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# Drug development costs when financial risk is measured using the Fama–French three-factor model

John A. Vernon, Joseph H. Golec, Joseph A. Dimasi

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## Abstract

In a widely cited article, DiMasi, Hansen, and Grabowski (2003) estimate the average pre-tax cost of bringing a new molecular entity to market. Their base case estimate, excluding post-marketing studies, was $802 million (in $US 2000). Strikingly, almost half of this cost (or $399 million) is the cost of capital (COC) used to fund clinical development expenses to the point of FDA marketing approval. The authors used an 11% real COC computed using the capital asset pricing model (CAPM). But the CAPM is a single factor risk model, and multi-factor risk models are the current state of the art in finance. Using the Fama–French three factor model we find that the cost of drug development to be higher than the earlier estimate. Copyright © 2009 John Wiley & Sons, Ltd.

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## Citing Literature