

Executive Summary

This paper investigates the empirical characteristics of the pricing kernel based on two different models and quantifies the outcome by applying it to portfolio management. We determine the *empirical pricing kernel* (EPK) based on the state-preference approach (SPA) by implementing a recently developed method by Aït-Sahalia and Lo (2000) involving S&P 500 index options. We compare the results to the pricing kernel proposed by traditional economic theory, specifically the mean-variance approach (MVA) credited to Markowitz (1952). For each estimate, we construct what we call an *optimal structured product* (OSP) to compare the respective performances.

We find that the MVA-implied pricing kernel is a linearly decreasing function of aggregate resources. The estimated SPA-based EPK, however, exhibits a non-linear pattern, indicating a contradiction to underlying assumptions inherent to standard models. This is commonly referred to as the *empirical pricing kernel puzzle*. This difference in outcome is reflected in the respective OSPs: the OSP implied by the SPA consistently outperforms the OSP implied by the MVA.

Our reported results confirm recent findings on the pricing kernel and offer an additional tool to quantify the implications.