Financial Anomalies

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Preface

The article is desiged to study financial anomalies

1 Introduction

Fama and MacBeth (1973) show two-parameter regression model estimates average risk-return relationships based on efficient market porfolio (m), that is, the market prices fully reflect the available information. The asset are constructed based on Equation 1 for an asset (i) proposed by @Black (1972).

$$x_{im} \equiv \frac{\text{total market value of all units of assets } i}{\text{total market value of all assets}} \quad \text{where asset}(i)\text{in the portfolio}(m) \tag{1.1}$$

Excepted return of a security (i) is $E(\tilde{R}_0)$, the expected return on a security that is riskless in the portfolio m, plus a risk premium that is β_i times the difference between expected return of the portfolio ($E(\tilde{R_m})$) and riskless portfolio ($E(\tilde{R}_0)$). is calculated by Equation 1, β_i is the risk of the asset i of the portfolio m, measured relative to $\sigma^2(\tilde{R}_m)$

$$E(\tilde{R}_i) = \left[E(\tilde{R_m}) - S_m \sum \tilde{R_m}\right] + S_m \sigma(\tilde{R_m})\beta_i,$$

where,

$$\beta_i \equiv \frac{cov(\tilde{R}_i, \tilde{R_m})}{\sigma^2(\tilde{R_m})} = \frac{\sigma_{j=1}^{N} x_{jm}\sigma_{ij}}{\sigma^2(\tilde{R_m})} = \frac{cov(\tilde{R}_i, \tilde{R_m})/\sigma(\tilde{R_m})}{\sigma(\tilde{R_m})}$$

$$S_m = \frac{E(\tilde{R_m}) - E(\tilde{R}_0)}{\sigma(\tilde{R_m})}$$

hence

$$E(\tilde{R}_i) = E(\tilde{R}_0) + \left[E(\tilde{R_m}) - E(\tilde{R}_0)\right]\beta_i \tag{1.2}$$

For each period of t, the cross sectional regression is given by

$$R_{pt} = \tilde{\gamma}_{0t} + \tilde{\gamma}_{1t}\tilde{\beta}_{p,t-1} + \tilde{\gamma}_{2t}\tilde{\beta}^2_{p,t-1} + \tilde{\gamma}_{3t}\bar{s}_{p,t-1}\tilde{\epsilon}_i + \tilde{\eta}_{pt}, \tag{1.3}$$

$$p = 1, 2, ...t$$

Equation 1 the indepenent variable $\tilde{\beta}_{p,t-1}$ is the average of the $\tilde{\beta}_i$ for securities in portfolio p, $\tilde{\beta}^2_{p,t-1}$ is the average of the squared values of these $\tilde{\beta}_i$, $\bar{s}_{p,t-1}\tilde{\epsilon}_i$ is the average of $s\tilde{\epsilon}_i$ for portfolio p_i

Gupta and Ofer (1975) examines investors growth expectations reflected in the stock prices. A change in the expectation is reflected in the price movement. The study defines the earnings price ratio is a function of risk characteristics of the security and the expected growth in the earnings in Equation 1. The risk component are measured by: - the beta coefficient - the firm asset size (natural logarithm of total asset) - dividend payout ratio - leverage ratio of liabilties and preferred stocks to the common stock outstanding - earnings variablity (standard deviation of earnings to price ratio calcuated over period of seven years)

$$EP = f(RS, EG) \tag{1.4}$$

where:

$EP =$ earnings price ratio- ,

$RS =$ risk characteristics of the security

$EG =$ the expected growth rate in the earnings

(1.5)

$$\Delta P_i^t = \frac{P_{it} - P_{it-1}}{P_{it-1}} \times 100 \tag{1.6}$$

where:

$\Delta P_i^t$is the percent change of the security $i$during the period $t-1$to$t$

The average yearly percentage of the prices change for portfolio $j(\Delta P_j)$ is given by

$$\Delta P_j = \frac{\sum_{t=1}^{14} \frac{\sum_{r_t=10j-9}^{10j} \Delta P_{rt}^t}{14}}{14}, r_t = 1, \cdots, 190$$

where:

$r_t =$ the relative ranking of a security at time t according to its prediction error at that year.

