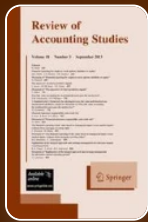



[Home](#) > [Review of Accounting Studies](#) > Article

# Over-investment of free cash flow

| Published: 23 June 2006


| Volume 11, pages 159–189, (2006) [Cite this article](#)

## [Review of Accounting Studies](#)

[Aims and scope](#) →[Submit manuscript](#) →[Scott Richardson](#) <sup>1</sup> **36k** Accesses  **1319** Citations  **11** Altmetric  **1** Mention [Explore all metrics](#) →

## Abstract

This paper examines the extent of firm level over-investment of free cash flow. Using an accounting-based framework to measure over-investment and free cash flow, I find evidence that, consistent with agency cost explanations, over-investment is concentrated in firms with the highest levels of free cash flow. Further tests examine whether firms' governance structures are associated with over-investment of free cash flow. The evidence suggests that certain governance structures, such as the presence of activist shareholders, appear to mitigate over-investment.

 This is a preview of subscription content, [log in via an institution](#)  to check access.[Access this article](#)

[Log in via an institution →](#)

**Buy article PDF 39,95 €**

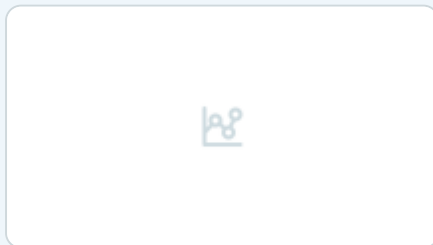
Price includes VAT (Poland)

Instant access to the full article PDF.

Rent this article via [DeepDyve](#) 

[Institutional subscriptions](#) →

### Similar content being viewed by others



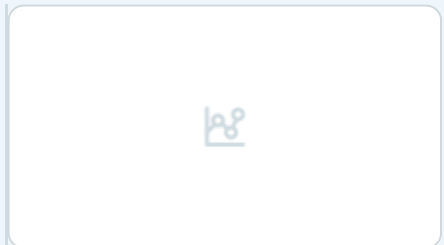
**Ownership structure and investment-cash flow sensitivity.**

Article | 04 May 2017



**Corporate Governance and Firm Cash Holdings in the U.S.**

Chapter | © 2012



**A state-of-the-art review of corporate cash holding research**

Article | 26 October 2017

## Notes

1. Prior work in finance and economics examining the relation between cash flow and investment expenditure has tended to use either balance sheet measures of the stock of cash and cash equivalents (e.g., Harford, [1999](#)) or earnings based measures as a proxy for cash flow (e.g., Lang, Stulz, & Walkling, [1991](#); Opler & Titman, [1993](#)). It is well known that earnings and cash flows are not equivalent measures (e.g., Sloan, [1996](#)). This paper seeks to measure free cash flow directly using information from the statement of cash flows as opposed to noisy combinations from the income statement and balance sheet.
2. Depreciation and amortization is likely to be a reasonable estimate for

maintenance investment (of the capital expenditure variety) for firms whose depreciation schedule closely maps with the use of the asset. However, this is not likely to be the case for all firms. Likewise, depreciation and amortization is not likely to be a good approximation of maintenance investment for R&D. Recognizing these limitations, the investment expectation model developed in [Section 1.4](#) includes prior firm level investment. To the extent that there is a temporally constant component to maintenance investment including this variable will help capture such investment.

3. I estimate the investment expectation model across all firms which implies that the average over-investment across firm-years is equal to zero. Obviously, this analysis is subject to the standard criticism of mis-specification in the investment expectation model (with respect to both functional form and the set of included independent variables). To address these concerns, I consider different sets of independent variables in the investment model (see [Section 3](#)) and perform analysis using raw and ranked data as well as a portfolio approach that assumes measurement error is uncorrelated across portfolios (discussed in [Section 3.2](#)). My results are robust to all of these specifications.
4. In the empirical implementation of this model I use a measure of operating earnings. This is driven by practical considerations relating to the predictability of future abnormal earnings. Measures of bottom line earnings do not perform as well as measures of operating earnings in predicting abnormal earnings. This is largely due to the lower persistence of the transitory items that are included in measures of comprehensive or bottom line income (e.g., Dechow et al., [1999](#)).
5. Specifically, the framework is flexible enough to allow inter-temporal and cross-sectional variation of these last two parameters. However, for my purposes I assume a constant discount rate of 12 percent and the persistence parameter of 0.62 as reported in Dechow et al. ([1999](#)). I have re-performed all analyses using (i) industry specific earnings persistence parameters, and (ii) firm specific cost of capital estimates from the CAPM model. The key inference

that over-investment is concentrated in firms with positive free cash flow is unaffected by these alternative estimation approaches.

