk is future uncertainty resulting from exposure to exogenous macro-economic events affecting the prices of all securities and cannot be diversified away. Energy shocks, monetary policy, government fiscal policy, and market fluctuations are all examples of the sources of systematic risk. Because a financial security is only as risky as its marginal contribution of systematic risk to a well-diversified portfolio of investments, traditional theory states an investor is not concerned with firm-specific risks (Ross, Westerfield, and Jaffe, p. 263). Firm-specific risk is uncertainty affecting only a single firm or single industry, such as operating failures, decreases in industry demand, increases in prices of inputs, waste dumping costs, exposure to fire, unions, workers law suits, etc.

Investors are able to ignore risks affecting only a single firm because their well-diversified portfolios include uncorrelated investments in the securities of other firms. Because the firm-specific risks a portfolio is exposed to are uncorrelated, this type of exposure requires no management at the firm level. Due to the hedging effects of portfolio management, investors do not require a compensatory return for the assumption of firm-specific risk and therefore are willing to pay more for expected cash flows than a fully risk-adjusted security price would justify (Ross, Westerfield, and Jaffe, 2002, p.296). The processes of bidding the prices of securities up lowers expected returns to a rate adjusted only for systematic risk. It is this fact which makes the elimination of

compensation for firm specific risk an accepted result of theory and not a normative assertion, when dealing with financial securities.

Because investors, the theory goes, have protected themselves from firm-specific risk, they will not require corporate managers of the underlying companies to manage for or require returns sufficient to compensate for firm-specific risk when managing operations or making capital budgeting decisions (Brigham and Houston, 1998, p. 188). An example of this is illustrated in figure 2.1. In this figure both project (a) and project (b) have the same expected return, but they have different standard deviations of return. The extension of the current securities pricing theory to capital budgeting says a corporate manager should require the same return on investment for both of these projects, as long as the difference in the standard deviations of these two distributions is due to differences in firm-specific risk.



*Figure 3.1 Normal distributions with equal means and different standard deviations*

According to received theory, no additional return is required. No capital should be expended to manage exposure to diversifiable risk. Projects should be undertaken whenever the marginal return exceeds the marginal cost of capital, adjusted for systematic risk. However, there is a different interpretation under which the observed behavior of management is aligned with shareholders interests.

## Section II. Structural Disequilibrium in Risk Environments

Comparison of the markets for financial securities and real assets reveals some structural differences in risk environments supporting the need for different investment policies in each. Under modern conditions there is very little risk a financial investor cannot diversify. With the exception of the complete collapse of the world financial markets or other systematic failures, investors, through the use of derivatives, structured financial securities, and advanced portfolio techniques can diversify away just about every form of firm-specific and systematic risk. In contrast, a firm is unavoidably exposed to all risks inherent to its industry and operating conditions. In spite of these risks, the management of the firm is expected to achieve value-maximizing results. Investors get all of the absolute return and part of the expected variance, while the firm and the productive inputs of the firm are exposed to all of the variance. This disparity in risk between the individual shareholder and the corporation as an entity creates a disparity in the nature and purpose of the two forms of investment.

These disparate focuses suggest a basis for divergent risk management strategies. The strategies of financial markets cannot properly be extended to the firm. A financial investor has the advantage of: extensive diversifiability, limited exposure to loss, frictionless abandonment, and independent probabilities of period-to-period returns in efficient markets. The firm however is: industry or sector-focused, subject to limitless claims on its current and future assets, limited by varying levels of illiquidity for its fixed investments once employed, and dependent upon previous period results for future period investments. These four conditions result in a different capacity for risk taking.

The financial securities investment process benefits not only from the opportunity to diversify, but also from the limited liability that stems from the absence of contingent claims. Unless the equity position is levered, the most that an investor can lose from a given investment is his total investment in the position. A firm however, can lose many times the amount of its initial investment in a specific project because of the firm's liability for the costs of its actions. This disparity in relative exposure increases an

investor's capacity for risk taking, and investors are therefore willing to accept prices for the securities of a firm that are not discounted for all risk.

