Journal of Financial Economics 108 (2013) 1–28

Contents lists available at SciVerse ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/jfec

The other side of value: The gross profitability premium ☆

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ARTICLE INFO

Article history:
Received 15 December 2011
Received in revised form
29 May 2012
Accepted 6 June 2012
Available online 26 January 2013

JEL classification:
G12

Keywords:
Profitability
Value premium
Factor models
Asset pricing
Quality investing

ABSTRACT

Profitability, measured by gross profits-to-assets, has roughly the same power as book-to-market predicting the cross section of average returns. Profitable firms generate significantly higher returns than unprofitable firms, despite having significantly higher valuation ratios. Controlling for profitability also dramatically increases the performance of value strategies, especially among the largest, most liquid stocks. These results are difficult to reconcile with popular explanations of the value premium, as profitable firms are less prone to distress, have longer cash flow durations, and have lower levels of operating leverage. Controlling for gross profitability explains most earnings related anomalies and a wide range of seemingly unrelated profitable trading strategies.

1. Introduction

Profitability, as measured by the ratio of a firm's gross profits (revenues minus cost of goods sold) to its assets, has roughly the same power as book-to-market (B/M) predicting the cross section of average returns. Gross profits-to-assets is also complimentary to book-to-market, contributing economically significant information above that contained in valuations, even among the largest, most liquid stocks. These conclusions differ from those of earlier studies. For example, while Fama and French (2006) finds that earnings has explanatory power in Fama and MacBeth (1973) cross section regressions, Fama and French (2008, p. 1663) finds that "profitability sorts produce the weakest average hedge portfolio returns" among the strategies they consider and "do not provide much basis for the conclusion that, with controls for market cap and B/M, there is a positive relation between average returns and profitability." Gross profitability has far more power than earnings, however, predicting the cross section of returns.

Strategies based on gross profitability generate value-like average excess returns, even though they are growth strategies that provide an excellent hedge for value. The two strategies share much in common philosophically, despite being highly dissimilar in both characteristics and covariances. While traditional value strategies finance the acquisition of inexpensive assets by selling expensive assets, profitability strategies exploit a different dimension of value, financing the acquisition of productive assets by selling unproductive assets. Because the two effects are closely related, it is useful to analyze profitability in the context of value.

Value strategies hold firms with inexpensive assets and short firms with expensive assets. When a firm's market value is low relative to its book value, then a stock purchaser acquires a relatively large quantity of book assets for each dollar spent on the firm. When a firm's market price is high relative to its book value the opposite

☆ I thank Gene Fama, Andrea Frazzini, Toby Moskowitz, the anonymous referee, and participants of the National Bureau of Economic Research Asset Pricing and Q Group meetings.

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http://dx.doi.org/10.1016/j.jfineco.2013.01.003

is true. Value strategies were first advocated by Graham and Dodd (1934), and their profitability has been shown countless times since.

Previous work argues that the profitability of value strategies is mechanical. Firms for which investors require high rates of return (i.e., risky firms) are priced lower and, consequently, have higher book-to-markets than firms for which investors require lower returns. Because valuation ratios help identify variation in expected returns, with higher book-to-markets indicating higher required rates, value firms generate higher average returns than growth firms (Ball, 1978; Berk, 1995). While this argument is consistent with risk-based pricing, it works just as well if variation in expected returns is driven by behavioral forces. Lakonishok, Shleifer, and Vishny (1994) argue that low book-to-market stocks are on average overpriced, while the opposite is true for high book-to-market stocks, and that buying value stocks and selling growth stocks represents a crude but effective method for exploiting misvaluations in the cross section.

Similar arguments suggest that firms with productive assets should yield higher average returns than firms with unproductive assets. Productive firms that investors demand high average returns to hold should be priced similarly to less productive firms for which investors demand lower returns. Variation in productivity in this way helps identify variation in investors' required rates of return. Because productivity helps identify this variation, with higher profitability indicating higher required rates, profitable firms generate higher average returns than unprofitable firms. Again, the argument is consistent with, but not predicated on, rational pricing.

Consistent with these predictions, portfolios sorted on gross profits-to-assets exhibit large variation in average returns, especially in sorts that control for book-to-market. More profitable firms earn significantly higher average returns than unprofitable firms. They do so despite having, on average, lower book-to-markets and higher market capitalizations. Because strategies based on profitability are growth strategies, they provide an excellent hedge for value strategies and, thus, dramatically improve a value investor's investment opportunity set. In fact, the profitability strategy, despite generating significant returns on its own, provides insurance for value. Adding profitability on top of a value strategy reduces the strategy's overall volatility, despite doubling its exposure to risky assets. A value investor can, thus, capture the gross profitability premium without exposing herself to any additional risk.

Profitability also underlies most earnings related anomalies, as well as a large number of seemingly unrelated anomalies. Many well known profitable trading strategies are just different expressions of three basic underlying anomalies, mixed in various proportions and dressed up in different guises. A four-factor model, employing the market and industry-adjusted value, momentum, and gross profitability factors, performs remarkably well pricing a wide range of anomalies, including (but not limited to) strategies based on return on equity, market power, default risk, net stock issuance, and organizational capital.

The remainder of the paper is organized as follows. Section 2 provides a simple theoretical framework for the prediction that gross profitability predicts the cross section of expected returns and shows that the predicted relation is strong in the data. Section 3 investigates the relation between profitability and value more closely. It shows that controlling for book-to-market significantly improves the performance of profitability strategies and that controlling for gross profits-to-assets significantly improves the performance of value strategies. Section 4 considers the performance of a four-factor model that employs the market and industry-adjusted value, momentum, and gross profitability factors, and it shows that this model performs better than standard models pricing a wide array of anomalies. Section 5 concludes.

2. Profitability and the cross section of expected returns

Fama and French (2006) illustrate the intuition that book-to-market and profitability are both positively related to expected returns using the dividend discount model in conjunction with clean surplus accounting. In the dividend discount model, a stock's price equals the present value of its expected dividends. Under clean surplus accounting the change in book equity equals retained earnings. Together these imply the market value of equity (cum dividend) is

$$M_t = \sum_{\tau=0}^{\infty} \frac{\mathbf{E}_t[Y_{t+\tau} - dB_{t+\tau}]}{(1+r)^{\tau}}, \tag{1}$$

where Y_t is the time-t earnings, $dB_t \equiv B_t - B_{t-1}$ is the change in book equity, and r is the required rate of return on expected dividends. Holding all else equal, higher valuations imply lower expected returns, and higher expected earnings imply higher expected returns. That is, value firms should outperform growth firms, and profitable firms should outperform unprofitable firms.

Fama and French (2006) test the expected relation between profitability and expected return with mixed results. Their cross sectional regressions suggest that earnings are related to average returns in the manner predicted, but their portfolio tests suggest that profitability adds little or nothing to the prediction of returns provided by size and book-to-market.

Fama and French (2006) employ current earnings as a simple proxy for future profitability, however, and gross profitability is a better proxy. Earnings in Eq. (1) represent a firm's true economic profitability. Earnings off the income statement represent a firm's true economic profitability reduced by any investments that are treated as expenses, such as research and development (R&D), advertising, or human capital development. Expensed investments directly reduce earnings without increasing book equity but are nevertheless associated with higher future economic profits and, therefore, higher future dividends. When considering changes to earnings in Eq. (1), it thus makes no sense to hold all else equal.

Gross profits is the cleanest accounting measure of true economic profitability. The farther down the income statement one goes, the more polluted profitability