6. The reciprocal is preferred for two reasons. First, the distribution of the reciprocal is less skewed leading to more desirable properties for statistical tests. Second, the measure is continuous through zero such that firms with negative book values are ranked similar to high growth firms. Note that using the reciprocal (i.e.,  $V/P$ ) means that the expected relation between investment and growth opportunities is negative.
7. The mean firm in my sample undertakes investment expenditure equal to 13.1% of its asset base. Maintenance expenditure for the average firm is equal to 5.7% of the asset base. This constitutes 44% of total investment expenditure ( $0.057/0.131 = 0.44$ ).
8. It is not critical for my analysis that my investment model is free from error. I only need to be able to identify a measure of unexpected (under/over) investment that is correlated with true unexpected (under/over) investment. This is likely to be achieved given that my model of expected investment expenditure is drawn from prior research. The theoretical foundation for the reduced form model, the robustness of the relation (between over-investment and free cash flow) to alternative specifications, the concentration of the relation in firms with positive free cash flow and cross-sectional variation in the relation based on the strength of governance structures (see [Section 4](#)) all speaks to an economic result and not merely a spurious correlation.

## References

---

Allen, F., & Michaely, R. (2003) Payout policy. In *North-Holland handbook of economics* edited by George Constantinides, Milton Harris, and Rene Stulz.

Alti, A. (2003). How sensitive is investment expenditure to cash flow when financing is frictionless? *Journal of Finance*, 53, 707–722.

[Article](#) [Google Scholar](#)

Barro, R. (1990). The stock market and investment. *Review of Financial Studies*, 3, 115–131.

[Article](#) [Google Scholar](#)

Bates, T. W. (2005). Asset sales, investment opportunities, and the use of proceeds. *Journal of Finance*, 60, 105–135.

[Article](#) [Google Scholar](#)

Berger, P. G., & Hann, R. (2003). The impact of SFAS 131 on Information and Monitoring. *Journal of Accounting Research*, 41, 163–223.

[Article](#) [Google Scholar](#)

Blanchard, O. J., Lopez-de-Silanes, F., & Shleifer, A. (1994). What do firms do with cash windfalls? *Journal of Financial Economics*, 36, 337–360.

[Article](#) [Google Scholar](#)

Brown, L., & Caylor, M. (2004). Corporate Governance and Firm Performance. Working paper, Georgia State University.

Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2005). Capital allocation and timely recognition of economic losses: International evidence. Working paper, University of Chicago.

DeAngelo, H., DeAngelo, L., & Stulz, R. (2004). Dividend Policy, Agency Costs and Earned Equity. Working paper, University of Southern California.

Dechow, P. M., Hutton, A. P., & Sloan, R. G. (1999). An empirical assessment of the residual income valuation model. *Journal of Accounting and Economics*, 26, 1–34.

[Article](#) [Google Scholar](#)

Dechow, P. M., Richardson, S. A., & Sloan, R. G. (2005). The Persistence and Pricing of the Cash Component of Earnings. Working paper, University of Michigan and University of Pennsylvania.

Dey, A. (2005). Corporate governance and financial reporting credibility. Working paper, Northwestern University.

Fairfield, P. M. (1994). P/E, P/B and the present value of future dividends. *Financial Analysis Journal*, July-Aug, 23–31

[Article](#) [Google Scholar](#)

Fairfield, P. M., Whisenant, J. S., & Yohn, T. L. (2003). Accrued earnings and growth: Implications for future profitability and market mispricing. *Accounting Review*, 78, 353–371.