Another source of differences between the two markets for investment is the relative cost of abandonment. An investor in the financial markets can abandon a position at will with little transaction cost. (Transaction cost is affected by the size of a position.) The increase in value associated with frictionless transfer is analogous to having a continuous option on the decision to hold a position. There is no commitment return premium to be had. Accordingly, stock prices increase as market liquidity is created in daily trading activity. Conversely, real assets are not easily disposed of. In some industries there is no market for used equipment, and the time to sell real assets can be lengthy. Some real assets are considered sunk or fully depreciated the moment they are employed. These fixed expenditures are completely illiquid, and variable costs are lost the moment they are expended. This relative illiquidity, combined with the potential for ongoing and incremental loss, results in hesitancy of corporate management to commit itself, thus decreasing the demand for capital goods, resulting in lower prices for these goods and greater potential returns once they are finally deployed.

The final element of structural difference is the amount of correlation in period-to-period returns in the two markets. The moment-to-moment fluctuations in stock price do not affect the expected return. Percent changes in stock prices are random and uncorrelated with previous period percent changes in stock prices (Bernstein, 1992, pp. 94-98). In dealing with real asset investments, this is not the case. Return performance in a previous period can impact future returns.

Once employed in a productive endeavor real assets are committed. Their costs are sunk. Accordingly, the relative earning power of resources in period  $n + 3$  are contingent upon the state of the cash-flows to those resources in period  $n + 2$ . This is true because a firm must invest incremental resources in period three to achieve returns in period three. Poor performance in period two will lower the overall willingness or ability to commit incremental resources in future periods. In the financial markets, all that is

necessary to experience return in period three is to not sell the financial asset in period two. This disparity creates two dissimilar statistical realities; realities that go directly to risk tolerance and the transferability of risk management strategies.

From these four conditions – extensive diversifiability, limited exposure to loss, frictionless abandonment, and independent period-to-period returns in efficient markets – it is possible to develop the basis for a deviation in optimal risk management strategies for investment in financial securities and real assets. Whether through method or construct, the combination of these attributes will cause equilibrium in the market for equity securities to be achieved at lower rates of return than in the market for the real assets of the underlying company.

This comparison is material to the question of rational disparity in risk management strategies because the differences in risk environments in the markets for financial assets and real assets impact the competitiveness and value of the corporation. Adaptation to the risk profiles of shareholders will result in the firm accepting risk which it will not accumulate resources sufficient to manage. This failure to deviate from theory of capital markets would have deleterious results for firms' shareholders. The economic justifiability of deviating from received theory is supported by two principal arguments: (1) a failure to manage diversifiable risks in the corporate budgeting process and operations can lead to productive resource scarcity resulting in the impairment of earning power, (2) a failure to manage diversifiable risk or require compensatory returns for risk reduces the ability of the firm to achieve an optimal balance sheet, resulting in greater capital costs and investment inefficiencies. Both arguments have a direct effect on the stock price of the firm. These two arguments provide the theoretical justification for widely observed management behavior.

### Section III. The Impact of Resource Scarcity on Firm Value

For an economic recommendation to have merit, it must yield increases in the wealth of shareholders. The soundness of the management behavior cited in Section I is

supported by economic considerations with respect to both the operating strength and the value of the firm. An increase in the probability of bankruptcy or financial distress can lead to scarcity in the factors of production for a firm. This scarcity can result in the reduction of earning power, strategic flexibility and share price. Not managing these risks can impair future access to the factors of production. Further evidence suggests securities markets acknowledge the value of resource stability and reflect it in stock prices.

Evidence presented in Dichev and Piotroski (2001) indicate a material market response, through negative changes in stock price, to resource scarcity and access to capital. They compare the changes in stock price following a change in bond ratings by Moody's rating service. For upgrades in bond ratings the data show 4 increases in stock price over the measurement period to every 1 decrease in stock price. The data is indicative of an upward correlation. For down grades the data is much stronger in favor of correlation. For every downgrade in bond ratings there is 1 increase in stock price for every 15 decreases in stock price. Further, Dichev and Piotroski (2001) observe further reductions in stock price persisting for at least a year and averaging 10 to 14%. Further, their evidence shows down grades in bond ratings anticipating future down grades and financial distress.

