THE SCANNER

Comparing apples to apples

In Olympic weightlifting, various weight classes are defined based on the weights of the competitors. The primary purpose behind establishing these classes is to ensure that athletes are reasonably comparable with their peers. For instance, a 55 kg weightlifter, no matter how powerful, can generally be expected to perform less than a 96 kg counterpart.

Likewise, in equity markets, investors have numerous options available to them. With over 3000 companies listed in the Indian equity market alone, it's impractical to compare smaller companies with larger ones. Therefore, creating classes is crucial for meaningful comparisons. In that context, a common market-cap language has emerged over time. Stocks are bifurcated into large-cap, mid-cap, and small-cap with the underlying assumptions that the stocks within a certain market cap basket have common attributes – these could include valuation range, growth potential, risk, phase of business cycle, etc. Currently, the Securities Exchange Board of India (SEBI) defines market cap segmentation as below:

1 Large Cap

The **1st** to the **100th** company in terms of full market capitalisation

2 Mid Cap

The **101st** to the **250th** company in terms of full market capitalisation

3 Small Cap

The **251st** onwards in terms of full market capitalisation

Need for redefining the norms

Traditionally, the small-cap category is defined as comprising companies from the 251st position onwards. However, it can be argued that comparison even within a particular segment is not always logical, thereby leading to more of an 'apples to oranges' kind of situation. This anomaly becomes even more pronounced in the large-cap segment with significant dispersion between the largest and the smallest companies within the individual categories (Refer to Exhibit 1). To enhance clarity and precision, we suggest introducing additional market cap tiers in large-cap and mid-cap segments.

Segregating large caps into mega and large

The BSE Sensex, a widely used index tracking large-cap companies, comprises 30 stocks. We propose the establishment of two subclasses within the existing large-cap category: Mega and Large70. To avoid confusion, we suggest renaming the current large-cap category as the Large100 cap.

Our new definitions for the two caps are as follows:

- **Mega Cap**: The **1st to the 30th** company in terms of full market capitalisation
- **Large100 Cap**: The **1st to the 100th** company in terms of full market capitalisation
- **Large70 Cap**: The **31st to the 100th** company in terms of full market capitalisation

Segregating small cap into micro and nano

Both the NSE and BSE have small-cap indices consisting of 250 stocks, encompassing companies ranked from the 251st to the 500th position in terms of full market capitalisation. To enhance clarity and precision, we suggest introducing two additional market cap tiers: Micro and Nano, each composed of 250 stocks.

The definitions could be as follows:

- **Small Cap**: **251st - 500th** company in terms of full market capitalisation
- **Micro Cap**: **501st - 750th** company in terms of full market capitalisation
- **Nano Cap**: **751st - 1000th** company in terms of full market capitalisation
- **Others**: **1001st company onwards** in terms of full market capitalisation

By creating more distinct categorisations, portfolio managers can better enhance the comparability among market caps and take more informed investment decisions. Key takeaways from our analysis:

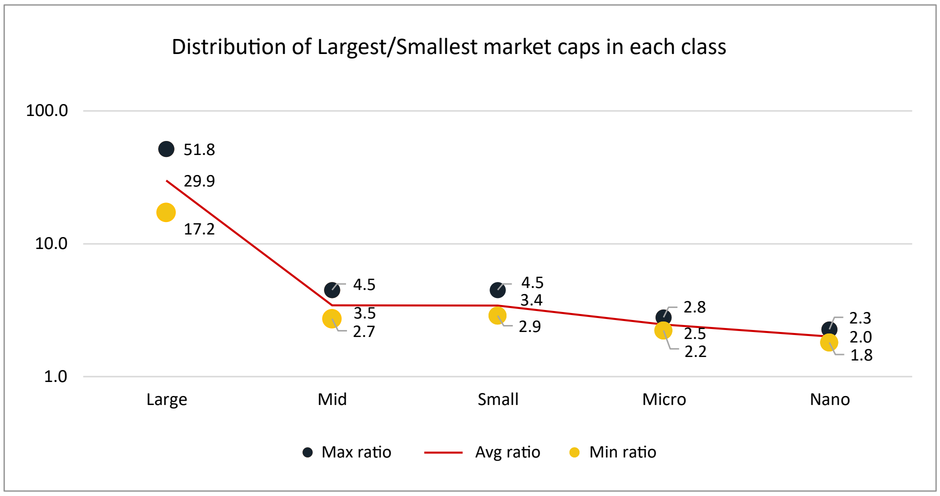
- Large cap is better considered as a combination of two caps, Mega and Large 70
- The larger the cap, the lower the risk
- In smaller caps, while average returns remain comparable with larger caps, upside dispersion increases. This suggests a higher potential for generating higher returns through robust strategies in smaller caps.