(1.7)

$\Delta P_t^{rt} =$ percentage price change during the period $t-1$ to t for a security that has the rank of r_t at time t

(1.8)

Basu (1977): to determine empirically whether the investment performance of the common stocks is related to the P/E ratios. P/E is the ratio of market value of the common stock

(market price times the number of shares outstanding) as of December 31 to reporting annual earnings (before extraordinary items) available for common stockholders. According to the paper, due the exaggerated investor expectations, P/E ratio may be the indicator of future investment peroformance. The paper shows that P/E is not fully reflected in security prices in as rapid a manner as postulated by the semi-strong form of the efficient market hypothesis. Instead, it seems that disequilibrium persisted in the capital market during the period studied. The results suggests that market efficiency does not exist due to lags and frictions in the price adjustmnet process.

Litzenberger and Ramaswamy (1979):

$$\tilde{R} - r_{ft} = \gamma_0 + \gamma_1 \beta_{it} + \gamma_2 (d_{it} - r_{ft}) + \tilde{\epsilon}_{it}, i = 1, 2, \cdots, N, t = 1, 2, \cdots, T \tag{1.9}$$

where :

$\tilde{R}_{it}$Return of the security i in period t, β_{it} and d_{it} are the systemic risk and the dividend yield of security i in

$\tilde{\epsilon}_{it}, adisturbancetermis\tilde{R} - E(\tilde{R}_{it}), thedeviationoftherealizedreturnfromtheexpectedvalue.$

coeffiecients $\gamma_0, \gamma_1, \gamma_2$ (1.10)

Banz (1981): studies "size effect" by using market indices - Market Index, CRSP value weighted, CRSP equal weighted indexes, US Bond Index, Corporate Bond Index to estimate the relationship between the return and market value based on Equation 1. The study suggests the CAPM is misspecified.

$$R_{it} = \gamma_{0t} + \gamma_{1t} \beta_{1t} + \gamma_{2t} \left[(\phi_{1t} - \phi_{mt}) \right] + \epsilon_{it}, i = 1, \cdots, N \tag{1.11}$$

where:

R_i = return on security i

γ_0 = return on a zero-beta portfolio

γ_1 = return on market risk premium

ϕ_i = market value security i

ϕ_m = average market value

$\gamma_2$constant measuring the contribution of$\phi_i$to the expected return of a security

(1.12)

Figlewski (1981) estimates "The test methodology we will use is a familiar one. We construct ten port? folios to which stocks are assigned according to their average short interest during the previous six months, and calculate the portfolio a's or excess returns."

Basu (1983): The empirical findings reported in this paper indicate that, at least during the 1963-80 time period, the returns on the common stock of NYSE firms appear to have been related to earnings' yield and firm size.

De Bondt and Thaler (1985): "This study of market efficiency investigates whether such behavior affects stock prices. The empirical evidence, based on CRSP monthly return data, is consistent with the overreaction hypothesis. Substantial weak form market inefficiencies are discovered. The results also shed new light on the January returns earned by prior"winners" and "losers." Portfolios of losers experience exceptionally large January returns as late as five years after portfolio formation. To repeat, our goal is to test whether the overreaction hypothesis is predictive. Specifically, two hypotheses are suggested: (1) Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction. (2) The more extreme the initial price movement, the greater will be the subsequent adjustment. Both hypotheses imply a violation of weak-form market efficiency."

Bhandari (1988): "The expected returns on common stocks are positively related to the debt/equity ratio (DER), controlling for the beta and firm size, both including and excluding January. This relationship is not sensitive to variations in the market proxy, estimation technique, etc. The evidence suggests that the"premium" associated with the debt/equity ratio is not likely to be just some kind of "risk premium""

$$E(\tilde{r}_i) = E(\tilde{\gamma}_0) + E(\tilde{\gamma}_1)LTEQ_i + E(\tilde{\gamma}_2)BETA_i + E(\tilde{\gamma}_3) + DER_i, i = 1, \cdots, N \tag{1.13}$$

where:

Natural Logarithm of Total Common Equity (LETQ) where total common equity is the number of shares outstanding times (month-end) price per share

$$\text{Debt to Equity Ratio (DER)} = \frac{\text{book value of total assets} - \text{book value of common equity}}{\text{market value of common equity}}$$

BETA, the risk measure

Amihud and Mendelson (1989):

The percentage bid-ask spread (= dollar spread divided by the stock price)

$$R_{pm} = \gamma_0 + \gamma_1\beta_{pn} + \gamma_2\sigma_{pn} + \gamma_3 SZ_{pn} + \gamma_4 S_{pn} + \sum_{n=1}^{19} d_n DY_n + \epsilon_{pn} \qquad \text{where:}$$

p is the portolio

β_{pn} portfolio beta

σ_{pn} residual standard deviation

S_{pn} the portfolio average spread

SZ_{pn} average market value of the portfolio

(1.14)

Ou and Penman (1989): "Implements multivariate LOGIT analysis in financial statements. Fundamental analysis extracts value measures from financial statements and compares them to prices to identify mispriced stocks. The evidence here suggests that financial statements capture fundamentals that are not reflected in prices."

Jegadeesh (1990): "This paper documents strong evidence of predictable behavior of security returns. The results here show that the monthly returns on individual stocks exhibit. significantly negative first-order serial correlation and significantly positive higher-order serial correlation. The pattern of serial correlation exhibits seasonality, with the pattern in January significantly different from that in the other months."

Jegadeesh and Titman (1993):

Loughran and Ritter (1995) : "Investing in firms issuing stock is hazardous to your wealth. Firms issuing stock during 1970 to 1990, whether an IPO or an SEO, have been poor long-run investments for investors. s. The average annual return during the five years after issuing is only 5 percent for firms conducting IPOs, and only 7 percent for firms conducting SEOs. Investing an equal amount at the same time in a nonissuing firm with approximately the same market capitalization, and holding it for an identical period, would have produced an average compound return of 12 percent per year for IPOs and 15 percent for SEOs. The magnitude of the underperformance is large: it implies that 44 percent more money would need to be invested in the issuers than in the nonissuers to be left with the same wealth five years later."

Michaely, Thaler, and Womack (1995): "Market reaction to the dividend initiations."

La Porta (1996): " Contrarian strategies that use analysts' expectations to form portfolios yield high returns. Specifically, when stocks are sorted by the expected growth rate in earnings, low E{g} stocks beat high E{g} stocks by twenty percentage points.. Finally, event study evidence suggests that the market was overly pessimistic about the earnings of the low E{g} portfolio and excessively optimistic about the earnings of the high E{g} portfolio"

Lev and Sougiannis (1996): "To address these concerns, we estimate the R&D capital of a large sample of public companies and find these estimates to be statistically reliable and economically meaningful. We then adjust the reported earnings and book values of sample firms for the R&D capitalization and find that such adjustments are value-relevant to investors."

Sloan (1996): "This paper investigates whether stock prices reflect information about future earnings contained in the accrual and cash flow components of current earnings. The persistence of earnings performance is shown to depend on the relative magnitudes of the cash and accrual components of earnings. However, stock prices act as if investors fail to identify correctly the different properties of these two components of earnings"

Womack (1996): " An analysis of new buy and sell recommendations of stocks by security analysts at major U.S. brokerage firms shows significant, systematic discrepancies between prerecommendation prices and eventual values. The initial return at the time of the recommendations is large, even though few recommendations coincide with new public news or provide previously unavailable facts. However, these initial price reactions are incomplete. For buy recommendations, the mean postevent drift is modest (+2.4%) and short-lived, but for sell recommendations, the drift is larger (-9.1%) and extends for six months. Analysts appear to have market timing and stock picking abilities"