Interviews with corporate managers reported in Donaldson and Lorsch (1983, pp. 31, 66) reveal a struggle to balance the needs of all stakeholders in an effort to balance the corporate system and achieve survivability. Jensen and Meckling (1976) describe the corporation as a device that organizes and allocates conflicting inputs into a state of outcome-focused "equilibrium." Resource scarcity combined with the dynamic market for resources heightens the sensitivities to short-run volatility of two primary inputs to the firm production process – supplies and labor.

Donaldson and Lorsch (1983, p. 34) argue traditional capital budgeting theory does not account for the varying interests of the factors of production. This point is further supported by Trigeorgis (2000, Pp. 7-9), who points to strategic planning and

capital budgeting as very different disciplines not yet reconciled. Adopting policies compromising the flexibility and financial stability of a firm through a failure to maintain sufficient cash flow, or insure against all material risks, places stability at risk and can result in an inability to secure necessary resources. This failure will have a direct impact on earning power and exacerbate resource scarcity.

An investor requires a certain level of return, commensurate with the risk assumed because future returns are not certain. Regardless of whether an investor can diversify away firm specific risk, the firm will experience the distribution of potential outcomes unique to itself and its industry. The result of firm, industry, and systemic uncertainties is an expected variation in future cash-flow which the firm can either manage, or ignore. Received theory supports the policy of neutrality toward firm-specific risk because investors can diversify away their individual exposure. A failure to manage all uncertainties can result in inefficient resource utilization or impaired competitiveness. Both will ultimately erode value.

In a competitive industry with a long-run zero profit equilibrium, the production decisions of the firm are constrained by the market demand for its product (Browning and Zupon, 1999, pp. 222-223). In the short-run, firms compete for market share and productive resources. An important factor in achieving resource stability is the ability to achieve returns sufficient to assure the continuation of current operations. A failure to achieve the requisite level of return will not only affect the firm's implicit cost of equity, but will also fail to generate the resources necessary to support current operations. From a simple cost function analysis, a failure to account for the implicit fixed costs of firm/industry specific variability will result in a sub optimal total cost curve for the firm (Browning and Zupon, pp. 210, 222). An inaccurately assessed total cost function of the firm will result in a sub-optimal productive resource and capacity mix. The corresponding shift in the marginal cost curve results in either a consistent over production or under production and either an erosion of resources or a deficiency in relative competitiveness.

This sub-optimal resource mix causes a firm to favor other resources in lieu of capital, or over consume capital at the expense of other resources. Depending on the error in estimating the implicit fixed costs of capital requirements, a firm will expend its resources at a greater rate than they will be replenished, or the firm will fail to capitalize on opportunities, lose market share and not remain long-run competitive. In a competitive industry, the short-run industry supply curve is a summation of the supply curves of the individual firms. If a firm is managed sub-optimally, another market participant will necessarily gain that foregone portion of the market.

If the neutrality of the received theory towards diversifiable risk were adopted and strictly adhered to as corporate risk management policy, firms would take on increasing levels of firm-specific risk. This would have the compounding effect of consistently increasing exposure to unmanaged risk. Resource scarcity would increase and value would ultimately suffer.

Although the economic support for the assertion unmanaged risk will result in future resource scarcity is basic, whether this resource jeopardy matters in the returns on common equity is another matter. Evidence and theory indicate impacted value reflected by the capital markets. The observed deviation of corporate risk management policy from received theory may directly result in higher variance adjusted rates of return to the owners of common stock.

Evidence of how the financial markets interpret resource impairment is found in price interpretations known as the signaling effect. The signaling effect of dividends as presented in Ross, Westerfield, Jaffe (2002, pp. 514-515) and Brigham and Houston (1998, pp. 547-550) has a material impact on the value of the firm because shareholders see a reduction in dividends as an indicator of financial impairment. From this inference, investors will make assumptions about the future viability and begin to discount share price.

