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A comparative study of relationship between different markets

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Abstract
Sehgal and Triphati (2005) examined the size effect in the Indian stock market using data of top 482 Indian companies for the period of 1990-2003. They found a strong size premium using six alternative measures of company *viz*. - Market capitalization, Enterprise value, Net Fixed Assets, Net Annual Sales, Total assets and Net Working Capital. Further, the size based investment strategy seemed to be economically feasible as it provided extra normal returns on risk adjusted basis. Frequent rebalancing of size based portfolio was however found to be undesirable. The size effect did not seem to be owing to any seasonality or business cycle factors. The study had strong implications for mutual fund managers, investment analysts as well as small investors who were continuously on lookout for trading strategies that beat the market. The presence of a strong size premium also raised doubts the informational efficiency of Indian Stock market. The authors found strong size effect over the study period which had become more pronounced during recent time period.

Keywords: Market size, working capital, normal returns, strategies, India

Introduction
The important reason for the existence of an efficient market is the intense competition among the investors to have profits from any new information. The ability to identify over and under-priced stocks is very valuable as it would allow investors to buy some stocks for less than their "true" value and sell others for more than they were worth. Naturally, as more and more analysts compete against each other in their effort to take advantage of over and under-valued securities, the likelihood of being able to find and exploit such mis-priced securities becomes smaller and smaller. In equilibrium, only a relatively small number of analysts will be able to profit from the detection of mis-priced securities, mostly by chance. For the vast majority of investors, the information analysis payoff would likely not outweigh the transaction costs. The most crucial implication of the EMH can be put in the form of a slogan: Trust market prices! At any point in time, prices of securities in efficient markets reflect all known information available to investors. Bansal Monica (2010) [21] There is no room for fooling investors and as a result, all investments in efficient markets are fairly priced, i.e. on an average investors get exactly what they pay for. Fair pricing of all securities does not mean that they will all perform similarly, or that even the likelihood of rising or falling in price is the same for all securities. According to capital markets theory, the expected return from a security is primarily a function of its risk. The price of the security reflects the present value of its expected future cash flows, which incorporates many factors such as volatility, liquidity and risk of bankruptcy.

The Classical Efficient Markets Hypothesis
The origin of the EMH can be traced back to Paul Samuelson (1965), whose contribution is neatly summarized in the title of his article: "Proof that Properly Anticipated Prices Fluctuate Randomly". In an informational efficient market, price changes must be unforecastable if they are properly anticipated, i.e., they fully incorporate the information and expectations of all market participants. Fama (1970) operationalized this hypothesis summarized in Fama's well-known epithet "Prices fully reflect all available information" by placing structure on various information sets available to market participants.

The concept of informational efficiency suggests that the more efficient the market, the more random the sequence of price changes generated by such a market, and the most efficient market of all is one in which price changes are completely random and unpredictable. This is not an accident of nature, but is in fact the direct result of many active market participants attempting to profit from their information. Driven by profit opportunities, a myriad of investors pounce on even the smallest informational advantages at their disposal and in doing so; they incorporate their information into market prices and quickly eliminate the profit opportunities that first motivated their trades. If this occurs instantaneously, which it must in an "idealized world of frictionless" markets and costless trading, then prices must always fully reflect all the available information. Therefore, no profits can be from information-based trading because such profits must have already been captured.

New Classification for market Efficiency

Fama (1991) developed new classification for market Efficiency: first, test for return predictability instead of weak from test; second, event studies instead of semi strong from test; third, test for private information instead of strong from test.

Results and Discussion

During the period 2002-03, the significance of difference in mean returns of Group A with the BSE-Sensex Index return is exhibited in table 1, which shows that t-stat is greater than t critical two-tail value. Therefore, t-stat is significant and null hypothesis is rejected in Group A. Whereas in Group B, t-stat is less than the t critical two-tail value, hence the null hypothesis is accepted in Group B.

Table 1: Comparison of Group-wise Quarterly Mean Returns with Index Returns during 2002-03

Quarters	Group-A			Group-B		
	Mean	Index	t-Stat	Mean	Index	t-Stat
June 2002	0.1708	0.0646	1.0000**	0.0692	0.0646	2.166567
Sept. 2002	181323	0.0789		0.0803	0.0789	
Dec. 2002	0.1696	0.0683		0.0844	0.0683	
March 2003	0.3081	0.0754		0.1006	0.0754	

Source: Data Complied from CMIE Prowess Database.
** Significant at 5 per cent level of significance.

