

Mehra and Prescott(1985) studied the equity premium during the period 1889-1978, the average real annual yield on the Standard and Poor 500 Index, and the difference in yields can be captured by the model with transaction costs, liquidity constraints and other frictions absent in the Arrow-Debreu set-up. And they also study competitive pure exchange economics that equilibrium growth rate process on consumption and asset return are constant.

They predict intuitively that the consumption, economy, and growth rate is the reason why low average real return and high average return on equity is not rational in a perfect market. They also show how elasticities of substitution are related to the yield.

In this study, they use five main data in series during the period 1889-1978. Series P and D are used to determine the average annual real return on the standard and Poor's 500 index. Series C determines the process of the growth rate of consumption. Series RF and PC determine the real return on relatively riskless securities. Moreover, they use a pure exchange model from Lucas(1978) and assume growth rate follows a Markov process. They consider the expectation operator conditional upon information available at time zero which includes the discount factor with the utility function and is restricted to be constant relative risk aversion(CRRA).

Furthermore, the parameters alpha measure the curvature of the utility function and growth rate is subject to the Markov chain and also measures willingness to substitute consumption. Then, they formulate the expression to test the hypothesis that they have set earlier and see whether it is consistent with the model or not. There are many variables and expressions in this test such as expected return on given asset, equilibrium price and consumption.

Since the alpha and beta are the parameters that show preference while phi and lambda are the parameters that represent technology. According to this paper, Arrow(1971) summarizes a number of studies and finds that relative risk aversion with respect to wealth is almost constant. He also argues that alpha should be approximately one. Their results are very similar when alpha less than one with different consumption processes that given mean and variances of growth rate equal the historical value.

The important restriction in this test is the value of alpha not to exceed ten because large alpha when paired with average equity and risk-free return can be obtained by making small changes in the process of the consumption. Moreover, there are 2 problems that occur in this test. The error of measuring inflation rate and tax consideration which lead to the implicitly considering effective after tax return.

From an example of determining the average risk premium in this paper, when corporate profit share of output they will set a variable and see how many percent is committed and how risk is borne to the owner of the company to see the number of equity risk premium.

Since there are many parameters and assumptions from many models. The equilibrium model of non-Arrow-Debreu may rationalize the large equity risk premium over 90 years in the U.S economy and to test this hypothesis you need to have consumption by income or age to test it.