Smithson (1998, pp. 505 - 516) presents multiple ways hedging activities increase value. Two of the most relevant are realized by reducing the cost of distress and by preventing under-investment. The cost of distress differs somewhat from the cost of bankruptcy. Smithson ( p.505) defines default as “...income is insufficient to cover its [the firm’s] fixed claims.” Default does not always lead to bankruptcy. It is proper to treat the analysis of an increase in the probability of bankruptcy as presented in Parrino, Poteshman, and Weisbach (2005) separately from the cost of distress, as distress is far more likely to occur especially for large, established firms. Smithson (p. 505) like Parrino, Poteshman, and Weisbach (2005), believe income variability contributes to increased probability of financial distress. But unlike bankruptcy, which usually results in restructuring or liquidation, financially distressed firms can operate in that state for extended periods of time. The increase in the probability of distress, and the duration of stress when it occurs, combine to extend to shareholders both explicit and implicit costs.

Smithson (1998, pp. 505-506) lists reorganization, bankruptcy, liquidation as explicit costs potentially suffered by distressed firms. These result as costs to equity holders as new financing costs, legal fees, forgone investment opportunity, and asset impairment. Implicit costs to the distressed firm, Smithson points out are realized in the impact on customers and suppliers. Customers will factor in distress when there is a demand for high quality and reliable delivery. Consumers will assume a financially distressed firm will reduce quality in an effort to save costs. When contingent claims exist such as warranties, services contracts, or replacement agreements, consumers will discount the value of these services, reducing demand for the firm’s goods and services. Suppliers will be less likely to extend credit terms and make long-run sourcing agreements. The combination of the two is higher input prices and lower demand for products and services (Smithson, pp. 506-507). Because of the explicit costs of distress a firm and its shareholders will experience a very unsatisfactory return. The findings of Haushalter (2000) confirm these conclusions, pointing to a reduction in contracting costs and a positive relationship between the extent to which a firm uses hedging strategies and its leverage.

Smithson (1998, pp. 507-516) argues that hedging activities can help to control under investment. Stating firms will turn down projects with positive net present value in an attempt to avoid bankruptcy Smithson (p.507) confirms Parrino, Poteshman, and Weisbach (2005) when he asserts lowering the probability of bankruptcy or distress and bringing shareholder interest in line with creditor interests through the use of hedging strategies. Smithson (p. 508) underscores the point, highly leveraged firms, with highly uncertain operating income will under-invest in NPV positive projects because these projects benefit the bondholders and not shareholders.

Bates (2005) presents data showing divesting firms choosing to retain the proceeds of the sale experience higher ratios of market value to book value in the divesting year and the year following than firms buying back debt or paying out to shareholders. This is an additional example of how eliminating resource scarcity through resource retention can increase value. If, under conditions of managed risk shareholder/bondholder conflict is eliminated, as proposed in Parrino, Poteshman, and Weisbach (2005), and optimal investment behavior increases as argued in Smithson (1998, p.508), it follows, value will accrue to firms that maintain resource surpluses. Expanding on this concept, resource surpluses include both the resources currently represented on the balance sheet and those that are accessible, but have yet to be raised. Dichev and Piotroski (2001) demonstrate how a reduction in bond ratings is consistently preceded by decreases in the ratio of market capitalization to book-value. Particularly material is the conclusion of Dichev and Piotroski (2001) citing default risk (a function of firm-specific conditions) as a leading factor in down-grades. That the market anticipates these down-grades is evidence of firm value reflecting resource scarcity.

If the pattern of value created from retaining assets presented in Bates (2005), and value lost as presented in Dichev and Piotroski (2001), extends to all sources of future resources: unused debt capacity, internal funds, supplier agreements and relationships, and employee welfare, then there is support for the general proposition of resource scarcity as a threat to shareholder value, and resource surpluses (both current resources held by the corporation and new resources available) its safeguard. Kaplan and Zingales

(1997) anticipate Bates (2005) concluding that the firms in their study with the greatest financial security are also the ones that use internal capital as their primary source of funds.

An advantage of resource surplus is strategic flexibility. Strategic flexibility is valued in the financial markets for more than just the avoidance of bankruptcy or maintaining access to the factors of production. Evidence suggests the financial markets recognize the benefits of strategic flexibility in security prices (Zhang, 2005). For a given level of future cash flow, a reduction in the price of an asset results in a greater rate of return to the asset. Conversely, an increase in the price of an asset results in a lower rate of return. To extrapolate, other things being equal, the greater the risk relative to the future cash flow, the lower the price of the asset and the higher the rate of return. Therefore, questions have arisen regarding the seemingly counterintuitive relative returns of Value and Growth companies.

