The correlation between risk and rentability in the construction industry of Romania

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1. Introduction

The study of risk and return continues to be an area of vital importance for researchers, however the theorizing and empirical findings in this area continue to present a series of problems. The risk-return relationship has been presented in the literature in two distinct ways. One is the discussion on whether the relationship between risk and return is positive, negative, or curvilinear (Fiegenbaum, Hart, & Schendel, 1996). The second involves empirical anomalies that researchers are confronted with when examining the numerous studies in this area (for a brief review, see Gooding, Goel, & Wiseman, 1996; Wiseman & Catanach, 1997). There have been relatively few explanations that have satisfactorily reconciled these differences.

2. Theoretical Notions

Although in the specialized literature, risk has several acceptations for businesses carried out by economic agents (economic risk, exploitation risk, financial risk, commercial risk, investment risk etc.) the economic significance of risk is considered to be an important one, because it points out the inability of a company to adapt on time and at the lowest costs to environmental changes; in other words the economic risk expresses the volatility of the economic outcome under exploitation.

2.1. The Risk of Exploitation

The risk of exploitation acts due to the sensitivity of result to changes of operating conditions. The probability that the size of the enterprise's activity can not cover the total expenses generated by its support because of their structure, it involves the emergence of risk of exploitation. For any economic agent the risk level of the operation is more important, as the share of the fixed nature of costs is higher. In order to estimate the risk of operating, the business practice is using a tool of analysis known as the threshold of
profitability, for establishing the conditions needed for the microeconomic balance, with
or without profits (neutral point).

2.2. The Financial Risk

The financial risk of economic agents is associated with the method of financing of the
compny business, given the sensitivity of the outcome to changes in funding conditions.
Thus, the more fixed payment amounts are used in a higher proportion in the total
financial sources, the more important is the financial risk dimension. The financial risk's
evaluation is made similar to the exploiting risk, with the helping of the following
indicators:
  · the safety margin;
  · the safety index;
  · the elasticity coefficient.

If it modifies the return of equity, the analysis of this modification due the financial
policy could be pursued with the aid of a model entitled “financial leverage effect “ The
financial leverage measures the impact of credit's quantization (in order to finance an
investment) over its financial profitableness.
The financial leverage effect, namely the variation of equity return depends on the
correlations which exist between the return of assets and the debt cost or interest rate, on
a side and the debt level on the other side.

2.3. The Risk of Bankruptcy

The risk of bankruptcy appears due to the economic agent’s failure to honor its payment
obligations on time. Therefore, the risk of bankruptcy is manifested in the situation in
which the company is unable to cope with payments to its creditors, suppliers, state,
financial and credit institutions etc. The purpose of strategies to prevent the risk of
bankruptcy (to restructure companies in difficulty) is to eliminate the causes and
dysfunctions that have generated a decline of the economic performance recorded by the
company. The causes that can lead to bankruptcy are many, focusing on: reduction of
activity; reducing of margins and rates of return; the emergence and amplification of
Treasury issues, management issues; the bankruptcy of customers, reduced market outlets, etc.

2.4. The Investment Risk

The risk in the economic agent’s investment business appears as a result of the fact that the achievement of all investments involves immediate expenses, while revenues and profits will come during a future period of time.

3. Literature Review

The Capital Asset Pricing Model (CAPM), developed by Sharpe (1964) and Lintner (1965), is the most popular computational equation for the estimation of investment risk. CAPM argues that beta, or the systematic risk is the only relevant risk measure for investment and the relation between the returns of any asset is linearly related to its market beta.

Since the development of CAPM model by Sharpe and Lintner, many criticisms were pointed by the academics and practitioners to its validity as a model for asset pricing. Fama & MacBeth (1973) tested the linearity of the relationship between the expected return on a security and its risk market according to the assumption that the capital market is perfect hence, i.e. no information or transaction cost incurred by investor, and they found that risky portfolios with higher betas tend to have higher returns than the less risky portfolios. But this linear relationship was criticized by the other asset pricing models like Arbitrage Pricing Theory (APT) which was developed by Ross (1976), who suggested that beta is not the only component that could measure the systematic risk or undiversified stock returns of other securities. Fama and French (1992) also found an insignificant relationship between beta and average returns. They concluded that the CAPM cannot describe the average stock returns; and that market capitalization and the ratio of book value to market value have significant explanatory power for portfolio returns. Despite these studies, there were other studies (Black, 1993; Jagannathan and Mcgrattan; 1995) that supported CAPM model and found that it may be still useful for measuring risk.
Pettengill et al (1995) presented an alternative approach to test the conditional relationship between risk and return in the US market. This approach depends on separating the periods of positive and negative market excess returns; and it was found that betas and returns are significantly and positively related when market excess returns are positive (up market); and significantly and negatively related when market excess returns are negative (down market).