[Google Scholar](#)

Fama, E. F., & French, K. R. (1997). Industry costs of equity. *Journal of Financial Economics*, 43, 153–194

[Article](#) [Google Scholar](#)

Fama, E. F., & Macbeth, J. D. (1973). Risk, return and equilibrium—empirical tests. *The Journal of Political Economy*, 81, 607–636

[Article](#) [Google Scholar](#)

Fazzari, S. M., Hubbard, R. G., & Petersen, B. C. (1988). Financing constraints on corporate investment. *Brookings Papers on Economic Activity*, 141–195.

Fazzari, S. M., & Petersen, B. C. (1993). Working capital and fixed investment: New evidence on financing constraints. *RAND Journal of Economics*, 24, 328–342.

[Article](#) [Google Scholar](#)

Feltham, G. A., & Ohlson, J. A. (1996). Uncertainty resolution and the theory of depreciation measurement. *Journal of Accounting Research*, 34, 209–234.

[Article](#) [Google Scholar](#)

Gompers, P. A., Ishii, J. L., & Metrick, A. (2003). Corporate Governance and Equity Prices. *Quarterly Journal of Economics*, 118, 107–155.

[Article](#) [Google Scholar](#)

Goodman, T. H. (2005). How do contracts adapt to an increase in free cash flow? Working paper, University of Pennsylvania.

Harford, J. (1999). Corporate cash reserves and acquisitions. *Journal of Finance*, 54, 1969–1997.

[Article](#) [Google Scholar](#)

Hoshi, T., Kashyap, A., & Scharfstein, D. (1991). Corporate structure, liquidity and investment: Evidence from Japanese industrial groups. *Quarterly Journal of Economics*, 106, 33–60.

[Article](#) [Google Scholar](#)

Hubbard, R. G. (1998). Capital-market imperfections and investment. *Journal of Economic Literature*, 36, 193–225.

Iman, R. L., & Conover, W. J. (1979). The use of rank transform in regression. *Technometrics*, 21, 499-509.

[Article](#) [Google Scholar](#)

Jensen, M. C. (1986). Agency costs and free cash flow, corporate finance and takeovers. *American Economic Review*, 76, 659-665.

[Google Scholar](#)

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.

[Article](#) [Google Scholar](#)

Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics*, 112, 169-215

[Article](#) [Google Scholar](#)

Kaplan, S. N., & Zingales, L. (2000). Investment-cash flow sensitivities are not valid measures of financing constraints. *Quarterly Journal of Economics*, 115, 707-712.

[Article](#) [Google Scholar](#)

Lamont, O. (1997). Cash flow and investment: Evidence from internal capital markets. *Journal of Finance*, 52, 83-109.

[Article](#) [Google Scholar](#)



Lamont, O. (2000). Investment plans and stock returns. *Journal of Finance*, 55, 2719-2748.

[Article](#) [Google Scholar](#)

Lang, L. H. P., Stulz, R. M., & Walkling, R. A. (1991). A test of the free cash flow hypothesis: The case of bidder returns. *Journal of Financial Economics*, 29, 315-335

[Article](#) [Google Scholar](#)

Larcker, D. F., Richardson, S. A. & Tuna, A. I. (2005). How important is corporate governance? Working paper, University of Pennsylvania.

Li, D. (2004). The implications of capital investments for future profitability and stock returns—an overinvestment perspective. Working paper, University of California, Berkeley.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48, 261-297.

[Google Scholar](#)

Morck, R., Shleifer, A., & Vishny, R. W. (1990). Do managerial objectives drive bad acquisitions? *Journal of Finance*, 45, 31-48.

[Article](#) [Google Scholar](#)

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5, 147-175.

[Article](#) [Google Scholar](#)

Myers, S. C., & Majluf, N. (1984). Corporate financing and investment decisions

when firms have investment information that investors do not have. *Journal of Financial Economics*, 13, 187-220.

[Article](#) [Google Scholar](#)

Ohlson, J. A. (1995). Earnings, book values and dividends in security valuation. *Contemporary Accounting Research*, 11, 661-687.

[Article](#) [Google Scholar](#)

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52, 3-46.

[Article](#) [Google Scholar](#)

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (2001). Corporate cash holdings. *Journal of Applied Corporate Finance*, 14, 55-66.

[Article](#) [Google Scholar](#)

Opler, T., & Titman, S. (1993). The determinants of leveraged buyout activity: Free cash flow vs. financial distress costs. *The Journal of Finance*, 48, 1985-1999.

