Management 642: Portfolio Management
Accrual Anomaly: Empirical Analysis:
Team 4

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The Accrual Anomaly

The accrual anomaly represents one of the most robust and persistent anomalies in financial markets. It was first documented by Sloan (1996) in his seminal paper "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings?" This anomaly challenges the efficient market hypothesis by demonstrating that investors systematically misprice the persistence of earnings components.

What is the Accrual Anomaly?

The accrual anomaly refers to the empirical observation that firms with high accruals (relative to cash flows) tend to earn abnormally low future stock returns, while firms with low accruals tend to earn abnormally high returns. This pattern persists even after controlling known risk factors, suggesting a market inefficiency in how investors process accounting information.

Key Finding: Companies with low accruals (high cash-based earnings) outperform companies with high accruals (low cash-based earnings) by economically significant margins.

Why Accruals Matter?

Earnings are composed of two parts: cash flows from operations (CFO) and accruals, which are non-cash accounting adjustments that smooth timing differences between when revenues and expenses are recognized and when the cash actually moves. Accruals are far less persistent than cash flows, and high accrual levels often reflect aggressive revenue recognition, rising accounts receivable or inventories, temporary working-capital adjustments, or even earnings manipulation to meet performance targets. Because investors frequently mistake the accrual portion of earnings as being just as sustainable as cash flows, they tend to overvalue firms with high accruals and undervalue firms with low accruals. This systematic mispricing later corrects, creating predictable return patterns across low- and high-accrual firms.

Measurement of Accruals

In this dataset, accruals are measured using the change in operating working capital scaled by book equity, which provides a standardized way to compare firms of different sizes. Specifically, the accrual measure is defined as:

AC/B = (Change in operating working capital from t–2 to t–1) / Book equity per share in t–1.

Operating working capital typically includes accounts receivable, inventories, and other short-term operating assets minus short-term operating liabilities. By examining the change in operating working capital over the prior year and dividing it by book equity, this ratio captures how much of a firm's earnings stem from non-cash accounting adjustments rather than from actual cash inflows.

A high AC/B value indicates that a significant portion of the firm's reported earnings is tied to accrual-based adjustments—such as increases in receivables or inventories—which may not translate into future cash flows. This can signal aggressive revenue recognition, overly optimistic growth assumptions, or earnings management intended to meet short-term targets. In contrast, low accrual levels typically suggest that earnings are primarily supported by strong operating cash flows, reflecting more conservative accounting practices and generally higher earnings quality. Because of these differences, the AC/B ratio serves as an important indicator of the sustainability and reliability of a firm's earnings, and it forms the basis for constructing accrual-based investment portfolios used to study the accrual anomaly.

Portfolio Formation

The accrual-based portfolios examined in this study follow a standard academic methodology designed to isolate the return differences associated with firms' accrual levels. Each year, at the end of June, all eligible stocks in the dataset are sorted into portfolios based on their accrual ratio (AC/B). This annual rebalancing schedule is consistent with the approach used in prior empirical research and ensures that each portfolio reflects updated accounting information as new financial statements become available.

- To form the portfolios, firms are ranked from lowest to highest accruals and then divided into ten equal-sized groups (deciles). **Decile 1 (Lo10)** contains firms with the lowest accrual ratios, representing companies whose earnings are heavily supported by cash flows and exhibit more conservative accounting practices. **Decile 10 (Hi10)** contains firms with the highest accrual ratios, which typically rely more on non-cash accounting adjustments and may be associated with lower earnings quality.

- For each decile, the study constructs both **equal-weighted** and **value-weighted** portfolios. The equal-weighted portfolios treat all firms the same regardless of size, highlighting the behavior of smaller firms, while value-weighted portfolios place greater emphasis on larger firms, capturing their greater influence on market-wide performance. Using both weighting schemes allows for a more comprehensive assessment of the accrual anomaly and helps determine whether the effect is concentrated in small firms, large firms, or both.

- Finally, the dataset used for this analysis includes firms across all sectors, including **utilities and financials**, in both the breakpoint formation and the portfolio construction stages. This inclusion reflects the structure of the provided data and ensures that the results mirror the full cross-section of firms represented in the sample.

Previous Research Findings

Sloan (1996) found that a hedge portfolio long low-accrual stocks and short high-accrual stocks generated abnormal returns of approximately 10% per year. Subsequent research has confirmed the robustness of this anomaly across different time periods, international markets, and with various controls for risk factors. The anomaly is generally attributed to investor overvaluation of the accrual component of earnings and undervaluation of the cash flow component, reflecting a form of earnings fixation.

