Leverage and inefficiencies in financial markets
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Chapter 6

Conclusion

For testing the empirical performance of existing asset pricing models, or else establish new models to explain financial puzzles, this thesis addresses four independent research topics related to asset pricing:

1. Empirical tests of the unlevered CAPM and solving the value premium puzzle by combining financial leverage ratios and the market risk premium.

2. Identifying the overnight return puzzle in Chinese stock markets and solving it according to the T + 1 trading rule.

3. Testing market efficiency in pricing oil stocks under different types of oil price shocks.

4. Constructing a stock return prediction model using firms’ financial leverage ratio and testing it empirically.

With existing asset pricing models or else newly constructed models, I analyze these research questions systematically and thus report some notable results. I elaborate on them here. These results are helpful to understand the roles of firms’ financial leverage ratios, trading mechanisms and extreme shocks of oil prices in asset pricing.

In Chapter 2, I propose an unlevered version of the CAPM, which I test with data from 7563 U.S. firms and a variety of test portfolios, for the period 1952-2014. The empirical results show that the unlevered CAPM performs relatively well compared with traditional implementations of the CAPM and the Fama and French (1993) three-factor model. Whereas these two models exhibit erratic behavior, depending on the particular choice of test portfolios, the unlevered CAPM is robust to such choices. Moreover, the value premium puzzle
potentially can be explained by the interaction between firms’ financial leverage and market risk premium. With a two-beta model to capture assets’ beta-premium sensitivity, I show that this translation of a conditional unlevered CAPM to an unconditional levered two-beta model provides an equally robust method to explain differences in the cross-section of returns. A notable feature of the Unlevered CAPM is that it is a simple single factor model. This feature is in line with my belief that asset pricing research does not necessarily progress by making the models more and more complicated.

Chapter 3 reports on a new financial puzzle in Chinese stock markets and thereby contributes three new findings. First, the average overnight return on market portfolios is significantly negative, but the average overnight returns on other countries’/regions’ stock markets are all positive. Second, the T + 1 trading rule generates a discount (T + 1 discount), around 14 basis points, according to a periodical pattern: It is incorporated in the opening price every morning, then eliminated at the end of the day. Third, the evaluation of the T + 1 discount’s contribution to overnight risk identifies an lower (upper) bound of its variance contribution rate at around 5.11% (10.22%). This finding indicates that the T + 1 trading rule substantially increases overnight risk, despite T+1 trading rule was introduced with the belief it would reduce volatility. It is worth to note that the overnight return puzzle is unique in Chinese stock markets. However, I believe that for a research paper it is not always necessary to be general, but it should address an interesting question clearly.

In Chapter 4, I propose a two-stage analysis method to study pricing efficiency for oil stocks in the face of different kinds of oil shocks. The investigation produces five main findings. First, it challenges the efficient market hypothesis. Oil stocks tend to be overpriced after negative oil price shocks. Second, pricing error rarely differs from zero after moderate oil price changes or positive oil price shocks, so the efficient market hypothesis is frequently supported. Third, oil stocks’ factor loadings on the market portfolio are slightly smaller than one, implying that oil stocks represent a conservative investment. Fourth, the factor loadings on size are significantly negative, due to the relatively large market values of oil industry firms. Fifth, the factor loadings on the book-to-market ratio are significantly positive, consistent with the notion that oil companies tend to have higher book-to-market ratios and financial leverage than firms in other industries.

Finally, Chapter 5 establishes a stock return prediction model, using the un-
levered CAPM. The model reveals that portfolios’ leverage can forecast their returns. Using fixed and random effects panel data regressions, I estimate and test the significance of the leverage ratio’s coefficient in the U.S. stock markets. Both panel regressions indicate a significant, positive slope of the leverage ratio, and the estimations are roughly of the same order of magnitude as the risk premium. The out-of-sample test provides further evidence in support of our conclusion.