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**STOCHASTIC PORTFOLIO PROGRAMMING,
COMPETITIVE MARKET EQUILIBRIA,
AND MARKET PORTFOLIOS AND RISK PROFILES:
A NEW ZEALAND CAPITAL MARKET ANALYSIS**

A thesis presented in fulfilment of the requirements
for the degree of Doctor of Philosophy in Finance at Massey University

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Dedicated to the memory of my mother Mary Isabel Young (nee Pickering)

1922 - 1990

ABSTRACT

Mainstream modern portfolio theory has developed around the portfolio selection and asset pricing models of Markowitz' mean-variance criterion, the Capital Asset Pricing Model, Arbitrage Pricing Theory and, more recently, the models of continuous-time finance.

In the early 1960's Paul van Moeseke developed a model of asset allocation under risk conditions and, in the first instance, this thesis is a restatement of this model. To date this model has been largely overlooked by mainstream finance but it has several significant features in its favour. The model explicitly determines the risk profiles of particular financial markets by focussing on the marginal return to these markets and equating this marginal return to the investment dollar's marginal cost. As marginal cost will differ between investors the model allows for a heterogeneous investor base. Another feature of the model is that it has application across the entire risk spectrum. This thesis discusses the Moeseke model within the framework of modern portfolio theory and provides extensions to this model.

In presenting the model, attention is given to the development and major criticisms of asset pricing models and portfolio selection techniques in general. Extensions to the model incorporate the monetary policy procedures used in New Zealand since the late 1980's and consider the application of the model in times of negative real returns. This

thesis also discusses the relationship between the Moeseke model and the Arrow-Debreu model of general economic equilibrium.

A major empirical application of the model is undertaken for New Zealand's capital markets to determine the value and stability of their risk profiles. It is found that the risk profile of the New Zealand stock market is similar to that found previously for the United States and Canada with a high degree of stability. Risk profiles for the fixed interest market and the managed funds industry are also estimated. The determination of the marginal cost of the investment dollar for individual investors, institutions and international investors investing in New Zealand's capital markets is a key component for the model's application. A process for estimating these marginal costs is proposed together with these estimates.

This thesis argues that the Moeseke model and the extensions have a useful contribution to make to the modern portfolio analysis and selection process.

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