



Accruals, cash flows, and operating profitability in the cross section of stock returns[☆]



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ABSTRACT

Accruals are the non-cash component of earnings. They represent adjustments made to cash flows to generate a profit measure largely unaffected by the timing of receipts and payments of cash. Prior research uncovers two anomalies: expected returns increase in profitability and decrease in accruals. We show that cash-based operating profitability (a measure that excludes accruals) outperforms measures of profitability that include accruals. Further, cash-based operating profitability subsumes accruals in predicting the cross section of average returns. An investor can increase a strategy's Sharpe ratio more by adding just a cash-based operating profitability factor to the investment opportunity set than by adding both an accruals factor and a profitability factor that includes accruals.

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1. Introduction

Expected returns increase in measures of profitability that include accounting accruals (e.g., [Navy-Marx, 2013](#); [Ball, Gerakos, Linnainmaa and Nikolaev, 2015](#)). Accruals are adjustments accountants make to operating cash flows to better measure current-period firm performance ([Dechow, 1994](#)). [Sloan \(1996\)](#) documents a robust *negative* relation

between accruals and the cross section of expected returns. This relation, known as the “accrual anomaly,” is not explained by the [Fama and French \(1996\)](#) three-factor model, their recent five-factor model that includes a profitability factor ([Fama and French, 2015](#)), the [Navy-Marx \(2013\)](#) gross profitability factor, or the [Hou, Xue and Zhang \(2015\)](#) *q*-factor model.¹ Moreover, the accrual anomaly actually strengthens when evaluated using asset pricing models that include accruals-based profitability measures.

We show three primary results. First, cash-based operating profitability, a measure of profitability that is

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¹ There is a substantial literature on the accrual anomaly that includes [Fama and French \(2006\)](#), [Hirshleifer, Hou and Teoh \(2009\)](#), [Polk and Sapientza \(2009\)](#), [Hirshleifer and Jiang \(2010\)](#), [Li and Zhang \(2010\)](#), [Hirshleifer, Teoh and Yu \(2011\)](#), [Lewellen \(2011\)](#), [Stambaugh, Yu and Yuan \(2012\)](#), [Avramov, Chordia, Jostova and Philipov \(2013\)](#), [Navy-Marx \(2013\)](#), [Hou, Xue and Zhang \(2015\)](#), and [Fama and French \(2015\)](#).

devoid of accounting accruals adjustments, better explains the cross section of expected returns than gross profitability, operating profitability, and net income, all of which include accruals. Second, cash-based operating profitability performs so well in explaining the cross section of expected returns that it subsumes the accrual anomaly. In fact, investors would be better off by just adding cash-based operating profitability to their investment opportunity set than by adding both accruals and profitability strategies. Third, cash-based operating profitability explains expected returns as far as ten years ahead.

Taken together, our results provide a simple and compelling explanation for the accrual anomaly. Firms with high accruals today earn lower future returns because they are less profitable on a cash basis. When they are included in an asset pricing model without a profitability measure, accruals predict returns because they are negatively correlated with the cash-based component of profitability. Our findings explain why the accrual anomaly increases when evaluated using an asset pricing model that includes a profitability measure: accruals allow the regression to extract the cash-based component from the accruals-based profitability variable. In our analyses, any increase in profitability that is solely due to accruals themselves has no relation with the cross section of returns.

We start our empirical analysis by regressing returns on accruals and profitability. Among profitability measures, Ball, Gerakos, Linnainmaa and Nikolaev (2015) find that operating profitability better explains the cross section of expected returns than other commonly used measures, such as gross profitability (Novy-Marx, 2013) and “bottom line” net income (Ball and Brown, 1968). When we regress returns on operating profitability and accruals, we find that the signs of the coefficients on these two measures differ, but the economic magnitudes are similar. These estimates suggest that a positive “shock” to operating profitability, holding everything else constant, predicts a higher average stock return for the shocked firms. However, if we fully attribute the effect of this shock to accruals—that is, these firms are more profitable only because of an increase in the non-cash portion of earnings—the offsetting slopes on operating profitability and accruals indicate that the firms’ average returns would remain unchanged. In other words, the evidence implies that only the cash-based component of operating profits matters in the cross section of expected returns, and the predictive power of accruals is attributable to their negative correlation with the cash-based component.

When we create a cash-based operating profitability measure by purging accruals from operating profitability, we generate a significantly stronger predictor of future stock performance that effectively subsumes the accrual anomaly.² While accruals have significant incremental

predictive ability relative to operating profitability, we find that they have no incremental power in predicting returns within portfolios sorted by cash-based operating profitability. Furthermore, a cash-based operating profitability factor prices both operating profitability and accruals in the cross section.

The economic significance of these results can be demonstrated by comparing the maximum Sharpe ratios of portfolios generated using the traditional four factors (market, size, value, and momentum) and combinations of factors based on accruals, operating profitability, and cash-based operating profitability. Combining the cash-based operating profitability factor with the traditional four factors leads to the highest Sharpe ratio, which is substantially higher than the maximum Sharpe ratio generated using the traditional factors and both the accruals and operating profitability factors.

Sloan (1996) posits that the accrual anomaly arises because investors do not understand that accruals are less persistent than cash flows, which leads to mispricing. The idea is that if investors believe that accruals and cash flows are equally persistent, then they are predictably negatively surprised when accruals do not persist, which explains the negative relation between average returns and accruals. This explanation of the accrual anomaly implies that accruals would predict future surprises even when we control for cash-based operating profitability. However, we observe otherwise—accruals have no explanatory power if we control for cash-based operating profitability.

We find that cash-based operating profitability predicts returns as far as ten years into the future. This could indicate an initial market under-reaction to cash flow information that is gradually corrected over a decade. Alternatively, this result could indicate that cash-based profitability and expected returns share common economic determinants (such as risk) that are relatively stationary over time (Ball, 1978).

This study relates to prior research that examines the relation between cash flows and the cross section of expected returns. Foerster, Tsagarelis and Wang (2015) examine the ability of cash flows to explain average returns relative to earnings-based profitability measures. They focus on measures of free cash flow as opposed to cash-based operating profitability and do not examine the relation between cash flows and the accrual anomaly. Desai, Rajgopal and Venkatachalam (2004) examine whether the accrual anomaly is a manifestation of the value premium. They find that the ratio of the total cash flow from operations to price, which is a proxy for the value premium, has explanatory power for the accrual anomaly. Cheng and Thomas (2006) find that abnormal accruals have incremental explanatory power controlling for operating cash flows-to-price and conclude that accruals are not part of the value premium. In contrast, we find that accruals have no incremental explanatory power when controlling for cash-based operating profitability. Moreover, our empirical tests control for the book-to-market ratio. Hence, cash-based

² The empirical motivation for investigating the predictive power of cash-based operating profitability is similar to Fama and French’s (1992) motivation for the book-to-market ratio. Fama and French (1992) estimate cross-sectional return regressions and find that the estimated slopes on two leverage measures, $\log(A/ME)$ (“market leverage”) and $\log(A/BE)$ (“book leverage”), have opposite signs but are close to each other in magnitude. These estimates lead Fama and French (1992) to use

the log book-to-market ratio—the difference between the two leverage measures—as the single regressor.

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