Several explanations have been proposed for the persistence of the accrual anomaly, including: limited investor attention to the cash flow/accrual distinction, transaction costs that prevent full arbitrage, and the possibility that accruals proxy for some unidentified risk factor. However, the anomaly has proven remarkably persistent even as it has become well-known in both academic and practitioner communities2. Data and Methodology

This analysis utilizes monthly return data for accrual-based portfolio deciles from July 1963 through October 2025, obtained from Kenneth French's Data Library. The dataset provides both value-weighted and equal-weighted returns for decile portfolios based on accrual rankings.

Dataset Description

- Sample period: July 1963 to October 2025 (748 months)
- Portfolio weighting: Both value-weighted (VW) and equal-weighted (EW)
- Number of portfolios: 10 deciles plus spread portfolio
- Return units: Monthly returns converted from percentages to decimals
- Spread portfolio: Hi10 - Lo10 (high accruals minus low accruals)

Empirical Tests Conducted

This study conducts four main categories of empirical analysis. First, it examines full-sample summary statistics by reporting mean returns, standard deviations, Sharpe ratios, and statistical significance tests for each decile and the spread portfolio. Second, it performs a sub-period analysis that evaluates accrual portfolio performance across different decades—from the 1960s through the 2010s—and compares returns during recessionary versus expansion periods. Third, the study includes a time-series analysis, plotting monthly returns for extreme deciles and tracking the spread portfolio's performance over time, with recession periods clearly indicated. Finally, additional tests such as the January effect and cumulative return comparisons are incorporated to provide further insight into the behavior and robustness of the accrual-based strategy.

3. Empirical Results3.1 Full Sample Summary Statistics Table 1 presents the summary statistics for value-weighted portfolios over the entire sample period from July 1963 to October 2025. We examined the performance of decile portfolios sorted by accruals over the full sample period from July 1963 to October 2025. The "Spread" portfolio is constructed as the return of the High Accrual portfolio (Decile 10) minus the return of the Low Accrual Decile 1).

Table 1: Value-Weighted Portfolio Summary Statistics

Portfolio	Mean (%)	Std Dev (%)	Sharpe Ratio
Lo10 (Low Accrual)	13.45	19.21	0.70
Hi10 (High Accrual)	9.88	20.22	0.49
Spread (Hi10 - Lo10)	**-3.57**	**10.06**	**-0.35**

t-statistic for Spread: -2.80

Table 2 presents the summary statistics for equal-weighted portfolios over the same period.

Table 2: Equal-Weighted Portfolio Summary Statistics

Portfolio	Mean (%)	Std Dev (%)	Sharpe Ratio
Lo10 (Low Accrual)	15.08	25.26	0.60
Hi10 (High Accrual)	10.70	25.14	0.43
Spread (Hi10 - Lo10)	**-4.38**	**6.33**	**-0.69**

t-statistic for Spread: -5.47

Interpretation of Full Sample Results

The results provide strong evidence for the accrual anomaly. Both value-weighted and equal-weighted portfolios show that low-accrual firms (Lo10) significantly outperform high-accrual firms (Hi10). The spread portfolio generates economically and statistically significant negative returns, indicating that a strategy of going long low-accrual stocks and short high-accrual stocks would have been profitable.

Key Observations:
- Interpretation of the Mean Returns: The primary finding is that the Accrual Anomaly is statistically and economically significant over the full sample.

- Value-Weighted (VW): The spread portfolio (High minus Low) has an annualized mean return of -3.57% (t-statistic = -2.80). Since the t-statistic is greater than 1.96 in absolute value, this result is statistically significant at the 5% level.

- Equal-Weighted (EW): The anomaly is even stronger in equal-weighted portfolios, with a spread of -4.38% (t-statistic = -5.47).

- The stronger effect in equal-weighted portfolios suggests the anomaly is more pronounced in smaller firms.
- Low-accrual portfolios show superior risk-adjusted returns with Sharpe ratios of 0.70 (VW) and 0.60 (EW) compared to high-accrual portfolios' 0.49 (VW) and 0.43 (EW).
- The negative Sharpe ratios for spread portfolios reflect the fact that this is measured as Hi10 - Lo10, so a negative return is actually desirable for the long-low/short-high strategy.

Note on Negative Spreads: It is crucial to understand that a negative spread here indicates a profitable anomaly. Because the spread is calculated as "High minus Low," a negative number means Low Accrual stocks (the ones we want to buy) outperformed High Accrual stocks (the ones we want to short). An investor implementing a zero-investment strategy (Long Low / Short High) would have earned these positive returns.

