Long-term Abnormal Stock Performance: UK evidence

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature:....................Yan Huang.........................
Acknowledgement

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Abstract

One of the most controversial issues for long-term stock performance is whether the presence of anomalies is against the efficient market hypothesis. The methodologies to measure abnormal returns applied in the long-run event studies are questioned for their reliability and specification. This thesis compares three major methodologies via a simulation process based on the UK stock market over a period of 1982 to 2008 with investment horizons of one, three and five years. Specifically, the methodologies that are compared are the event-time methods based on models (Chapter 3), the event-time methods based on reference portfolios (Chapter 4), and the calendar-time methods (Chapter 5).

Chapter 3 covers the event-time approach based on the following models which are used to estimate normal stock returns: the market-adjusted model, the market model, the capital asset pricing model, the Fama-French three-factor model and the Carhart four-factor model. The measurement of CARs yields misspecification with higher rejection rates of the null hypothesis of zero abnormal returns. Although the application of standard errors estimated from the test period improves the misspecification, CARs still yield misspecified test statistics. When using BHARs, well-specified results are achieved when applying the market-adjusted model, capital asset pricing model and Fama-French three-factor model over all investment horizons. It is important to note that the market model is severely misspecified with the highest rejection rates under both measurements.

The empirical results from simulations of event-time methods based on reference portfolios in Chapter 4 indicate that the application of BHARs in conjunction with p-value from pseudoportfolios is appropriate for application in the context of long-run event studies. Furthermore, the control firm approach together with student t-test statistics is proved to yield well-specified test statistics in both random and non-random samples. Firms in reference portfolios and control firms are selected on the basis of size, BTM or both. However, in terms of power of test, these two approaches have the least power whereas the skewness-adjusted
test and bootstrapped skewness-adjusted test have the highest power. It is worth noting that when the non-random samples are examined, the benchmark portfolio or control firm needs to share at least one characteristic with the event firm.

The calendar-time approach is suggested in the literature to overcome potential issues with event-time approaches like overlapping returns and calendar month clustering. Chapter 5 suggests that both three-factor and four-factor models present significant overrejections of the null hypothesis of zero abnormal returns under an equally-weighted scheme. Even for stocks under a value-weighted scheme, the rejection rate for small firms shows overrejection. This indicates the small size effect is more prevalent in the UK stock market than in the US and the calendar-time approach cannot resolve this issue. Compared with the three-factor model, the four-factor model, despite its higher explanatory power, improves the results under a value-weighted scheme. The ordinary least squares technique in the regression produces the smallest rejection rates compared with weighted least squares, sandwich variance estimators and generalized weighted least squares. The mean monthly calendar time returns, combining the reference portfolios and calendar time, show similar results to the event-time approach based on reference portfolios. The weighting scheme plays an insignificant role in this approach.

The empirical results suggest the following methods are appropriately applied to detect the long-term abnormal stock performance. When the event-time approach is applied based on models, although the measurement of BHARs together with the market-adjusted model, capital asset pricing model and Fama-French three-factor model generate well-specified results, the test statistics are not reliable because BHARs show severe positively skewed and leptokurtic distribution. Moreover, the reference portfolios in conjunction with p-value from pseudoportfolios and the control firm approach with student t test in the event-time approach are advocated although with lower power of test. When it comes to the calendar-time approach, the three-factor model under OLS together with sandwich variance estimators using the value-weighted scheme and the mean monthly calendar-time abnormal returns under equal weights are proved to be the most appropriate methods.
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