

RISK, RETURN AND EQUILIBRIUM: SOME CLARIFYING COMMENTS

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SHARPE [12] AND LINTNER [7] have recently proposed models directed at the following questions: (a) What is the appropriate measure of the risk of a capital asset? (b) What is the equilibrium relationship between this measure of the asset's risk and its one-period expected return?¹ Lintner contends that the measure of risk derived from his model is different and more general than that proposed by Sharpe. In his reply to Lintner, Sharpe [13] agrees that their results are in some ways conflicting and that Lintner's paper supersedes his.

This paper will show that in fact there is no conflict between the Sharpe-Lintner models. Properly interpreted they lead to the same measure of the risk of an individual asset and to the same relationship between an asset's risk and its one-period expected return. The apparent conflicts discussed by Sharpe and Lintner are caused by Sharpe's concentration on a special stochastic process for describing returns that is not necessarily implied by his asset pricing model. When applied to the more general stochastic processes that Lintner treats, Sharpe's model leads directly to Lintner's conclusions.

I. EQUILIBRIUM IN THE SHARPE MODEL

The Sharpe capital asset pricing model is based on the following assumptions:

(a) The market for capital assets is composed of risk averting investors, all of whom are one-period expected-utility-of-terminal-wealth maximizers (in the von Neumann-Morgenstern [16] sense) and find it possible to make optimal portfolio decisions solely on the basis of the means and standard deviations of the probability distributions of terminal wealth associated with the various available portfolios.² If the one-period return on an asset or portfolio is defined as the change in wealth during the horizon period divided by the initial wealth invested in the asset or portfolio, then the assumption implies

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1. The terms "capital asset" and "one-period return" will be defined below.

2. In the one-period expected utility of terminal wealth model, the objects of choice for the investor are the probability distributions of terminal wealth provided by each asset and portfolio. Each "portfolio" represents a complete investment strategy covering all assets (e.g., bonds, stocks, insurance, real estate, etc.) that could possibly affect the investor's terminal wealth. That is, at the beginning of the horizon period the investor makes a single portfolio decision concerning the allocation of his investable wealth among the available terminal wealth producing assets. All terminal wealth producing assets are called capital assets.