Gain, Loss, and Asset Pricing

Antonio E. Bernardo and Olivier Ledoit

University of California, Los Angeles

We develop an approach to asset pricing in incomplete markets that bridges the gap between the two fundamental approaches in finance: model-based pricing and pricing by no arbitrage. We strengthen the absence of arbitrage assumption by precluding investment opportunities whose attractiveness to a benchmark investor exceeds a specified threshold. In our framework, the attractiveness of an investment opportunity is measured by the gain-loss ratio. We show that a restriction on the maximum gain-loss ratio is equivalent to a restriction on the ratio of the maximum to minimum values of the pricing kernel. By limiting the maximum gain-loss ratio, we can restrict the admissible set of pricing kernels, which in turn allows us to restrict the set of prices that can be assigned to assets. We illustrate our methodology by computing price bounds for call options in a Black-Scholes economy without intermediate trading. When we vary the maximum permitted gain-loss ratio, these bounds can range from the exact prices implied by a model-based pricing approach to the loose price bounds implied by the no-arbitrage approach.

I. Introduction

There are two fundamental approaches for pricing assets. Each restricts the set of prices that can be assigned to an asset by restricting