Isakov (1999) followed the approach of Pettengill et al. (1995) and examined the Swiss Stock Market for the period 1983–1991. He found that beta has a statistically significant relation to realized returns and depend on the expected sign of the market. He concluded that beta is a good measure of risk and is still alive and applicable.

Despite the popularity of Pettengill et al (1995) model, Cooper (2009) argues that there is much bias in the calculation of the coefficients, and, as a result, it could not help us more to prove the relationship between beta and returns. However, other studies show that beta tends to vary over time.

Blume (1975), Huang and Cheng (2007), and Jagannathan and Wang (1996) show that conditional CAPM with a time-varying beta outperforms the unconditional CAPM with a constant beta. While there were many studies on the conditional CAPM in the developed markets, there were also other studies on emerging markets which tried to answer the question whether conditional CAPM is a valid model for these markets or not.

Further in the Literature Review Chapter I have outlined the differences between risk-return correlation in terms of portfolio theory and the correlation regarding a company’s activity.

Among the first persons that initiated this separation is Bowman with his Bowman’s Paradox referring to the the negative association between cross-sectional, accounting-based, firm performance and the variance of performance.

Explanations for the source of the Bowman paradox include various contingencies, strategy conduct and statistical artifacts. The most common explanation today is probably the effect of performance relative to a reference point and its impact on managerial risk taking as discussed by prospect theory.

Prospect Theory (Kahneman & Tversky, 1979), it is argued that managers whose firms experience performance declines evoke a loss context and seek out riskier alternatives,
while those who experience improved performance evoke a gain context and choose less risky alternatives (Gooding et al., 1996, p. 332).

While the theory with regard to multiple reference points is still underdeveloped in being able to provide an accurate estimation of failure and success reference points, the preponderance of the evidence suggests that such multiple points are likely to exist. The challenge for researchers is to refine the theory further and look for ways to empirically test for the existence of these multiple reference points.

Previous management research on the risk–return relationship may be broadly classified in accordance with three basic explanatory rationales: (1) contingencies that influence the risk behavior of organizational decision-makers; (2) outcomes from strategic conduct; and (3) statistical artifacts. The first explanatory rationale, ‘contingencies that influence behavior of organizational decisionmakers,’ includes a wide variety of explanations. These arguments were transposed to situational framing where high performance is associated with risk aversion and poor performance with risk-seeking behavior. This perspective is consistent with behavioral models where the choice of actions, and hence risk behavior, is driven by firm performance in relation to given aspiration levels (e.g., March and Shapira, 1987, 1992; Bromiley, 1991). Accordingly, negative risk–return relationships arise as managers in the underperforming firms decide to take riskier actions to increase returns, thus implying that individual decision behaviors aggregate into organizational outcome effects (Bazerman, 1984; Hartman and Nelson, 1996). Bromiley (1991) also found that higher risk seems to cause poorer performance, thus leading to vicious or virtuous performance cycles over time. Today these rationales constitute widely accepted explanations for Bowman’s risk–return paradox.

The second explanatory rationale is ‘strategic conduct’ as originally suggested by Bowman (1980). Although strategic conduct explanations relate to managerial decisionmaking, they are different from contingency perspectives. Rather than explaining on the basis of induced management behaviors, the strategic conduct approach attempts to show that good management practices can make a difference; i.e., inverse risk–return relationships could be the result of firm heterogeneity of strategic management capabilities. Clearly, the ‘strategic conduct’ perspective implies that managerial
discretion matters. This stream of research has been less grounded in theory than the ‘contingency approach’ above, and has tended to advocate normative approaches to strategic management as an effective way to manage both risk and return. However, there have also been some empirical and theoretical contributions.

The third explanatory rationale is ‘statistical artifacts.’ This rationale deals with the possibility of misspecifications and spurious effects in empirical studies that have found the negative association between risk and return. This explanation suggests that the negative association may be due to flawed statistical analyses. Since it is impossible to distinguish between time specific risk–return relationships and shifts in these relationships over time, the calculations might indicate true relationships, although we cannot be certain (e.g., Ruefli, 1990; Ruefli and Wiggins, 1994; Ruefli et al., 1999). Henkel (2003) demonstrated that samples where accounting measures are skewed toward negative returns lead to spurious effects of negative risk–return correlations.