Please note: The data used in the study spans the period August 2006 to December 2023

Charts

Exhibit 1

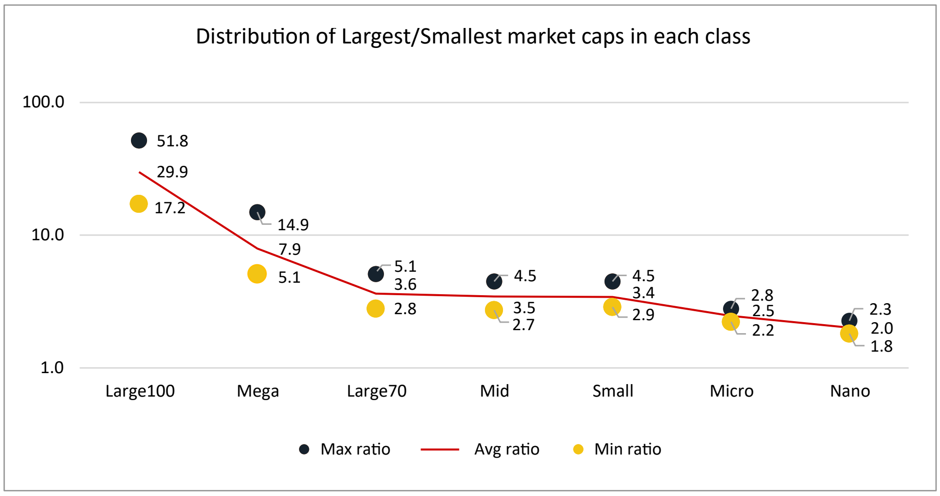
Distribution of largest/smallest in each class (existing large-cap)



Note: While the average ratio of the largest versus lowest company in each market cap ranges from 2 to 3.5 for most caps, it increases to a staggering level of 32 for large caps. In simpler terms, for all other caps, one might expect a company to be compared with another having 3 to 4 times its market cap. However, in the case of large caps, a company could potentially be compared with another having 52 times its market cap.