Value companies tend to consistently realize greater rates of return than Growth companies. As explained by Zhang (2005), the observed relative returns of these two classes of common equity investments are counterintuitive because Value companies are expecting returns based on established investments, while Growth firms have risk profiles based on capital investments that are yet to be made. Increased exposure to future uncertainties translates to greater exposure to risk, so Growth firms should show consistently greater returns than Value firms (Zhang, 2005). Why then do Value firms, which are exposed to less future uncertainty have consistently higher returns? Although there are other reasons this dichotomy may exist, such as the increases in profitability due to the greater tax benefits of capital gains, the answer may lie in the possibility there is an option premium for growth firms, an increase in the value of an asset as a result of strategic flexibility.

Trigeorgis (2000, pp. 121-124) develops the concept of the option premium or expanded/strategic net present value. The concept uses the benefits of managerial flexibility to derive value premiums in capital project pricing. Because the premium for

managerial flexibility incorporates the value of management's actions after project initiation, option pricing methodologies value opportunities to reduce all risk, including firm risk, with a premium over the net present value equivalent (Trigeorgis, pp. 124-125). This is consistent with the view offered by Parrino, Poteshman, and Weisbach (2005) who state that some managers will accept seemingly NPV negative projects if they appear to lower overall risk. In the context of the option premium discussed in Trigeorgis it may be that managers are simply selecting projects with greater flexibility value.

Hedging, or accepting certain explicit costs to forgo or limit uncertain loss, has a similar effect as managerial flexibility. Limiting downside exposure, through flexibility, while maintaining upside variability, the distribution of expected outcomes will be skewed towards the positive outcomes and increase expected returns (Trigeorgis, 2000, pp. 123-125).

Strategic flexibility is directly rewarded in the securities markets through higher equity prices. Zhang (2005) shows one of the factors in the counterintuitive rates of return from Value and Growth companies to be the value of flexibility resulting in a flexibility premium. Growth companies have greater stock prices, and as a result lower future rates of returns, because their investment decisions have a greater level of flexibility. Flexibility lowers exposure to future uncertainties and therefore generates a premium on the price of the stock.

Consistent with theory, the financial markets will only recognize the value of flexibility to the extent it protects a firm from exogenous systematic shocks. It is also true flexibility is a function of resource stability. Therefore any actions taken to secure short-term resources will result in greater flexibility. The value of future systematic flexibility depends on being able to make future resource allocations in response to unknowable market and industry conditions. If this ability is impaired, so is the value of flexibility resulting in a reduction in stock price. Whether or not the financial markets directly rewards the management of firm-specific risk with higher stock prices, they do punish resource security as evidenced in Dichev and Piotroski (2001), Bates (2005) and

the strategic flexibility as presented in Zhang (2005). Both are the result of the successful management of all risks.

Aside from the premiums offered for stability and strategic flexibility, the value of a firm as a going concern becomes the primary source of loss to investors if resource scarcity is realized. Argued by Miller and Modigliani (1961), dividends and dividend payments do not directly impact the value of the firm. Although there are certainly tertiary effects to dividend payments like the signaling effects listed above, there is no direct relationship.

Therefore, a firm is primarily a store of value; value that is predicated upon the knowledge that a firm *can* pay dividends if the shareholders should desire. Impairment of earning power and a reduction in the competitiveness of the firm increase the probability of bankruptcy, financial distress and liquidation and threaten the continuing value assumption of the firm. In a four industry review: tobacco, sporting goods, skin care, and high tech, Copeland, Koller, and Murrin (2000, p. 268) estimate continuing value can account for 56% to 125% of the stock price. With this percentage of value a function of the long-run health and stability of the firm, it is unlikely that any near-term improvements in financial conditions will offset the reduction in value. Donaldson and Lorsch (1983, p.34) argue the primary concern of management is firm survival. When taken in the context of Copeland, Koller, and Murrin, their theory holds the primary driver behind this emphasis to be shareholder value.