Nonetheless, after disentangling the true effects he still found inverse risk–return relationships across industries during 1970–79, the period analyzed by Ruefli and Wiggins (1994). Denrell (2004) also demonstrated that heterogeneity in risk propensity as well as serial correlation in performance can produce spurious u-shaped relationships between risk and return.

5. Empirical Review

In the Empirical Review Chapter I have presented two articles. The first article is named “A Contingent Relationship Between Risk and Return: Toward A Behavioral Model of Decision Making” and proposes a framework where different theoretical approaches can be mapped onto a two-dimensional risk-return space in order to reconcile them. Rather than a single and fixed reference point, it proposes that there are two additional reference points. Furthermore, there is presented a polynomial risk-return relationship that suggests a negative risk-return relationship below and above the failure and success reference points, and a positive relationship in between the two points.

The article suggests that firms operating below their failure reference point are likely to be risk seeking in order to overcome their current problems and move toward the industry average. For firms above the success reference point, managers are again likely
to be risk seeking, though for entirely different reasons. Here risk seeking behaviors take place on account of perceptions of high organizational slack, and high organizational capabilities and excess slack. For firms operating between their failure reference point and their success reference point, essentially those operating in the relative comfort zone, managers are likely to be risk averse.

As a matter of choice, managers would prefer to be in a low risk - high return environment. In any other situation, managers will be facing either unacceptable levels of risk or low levels of return or both. There are two major factors that impact managerial thinking in assessing firm performance. The first is a level of return above which the firm should operate, and the second is a level of risk below which a firm should operate. In other words, given a level of risk, what is an acceptable rate of return? Here, the effort would be to manage risk and increase returns. The second is, given a level of return, what is an acceptable level of risk? Here, the effort would be to manage return and decrease risk. We believe our paper addresses a number of important issues in the risk-return relationship, and we believe these propositions can be refined and empirically tested. The explanation conveys a revised understanding of existing risk seeking and risk averse behavior arguments. The theoretical reasoning offered in the article advances understanding of organizational risk taking by reconciling and refining proeminent models and can be applied to contemporary managerial thinking.

The second article, Testing a causal model of corporate risk taking and performance, presents the determinants of organizational risk taking and its impact on economic performance are critical issues in strategic management. Using a model that included risk, performance, performance expectations and aspirations, slack, and industry performance, this research addressed how past performance and other factors influence risk taking and how risk taking and other factors influence future performance. Not only did poor performance appear to increase risk taking-risk taking appeared to result in further poor performance, even when past performance, industry performance, and organizational slack were controlled.

Overall, the results favor a model in which low performance and lack of slack drive risk taking, but the risks taken have poor returns.
6. Case Study

Chapter IV presents a practical analysis of the correlation between risk and performance on 28 construction companies, over a period of 5 years (2005-2010).

The profitability ratios used are ROA, ROE and the profit margin and the risk was measured with three types of slack:
- available slack: liquidity ratio
- potential slack: financial leverage and debt ratio
- recoverable slack: rapport between exploitation expenses and gross turnover

In the regression model profit margin was used because it had a relatively constant evolution.

In order to verify the series distribution, I used a graphic method by comparing the quantiles of the normal distribution with the quantiles of each series distribution.

After performing the Augmented Dickey Fuller test on each series, it resulted that all the series used in the regression model are stationary series.

The strong correlation between the profit margin and the four independent variables is shown by the value of R squared coefficient = 0.7945.

The liquidity coefficient is -0.048 showing a negative and relatively weak influence on the profit margin.

Exploitation expenses divided by gross turnover has the most significant, positive influence on the profit margin, with a coefficient of 0.8365.

The financial leverage effect on the profit margin is a positive, weak one with a coefficient of only 0.0543.

The debt ratio coefficient is 0.5693 suggesting a positive influence on the profit margin.

I have also conducted a cluster analysis, using the Return on Assets ratios and the leverage to group the 28 companies into 4 clusters.

The results were the following:

Cluster 1: Low performance - low risk: ARCO, COBS, COSC, CNSI, CORO, DUPX, ELEL, ELJA, ENP, IMP, INMP, MOLE, NAPO, COTR, SCIM, SELC, SIBX.

Cluster 2: High performance – Low risk: ACIS, CMCM, CHIA, COMI, COMK, COBJ.

Cluster 3: Low performance – Very low risk: BEUC
Cluster 4 : High performance – high risk : CONK, COFI, COBU, SUTB.

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