DISSERTATION INFORMATION

Title: **Enterprise risk management and cost of equity estimation model using macroeconomic factors**

Major: Business Administration Major ID: 9.34.01.01

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1. ABSTRACT

Enterprises deal with many operational risks, including production, investment, and capital mobilization. Macroeconomic risks (strategic risks) can cause severe damage to enterprises' operations and, hence, significantly affect their cost of equity. Therefore, the enterprises' value, shareholders' wealth, and other stakeholders' interests will be negatively affected.

Strategic risk management (the most important component of enterprise risk management (ERM)) is always of special interest to the enterprises's top managers. They even participate in risk management planning, implementing, inspecting, and reviewing. One of the strategic risk management activities related to the financial sector is that corporate administrators need to build or select a suitable model to estimate the cost of equity. This is one of the fundamental costs affecting enterprises' operations, dividend policy, and performance evaluation.

Many models for estimating the cost of equity exist in corporate finance and economics. However, the models built in recent times are often based on firm characteristics, such as assets, liabilities, equity, and the company's level of investment. Therefore, these models can be considered as micro-side models.

In practical applications, the capital asset pricing model CAPM (one-factor model) is most commonly used because this model is simple, easy to understand, and the data set is available and does not require complex processing skills. However, many assumptions in the CAPM are not realistic in practice. Notably, many studies have shown that not only market systematic risk but many other risks, especially macroeconomic risks, also impact the enterprise's cost of equity.

Using quantitative research methods, fundamental economic theories (strategic and financial risk management theories, macro-finance theories, cost of equity theory), and results from previous empirical studies, this dissertation proposes a new non-tradable factor model based on macroeconomic risks (EAPM) to estimate the cost of equity. Therefore, the EAPM has a macro-side approach. In addition, the EAPM model augments the CAPM models (using only one market factor), APT, IAPM and CAPM + alpha models and the survey results of Graham & Harvey (2001) by adding three more factors representing macroeconomic risks, including prime rate, long-term government bond yield, and exchange rate.

Similar to CAPM, this new EAPM has some important advantages, such as being simple and easy to understand; economic data is almost always available and free; it does not use the return on investment portfolios to classify characteristics, so it does not require high data processing skills like the exchange factor models. More importantly, the EAPM model has four factors (market risk and three macroeconomic risks, including base lending rate, long-term government bond yield, and exchange rate), so it is more flexibility than CAPM. In addition, the EAPM has a foundation in fundamental economic theory.

The EAPM can help managers make appropriate decisions in the areas of resource allocation for production, investment, capital mobilization, dividend policy development, as well as evaluating the performance of the company, the content of this dissertation is consistent with the concept of business administration (the study of how to manage a business) in the famous Oxford and Cambridge dictionaries (Cambridge, 2024; Oxford, 2024). In addition, this dissertation uses enterprise stock and market returns and macroeconomic data in building and testing the EAPM model, so the content of this dissertation is also consistent with the current interdisciplinary research trend (Gao, 2022; Gill et al., 2015).

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2. FINDINGS OF THE DISSERTATION

Using the Bayesian statistical method, non-parametric Bayesian estimator, MCMC simulation on two real daily and monthly data sets of 432 stocks in the S&P 500 index, confidence interval method and absolute t-statistic greater than 2.78 or 3, this dissertation tested the hypotheses and compared the efficiency between the two models EAPM and CAPM.

The results of the hypothesis testing showed that the EAPM has many advantages over the CAPM in estimating the beta coefficient of systematic market risk and the cost of corporate equity. These advantages include: 1) The EAPM indicates the factors representing economic risk that affect the cost of corporate equity, especially the prime rate. This finding is a significant difference that the CAPM does not indicate. 2) The EAPM is more efficient in estimating the cost of corporate equity. 3) The EAPM can be applied to more corporate securities in estimating the beta market systematic risk and the cost of equity in practice, especially with monthly data sets. 4) The EAPM can be used as an alternative to the CAPM in estimating the beta market systematic risk and the cost of equity, especially with monthly data sets. 5). The EAPM is more efficient than the CAPM in estimating the beta market systematic risk, especially with daily data sets. 6) The EAPM has similar model error, but better model stability. 7) The EAPM can better explain the relationship between the independent variables in the model and the cost of equity. 8) The EAPM is more consistent with the efficient market assumption, an important assumption of the CAPM model.

3. IMPLICATIONS AND FUTURE RESEARCH

The EAPM provides a new model that is consistent with basic economic theory and more efficient than CAPM in estimating the beta - the market risk coefficient and the cost of equity. The EAPM can help enterprise managers better understand and grasp the cost of equity and the weighted average cost of capital (core input costs, corporate-level strategies). So, managers can plan for enterprise's operations from here. In addition, with an understanding of the cost of equity, managers can also plan and choose appropriate capitals in restructuring activities and valuing enterprise’s stock. Finally, managers can also use EAPM to evaluate enterprise performance and set up appropriate dividend policy. These can help the manager cut costs and improve operational efficiency as well as relationships with shareholders and other stakeholders.

The findings of this dissertation and the EAPM can help the managers in risk management. These findings can also help other researchers have a new direction in building a model to estimate the cost of equity. Similarly, investors can also easily use the findings of this dissertation in practice to estimate the beta and value the stock they want to invest in.

This dissertation uses the Bayesian statistical method with the assumption that the coefficients of the EAPM model are alpha, beta, gamma, kappa, and lambda vary over time, and the distribution of these coefficients has a bell-shaped curve. However, the frequentist statistical method assuming that the coefficients of the EAPM are fixed (unchanged and unknown) is very popular in practical applications and research. Therefore, if the EAPM is used by the frequentist statistical method, the findings may differ from those of this dissertation.

The EAPM uses three factors representing macroeconomic risks (interest rates and exchange rates) while in reality there are many other macroeconomic risks such as PCEPI/CPI inflation index, GDP, GNP, ISM/PMI industrial production index, taxes, public and private spending, unemployment rate, and economic and political policy. These risks can also have an impact on the cost of euity. Therefore, these factors also need to be considered and added to the EAPM in the future.

With the above limitations, for future research, we will supplement by testing with data from other developed countries than the United States and developing countries using other estimation tools, simulation methods such as bootstrap or jackknife, and other economic risks.

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