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).

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

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 $\sigma^2(\tilde{R_m})$

$$
\begin{aligned}
&E(\tilde{R_i}) = \left[E(\tilde{R_m}) - S_m \sum \tilde{R_m}\right] + S_m \sigma(\tilde{R_m})\beta_i, \\
&\text{where,} \\
&\beta_i \equiv \frac{cov(\tilde{R_i}, \tilde{R_m})}{\sigma^2(\tilde{R_m})} = \frac{\sigma_{j=1}^{N} x_{jm}\sigma_{ij}}{\sigma^2(\tilde{R_m})} = \frac{cov(\tilde{R_i}, \tilde{R_m})/\sigma(\tilde{R_m})}{\sigma(\tilde{R_m})} \\
&S_m = \frac{E(\tilde{R_m}) - E(\tilde{R_0})}{\sigma(\tilde{R_m})}
\end{aligned}
$$

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

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

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

$\tilde{\epsilon}_{it}, a disturbance term is \tilde{R} - E(\tilde{R}_{it}), the deviation of the realized return from the expected value.$

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

(**amihud1989effects?**):

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

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)

2 Summary

In summary, this book has no content whatsoever.

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