

Chapter 10

Downside Risk Premium: A Comparative Analysis

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ABSTRACT

The purpose of this chapter is to address the main developments and challenges on risk assessment and portfolio management. The former innovation in modern portfolio theory, Markowitz, has been succeeded from linear and non-linear optimization techniques that improve portfolio efficiency. Special emphasis is given on Roy's seminal work on "Safety First Criterion" which advocates that the safety of investments should be prioritized. Thus, an investment should be chosen in a way that it has the lowest probability of falling short of a required threshold of investors. This motivated Markowitz to advocate a downside risk measure based on semivariance. It captures the notion of risk as failure to meet some minimum target. It is influenced by returns below the target rate. It focuses on investors' concern with downside variability and loss reduction. This chapter offers a critical reflection of these recent developments and could be of interest for individual and institutional investors.

INTRODUCTION

There has been a rekindlement of interest and a surge in researching the downside risk especially from the portfolio optimization perspective or the development of advanced asset pricing models. Investors welcome upside gains and dislike downside losses. They do not like stocks that covary with the market when the market declines. Stocks that covary with market downturn have higher downside risk. Investors place greater weight or emphasis on downside risk and are averse to downside risk and losses. Therefore, downside risk is priced. Stocks that covary with market during market downturn are unattractive securities and investors are reluctant to hold them unless being rewarded or compensated for the risk. This demand for additional compensation, in the form of higher expected return, for holding stocks that covary with market downturn is known as downside risk premium.

Stocks with high covariation conditional on upside movement of market tend to trade at a discount whereas stocks with high covariation conditional upon downside movement of market offer premium

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for bearing downside risk. Therefore, downside risk closely corresponds to how individual investors actually perceive risk.

Ang, Chen and Xing (2005) find that cross-section of stock returns reflects a premium for bearing downside risk equal to 6% per annum. They find that this reward for bearing downside risk is different from compensation for regular market beta, coskewness, liquidity risk, size or book-to-market and momentum risk. Earlier researchers found little evidence of downside risk premium due to issues related to data and methodology. Some researchers in earlier studies do not arrive at an unambiguous conclusion due to the fact that they did not focus on measuring the downside risk premium using all individual stocks in the cross-section. According to Ang et.al. (2005), Jahankhani (1976) fails to find any premium for downside beta because the examined time period was short, from 1951 to 1969. Furthermore, he only uses portfolio formed from regular CAPM betas. It was further pointed out by Post, Vliet and Lansdorp (2009) that this short time span does not include some important bear markets of the 1930s, 1970s and 2000s. The examination of bearish periods is of vital importance for the investigation of downside risk premium, because during these periods investment risks are high and investors demand additional compensation due to their risk aversion profiles.

The objective of this paper is to comparatively investigate the downside risk premium and address any limitation and/or space for further development. Special emphasis is given on the critical reflection of the financial considerations of the downside risk premium.

LITERATURE REVIEW

Downside Risk Measures

There are several downside risk measures in the literature. It was Roy (1952) who came out with the earliest downside risk measure. In his published paper entitled "Safety First Criterion", Roy (1952) advocates that the safety of investments should be prioritized in any investments. According to Roy (1952), an investment should be chosen in a way that it has the lowest probability of falling short of a required threshold of investors. Later, Nobel prize laureate for Economics in 1990, Markowitz (1959) advocates a downside risk measure based on semivariance. Even though Markowitz (1959) then proposes the famous mean-variance, EV model of risk measure, he also argues that semivariance is a more appropriate measure of risk. According to Markowitz (1959), variance is proposed and used simply for the reason of its convenience, familiarity and it is a computational efficient risk measure. The most prominent feature of semivariance as a downside risk measure is that it is based on recognizing risk as a deviation below a critical target rate of return. It captures the notion of risk as failure to meet some minimum target. It is influenced by returns below the target rate. It focuses on investors' concern with downside variability and loss reduction. Only a subset of return distribution is used. Minimization of semivariance concentrates on the reduction of losses. It is much more consistent with the perception of risk of investors and financial manager. They perceive risk as a failure to meet some minimum or target rate rather than in terms of deviations from expectations or not even in terms of deviations below expectation. Thus, downside risk measure is intuitively appealing and it closely corresponds to how individual investors actually perceive risk.

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