

Assessing the Incremental Value of Option Pricing Theory Relative to an "Informationally Passive" Benchmark

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In modern finance, the value of an active investment strategy is measured by comparing its performance against the benchmark of passively holding the market portfolio and the riskless asset. We wish to evaluate the marginal contribution of a theoretical derivatives pricing model in the same way, by comparing its performance against an "informationally passive" alternative model. All rationally priced options must satisfy a number of conditions to rule out profitable static arbitrage. The Black-Scholes model, and others like it, are obtained by assuming an equilibrium in which there are no profitable dynamic arbitrage opportunities either. The passive model we consider incorporates only the fundamental properties of option prices that must hold to avoid static arbitrage, but has no theoretical content beyond that. We review different measures of model performance and apply them to several versions of the Black-Scholes model and our passive model. As with active portfolio management, it turns out to be not that easy for an "active" model to do a lot better than a well designed passive alternative. For example, "classical" Black-Scholes model turns out to be less accurate than the passive benchmark.

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