During the period of 2003 to 2004, in Group A, highest value is found at quarter first as depicted in the table 2 and continuously decreasing from June quarter to March quarter. Median value is also registering a declining trend during this period. The mean values are more dispersed in June quarter which is determined from the standard deviation. Positive asymmetrical trend decreased from June quarter to the end of the March quarter which shows the existence of more positive values. The decreasing kurtosis values show more peaked distribution starting from June quarter to March quarter. The Jarque-Bera statistic indicates non normal distribution pattern in each quarter because of having zero probability.

Table 2: Descriptive Statistics for All Quarters during 2003-04 (Group-A)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2003	0.2122	0.1295	0.6088	7.9772	66.7078	13119.3900	0.0000
Sept. 2003	0.1668	0.1117	0.2963	6.8504	54.2053	8546.1590	0.0000
Dec. 2003	0.1283	0.0804	0.2894	7.6930	63.5373	11867.0300	0.0000
March 2004	0.1544	0.0960	0.3315	7.5768	62.2274	11368.3700	0.0000

Source: Data compiled from CMIE Prowess Database

In Group B, same pattern is followed in mean returns and median value by showing decreasing trend from June quarter to March quarter except in case of December quarter in mean returns as shown in table 3. Fourth quarter is also showing greater magnitude of the deviations of the values from their mean. From the first quarter, observations are positively asymmetrical which continued in September, December and March quarters also. The curve is more peaked in March quarter than the other quarters. But it is interesting to notice that the Jarque-Bera statistic reported normal distribution in case of June and December quarters and non normal distribution in September and March quarters indicating some changes in the market behaviour.

Table 3: Descriptive Statistics for All Quarters during 2003-04 (Group-B)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2003	0.0758	0.0684	0.0367	1.1155	4.3797	13.7613	0.0010
Sept. 2003	0.0668	0.0577	0.0304	1.3397	6.0511	32.9770	0.0000
Dec. 2003	0.5699	0.0578	0.0338	0.0612	1.9566	2.1613	0.3394
March 2004	0.0593	0.0497	0.0415	2.9659	14.2990	325.7204	0.0000

Source: Data compiled from CMIE Prowess Database

Table 4 has reported the comparison of Group-wise mean returns with the BSE-Sensex Index return for the period 2003-04. It is found that t-stat is greater than t critical two-tail value in Group A. Hence, t-stat is found significant; therefore, null hypothesis is rejected. However, the calculated value is less than the tabulated value in Group B,

therefore null hypothesis is accepted i.e. the funds managers are able to systematically outperform the markets and assets prices are aligned in capital markets to the underlying risk return characteristics.

Table 4: Comparison of Group-wise Quarterly Mean Returns with Index Returns during 2003-04

Quarters	Group-A			Group-B		
	Mean	Index	t-Stat	Mean	Index	t-Stat
June 2003	0.2122	0.0680	7.4651**	0.0758	0.0680	1.0480
Sept. 2003	0.1668	0.0616		0.0668	0.0616	
Dec. 2003	0.1283	0.0530		0.5699	0.0530	
March 2004	0.1544	0.0539		0.0593	0.0539	

Source: Data Complied from CMIE Prowess Database.
** Significant at 5 per cent level of significance.

For the year 2004-2005, the mean returns and median value has the highest value during June quarter as depicted in the table 5. However the mean values are more dispersed in September quarter which is determined from the standard deviation. Positive asymmetrical trend increased from June quarter to September quarter and then declined from December quarter to the end of the March quarter. As regards to kurtosis, the curve is more peaked in quarter September than the other quarters. The Jarque-Bera statistic indicates non normal distribution pattern in each quarter because of having zero probability.

Table 5: Descriptive Statistics for All Quarters during 2004-05 (Group-A)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2004	0.1372	0.1078	0.0935	1.1370	4.3455	21.2337	0.0000
Sept. 2004	0.1222	0.0883	0.1057	3.6344	22.6585	1336.1800	0.0000
Dec. 2004	0.0982	0.0744	0.0842	2.8198	12.9726	399.2442	0.0000
March 2005	0.1032	0.0865	0.0726	1.5231	5.2858	44.1186	0.0000

Source: Data compiled from CMIE Prowess Database

In Group B, as depicted in table 6, June quarter has reported highest mean returns which is based on highest E/P ratio. It has also shown highest median value. Third quarter is showing greater magnitude of the deviations of the values from their mean. In the first quarter, observations are asymmetrical which continued to September, December and March quarters. The kurtosis values show more peaked distribution on September quarter which starts declining from September quarter to March quarter. The Jarque-Bera statistic indicates non normal distribution pattern in each quarter because of having zero probability.

