Performance of Micro Stocks in Indian Stock Market

***Dr.A.Balakrishnan ** Moinak Maiti**

ABSTRACT

In this paper, we experiment if returns on micro stocks have any pattern showing significant mean excess returns and we also test whether stock returns are better captured by one factor CAPM and two factor model. Empirical results show that there is a strong size (Micro stocks) effect in stock returns. The results also reveal that size effect is pervasive in all alternative size measures such as total assets and enterprise value. Further, we observe that two factor model is better than CAPM in explaining the stock returns.

Introduction

Size effect gives a new dimension to the asset pricing and challenge the traditional model of asset pricing. Banz (1981) find relationship between the size of the company and their average excess return of the NYSE (New York Stock Exchange) stocks. The study show the "size effect"[1] is present in the past 40 years and it is nonlinear in nature. The size effect is more in the smaller size company than in the medium and larger size company stocks. This is the strongest evidence for the miss specify of CAPM[2]. Further confirm by the Brown, Kleidon & Marsh (1983) study; also new evidence comes into the light that the behaviour of size is sensitive to the time. Seeming unrelated regression model use show that instability in the size effect is due to the time series of data taken. Hence take log normal value for size and also find different methodology for size effect give different results. Due to "Seasonality effect"[3] January stock returns exceed other month returns and more due to the smaller size firm returns. Angel, John and Gary (1984) study confirms the seasonality effect in the Canadian stock returns. The study finds a relationship between the tax-loss-selling-pressure and return of first month of the year. Also the relationship is not statistically significant. Lakonishok & Shapiro (1985) confirm that if January returns discard, the size variable is insignificant. Also the size variable is most important factor among beta or other risk measure parameters. Barry & Brown (1985)

1 Small size company stocks outperformed big company stocks in returns

2 Capital Asset Pricing model, a single factor asset pricing model based on market risk beta developed by Sharpe and Treynor (1961)

3 Introduced by by Keim (1983), January stock returns exceeds other month returns

* Assistant Professor, Department of Banking Technology, Pondicherry University, Pondicherry-605014
Mobile No. 91+9489585514 E-Mail ID: abalki22@gmail.com

** Research Scholar, Department of Banking Technology, Pondicherry University, Pondicherry-605014
Mobile No. 91+9487084913, E-Mail ID: maitisoft@gmail.com

examine the market equilibrium model on the less known stocks or stocks whose information not available adequately. The study find there is a relationship between the stock listing period and returns, that doesn't take account of firm size. Also they do not find seasonality effect in their study. Further Chan, Chen & Hsieh (1985) test confirm the size effect as an anomaly in asset pricing using multi factor model. The study hypothesis of "return premium varies with business environment" proves right as smaller stocks are more risky. Hence, it justifies that higher return in small stocks under extra amount of risk. Yakub & Haim (1986) find significant relationship between the spread and return. Higher spread stock has higher return than low spread but low spread stock are more sensitive in terms of return. Small change in the low spread stock result in significant difference in the return than stock with high spread. Irwin & Larry (1988) also confirms the size effect anomaly in their study. The study also defines size effect as a risk that is not capture by usual measure like beta and variance. Fama-French (1992) use book to market (BE/ME) ratio and size to capture the average returns of the stocks. The study use different value of betas and find flat results even though the beta is the only clarifying variable. This give two important factor BE/ME and size as important determinant to capture the return. Bark (1995) argue size as not an anomaly rather can be used to strong increasing the power of the empirical test. It is not possible to have an inverse relationship between the market value and returns. Further Berk (1996) study find, that stock return is not relate to the size. Also justifies the BE/ME factor explain the return.

Above paragraph evidence the study for and against the size effect. Coleman (1997) review paper support against the size effect, while Savina (2006) paper support for the size effect from international evidences. Fama-French (2008) find one another important variable "momentum" that is important determinant to capture stock return. In emerging market context the paper also review several studies explained further. Pandey (2002) study on Malaysian stocks confirms seasonality effect dominant not only in developed market but also in emerging markets. Shegal & Vanita (2006) study confirms strong size effect in India. The study on Indian stock market on six alternative of size premium raises the question on Indian stock market operational efficiency. Further study on Indian capital market, Vanita (2009) find that market capitalisation and price to earnings ratio has negative effect but BE/ME have a positive effect on stock return. Also confirm Fama-French "Three factor"[4] model is dominant over CAPM in Indian context. From the above rigorous literature review for both matured and emerging markets, we find that no study has tested the performance micro stocks (tiny stocks). Hence, our study proposes to fill the above gap.