Exhibit 2

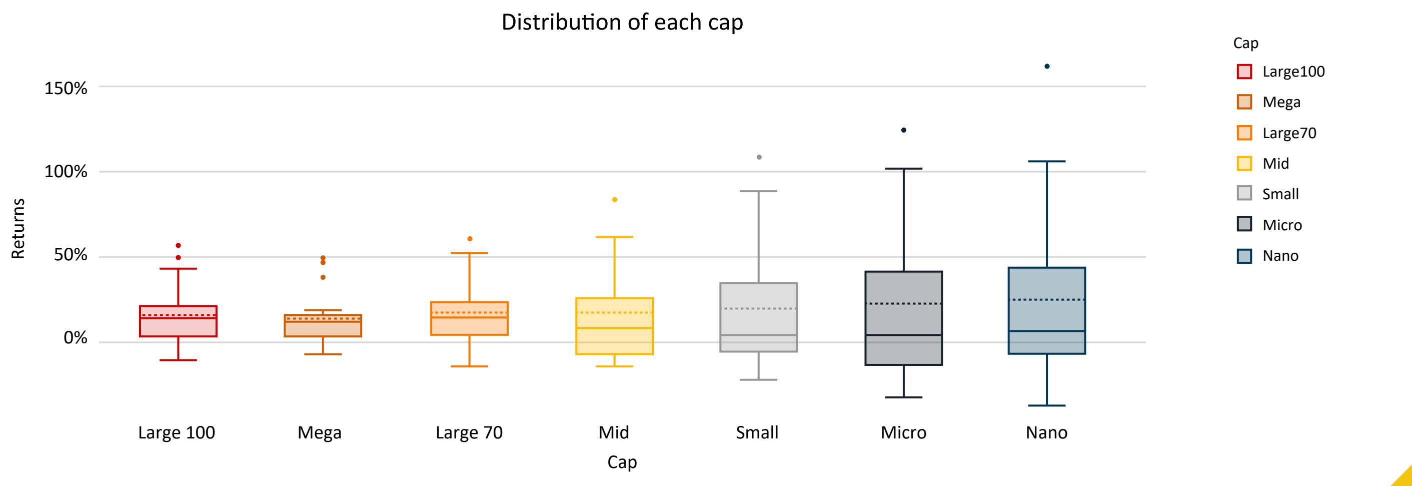
Distribution of largest/smallest in each class (redefined categories)



The ratio of the highest to the lowest market cap in Large70 is now comparable with the rest of the classes. Even the Mega cap has a quarter of the spread of market caps compared to the original Large100 cap. We can now affirm that all the classes feature companies of comparable size.

Exhibit 3

Revised market-cap wise distribution of returns



Q&A

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What makes market cap segmentation so important?

When we classify stocks into various market caps, the primary reason is comparability. As long as you remain in the desired market cap, the companies under review would remain comparable in size and perhaps liquidity. This helps the portfolio manager take informed decisions about the universe of stocks under her consideration.

Why do you think the dispersion is significantly higher in the large-cap space?

Equity markets are usually top heavy with the largest companies dominating a majority of the weight. Hence, if we add too many companies in the same basket as the largest ones, the relative size of the smaller companies in that 'large cap' basket would become miniscule compared to the bigger ones. This is evident in the data as well.

Does the reclassification have a significant impact on risk and return?

The Fama-French three-factor model describes stock returns through the outperformance of small cap companies relative to large-cap companies. In other words, smaller caps should yield higher returns.

Caps	Large100	Mega	Large70	Mid	Small	Micro	Nano
Average returns	16.0%	13.4%	17.1%	17.6%	19.6%	21.7%	24.9%
Standard deviation	18.6%	15.6%	20.3%	28.0%	37.4%	42.7%	49.4%
Coefficient of Variation	1.27	1.25	1.31	1.90	2.53	2.77	2.86
CAGR	14.6%	12.5%	15.5%	14.7%	14.8%	15.4%	17.3%

We can see that bifurcating the large cap in Mega cap and Large70 cap ends up in two market caps with distinctive risk: return profiles. The Mega cap are the slowly growing companies with lesser volatility as compared to the Large70 cap that witness higher returns with increased volatility.

How did you come across this research idea?

When it comes to data analysis, the first and foremost step is to understand the nature of the data. Is it cohesive, is it comparable, and does it have large enough history? These are some of the questions any data scientist should ask before jumping into using the myriad tools available in her arsenal.

When we looked at the distribution of sizes and returns, we found something was amiss in currently defined large cap companies. After digging through the numbers, we realized the clubbing of largest companies needs refinement, and proposed one such refinement in this paper.

How will this affect the returns of my investment?

There is no magical formula that will guarantee superior returns. However, tiny improvements in the investment process, made over a long period of time, will increase the probability of achieving one's investment goals. The more we are aware of the data we are working with, the better nuances we can draw from it.

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