

Investing in Mutual Funds with Regime Switching

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Abstract

There is now considerable evidence suggesting that economic systems including stock markets periodically transition from one regime to another. For example, economies periodically switch between booms and recessions. Similarly, stock markets periodically switch between ‘bull’ and ‘bear’ market states with each state being characterized by distinctive dynamics. Are the potential regime shifts in the stock market returns relevant for the mutual fund selection decision of fund investors? If so, how should they account for such regime switches when selecting mutual funds?

This paper develops a Bayesian framework for choosing an optimal portfolio of mutual funds in the presence of regime switching in stock market returns. Specifically, I adopt a Bayesian methodology that allows for regime uncertainty to be incorporated in the investment decision of the investor who wishes to select a portfolio of mutual funds with the highest ex ante Sharpe ratio. In addition to the uncertainty regarding the economic states, a fund investor also faces two other sources of uncertainty in making her fund selection decision. The first uncertainty concerns the degree of pricing error afflicting the asset pricing model used by her in evaluating fund performance. The other source of uncertainty facing the investor relates to the degree of skill possessed by the fund managers. I examine the investment decisions of investors under a range of prior beliefs regarding both the validity of the benchmark asset pricing models utilized for performance evaluation, as well as managerial skill.

The incorporation of regime switching uncertainty in the decision problem of the investor makes the investment problem non-trivial. A key feature of the proposed framework of this paper is the use of the Gibbs sampling procedure to estimate the relevant parameters of interest. The use of the Gibbs sampling procedure makes it possible to estimate a high-dimensional system involving over 500 funds. Importantly, the framework allows for decision making in the context of a large number of assets without the need to specify or optimize the complete likelihood function – a task that would be extremely difficult, if not altogether infeasible, in the context of a regime switching model with several hundred assets and unobserved states.

I find that for a range of prior beliefs regarding the pricing error of the CAPM and the 4-factor Carhart model, and fund manager skill, recognizing regime switching in market returns exerts a powerful influence on the fund choices of the investor. In order to gauge the economic

significance of regime switching for the fund selection decision I calculate the certainty equivalent loss experienced by the investor if she were to ignore the regime switches in market returns. I find that the economic costs of ignoring regime switching are substantial. For example, an investor with complete prior confidence in the Capital Asset Pricing Model but who rules out the possibility of managerial skill, would experience a utility loss of 90% or 267 basis points per month in certainty equivalent terms, when failing to account for the regimes. Alternatively, consider an investor whose prior beliefs attach a 5% probability to the event that asset returns will deviate from the CAPM's predictions by $\pm 4\%$ per year. The cost of ignoring regime switches for such an investor ranges between 81 and 100 basis points per month depending on her prior beliefs in managerial skill.

In summary, this paper makes two contributions to the literature on investors' mutual fund selection decision. First, it proposes a formal Bayesian framework to allow investors to incorporate regime switching uncertainty in their decision process. The proposed framework makes it feasible to address regime switching uncertainty even in the context of a portfolio allocation decision involving several hundred mutual funds. Second, the paper provides an assessment of the economic value of accounting for regime switching in market returns when selecting a portfolio of mutual funds. The central message that emerges from the paper is that it is important for investors to recognize the potential regime switches in benchmark returns when evaluating and investing in mutual funds.