

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

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

First published: 12 July 2010

<https://doi.org/10.1002/hecl.1538>



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.

REFERENCES

DiMasi JA, Hansen R, Grabowski HG. 2003. The price of innovation: new estimates of drug development costs. *Journal of Health Economics* 22: 141–185.

[Web of Science®](#)  | [Google Scholar](#) 

Fama EF, French KR. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33: 3–56

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Grabowski HG, Vernon JM, DiMasi JA. 2002. Returns on research and development for 1990s new drug introductions. *Pharmacoeconomics* 20(Suppl. 3): 11–29.

[PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Graham J, Harvey C. 2001. The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics* 60: 187–243.

[Web of Science®](#) | [Google Scholar](#)

Poterba JM, Summers LH. 1995. A CEO survey of U.S. companies time horizons and hurdle rates. *Sloan Management Review* (Fall) 37(1): 43–53.

[Web of Science®](#) | [Google Scholar](#)

Citing Literature



[Download PDF](#)

ABOUT WILEY ONLINE LIBRARY

[Privacy Policy](#)

[Terms of Use](#)

[About Cookies](#)

[Manage Cookies](#)

[Accessibility](#)

[Wiley Research DE&I Statement and Publishing Policies](#)

HELP & SUPPORT

[Contact Us](#)

[Training and Support](#)

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



[Manage Preferences](#)

[Accept All](#)

[Reject Non-Essential](#)

Copyright © 1999-2026 John Wiley & Sons, Inc or related companies. All rights reserved, including rights for text and data mining and training of artificial intelligence technologies or similar technologies.

WILEY

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



Manage Preferences

Accept All

Reject Non-Essential