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ABSTRACT

In this paper the authors extend the analysis in Woodward and Brooks (2010) to derive a generalized form of Merton’s (1981) dual beta market timing model that allows for continuous adjustment of portfolio beta in response to changing market conditions, and also includes the dual beta model as a special case. The model provides a more realistic representation of the fund return generation process. Using this model the authors test the market timing skills of fund managers for a sample of Australian superannuation funds for the period 1990 to 2002. The authors find that managed funds in which investors voluntarily select a given fund (retail funds) experience frequent rebalancing when compared to managed funds in which the investors’ contribution is involuntary (wholesale funds). The authors relate the greater sensitivity to all changes in market conditions of retail funds to higher expenses and poor performance that was found in a recent study by Langford, Faff and Marisetty (2006). The results have important implications for Australian superannuation policy, since the Australian Government, effective from 1st July 2005, has required all funds to introduce voluntary contribution schemes.

Keywords: Asset Pricing, Dual Beta Market Timing, Fund Performance, Logistic Regression, Market Timing

INTRODUCTION

Among the theoretical models on fund manager performance, Merton’s (1981) dual beta model is widely used for testing the market timing ability of fund managers. It should be noted that market timing in this paper does not refer to the late trading controversy. The Merton model is popularized through the Henriksson and Merton (1981) empirical implementation. This model is transformed into different variations and used even in the recent times. For an example, see Ferson and Schadt (1996) who use a conditional version of Henriksson and Merton (1981). Merton’s model is a response to the single beta or constant risk model of Jensen (1968) which has been recognized to be overly simplistic (see Jensen (1972), Lee and Rahman

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(1990), Treynor and Mazuy (1966) and Grinblatt and Titman (1989)) since informed money managers are apt to change their portfolio risks in response to market conditions, for instance see Ferson and Schadt (1996) who control for publicly available predetermined information variables in their models. In Merton’s model, money managers change the risks of their portfolios depending on their information about the future return on the market relative to the risk-free security. The market timing skills of money managers is assessed by measuring whether the managers anticipate the market return and change the portfolio risk accordingly.

Lee and Rahman (1990) describe the information structure in Merton’s model as being too coarse and the dichotomy of market returns as either outperforming or underperforming the risk-free rate as unsophisticated. They develop a model using a continuously varying noisy information signal about the future market return and arrive at a quadratic regression similar to that used by Treynor and Mazuy (1966).

Recent applications of Merton’s model can be found in Ferson and Schadt (1996), Bollen and Busse (2001) Chance and Hemler (2001), and Farnsworth et al. (2002). Ferson and Schadt (1996) extend the conditional CAPM framework to performance evaluation. In this framework, the risk of a portfolio may change over time due to changes in the public information structure as well as management skill in anticipating market conditions. The conditional CAPM framework for performance evaluation has been criticized by Kryzanowski et al. (1997) and Chance and Hemler (2001). Kryzanowski et al. (1997) argue that if fund managers make their investment decisions based strictly on the $t-1$ information set, the Jensen’s alpha of the portfolio will be zero. Thus the model cannot capture the abnormal performance of fund managers that can be attributed to their real-time market timing skills.

Apart from these continuing inconsistencies, the Merton (1981) dichotomization of market conditions has been shown to be unrealistic as a test of the market timing skills of fund managers. More realistically, fund managers incorporate the magnitude of the market indicator in their portfolio composition decisions. At any rate it seems implausible that two very different positive forecast values of the market indicator would lead to the same response. In this paper we generalize the Merton model with four important objectives. First, we derive a logistic smooth transition market (LSTM) model as an alternative to the dual beta model. The LSTM model is more general and is flexible enough to capture a wide range of behaviors that include both the constant risk and dual beta market (DBM) model as special cases. Second, we provide a better characterization of the information structure of the fund manager by allowing for smooth transition in response to movements in market indicators. Third, we provide a more flexible testing method for market timing by loosening the restrictive dichotomous response assumption of the Merton (1981) model. Fourth, we test our model by using Australian superannuation funds data and present some interesting results.

The LSTM model is used in conjunction with a duration dependent, magnitude sensitive indicator variable to measure the market timing skills of fund managers. The rationale for using a duration dependent, magnitude sensitive indicator variable is that fund managers base their rebalancing decisions on both the sign and the magnitude of the market indicator as well as the duration of the current state of the market. For example extreme up markets of long duration would have a greater effect on the forecasts of fund managers than would slight up markets of short duration ceteris paribus. At any rate, a definition that incorporates all these facets is more in line with the trend based schemes of Pagan and Sossounov (2003) and Lunde and Timmermann (2004), and better represents the enduring periods of growth and contraction that are generally associated with the concepts of bull and bear markets.

We apply the model to Australian superannuation funds. Australian superannuation funds are broadly classified as wholesale and retail funds based on the extent of choice in selecting a given fund. Investors of wholesale
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