



A STUDY ON DEVELOPING OF ASSET PRICING MODELS

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ABSTRACT

Asset pricing models play a critical role in finance, aiding investors, analysts, and policymakers in understanding the valuation and behavior of financial assets. The goal of this research is to further the field by investigating the creation of asset pricing models. By means of an extensive examination of extant literature and empirical data, this study aims to identify the principal elements impacting asset prices and to suggest improvements or novel frameworks for asset pricing.

The research will commence with a comprehensive analysis of conventional asset pricing models, including the Capital Asset Pricing Model (CAPM) and its variations, emphasizing their advantages and disadvantages.

Subsequently, it will delve into contemporary approaches including multifactor models, behavioral finance theories, and machine learning techniques, assessing their efficacy in capturing asset pricing dynamics.

By synthesizing insights from theoretical and empirical research, this study seeks to identify the most relevant factors driving asset prices across different asset classes and market conditions. Moreover, it aims to provide practical implications for investors, asset managers, and policymakers, aiding them in making informed decisions regarding asset allocation, risk management, and policy formulation.

Overall, By studying asset pricing mechanisms in greater detail, this research hopes to improve the accuracy and robustness of models used to value financial assets in volatile and dynamic markets.

KEYWORDS: Finance modelling, Investments, Capital markets, Economic Theory, Asset Valuation

INTRODUCTION

In order to aid in the making of investment decisions and portfolio management techniques, these models seek to clarify the link between risk and return. Many asset pricing models have been created and improved over time, each providing a unique viewpoint on how assets are valued in financial markets. The present research endeavors to investigate the evolution of asset pricing models, scrutinizing their theoretical underpinnings, empirical data, and practical ramifications.

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OBJECTIVE OF THE STUDY

The goal of the study is to examine how asset pricing models have evolved historically, starting with the basic Capital Asset Pricing Model (CAPM) and moving up to more sophisticated, modern models. This entails looking at the underlying theories, presumptions, and empirical data that have influenced how asset pricing theory has changed over time.

Examine and critically evaluate the drawbacks of conventional asset pricing models, such as the CAPM, including their incapacity to adequately account for cross-sectional variation in asset returns and their dependence on simplifying assumptions that might not hold true in actual financial markets.

Examine alternative frameworks for asset pricing: The study's goal is to look into alternative models for asset pricing,



like the Fama-French Three-Factor Model and Arbitrage Pricing Theory (APT), which attempt to overcome the shortcomings of conventional models by providing alternative viewpoints on the relationship between risk and return. This entails comprehending these various frameworks' theoretical underpinnings, empirical backing, and application.

REVIEW LITERATURE

A few of the significant asset pricing models that are briefly covered in this article include the Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory (APT), Fama-French three-factor model, multi-factor models, and behavioral asset pricing models. literature study. It highlights the creation of these models as well as their benefits, drawbacks, and contributions to our understanding of the dynamics of asset prices. Validating and enhancing these models remains difficult despite this progress. These problems raise questions for potential future study, such including other data sources and dealing with problems with empirical testing.

EVOLUTION OF ASSET PRICING MODELS

Early financial economists including Eugene Fama, William Sharpe, and Harry Markowitz developed asset pricing models. Current Theory of Portfolios (MPT), which emphasizes the importance of diversity in reducing portfolio risk, was made possible by Markowitz's pioneering work in portfolio theory. The CAPM provided a simple but powerful method for estimating expected returns that revolutionized the field of financial economics. However, empirical studies have highlighted the shortcomings and irregularities of the CAPM, leading to the creation of alternative models. Stephen Ross's Arbitrage Pricing Theory (APT), in contrast to the CAPM, takes into account a larger spectrum of assets and the factors that influence their valuations, including many sources of systematic risk. Although APT provided a more flexible framework, it required precise definition and monitoring of significant risk variables. Fully explain asset returns facilitated by later developments in asset pricing theory. These models improved some of the shortcomings of the CAPM by providing better empirical performance and explanatory power.

THEORETICAL FOUNDATIONS

The concept of rational investing behavior and economic theory serve as the foundation for asset pricing models. Fama's well-known Efficient Market Hypothesis (EMH) from the 1960s states that since asset prices fairly represent all available information, it is impossible for investors to consistently beat the market. Because asset pricing models are based on assumptions about rational expectations and market efficiency, they are significantly affected by the EMH. The risk-return trade-off, whereby investors seek higher predictable returns by assuming a higher level of risk, is another key asset idea. theory of prices. This relationship is important for creating value pricing models and is the basis for value pricing in financial markets. To account for investor preferences and consumption decisions, theoretical models often combine utility theory and models based on intertemporal consumption.