[Article](#) [Google Scholar](#)

Penman, S. H. (1991). An evaluation of accounting rate of return. *Journal of Accounting, Auditing and Finance Spring*, 6, 233-255

[Google Scholar](#)

Penman, S. H. (1996). The articulation of price-earnings ratios and market-to-book ratios and the evaluation of growth. *Journal of Accounting Research*, 34, 235-259.

[Article](#) [Google Scholar](#)

Rogers, W. (1993). Regression standard errors in clustered samples. *Stata technical bulletin reprints* (vol. 3, pp. 83-94). College Station, Texas: Stata Press.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *Journal of Finance*, 52(2), 737-783.

[Article](#) [Google Scholar](#)

Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71, 289-315.

[Google Scholar](#)

Strong, J. S., & Meyer, J. R. (1990). Sustaining Investment, discretionary investment, and valuation: A residual funds study of the paper industry. In R. G. Hubbard (ed.) *Asymmetric information, corporate finance, and investment* (pp. 127-148). Chicago, IL: University of Chicago Press.

[Google Scholar](#)

Stulz, R. M. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 26, 3-27.

[Article](#) [Google Scholar](#)

Titman, S., Wei, K. C. J., & Xie, F. (2004). Capital investments and stock returns. *Journal of Financial and Quantitative Analysis*, 39, 677-700.

[Article](#) [Google Scholar](#)

Wang, X. (2003). Capital allocation and accounting information properties. Working paper, Emory University.

White, H. (1980). A Heteroskedasticity-consistent covariance matrix estimator

and a direct test for heteroskedasticity. *Econometrica*, 48, 817–838.

[Article](#) [Google Scholar](#)

Whited, T. (1992). Debt, liquidity constraints and corporate investment: Evidence from panel data. *Journal of Finance*, 47, 1425–1460.

[Article](#) [Google Scholar](#)

Wilcox, J. (1984). The P/B-ROE valuation model. *Financial Analysts Journal*, Jan–Feb, 58–66.

[Article](#) [Google Scholar](#)

## Acknowledgements

---

This paper is based on my dissertation at the University of Michigan. I would like to thank members of my dissertation committee: Richard Sloan (Chair), Jerry Davis, Patricia Dechow, Doug Skinner and Matthew Shapiro. I appreciate helpful comments from workshop participants at Boston College, University of California, Berkeley, University of Chicago, Columbia University, Harvard University, MIT, New York University, Northwestern University, University of Pennsylvania, University of Rochester and Stanford University, Mark Bradshaw, Dan Collins, John Core, Julie Cotter, Ilia Dichev, Jef Doyle, Hulya Eraslan, Ray Fisman, Ted Goodman, Raffi Indjejikian, Irene Kim, David Larcker, Charles Lee (editor), Russell Lundholm, Andrew Metrick, David Musto, Venky Nagar, Stephen Penman, Abbie Smith, Gary Solon, Steve Taylor, Irem Tuna, Ross Watts, Peter Wysocki, Stephen Young, an anonymous referee and conference participants at the 2005 Review of Accounting Studies Conference, especially those of Daniel Bergstresser. I would like to recognize financial support from the Paton Scholarship Fund, the Deloitte & Touche Foundation, the Arthur Andersen Foundation and the Michael J. Barrett Dissertation Award from the Institute of Internal Auditors.

# Author information

---

## Authors and Affiliations

**Wharton School, University of Pennsylvania, 1314 Steinberg Hall—Dietrich Hall, Philadelphia, PA, 19104-6365, USA**

Scott Richardson

## Corresponding author

Correspondence to [Scott Richardson](#).

## Rights and permissions

---

[Reprints and permissions](#)

## About this article

---

### Cite this article

Richardson, S. Over-investment of free cash flow. *Rev Acc Stud* **11**, 159–189 (2006).

<https://doi.org/10.1007/s11142-006-9012-1>

Published

23 June 2006

Issue Date

September 2006

DOI

<https://doi.org/10.1007/s11142-006-9012-1>

## Keywords

[Free cash flow](#)

[Over-investment](#)

[Agency costs](#)

## JEL Classification

[G3](#)

[M4](#)

# Search

Search by keyword or author



## Navigation

Find a journal

Publish with us

Track your research