

1. Introduction

The average return of US common stocks has only little correlation between the market betas of Sharpe-Lintner and the consumption betas of the intertemporal asset-pricing model of Breeden. However, some non-special standing variables, such as book-market equity ratio, show that they do. In this paper, they extend the work of Fama and French by expanding the set of returns, variables to be explained and the approach of testing the asset-pricing model is different.

2. The inputs to the time-series regressions

The independent variables include 1. Return on a market port of stocks 2. Book-to-market 3. Term-structure factors in return.

2.1 The explanatory returns

2.1.1 Bond-market factors

Use TERM to measure the risk in bond with respect to the interest rate in the long run. Use DEF, the difference between return of the market port to LT corporate bond, to measure default risk.

2.1.2 Stock market factors

Size, small firms are likely to have lower earnings compared to big one. BE/ME has a positive relation to average return. Proxy for the market factor is the excess market return and use 1-month bill rate as the risk-free rate.

2.2 The returns to be explained

Bonds, use the excess returns on 2 government bond and 5 corporate bond ports in the time-series regressions. Stocks, use excess returns on 25 ports, based on size and book-to-market equity. Later, they use port formed on E/P and D/P to check the robustness of the regression. The 5 largest ports have the largest fraction of value of about 74% of the value. In every quantile, except the smallest, the number of stocks and the total value decrease from lower to higher BE/ME port.

3. The playing field

3.1 The dependent returns

The 25 stock ports give an average excess return of between 0.32%-1.05% per month. There's negative correlation between size and average return. In the bond market, the average excess returns are less than 0.15% per month.

3.2 The explanatory returns

The average risk premium is 0.43% per month. The average premium in size related returns is only 0.27% per month. This can be considered a large return per month.

4. Common variation in returns

The slopes and R squared are evidence that risk factor capture the correlation between bond and stock returns.

4.1 Bond-market factors

Term and DEF exhibit a common variation of stock and bond returns. While the variation of bond can be clearer explained compared to stock.

4.2 Stock-market factors

The excess return on stock market ports, RM-RF capture correlation in stock return more than the term-structure factors.

4.3 Stock-market and bond-market factors

According to table 7, if we used bond and stock factors, we would have a strong regression to predict the stock and bond returns. Table 7, the five-factor regressions, has some contradiction with table 3 and 6. Table 7 got the conclusion that only low-grade bonds have a shared variation in bond and stock return. Whereas table 3,6 there's a variation when only used bond and stock market factors.

5. Cross-section of average returns

5.1 The cross-section of average stock returns

When excess market return is the only dependent variable in the regression, the intercept for stocks shows the size effect, except for the lowest BE/ME quintile. It concludes that the 2-term-structure factor have low R squared, implying low power for explaining Aver. return.

5.2 The cross-section of average bond returns

Table 3, 7b, 8b show that the common variation in bond returns is powerful in the bond-market factors and only LG port has a reasonable slope on the stock-market factor when TERM and DEF are in bond regressions.

6. Diagnostics (Checking the robustness of five common risk factors.)

6.1 The predictability of the regression residuals

The stock, bond return can be predicted using dividend yield, default spread, term spread and ST interest rate. In the regression, it shows no evidence that the residues are predictable implying that the five risk factors capture the cross-section expected returns.

6.2 January seasonals (Shows that stock returns, especially small one, have higher probability of be higher in January)

6.3 Split-sample tests

Split-sample regression confirms the common risk factors are related to size and book-to-market equity and the two also give evidence that they capture the cross-section of average stock returns.

6.4 Portfolio formed on E/P (Show that the average returns on E/P port is a U-shaped and emphasis that it's a challenge for the risk factors)

6.5 Portfolio formed on D/P (Also U-shaped, but the spread in average return is relatively weaker than E/P portfolio)

7. Interpretation and applications

7.1 Interpretation

5 factors model is pro at explaining common variation of bond and stock returns and the cross-section of average returns. The choices of factors are motivated by empirical experience not following any theories.

7.2 Applications

The results indicated that it can be used in any application that requires estimates of expected stock returns such as selection portfolios, measuring the abnormal returns in event studies and estimation of cost of capital.

7.3 Open questions

They leave questions left unanswered such as 1. How profitability, or any fundamentals, produce common variation in returns associated with size and BE/ME that does not pick up by the market return? 2. Can specific fundamentals be identified as state variables?