Table 6: Descriptive Statistics for All Quarters during 2004-05 (Group-B)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2004	0.0674	0.0567	0.0501	3.2436	15.0960	376.7900	0.0000
Sept. 2004	0.0602	0.0496	0.0449	3.5985	18.5637	588.0516	0.0000
Dec. 2004	0.0516	0.0476	0.2861	2.4114	10.2802	152.5204	0.0000
March 2005	0.0518	0.0466	0.0273	1.4513	5.8945	33.6069	0.0000

Source: Data compiled from CMIE Prowess Database

During the period 2004-05, the significance of difference in mean returns of Group A and B with the BSE-Sensex Index return is shown in table 7, which states that t-stat is greater than t critical two-tail value. Therefore, t-stat is significant. However, in Group B, t-stat is less than the t critical two-tail value; hence t-stat is not found significant. Therefore, null hypothesis is rejected in Group A and accepted in Group B.

Table 7: Comparison of Group-wise Quarterly Mean Returns with Index Returns during 2004-05

Quarters	Group-A			Group-B		
	Mean	Index	t-Stat	Mean	Index	t-Stat
June 2004	0.1372	0.0703	7.0637**	0.0674	0.0703	-1.98328
Sept. 2004	0.1222	0.0597		0.0602	0.0597	
Dec. 2004	0.0982	0.0586		0.0516	0.0586	
March 2005	0.1032	0.0641		0.0518	0.0641	

Source: Data Complied from CMIE Prowess Database.
** Significant at 5 per cent level of significance.

In Group A, during the period 2005-2006, first quarter reported the highest mean returns as shown in table 8. It has also reported the highest median value. The mean values are more dispersed in June quarter which is determined from the standard deviation. Positive asymmetrical trend increased from June quarter to December quarter which shows the existence of more positive values and decreased in March quarter. The increasing kurtosis values show more peaked distribution started from June quarter to December quarter and fell down to March quarter. The distribution of mean returns of all the quarters were found as non-normally distributed as verified from the findings of Jarque-Bera statistic.

Table 8: Descriptive Statistics for All Quarters during 2005-06 (Group-A)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2005	0.1041	0.0792	0.0859	1.8902	6.2155	74.9160	0.0000
Sept. 2005	0.0791	0.0611	0.0620	1.9077	6.9120	90.8297	0.0000
Dec. 2005	0.0743	0.0575	0.0618	1.9614	6.9254	93.6756	0.0000
March 2006	0.0617	0.0489	0.0466	1.2414	4.5222	25.7981	0.0000

Source: Data compiled from CMIE Prowess Database

As depicted in table 9, in Group B, first quarter reported the highest mean returns and median value. The mean values are more dispersed in June quarter. Positive asymmetrical trend increased from June quarter to December quarter and decreased in March quarter. The curve is more peaked in quarter December than the other quarters. The Jarque-Bera statistic indicates non normal distribution pattern in each quarter because of having zero probability.

Table 9: Descriptive Statistics for All Quarters during 2005-06 (Group-B)

Quarters	Mean	Median	Std. Div.	Skewness	Kurtosis	Jarque Bera statistic	Jarque Bera probability
June 2005	0.0482	0.0411	0.0313	2.3749	11.1065	176.5550	0.0000
Sept. 2005	0.0426	0.0355	0.0273	2.1329	9.3436	116.8748	0.0000
Dec. 2005	0.0391	0.0315	0.0289	2.7502	12.9597	258.8974	0.0000
March 2006	0.0354	0.0292	0.0203	1.6817	7.4615	62.4358	0.0000

Source: Data compiled from CMIE Prowess Database

The table 10 reported the results of t-Test: Paired Two Sample for Means stating the significance of difference in the mean returns of Group A and Group B with the BSE-Sensex Index return during the period 2005-06. It is observed that t-stat is greater than t critical two-tail value in both the groups. Hence, t-stat is significant in both the Groups, therefore, null hypothesis is rejected.

Table 10: Comparison of Group-wise Quarterly Mean Returns with Index Returns during 2005-06

Quarters	Group-A			Group-B		
	Mean	Index	t-Stat	Mean	Index	t-Stat
June 2005	0.1041	0.0624	4.1547**	0.0482	0.0624	-28.6933**
Sept. 2005	0.0791	0.0562		0.0426	0.0562	
Dec. 2005	0.0743	0.0537		0.0391	0.0537	
March 2006	0.0617	0.0478		0.0354	0.0478	

Source: Data Complied from CMIE Prowess Database.

** Significant at 5 per cent level of significance.

It has depicted the performance of various quarters for the period 2006-07 for Group A. Fourth quarter reported the highest mean returns and median value. The mean values are more dispersed in September quarter which is determined from the standard deviation. In the second quarter, observations are negative asymmetrical which turned into positive asymmetrical in December and March quarters. The curve is more peaked in quarter September than the other quarters. But it is interesting to notice that the Jarque-Bera statistic reported normal distribution.

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