

A Review Study on the Analysis of Validity Validation of Chinese Stock Market Pairs Using CAPM

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Abstract. Since the inception of the Capital Asset Pricing Model (CAPM), numerous empirical studies have been conducted to test its effectiveness. However, there are several disputes surrounding the CAPM model's implementation and study in the Chinese securities market. This paper first describes the significance of the CAPM model in testing its validity in the Chinese market. Then the paper summarizes 11 papers that include using data from the Shanghai and Shenzhen stock exchanges as assistance, and using different analytical methods to conduct research. The investigation demonstrates that the CAPM model's relevance and validity in the China stock market are restricted. Finally, a summary of the issues with the CAPM model's practical use in the Chinese securities market is provided, along with suggestions for solutions.

Keywords: CAPM, Theory validity test, China stock market, Review.

1. Introduction

1.1 Research Background

Capital Asset Pricing Model (CAPM) is one of the most critical theories in the field of finance. Research on portfolio theory frequently takes into account how investors determine the best way to divide their wealth across different assets. Markowitz used variance to calculate the risk of an investment while concentrating on the actions of the ideal investor. Modern portfolio theory was founded on his description of the mean-variance. The CAPM Model was subsequently proposed by Sharp and Lintner. The CAPM is based on a model of economic equilibrium that assumes all investors optimize in the manner that I specifically suggest [1]. The capital asset pricing model has been a cornerstone of finance theory ever since Sharp and Lintner first proposed it in the 1960s. Most institutions use CAPM as one of the reference models when making portfolio choices. Usually, the core of CAPM is to help investors to make investment decisions by calculating the return on asset capital.

A developing stock market is China. As part of its efforts to move from a highly centralised, strictly planned economy to a flexible market economy, the Chinese government began developing a regulated stock market in the 1990s. There are two trading markets on the Chinese stock exchange. The first is the Shanghai Stock Exchange (SSE), which opened for business on December 19, 1990, after being founded on November 26, 1990. The other is the Shenzhen Stock Exchange (SZSE), which opened for business on July 3, 1991 after being founded on December 1, 1990[2]. Recently, CPAM has been used to evaluate the efficacy of the stock market and has undergone a variety of empirical tests. This paper's goal is to study applicability of the CAPM in the Chinese stock market through a summary and analysis of several research techniques.

1.2 Research Significance

China's securities market started late, and the CAPM model has been extensively used in articles analyzing the Chinese stock market in recent years. The results of the tests are mixed, and therefore its validity is debated by different scholars. The CAPM is based on a set of strict prerequisites, and its validity may vary considerably across countries and regions and across capital markets over time. This topic essentially revolves on the fundamental question of whether the CAPM model can now be used to analyse the Chinese stock market. However, some of these studies do not effectively test whether the Chinese stock market meets the requirements of the CAPM model. This paper will

provide some discussion on this issue. Therefore, by summarizing the results of the current studies, this paper hopes to compare and analyze the current state of research on the validity of using the CAPM to verify the Chinese stock market and to draw attention to the potential direction of the Chinese stock market's development.

1.3 Paper Organization

First, a summary of the CAPM model's applicability in the Chinese stock market is provided in this study, along with the reliability of employing various research techniques to confirm it. Second, the paper analyzes the constraints of the Chinese stock market in the context of the assumptions under which the CAPM is established and the existing literature. Finally, the conclusion of the paper summarizes the Chinese stock market's shortcomings and the directions that can be developed in the future.

2. Literature review

The link between anticipated returns and systematic risk is examined in this research through an examination of studies. By accounting for risk, the CAPM offers a popular and mostly objective method of calculating projected returns while allowing for the quantification of risk. Furthermore, the CAPM assists in determining the equity costs. The price of equity capital is indeed the rate of return required by investors when participating in a company's equity. Based on the existing literature, this paper composes and classifies the existing relevant studies and selects 9 papers with high relevance for explanation and comparison. This paper will analyze the relevant literature in detail. The paper will examine whether the Chinese stock market is effective through the different research methods of the past. The majority of the data show that the CAPM is not applicable to the current Chinese stock market, thus this article will summarize the studies that prove the efficiency of the CAPM model on the Chinese stock market by examining various research methodologies. According to studies, the Chinese stock market is still in its early stages, is not yet completely established, and is still a long way from being a normal market.

