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Abstract

Steve Ross, a towering figure in modern finance, died last spring. Since then, numerous memorials and special events have taken place, honoring his many achievements in economics and finance. This article takes a fresh look at one of Ross's earliest papers on options, in which he showed that they have the ability to "complete" an incomplete market. The example in that 1976 paper showed how a set of options with different strikes can subdivide the range for the possible future price of a given stock to create Arrow–Debreu securities, each of which pays off on the occurrence of a single future

stock price. In this article, the author reviews Ross's paper and shows how it leads to the Breeden–Litzenberger methodology for extracting the risk-neutral density from options market prices. He then extends Ross's one-stock model to the case with multiple risk factors and shows how options written on a single linear combination of their prices can still complete the higher dimensional market.

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