An Analysis of Some Issues in Asset Price Behaviour

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DECLARATION

The work contained in this thesis has not been previously submitted for a degree or diploma at any other education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signed .....

Date _____

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ABSTRACT

The equity premium puzzle, described by Mehra and Prescott in 1985, has baffled financial economists for almost two decades and still lacks a satisfactory resolution. For an area of economics, whose main focus is on measuring risks and rewards for risk taking, not being able to explain the difference in expected returns between two major classes of financial assets - equity and bonds - is a major challenge. We examine some of the issues associated with the equity premium and related puzzles. The main contribution of the thesis is in establishing that a representative agent model can be used to approximate the solutions of an overlapping-generations economy when markets are conditionally complete and then using this approximation to examine age-related liquidity restrictions as possible explanations for the puzzle. We conclude that such restrictions by themselves can not explain the equity premium puzzle.

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PREFACE

In an article published in 1985 Mehra and Prescott argued that the equity premium in the US appears too high to be explained by a consumption asset-pricing model (CAPM). The growth of aggregate consumption is too smooth and not sufficiently correlated with the equity premium to generate the observed level of the average excess return on equities over risk-free bonds for a reasonable level of risk aversion. This observation, termed the equity premium puzzle, has been a subject of much research since the Mehra and Prescott publication but, despite a number of important contributions, the equity premium puzzle is still unresolved.

On the other hand, finance in general has been an extraordinarily successful field of modern economics. Factor pricing models, in particular, have found numerous practical applications in areas such as capital budgeting, performance evaluation, investment analysis, risk management, etc. The failure to find a satisfactory economic explanation of the equity premium puzzle means that these models, and business tools derived from them, are built on shaky theoretical grounds, as all factor models and economic intuition about these models are, in fact, based on Lucas's (1978)

consumption pricing model and its generalizations. As Cochrane (2001) points out:

> *"This is a point worth remembering: all factor models are derived as specializations of the consumption-based models. Many authors of factor model papers disparage the consumption-based model, forgetting that their factor model is the consumption-based model plus extra assumptions that allow one to proxy for marginal utility growth from some other variables."*

Understanding the fundamental economic factors driving the equity premium is vastly important. Grant and Quiggin (1998), for example, argue that, if a large portion of the observed equity premium is the result of market frictions, then the common practice of using equity market returns to evaluate the value of public projects can lead to under-financing of such projects and create inefficiencies.

This thesis examines some of the issues associated with the equity premium and related puzzles. Chapter 1 formulates the puzzles and the main empirical features of the data that generate it. Chapter 2 provides a brief overview of the main contributions to the literature. An important explanation for the puzzles emerged recently and is based around the effect of liquidity restrictions on asset pricing in models that take into account

life-cycle considerations. The main body of the thesis examines this explanation under an alternative market structure. Chapter 3 shows that asset prices in such a model can be approximated using an appropriately calibrated Lucas model. Chapter 4 uses this approximation in the context of a calibrated economy to examine the effect of liquidity restrictions on asset pricing and the equity premium. Chapter 5 concludes with a discussion of various algorithms used to obtain equilibrium solutions for asset pricing models.