2.1 Validation of CAPM in Chinese Securities Market through Different Research Methods

The majority of empirical research on CAPM in China have mainly studied the Shanghai Stock Exchange, which implies that selecting a sample of stocks from the Shanghai Stock Exchange can provide a rich reference object. Moreover, the Chinese stock market is currently in the early phases of its development. More recent data might provide a more accurate reflection of the current state of the market.

Monthly closing price data for 51 A-share stocks showed on the Shanghai Stock Exchange are utilised as the stock sample in Deng Wei's study, and they are regularly recorded over the course of the 18 months of sampling. According to CAPM, the study will use the monthly returns of each stock from July to December 2018 and the Shanghai Composite Index's monthly returns from July 2018 through December 2019 to do a linear regression to obtain the values of α and β . R^2 is the coefficient of determination, and if it is less than 0.05, the value is significant. The statistical results indicate that most of the values are more than 0.5, which indicates that the projected monthly market returns have a significant ability to explain the monthly returns of each stock. Additionally, most of the equity has p-values that are less than 0.05, indicating that most of the equity is significant. The study demonstrates that the majority of the marginal values may be utilised as a legitimate estimate to calculate the systematic risk of the sample stocks by examining the P-value and R^2 using SPSS [3].

By using data for 100 stocks in each month from January 1, 2007, to February 1, 2018, Taoyuan Zhou and Huarong Liu analyse the series of time and cross-sectional data of the capital asset pricing model of the Chinese stock market. The results of the study indicate that the Chinese stock market has low excess returns for portfolios with high systematic risk, which indicates that the effectiveness of the Chinese stock market does not satisfy the CAPM model [4]. Drew, Naughton, and

Veeraragaghavan's findings demonstrate that mean-variance efficient investors in China have the option of choosing portfolios of tiny and low book value stock firms as market portfolios to get greater risk-adjusted returns. As a result, the results demonstrate that market determinants by themselves are insufficient to adequately represent the cross-section of China's average stock returns [5].

Gao Yan and Yang Xin selected a sample of 44 stocks from SSE and SZSE and observed their market data over the past ten years. Their findings demonstrate that stocks have a negative temporal value. This indicates that investors prioritise profits over the time value of money and that the majority of stock market participants in China are speculative. The link between anticipated returns and stock risk is not linearly positive, which brings us to the second point. The CAPM expects the relationship to be linearly positive, so the Chinese stock market does not satisfy the CAPM requirement. Finally, systematic risk affects the expected return of the Chinese stock market to some extent. However, it is not the only factor [6].

2.2 Analysing the Applicability of the CAPM in the Chinese Stock Market through Different Research Methods

In fundamental markets, many of the CAPM model's assumptions are false. One of the key presumptions of the CAPM, for instance, is that the securities market is an efficient market. Therefore, the CAPM is not necessarily applicable to the study of the effectiveness of the Chinese securities market.

The Shanghai Composite Index has been used more frequently among the relevant studies. The trajectory of the stock market as well as changes and increases in the value of all capital, including all categories of securities traded on the Shanghai Stock Exchange, may be reflected by this value-weighted index. In other words, the Shanghai Composite Index complies with this requirement for CAPM market portfolios. In order to confirm the CAPM's applicability, Zheng and Xu's study used 20 companies from the A-shares of SSE as a research sample. As a research sample and using the data from January 2010 to May 2015, the applicability of CAPM was verified. The applicability of the CAPM was verified in the monthly return data from January 2010 to May 2015. They come to the conclusion that Shanghai A-shares are improperly addressed by the CAPM model [7]. In Deng Wei's study, R^2 is calculated to be 0.059 from stock data, which indicates that the explanation of systematic risk on expected stock returns is weak. However, as systematic risk makes up just 6% of overall risk and absolute risk is 94%, unsystematic risk is responsible for the majority of all risks. This shows that a large portion of stock returns does not compensate for systematic risk, but rather for unsystematic risk, which is at odds with the CAPM's underlying assumptions [3]. Shi, Donghui (1996) examined a sample of 50 equities traded on the SSE between April 1993 and May 1996 and discovered an inverse relationship between systematic risk and predicted yield. The statistics indicate that systematic risk and expected returns do not have a substantial linear connection, and that unsystematic risk has a large influence on stocks [8].