Brennan, Chordia, and Subrahmanyam (1998): "We examine the relation between stock returns, measures of risk, and several non-risk security characteristics, including the book-to-market ratio, firm size, the stock price, the dividend yield, and lagged returns. Our primary objective is to determine whether non-risk characteristics have marginal explanatory power relative to the arbitrage pricing theory benchmark, with factors determined using, in turn, the Connor and Korajczyk (CK; 1988) and the Fama and French (FF; 1993b) approaches. Fama—MacBeth-type regressions using risk adjusted returns provide evidence of return momentum, size, and book-to-market effects, together with a significant and negative relation between returns and trading volume, even after accounting for the CK factors. When the analysis is repeated using the FF factors, we find that the size and book-to-market effects are attenuated, while the momentum and trading volume effects persist. In addition, Nasdaq stocks show significant underperformance after adjusting for risk using either method"

Brennan, Chordia, and Subrahmanyam (1998): Regardless of the method used to risk-adjust returns, we find a strong negative relation between average returns and trading volume, which is consistent with a liquidity premium in asset prices. In addition, the size and book-to-market ratio effects are strong in the CK method of risk-adjustment, while the FF factors attenuate both the magnitude and significance of these effects.

Dichev (1998): " Several studies suggest that a firm distress risk factor could be behind the size and the book-to-market effects. A natural proxy for firm distress is bankruptcy risk. If bankruptcy risk is systematic, one would expect a positive association between bankruptcy risk and subsequent realized returns. However, resullts demonstrate that bankruptcy risk is not rewarded by higher returns. Thus, a distress factor is unlikely to account for the size and

book-to-market effects. Surprisingly, firms with high bankruptcy risk earn lower than average returns since 1980. A risk-based explanation cannot fully explain the anomalous evidence."

- MV is log of fiscal-year-end price times number of shares outstanding
- BIM is common equity divided by fiscal-year-end price times number of shares outstandin
- Z risk (bankruptcy risk, Altman (1968)) comprised of
  - Working capital/Total assets
  - Retained Earnings/Total assets
  - Earnings before interest and taxes/Total assets
  - Market value equity/Book value of total debt
  - Sales/Total assets
- O risk
  - SIZE = log(total assets/GNP price-level index).
  - $*$ TLTA = Total liabilities divided by total assets.
  - WCTA Working capital divided by total assets.
  - CLCA Current liabilities divided by current assets.
  - OENEG = One if total liabilities exceeds total assets, zero otherwise.
  - NITA Net income divided by total assets.
  - FUTL = Funds provided by operations divided by total liabilities.
  - INTWO = One if net income was negative for the last two years, zero otherwise.
  - CHIN = $(NI_t - NI_{t-1})/(|NI_t| + |NI_{t-1}|)$ where NI_t is net income for the most recent period.

Datar, Naik, and Radcliffe (1998): "In this paper, we provide an alternative test of A&M's model using the turnover rate as a proxy for liquidity and found strong support for A&M's model. In particular, we find that the stock returns are strongly negatively related to their turnover rates confirming the notion that illiquid stocks provide higher average returns." - Monthly Returns - turnover rate of every stock = monthly trading volume (the average number of shares traded during the previous three months, i.e., during months t- 3, t-2 and t-1) and divide it by the number of shares outstanding of that firm - turnover rate of every stock - book-to-market ratio, - firm size - firm beta

Moskowitz and Grinblatt (1999): " This paper documents a strong and prevalent momentum effect in ind ponents of stock returns which accounts for much of the individual sto tum anomaly. Specifically, momentum investment strategies, which buy p stocks and sell past losing stocks, are significantly less profitable once for industry momentum. By contrast, industry momentum investmen which buy stocks from past winning industries and sell stocks from p industries, appear highly profitable, even after controlling for size, book equity, individual stock momentum, the cross-sectional dispersion in m and potential microstructur"

Lee and Swaminathan (2000): "This study shows that past trading volume provides an important link between"momentum" and "value" strategies. Specifically, we find that firms with high (low) past turnover ratios exhibit many glamour (value) characteristics, earn lower (higher) future returns, and have consistently more negative (positive) earnings surprises over the next eight quarters. Past trading volume also predicts both the magnitude and persistence of price momentum. Specifically, price momentum effects reverse over the next five years, and high (low) volume winners (losers) experience faster reversals. Collectively, our findings show that past volume helps to reconcile intermediate-horizon "underreaction" and long-horizon "overreaction" effects"

2 Summary

In summary, this book has no content whatsoever.

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