Risk-Adjusted Performance (Sharpe Ratios): The anomaly is not merely compensation for higher volatility. In fact, the Low Accrual portfolios exhibit superior risk-adjusted returns compared to High Accrual portfolios.

- For VW portfolios, the Sharpe Ratio for Low Accruals is 0.70, compared to just 0.49 for High Accruals.

- This indicates that for every unit of risk taken, Low Accrual firms provided significantly more excess return than High Accrual firms.

Sub-Period Analysis
To assess the temporal stability of the accrual anomaly, we examine returns across different decades and economic conditions. Table 3 presents the decade-by-decade performance.

Table 3: Sub-Period Analysis - Annualized Returns (%)

Period	Value-Weighted			Equal-Weighted		
	Lo10	**Hi10**	**Spread**	**Lo10**	**Hi10**	**Spread**
1960s	17.35	8.90	-8.45	24.88	18.02	-6.86
1970s	11.37	4.97	-6.40	16.66	10.82	-5.84
1980s	15.42	14.54	-0.88	13.02	11.00	-2.02
1990s	18.22	12.78	-5.44	19.82	12.57	-7.25
2000s	0.12	-0.33	-0.46	11.75	9.95	-1.80
2010s	19.03	13.52	-5.51	9.53	5.86	-3.67
Recessions	**-7.05**	**-7.05**	**0.00**	**-3.60**	**-4.06**	**-0.46**
Expansions	**16.36**	**12.29**	**-4.07**	**17.74**	**12.80**	**-4.94**

Interpretation of Sub-Period Results:
- **Temporal Stability:** The anomaly persists across most decades. The 1960s, 1970s, 1990s, and 2010s all show statistically significant spread returns.
- **1980s Weakening:** The anomaly was notably weaker in the 1980s, with spread returns of only -0.88% (VW) and -2.02% (EW), suggesting periods of reduced profitability.
- **2000s Performance:** The 2000s showed minimal spread returns for value-weighted portfolios (-0.46%), though equal-weighted still showed -1.80%, again suggesting the effect is stronger in smaller firms. This aligns with the "adaptive market hypothesis" as hedge funds exploited the signal; the profits vanished temporarily.

- **Recent Performance:** The 2010s saw a resurgence of the anomaly with spread returns of -5.51% (VW) and -3.67% (EW), suggesting the strategy remains viable.
- **Recession vs. Expansion:** Interestingly, the spread portfolios show virtually no returns during recessions (0.00% for VW, -0.46% for EW), with all the returns concentrated in expansion periods (-4.07% VW, -4.94% EW). This suggests the anomaly is primarily an expansion-period phenomenon.
- **Equal vs Value Weighting:** Equal-weighted portfolios generally show stronger anomaly effects, consistent with the pattern being more pronounced in smaller firms where mispricing may be greater due to lower analyst coverage and higher information asymmetry.

Interpretation: This implies that the Accrual strategy is cyclical. It performs well when the economy is growing, perhaps because investors are optimistic and more likely to "fixate" on high earnings without checking if they are cash-based or accrual-based. However, during recessions, the strategy does not provide a hedge; it simply goes flat.

Time Series Analysis
Figures 1-4 present the time series plots of monthly returns for the extreme decile portfolios and spread portfolios. The gray shaded regions indicate NBER-defined recession periods.

Key Observations from Time Series Plots:

- **Spread Return Distribution:** The value-weighted spread portfolio is negative in 53.3% of months, while the equal-weighted spread is negative in 59.4% of months. This indicates the strategy would be profitable more often than not when implemented as long-low/short-high.
- **Volatility Patterns:** Both low and high accrual portfolios show similar volatility patterns, with spikes during recession periods. This suggests accrual-based sorting does not significantly alter systematic risk exposure.
- **Recession Behavior:** During recessions, the spread portfolios tend to show more volatile returns but no clear directional pattern, consistent with the near-zero average recession returns observed in the sub-period analysis.
- **Recent Period:** The spread continues to be negative (favorable for the long-low/short-high strategy) in recent years, suggesting the anomaly persists despite increased awareness.

The plots reveal that while individual months can show high volatility, the consistent underperformance of high-accrual stocks relative to low-accrual stocks is evident across the sample period. The strategy's performance does not appear to be driven by a few outlier periods but represents a persistent pattern.

Additional Analysis

January Effect
We test whether the accrual anomaly exhibits seasonality, particularly the well-known January effect. Table 4 presents the comparison of returns in January versus other months.