EMPIRICAL EVIDENCE

Empirical testing plays a crucial role in evaluating the performance and validity of asset pricing models. Researchers analyze historical data to examine whether the models' predictions hold in real-world financial markets. Empirical studies have provided mixed evidence regarding the effectiveness of different asset pricing models, highlighting the challenges of capturing the complexities of market dynamics and investor behavior. While some studies have found support for the CAPM and its extensions, others have identified anomalies and inconsistencies that question the models' ability to fully explain asset returns. Factors such as size, value, momentum, and profitability have been shown to influence asset prices beyond what traditional models predict, leading to the development of more sophisticated multifactor models. Recent research has also focused on testing the robustness of asset pricing models across different time periods, market conditions, and asset classes. These studies help identify the factors driving asset returns and shed light on the limitations and applicability of existing models in various contexts.

The latest change to the CAPM led managers to focus on behavioral rather than financial issues that affect a portfolio. However, all financial models clearly show the progression of this trend. This development lead to the behavioral value model, or B-P. The target market of the strategy is the investors of the purchase portfolio. It divides a client's investment portfolio into four categories: growth, mix, yield and value.

The B-P model was the subject of the following investigations carried out in Norway: We will go into greater detail and go over the benefits and drawbacks of each model in the sections that follow.



THE D-CAPM, OR MODEL OF DOWNSIDE CAPITAL ASSET PRICING

Investigators discovered that when return distributions are not normal, there is a chance that we may receive a lesser return than anticipated, which makes sense when evaluating capital. Semi-variance and standard deviation were identified by Markowitz in 1959 as suitable parameters for selecting a portfolio. The verified model known as D-CAPM accounts for return distributions that are either higher or lower than the symmetry border of the CAPM. Later, in 2002, Estrada made changes to D-CAPM. Estrada found that this model is incompatible with the portfolio theory and does not satisfy the requirements for diversification. While measuring semi-variance is entirely accurate and beneficial, there are certain statistical mistakes in the formula that was created to calculate covariance. It is therefore impossible to demonstrate the genuine reliance between two assets.

Simulations show that there is no chance of mistake if the capital asset pricing model's predicted returns and assets have a perfect and positive connection. However, there is a limitless potential for error if the assets in the capital asset pricing model exhibit a perfect negative correlation with predicted returns.

Finally, if there is no correlation between the assets and the expected returns of the capital asset pricing model, the possibility of mistake is critical. The estimates generated by this method are therefore unreliable. This makes the situation unsuitable for portfolio diversification and results in a lower beta for an error-prone criteria. The CAPM is based on certain presumptions, including the idea that returns to investors are correlated with their level of risk-taking. The market risk premium turns negative when a market's circumstances shift and investors don't get paid for the risk they assume.

Following Levy, Warren and others presented a model resembling the CAPM. To provide context for this model, the following financial presumptions must be mentioned: In a business that has a capital structure, the presence of debt influences the level of risk that shareholders incur; as a result, the shareholders bear sole responsibility for the business risk.

Consequently, the following formula will be applied to calculate the value of beta in this model:

$$\beta^D = \frac{\text{SemiCov}(R_i, R_m)}{\text{Semi-Var}(R_m)}$$

Regarding this, Nikoomaram (2010) examined the two popular pricing models in the automotive manufacturing sector, CAPM and D-CAPM, in order to provide a more accurate model that may be used to determine these sectors' predicted return rates.

The two models' predicted return rates and, lastly, the discrepancy between each model's projected return and expected return. His study's findings showed that D-CAPM is a better tool for estimating expected return rates in auto manufacturing firms than CAPM.

THE I-CAPM, OR INTERTEMPORAL MODEL OF CAPITAL ASSET PRICING

In order to make long-term decisions in the face of uncertainty, investors employed this model. The primary distinction between I-CAPM and regular CAPM is the misrepresentation of variables. In reality, during both bear and bull markets, investors made an effort to minimize the detrimental effects of these factors. According to Merton, investors manage their risk by acting in response to present and future market conditions. As a result, when making investment decisions, investors should take into account factors including inflation, job prospects, and potential stock market gains.

There are numerous potential uses for the I-CAPM. This model was employed by Chang, Hung, and Lee (2003) to examine the available Improvements in an investment portfolio's timing ability as well as the capacity to choose the ideal portfolio. The findings of their investigation suggested the ideal time to invest based on meticulous planning and timing.



The ability to classify in order to allocate investment assets has a positive impact on market timing. They have the ability to recognize market opportunities at the ideal moment and take advantage of them to maximize shareholder profits.

