

# Comparison of capm model and apm



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Title: Is the CAPM model a better asset-pricing model than the APM (arbitrage pricing model)?

The following is a brief literature overview and literature review of the economics books and journal articles used in the writing of this dissertation. The dissertation's objective was to evaluate the relative strengths of the Capital Asset Pricing Model (CAPM) as a pricing model, when it is compared to the most viable alternative, the Arbitrage Pricing Theory model. Various factors and influences that impact upon the pricing of certain goods and products, specifically oil-based products, as will be demonstrated in the dissertation is actually or potentially able to affect both these models and their relative effectiveness. The literature mentioned here was used to research and understand the concepts that underpin the CAPM and APT models, such as minimising the risk of losses and maximising the prospects of handsome profits from financial investments. The objective of these models is to be the most effective predictors of risks, changes, success, or failure. This literature review is a summary of the merits and the usefulness of the sources used during the research and completion of my dissertation; all views expressed below are my own.

Sharpe, Alexander, and Bailey in their book '*Investment*' provide useful background information with regard to the economic theories relating to the comparative merits of the CAPM and APT pricing models. The main points that Sharpe, Alexander, and Bailey make that is of relevance to the dissertation was about the origins of the CAPM which economists developed as a variant of the APT price modelling theories. They point out that the main difference between the two models is that the CAPM pricing model considers

a single factor (the market portfolio), whilst the APT model considers a few factors such as financial risks, future prospects, and the causes of inflation. The usefulness of each model can depend upon the depth of research needed and the scope of the analysis that is required. If a limited study is all that is needed then CAPM is probably the best option, if a more extensive study is needed then APT is more likely to be a better option. The basic assumption of Sharpe, Alexander, and Bailey is that each model has its own strengths and weaknesses, which means that the effectiveness of each model can vary greatly due to variations within the market portfolio. Fluctuations and market trends are probably the best means of demonstrating that the two models work properly or if they do not (Sharpe et al, 1995).

Sharpe, Alexander, and Bailey was a helpful source to use for this dissertation as they put forward the influences that affect pricing decisions, and the perspective profits of any company. Amongst these influences are the industrial growth rate, the rate of price inflation, variations in the short or long time interest rates, and the performance of financial bonds. Pricing models are needed to predict risks due to the variation in all those factors or influences which can make all the difference between a sound financial investment and, a disastrous financial investment. Sharpe, Alexander, and Bailey help to explain how a company's rate of growth just like that of its competitors can be highly dependent upon price fluctuations in commodities such as crude oil and natural gas, as well as whether those increased costs can be recuperated from the company's customers. Any worthwhile pricing model such as CAPM and APT needs to take inflation and its causes into

account. This book is a highly convenient source of information on many different aspects concerning portfolio investments and the theoretical and practical considerations that students and practitioners of financial investments and bond markets would find very useful (Sharpe et al, 1995).

Bower, Bower, and Logue's journal article from the September 1984 issue of the Journal of Finance provided invaluable background information concerning the APT system, and how its linked up with the measurement of the utility stock returns. The article was entitled '*Arbitrage Pricing Theory and utility stock returns*.' The journal article by Bower, Bower, and Logue contains the formulas that the APT system utilises to analysis the relevant data relating to issues of pricing theories and, allows economists to check upon their accuracy or relevance. The formula that was cited in this journal article was used to analysis the data from the oil companies that was the main research focus for the dissertation, and its results were invaluable for the formulation of conclusions and arguments. Knowing how the formulas of the modelling theories are formed and how effective those formulas are in predicting events, variants, and success or failure cannot be realistically achieved without knowing the exact formula that the respective pricing models are based upon. This article not unsurprisingly concentrates upon the strong points that the APT system has to offer in comparison to the CAPM system. Bower, Bower, and Logue are arguably advocates of investors using the APT system ahead of the CAPM pricing theory due to providing more accurate forecasts. Their article is certainly a useful means to further understand how the APT allows a highly accurate prediction of pricing trends, as well as a sound understanding of the variants that can ruin the accuracy

of any pricing model if not predicted or evaluated correctly. This article was available online which made it easier to access and is indeed where it was obtained from (Bower et al, 1984).

Brennan and Schwartz's article from the October 1989 issue of the *Journal of Business*, '*Portfolio and Financial Equilibrium*' was another useful source of information for carrying out the data analysis using both pricing models to allow an accurate and realistic comparison between the CAPM and APT models. This article gave an improved understanding of how the balance of potential profits, investment risks, and losses that can influence the decisions that potential investors make can be formed, changed, and also how they can operate within any given market portfolio, such as leading oil companies like Royal Dutch Shell. As far as Brennan and Schwartz are concerned the key for any pricing theory to be a successful and effective model is being able to point towards the factors, influences, and behaviours that establish or maintain portfolio and financial equilibrium. There may be variants within any given market portfolio yet the most effective pricing theories are those models that take into account the actual or potential variants that will alter the market portfolio from time to time. The article discussed the strong points and the weak points of both the CAPM and APT pricing models that helped develop a personal understanding of the differing criteria for assessing which, of the two pricing models was the most cost effective, or reliable. It also assists developing an understanding how accurate predictions of pricing changes or variations in profitability are going to be (Brennan and Schwartz, 1989).

Goetzman's '*An Introduction to Investment Theory*', is a sound source of information that was used in the dissertation to assist the comparison between the CAPM and APT pricing models. It is a more recent source of information about pricing models than some of the other sources mentioned in this literature review that were used for researching and writing the dissertation. Therefore it was a means of obtaining more up to date academic opinions, arguments, and practical examples of real life changes of market portfolios, investment variants, and the ability to detect, predict, or even avert risks to investments and profitability. Goetzman provides an invaluable insight into the way that investment theory has developed and its comparative strengths and weakness, or whether the best one to use depends on circumstances (Goetzman, 2007).

The main use of Terregrossa's '*Accounting for Estimation Risk in CAPM-generated forecasts*' for the dissertation was to assist in the formation of the arguments in favour or against the idea that the CAPM pricing model is more or less useful and accurate than the APT model. Terregrossa's article provides a relevant and easily understandable guide to the estimating of the financial risks that are a component element of the risk profiles and forecasts that are generated by the CAPM pricing theory. Besides describing the way in which the CAPM pricing model estimates investment and business risks the article discusses the theoretical and practical strengths or weaknesses of the risks that are estimated, and whether those risks are realistically forecast. Terregrossa's article was a highly relevant one for gaining a stronger grasp of how the CAPM pricing theory can be used to forecast changes to the market portfolio. A model that adapts to those

predicted changes to enhance profitability and prevent unnecessary risks being taken that damage company performance and investments (Terregrossa, 2004).

Cagnetti's '*Capital Asset Pricing Model and Arbitrage Pricing Theory in the Italian Stock Market: An Empirical Study*', was a relevant source of information as it is also a comparison of the two pricing models in operation. Whilst the dissertation is primarily aimed towards using oil companies as the basis for the comparison between the CAPM and the APT pricing models. Whilst Cagnetti's article was based upon a study of the Italian stock market it still provided a useful guide as to the time period of the data to be analysed. It is guide of how to evaluate and analyse the ways in which the two pricing models succeed or fail in predicting market trends and prices as well as noticing when variants can be detrimental or advantageous to the over all market portfolio, or any company's profitability (Cagnetti, 2002).