Table 4: January vs. Other Months - Mean Monthly Returns (%)

Period	Value-Weighted			Equal-Weighted		
	Lo10	Hi10	Spread	Lo10	Hi10	Spread
January	2.21	1.79	-0.42	7.17	6.39	-0.78
Other Months	1.02	0.74	-0.29	0.72	0.40	-0.33

t-test (VW): t=-0.35, p=0.72 | t-test (EW): t=-1.87, p=0.06

The January effect analysis reveals interesting patterns. Both portfolios show elevated January returns, particularly for equal-weighted portfolios where January returns are substantially higher (7.17% for Lo10 vs. 0.72% in other months). However, the spread portfolio does not show statistically significant differences between January and other months (p=0.72 for VW, p=0.06 for EW). This suggests that while there is a general January effect in small cap stocks, it does not differentially affect the accrual anomaly.

Cumulative Returns
Figure 5 and 6 present cumulative returns assuming $1 invested at the start of the sample period. The dramatic difference in outcomes is evident:

- **Value-Weighted:** $1 in low-accrual stocks would have grown to $1,327, while $1 in high-accrual stocks would have grown to only $128. The spread portfolio compounds to just $0.08, reflecting the 3.57% annual underperformance.
- **Equal-Weighted:** $1 in low-accrual stocks would have grown to $1,631, while $1 in high-accrual stocks would have grown to only $109. The spread portfolio compounds to just $0.06.

These cumulative return patterns demonstrate the economic significance of the accrual anomaly over the long term. The compounding effect of the annual return differences results in dramatically different wealth outcomes for investors.

Conclusion and Implications

Summary of Findings

This empirical analysis provides strong evidence for the persistence and economic significance of the accrual anomaly from 1963 to 2025. Our key findings include:

- Low-accrual stocks significantly outperform high-accrual stocks by approximately 3.57% annually (VW) and 4.38% annually (EW), with t-statistics of -2.80 and -5.47 respectively.
- The anomaly is persistent across most decades, though it weakened in the 1980s and 2000s.
- The effect is stronger in equal-weighted portfolios, suggesting it is more pronounced in smaller firms.
- Returns are concentrated in expansion periods, with virtually no spread returns duri\g recessions.

The cumulative wealth impact is substantial, with low-accrual portfolios generating 10-15 times the terminal wealth of high-accrual portfolios.

Implications for Investors

The accrual anomaly has several important implications for investment practice:

- **Quality Screening:** Investors should consider incorporating accrual analysis into their stock selection process, favoring firms with lower accruals and more cash-flow-based earnings.
- **Long-Short Strategies:** Hedge funds and sophisticated investors can potentially exploit this anomaly through long-short strategies, though transaction costs and implementation challenges must be carefully considered.
- **Small Cap Focus:** The stronger effect in equal-weighted portfolios suggests the anomaly may be more exploitable in the small cap universe where mispricing is less likely to be arbitraged away.
- **Risk Considerations:** The near-zero returns during recessions suggest the strategy does not provide downside protection during market stress, an important consideration for risk management.

Theoretical Implications

The persistence of the accrual anomaly, even after more than 25 years since Sloan's (1996) publication, poses a challenge to the efficient market hypothesis. Several factors may explain this persistence:

- **Limited Arbitrage:** Short-selling constraints, implementation costs, and holding period requirements may limit arbitrageurs' ability to fully eliminate the mispricing.
- **Behavioral Biases:** Investors may exhibit earnings fixation, failing to properly distinguish between the cash flow and accrual components of earnings.
- **Information Processing:** The accrual calculation requires detailed analysis of financial statements, which may exceed the attention capacity of many investors.
- **Risk Proxy:** High accruals may proxy for some form of unmeasured risk, though our analysis showing similar volatilities across portfolios challenges this explanation.

Limitations and Future Research

This study has several limitations that suggest directions for future research:

- We did not conduct CAPM or Fama-French three-factor regressions to fully assess risk-adjusted returns.
- Transaction costs and implementation feasibility were not explicitly analyzed.
- The analysis does not account for recent developments in machine learning and alternative data that may affect the anomaly.
- International evidence and cross-market comparisons could provide additional insights into the anomaly's universality.

Future research could extend this analysis by incorporating more sophisticated risk adjustments, examining the interaction between accruals and other known anomalies, and investigating whether machine learning approaches can enhance the identification of accrual-based mispricing. Additionally, research into why the anomaly persists despite widespread awareness would contribute to our understanding of market efficiency and behavioral finance.

Referencces

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