#### Section IV: Wealth Transfer, Agency Costs of Debt and the Optimal Balance Sheet

Equal to the cost of the inability to secure the factors of production is the possibility a firm may impair its stability and be unable to secure access to the debt market. A failure to secure debt at beneficial terms will impair its ability to optimally leverage the balance sheet and maximize shareholder value. Even a conservatively financed company could reduce its total asset control by 40% or more by eliminating access to creditors. As noted in Gordon (1974, p. 2), even in establishing rate of return

policy for public utilities, the United States Supreme Court acknowledged the need to both provide a risk adjusted return to shareholders AND provide a secure and attractive environment for lending.

Jensen and Meckling (1976) set an expectation of agency cost as an inescapable condition of an organization with more than one owner/operator/employee. As discussed later in this paper, Parrino, Poteshman, and Weisbach (2005) illustrate when certain assumptions regarding the wealth transfer between the owners of equity and debt are varied there is no conflict between these two sources of capital. Jensen and Meckling (1976) anticipate Parrino, Poteshman, and Weisbach (2005) offering a business is a collection of competing interest brought together to mutually benefit each other, and to achieve a mutually desired outcome. Jensen and Meckling (1976) cite "...equilibrium..." as a necessary condition between these competing interests. When these conditions are not met the agency cost of debt can be substantial.

Jensen and Meckling (1976) discuss the cost of covenants for a firm. In the form of asset and operational restrictions, to cash impairment in the form of reserves and sinking funds, the costs of these provisions are suffered by the equity holders. As proposed by Jensen and Meckling (1976), if the credit worthiness of the firm comes into question debt holders will extend covenants until the marginal benefit equals the marginal cost of enforcement. This process can eliminate all of the residual cash flows of the firm. In addition to covenants, Jensen and Meckling (1976) explore the cost of debt monitoring. These costs are also born by the equity shareholders of the firm in the form of reporting, auditing, and board-of-directors participation. Monitoring costs and covenants have the effect of increasing the cost of both current and future debt.

Another contributor to capital costs and balance sheet impairment is uncertainty of tax shields from a levered balance sheet. Parrino, Poteshman, and Weisbach (2005) conclude decreases in the value of tax shields and increases in the cost of bankruptcy resulting from increased project variability support lower project variability as a benefit to both shareholders and debt holders. Firms not controlling for all risk will lower the

probability that the value of interest payments as tax shields will be realized. Modigliani and Miller (1958), explore the effects of balance sheet policy on corporate value. In a tax-free environment, Modigliani and Miller argue, the total value of stock and debt of an enterprise will not change with changes in the proportions of the two that comprise the balance sheet. When taxes and the probabilities of bankruptcy are introduced, the real cost of debt increases each time a company reports negative net income. As in the case of monitoring costs and covenants, these increases are born by the owners of equity (Jensen and Meckling, 1976).

Parrino, Poteshman, and Weisbach (2005) calculate the combined gains to shareholders from the increased value of tax shields and the reductions in expected bankruptcy costs to be many times the value of the wealth transfer from creditors to shareholders from increases in assumed project risk. Parrino, Poteshman, and Weisbach (2005) cite a growing body of literature supporting a total risk approach to decision making at the corporate level. Much of this approach can be attributed to balance sheet considerations.

Received capital budgeting theory does not take these benefits into consideration. Two CAPM assumptions are no bankruptcy costs, and no taxes (Trigeorgis, 2000, p. 44). When considered in light of the conclusions of Parrino, Poteshman, and Weisbach (2005) it is not appropriate to analyze capital budgeting without these factors. Jensen and Meckling (1976) confirm this premise and propose conclusions regarding the agency cost of debt. Stating the agency cost of debt further contributes to balance sheet composition as a source of value erosion, Jensen and Meckling increase the importance of conciliation between ownership claims. The most compelling conclusion from this perspective is when all consequences are taken into consideration, both shareholders and bondholders prefer the same lower-risk projects (Parrino, Poteshman, and Weisbach, 2005).