Data & Methodology

The study employs data of 491 companies. The entire sample companies are listed on Bombay Stock Exchange (BSE) in BSE 500 index. The data includes month end adjusted share prices, market capitalization (MC), total assets (TA), and enterprise value (EV) etc. and the data are collected from CMIE Prowess. Returns are calculated using first difference. We use only capital gain for estimation purposes and we deliberately exclude dividend as it is arbitrary and meager in Indian context (see L.C Gupta). The study period is January, 1999 to March, 2015. According to prior research, we use variables as

[4] Beta, size and value are the three factor model by Fama & French (1993). It is represented by the equation: $R_{Pt} - R_{Ft} = a+b\ (R_{Mt-}R_{Ft}) + e_t$

measures of company size. The study also uses BSE-200 index return as the proxy of market and its data is also taken from CMIE Prowess. Finally, 91 day T-Bill return is used as proxy of risk free rate of return. Data source for risk free rate is the website of Reserve Bank of India (RBI). Next, we construct the portfolios on market capitalization as measure of company size and we also form portfolios based on total assets, enterprise value which are taken to be the alternative measures of company size. Methodology for forming portfolios is presented. First, we rank the companies at the end of June, 1999 (period t) based on market capitalization and then construct ten portfolios. P_1 (Portfolio one) contains 10% of the sample stocks with smallest MC while, P_{10} (Portfolio ten) comprises of 10% of the sample stocks with the highest MC. Then equally weighted returns on these ten portfolios from July, 1999 (t) to June, 2000 (t+1) are calculated. Then ranking is revised in June, 2000 and this process is repeated till end of the study period. Next, we rank the sample stocks at the end of March, 1999 (period t) based on TA and EV and form 10 portfolios each i.e., TA and EV. Then we estimate equally weighted returns on these portfolios from July, 1999 (t) to June, 2000 (t+1).

We run regression to test the CAPM as shown in equation 1 below :

$$R_{Pt} - R_{Ft} = a+b\ (R_{Mt-}R_{Ft}) + e_t \qquad (1)$$

where

$R_{Pt} - R_{Ft}$ = Excess returns (stock return minus risk free return) on portfolio,

$R_{Mt} - R_{Ft}$ = Excess returns on the market factor (excess of market returns over risk free return)

a = Measure of abnormal returns and

b = Sensitivity coefficient.

Next, we regress excess returns on portfolios are regressed for two factor which comprises of market and risk factor in relation to size namely SMB (small minus big). The two factor model is presented as follows.

$$R_{Pt} - R_{Ft} = a+b\ (R_{Mt-}R_{Ft}) + sSMB + e_t \qquad (2)$$

SMB represents small minus big which is the proxy of risk factor in returns in relation to size factor.

SMB is calculated by subtracting excess returns on P_{10} from excess returns on P_1

s is the sensitivity coefficient of size factor.

Empirical results

Table 1 presents mean excess returns on corner portfolios namely P_1 and P_{10} sorted on market capitalization, total assets, and enterprise value. The returns pattern clearly indicates that all three P_1 portfolios based on MC, TA, and EV outperform P_{10} portfolios by providing extra-normal returns. P_1 based on MC yields monthly average returns of 5.7% while P_{10} gives only 0.9% per month. Monthly returns differential between P_1 and P_{10} is found to be 4.8%. Average returns on P_1 and P_{10} based on TA and EV also have return differentials of 5.1% per month and 4.4% per month respectively. Hence, a strong size effect (micro size) is found in all size measures. Results are consistent with Sehgal and Tripathi (2005). Next, we discuss regression results of CAPM which are presented in table 2. It is noted from the regression results that none of the P_1 portfolios' average returns are captured by CAPM as the alpha intercept values of portfolios are not close to zero. Besides, R^2 indicating goodness of fit of P_1 based on MC and TA are less than 50%. Hence, we conclude that one factor CAPM fails to explain the average returns on portfolios. Table 3 shows regression results for two factor (market and size)

model. We find from the results that two factor model is able to explain the average returns on P_1 based on MC and EV as their alpha intercept values become almost zero. Moreover, size factor loads heavily on small stocks. Finally, R^2 values of P_1 portfolios are in the ranges of 89.7 to 96.5, thus, it is concluded that two factor model is found to be a better model in terms of explaining average returns on portfolios formed based on company size using different measures.