Using this methodology, Paulo Maio (2008) assessed three factors: equity, The findings of his study demonstrated that the I-CAPM outperformed the French and Fama three-factor models in its ability to forecast future investment portfolio circumstances. This model, in contrast to the French and Fama models, can estimate anomalous patterns that are exposed to the risk premium. Additionally, intriguing findings about I-CAPM have been reported in recent investigations. Using the Dow Jones Industrial index average, (Bali and Engle, 2009) investigated the implications of changing return and risk on the New York Stock Exchange.

THE C-CAPM STANDS FOR CONDITIONAL CAPITAL ASSET PRICING MODEL

Variables like potential changes and obstacles in investment performance that investors deem significant and helpful in some of their financial transactions to prevent bankruptcy are among the primary differences between ordinary CAPM and C-CAPM.

According to this concept, different investors have different expectations, and shifting market conditions are the primary cause of this issue. We are unable to forecast the market circumstances in this instance using the conventional CAPM.

In figure 3, this relationship is depicted:

In this scenario, the following equation yields beta:

$$\beta = \frac{Var(r_M)}{Cov(r_i, r_M)}$$

The following presumptions form the basis of the model:

Since these stocks don't require diversity, investors can adjust the stocks that are now available in their portfolio in accordance with their expectations.

Taking a cue from Jagannathan and Wang (1996), German, and Argentinean markets. Moreover, their methodology juxtaposed these outcomes with the numbers from the United States. According to their research, there is proof that the German.

PRICING FOR BEHAVIORAL ASSETS (BAP)

These days, a person's actions throughout a transaction matter a lot. The foundation of behavioral finance was introduced at this point. According to Hirshleifer (2001), Behavioral theory is primarily concerned with characterizing investor behavior while choosing investment units. It may also serve as a foundation for judging appropriate performance. Specifically, this idea states that investors arrange their assets in a tiered pyramid. As a result, the lower rungs of this pyramid are intended to shield investors from destitution during unfavorable market conditions.

Moreover, the top of the pyramid is positioned to take advantage of a good circumstance. While some investors choose stocks at random and pay little attention to the stacked pyramid, Investors are constantly looking for the best approach to hedge against losses on their investment portfolio. In this case, the capital asset pricing behavioral theory is created. analyzing the layered pyramid from the investor's point of view, looking at the asset allocations as full stacked sections of the pyramid rather than as individual investments, is one of the primary components of behavioral theory.

Sections meant for distinct purposes come together to create an environment where regulations about the acceptance of risk behavior across several sectors are feasible; this is partly done to guard against unfavorable market conditions. They can safeguard a portion of their investment from adverse circumstances in a particular area, while they can maximize profits in good ones in another. Behavioral theory states that investors allocate their resources according to the objectives and desires of numerous investments in diverse industries. Figure 6 illustrates the investment pyramid of Phantom Company during the year 2003.



it is not important in the pricing of financial assets, at least not in mainstream financial theory. They presented a behavioral capital asset pricing model in which high levels of both subjective and objective risk are associated with high expected returns. Negative effects are associated with high subjective risk. Positive-effect equities are preferred by investors, which drives up the price of these stocks and lowers their returns.

Three behavioral factors are separated out by the model: inconsistent preferences, problems with representativeness, and errors in the interpretation and conversion of information signals.

Measure A, or the market's capacity for self-correction, determines the final extent of behavioral mispricing. Examples are used to demonstrate and explain the explanation of the factors impacting all of the variables in the model. Could the model explain calendar anomalies, momentum and contrarian strategies, book-to-market effects and small size, market under- and overreactions, and continuations and reversals of stock returns, among other oddities in the market? In the concluding remarks, the benefits and drawbacks of the model are discussed, along with possible avenues for further research and development.

SUMMARIZATION

Financial critics thoroughly reviewed, assessed, dissected, and critiqued each model during the paper. Additionally, from 1970 to 2010, a number of credible economists and financial industry specialists studied a variety of models, with research conducted by academics at universities.

CONCLUSION

It would be beneficial to choose a capital asset pricing model if we could anticipate every factor that would affect our investment portfolio, either directly or indirectly. This article covered a wide range of hazards, including intertemporal, financial, downside, and liquidity concerns. It is possible to predict any of these specific hazards before making an investment. Any capital asset pricing methodology would result in a maximum return with no risk.

Prior to choosing a suitable model, investors must have a thorough understanding of the state of the financial markets. The behavioral asset pricing (BAP) model has been recommended by scholars recently. It should be noted, nevertheless, that the theory behind this model is currently being developed.

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