2.3 Constraints of the Chinese Securities Market

In order to forecast asset returns under systematic risk, the CAPM model relies on a variety of simplifying assumptions about the market and investing behaviour. In spite of the fact that many of the CAPM model's assumptions are false, this enables the model to disregard numerous real-world problems. The market is efficient. From the above analysis, most of the existing literature suggests that the Chinese equity market does not meet the criteria of an efficient market, and the transaction costs in the Chinese equity market are much higher than those in some mature Western markets [6]. Therefore, when using the CAPM model to analyze the Chinese market, the results obtained may not be fully accurate.

However, the view that the CAPM is worthless is not entirely correct. The CAPM model has limitations comparable to those of other helpful models since, in the first place, every model simplifies reality, which is sometimes required for a good model. The separation of the stock market in China into A-shares and B-shares, which are equities offered to local and international investors

accordingly, is another significant aspect of the market. Sun used the CAPM to explore the Chinese stock market between 1994 and 1998. The findings demonstrate that business size has little bearing on the distribution of average returns [9]. Therefore, the size of the stock market in China is not one of the reasons for its unsuccessful validity using the CAPM.

Additionally, the validity and applicability of the model description as well as the plausibility of the model's assumptions are all necessary components of the true test of the model. The coefficient of return and β correlation in our stock market is not significant. The study of Peng Zhang and Xianghuan Meng indicated coefficients γ_1 be not remarkable equal to 0. Thus, it can be concluded that the return of Shanghai stock market has an excellent linear relationship with risk. The stock market in China, however, is currently in its early phases of growth. It does not reach the standard of a regulated market due to the constraints of capital size and professionalism, which lead to low overall investment efficiency [8]. The beta coefficient, in other words, demonstrates the Chinese stock market's limited ability to generate average returns. Still, to some extent, the CAPM fails because of its application in the Chinese stock market and can serve as a guide for the development and reformation of the Chinese stock market.

Another problem in the Chinese stock market may be caused by information inequality. The research conclusions of Domowitz et al. indicate that market segmentation is also a way to lead to poor information across markets [10]. This article analyses the following restraints that impact the Chinese securities market in order to further support the sustainable and healthy growth of China's securities market. First, the Chinese securities information disclosure system is inadequate. In addition, the Chinese securities market is vulnerable to the Chinese capital market development, China's own economic construction, and the development of the surrounding environment on the impact. Specifically, it can be summarized as follows: on the one hand, by analyzing the efficacy of the Chinese securities market using the CAPM model, the study shows that the Chinese securities market cannot satisfy the requirements of the CAPM. Fama had proposed a market effectiveness hypothesis (EMH). The content of this hypothesis is that stock prices will adjust with any new information released, which means that the current stock price fully responds to all relevant information [11].

3. Conclusion

By summarizing and analyzing the recent work of scholars on the use of CAPM to verify the validity of the Chinese securities market, this paper finds that the use of CAPM has become increasingly widespread in China in recent years. This paper organizes and classifies the available research results, and analyzes the studies using different methods to verify the effectiveness of the Chinese market using CAPM by comparing and analyzing the limitations and possible development trends of the Chinese securities market. Therefore, it demonstrates that the Chinese stock market is still inefficient at the moment. The CAPM model, on the other hand, has several limitations due to a simplified approach relying exclusively on the outcomes of hypothesis testing, but it is nevertheless valuable. In other words, even if the data reject the model, it may still be useful to policymakers to some extent.

The above comparisons and analyses show that most studies show a gap between the Chinese stock market and mature Western markets. In addition, there are areas where the Chinese stock market can be improved, for example, the information asymmetry situation. The information asymmetry in the stock market can affect the transition to a market economy in a developing country like China. This paper makes three solutions to solve the aforementioned difficulties in order to further support the sustainable and healthy growth of China's securities market: To begin, minimise information asymmetry and strengthen the system of information disclosure. Furthermore, reduce the securities market's vulnerability to government initiatives. Finally, develop institutional investors aggressively and promote the institutionalization of investment themes.

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