

Return Attribution Analysis of the UK Insurance Portfolios

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Abstract

We examine the attribution of premium growth rates for the five main insurance sectors of the United Kingdom for the period 1969-2005; in particular, Property, Motor, Pecuniary, Health & Accident, and Liability. In each sector, the growth rates of aggregate insurance premiums are viewed as portfolio returns which we attribute to a number of factors such as losses, expenses, their expectations and uncertainty as well as market power, using the Sharpe (1988, 1992) Style Analysis. Our estimation method differs from the standard least squares practice which does not provide confidence intervals for style betas and adopts a Bayesian approach, resulting in a robust estimate of the entire empirical distribution of each beta coefficients over the long run for the full sample. We also perform a dynamic analysis of robust estimation for a rolling window of seven overlapping samples. Our empirical findings show that there are some main differences across industries as far as the shares attributed to the underlying factors in the long run. Rolling regressions assist us to identify the variability of these shares over time, but also across industries.

Keywords: Insurance Premiums, Monte Carlo Integration, Non-Negativity Constraints, Return Attribution, Sharpe Style Analysis

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