# Modelling of capital asset pricing by considering the lagged effects



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# Modelling of capital asset pricing by considering the lagged effects

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**Abstract**. In this paper the problem of modelling the Capital Asset Pricing Model (CAPM) with the effect of the lagged is discussed. It is assumed that asset returns are analysed influenced by the market return and the return of risk-free assets. To analyse the relationship between asset returns, the market return, and the return of risk-free assets, it is conducted by using a regression equation of CAPM, and regression equation of lagged distributed CAPM. Associated with the regression equation lagged CAPM distributed, this paper also developed a regression equation of Koyck transformation CAPM. Results of development show that the regression equation of Koyck transformation CAPM has advantages, namely simple as it only requires three parameters, compared with regression equation of lagged distributed CAPM.

## 1. Introduction

Referring Allen & Bujang [1] and Franses & Oest [5] standard form of Capital Asset Pricing Model (CAPM) was first developed separately by Sharpe in 1964, Lintner in 1965 and Mossin in 1969, therefore, the model is often called the CAPM form Sharpe-Lentner-Mossin. Most of the making of CAPM is based on a series of assumptions, namely: (i) An evaluation of the portfolio based on the expected return and standard deviation of the portfolio over a specified period of time; (ii) investor action based solely on considerations of expected return and standard deviation of the portfolio; (iii) The assets of the individual (individual assets) can completely broke up the smallest (fully divisible). Based on asset, it can buy assets on the desired amount; (iv) There is an interest rate and a risk-free savings (risk free lending and borrowing rate).This rate applies to all investors; (v) There are no transaction costs and income taxes; (vi) Information can be obtained directly (instantly) and free for all investors; (vii) individual investor action can not affect the price of the asset. In contrast, the actions of all investors (together and in the same direction) may affect the price of assets in the market; (viii) Each investor has the same hope (homogeneous expectations) against expectations of return, standard deviation and covariance of assets; and (ix) All assets can be traded (marketable) [6], [10].

According to Allen & Bujang [1] and Kuehn *et al*. [7], CAPM regression Equality is used to analyze the effect of the market index return on asset returns. The regression equation of CAPM is to link the level of expected returns on risk assets with a risk of the asset in a balanced condition [11]. In the equilibrium conditions of the capital markets, the difference between the market return with the return of risk-free assets referred to as the market risk premium, while the difference between the returns of assets with a risk-free asset return is referred to as the risk premium asset. In the CAPM, the