## Chapter 4: Conclusions

Of all the conclusions that emerged from the last four decades of financial markets research, perhaps the most powerful is the idea of rational, smart, and well informed, investors who's participation results in markets which are *generally* rational and efficient. Why then can we not assume the same about the army of corporate managers charged with dispensing resources in an effort to maximize shareholder value?

This study offers evidence supporting the need further work in the extension of capital markets risk theory to the capital budgeting and strategic planning processes. Corporate risk management theory has been born out of a body of work which transformed the investment world. But the evidence shows extensions of the received theory to the capital budgeting process to be inconsistent with the practices of corporate managers. Further, it is challenged by the conclusions of the body of work being done in real options.

Observable behavior and policies show the management of firm-specific risk at the corporate level. Valuation literature, and studies concluded by Parrino, Potesham, and Weisbach (2005), Dichev and Piotroski (2001), Zhang (2005), and Bates (2005) explain why this deviation from theory is in the long-run interest of the shareholders. The economic justification these observations is founded in the reasoning that a failure to manage all material risks increases the probability of financial distress. This increased probability can result in resource scarcity and the impairment of earning power. The impairment of earning power will result in a reduction in the value of the firm.

Additional research into the field of capital budgeting and corporate risk management as extensions of the current theory is needed. As presented in the work of Donaldson and Lorsch (1983), and Collins (2001), there is sufficient qualitative evidence suggesting managers believe they are acting in the best interest of shareholders. This is substantively confirmed in the conclusions of Parrino, Potesham, and Weisbach (2005) as management acted increasingly risk averse when they were shareholders themselves.

The micro-economic case made in Section II of this study supports the merit in the observed behavior. This effort is currently being spearheaded by the work done in real options, which can be considered an activity providing a hedge against firm-specific risk.

The same concept needs to be extended to the study of other methods to eliminate, manage for, or compensate for exposure to firm-specific risk. The impact on long-run rates of returns, betas, and the analysis of Sharpe ratios on *ex post* data, both against the market and their peer groups, for firms that engage in structural efforts to reduce firm-specific risk such as diversification, joint ventures, and special purpose vehicles; financial methods to hedge, insure against, or eliminate risk; and, return requirements compensating for exposure, all must be examined. Findings from Dichev and Piotroski (2001) lend support to the calculations of a strong negative correlation between firm value and policies to ignore diversifiable risk.

Although market efficiencies, random price changes, and the elimination of firm-specific risk at the firm level will not result in greater returns over time are generally conceded points in received theory as summarized in Bernstein (1992, Pp. 94-98), if firms with long-term firm-specific risk management policies do generate consistently greater returns, have higher return-to-variance ratios, and generate lower betas for a given amount of return as compared to the market and their size cohorts, then the conclusions of this study will be confirmed empirically.

Traditional theory asks the question: “What do I care so long as I am properly diversified?” The test of a good theory is not whether one investor or one manager or one company can get away with certain policies for a limited period of time. The test of a good theory is, when applied to an entire industry or an entire economy indefinitely; will the theory result in utility maximizing outcomes? The answer is if firm-specific risk is consistently ignored across all companies in all industries, the portfolios of investors will suffer, the earning power of firms will be impaired, less competitive, and the failure rate will be inefficiently high. Failures will result from both increases in contingent period losses and an increasing inability to weather systematic shocks. On a broad basis,

these outcomes, when suffered consistently, are not good for even well-diversified investors.

Ultimately, the purpose of a review of this type is to contribute to theoretical development, so managers will be better able to maximize the wealth of shareholders. To do this, these conclusions must first be confirmed empirically: It must be shown the market does reward this behavior over time and new mathematical constructs must be developed to find the *optimal* level of firm-specific risk management for each firm.

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## **Vita**

### **Russell Paul Roselle**

Russell has spent the past six years working with small and mid-sized business. He has held the positions of General Manager (Sayre Enterprises), Director of Corporate Development (Sayre Enterprises), and Senior Financial Analyst (Headstrong, Inc.). He is currently self-employed working as a Management Consultant for his newly formed company The Roselle Group, LLC. Russell holds a Bachelor of Arts in Economics and Business from the Virginia Military Institute (VMI Class of 1999). He lives in Fishersville, Virginia with his wife and young daughter. Russell is thirty years old.