Over-investment of free cash flow

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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.

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.

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