Summary statistics

Table 1

MC

	P_1	P_{10}
Mean	0.057	0.009
Std. Dev.	0.119	0.08

TA

	P_1	P_{10}
Mean	0.066	0.015
Std. Dev.	0.138	0.098

EV

	P_1	P_{10}
Mean	0.054	0.01
Std. Dev.	0.11	0.087

Table 2

MC

	a	b	t(a)	t(b)	R^2
P_1	0.049	1.070	7.801	13.549	0.499
P_{10}	0.001	0.973	0.451	43.868	0.913

TA

	a	b	t(a)	t(b)	R^2
P_1	0.057	1.107	7.180	11.036	0.398
P_{10}	0.006	1.029	1.550	20.145	0.688

EV

	a	b	t(a)	t(b)	R^2
P_1	0.045	1.020	8.035	14.313	0.527
P_{10}	0.001	1.048	0.655	41.443	0.903

Table 3

MC

	a	b	s	t(a)	t(b)	t(s)	R^2
P_1	0.005	0.982	0.915	2.583	46.407	48.983	0.965
P_{10}	0.005	0.982	-0.085	2.583	46.407	-4.577	0.922

TA

	a	b	s	t(a)	t(b)	t(s)	R2
P_1	0.019	1.048	0.753	5.325	25.219	29.849	0.897
P_{10}	0.019	1.048	-0.247	5.325	25.219	-9.772	0.795

EV

	a	b	s	t(a)	t(b)	t(s)	R2
P_1	0.007	1.044	0.879	3.135	44.267	38.712	0.949
P_{10}	0.007	1.044	-0.121	3.135	44.267	-5.330	0.916

Conclusion

In this paper, we examine the performance of micro stocks in Indian stock market. We also evaluate the ability of asset pricing models namely CAPM and two factor model (market and size) in explaining average returns on portfolios formed on company size. Average returns on portfolios exhibit that there is a strong size (micro size) effect in Indian stock market and the effect is found even one constructs portfolios on the basis of alternative size measures such as total assets and enterprise value. The empirical results also show that two factor model (market and size) captures most of the average returns on portfolios that are not explain by CAPM. Hence, we conclude that two factor model is a better model in capturing average returns. The study has a limitation that it does not include other size measures such as gross working capital, net working capital, and total sales. The study will be useful to the investors, fund managers, and financial analysts.

References

- Amihud, Y., & Mendelson, H. (1986). Liquidity and stock returns. Financial Analysts Journal, 42(3), 43-48.
- Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of financial economics*, *9*(1), 3-18.
- Barry, C. B., & Brown, S. J. (1984). Differential information and the small firm effect. Journal of Financial Economics, 13(2), 283-294.
- Berges, A., McConnell, J. J., & Schlarbaum, G. G. (1984). The turn-of-the-year in Canada. Journal of Finance, 185-192.
- Berk, J. (1996). An empirical re-examination of the relation between firm size and return. Unpublished manuscript, University of British Columbia.
- Berk, J. B. (1995). A critique of size-related anomalies. Review of Financial Studies, 8(2), 275-286.
- Brown, P., Kleidon, A. W., & Marsh, T. A. (1983). New evidence on the nature of size-related anomalies in stock prices. Journal of Financial Economics, 12(1), 33-56.
- Chan, K., Chen, N. F., & Hsieh, D. A. (1985). An exploratory investigation of the firm size effect. Journal of Financial Economics, 14(3), 451-471.
- Coleman.(1997). A history of the size effect.1-14
- Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. the Journal of Finance, 47(2), 427-465.
- Fama, E. F., & French, K. R. (2008). Dissecting anomalies. *The Journal of Finance*, *63*(4), 1653-1678.
- Friend, I., & Lang, L. H. (1988). The size effect on stock returns: Is it simply a risk effect not adequately reflected by the usual measures?. Journal of banking & finance, 12(1), 13-30.
- Lakonishok, J., & Shapiro, A. C. (1986). Systematic risk, total risk and size as determinants of stock market returns. Journal of Banking & Finance, 10(1), 115-132.
- Pandey, I. M. (2002). Stock return seasonality in the emerging Malaysian market.
- Savina. (2006). International evidence of size effect. Dimensional fund advisors. 1-12
- Sehgal, S., & Tripathi, V. (2005). Size effect in Indian stock market: Some empirical evidence. Vision: The Journal of Business Perspective, 9(4), 27-42.
- Tripathi, V. (2008). Company fundamentals and equity returns in India. Available at SSRN 1134651.