Re-thinking Market Caps in India

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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. Further, recent events have underscored that even the smallest of differences amongst peers can have large ramifications – whether it is a fraction of a second that separates the gold from the silver or a mere 100 gms that can change the course of destiny for a sportsperson – every difference matters.

Segmentation promotes fairness and equality by ensuring that we are not comparing apples to oranges or placing something at an unfair advantage over another. In the equity markets, where there are over 3000 listed companies, segmentation becomes almost critical. Comparing a small company to a larger one is not only impractical but can also lead to sub-optimal investment decisions. From this idea stems the concept of market capitalisation.

Established Classifications

Market capitalisation is the product of the total number of outstanding shares of the company and the current market price. Larger the market capitalisation, higher is its perceived value.

In an Indian context, the Securities Exchange Board of India (SEBI), through its circular no. SEBI/HO/IMD/DF3/CIR/P/2017/114 dated October 6th, 2017, has defined large-cap, mid-cap, and small-cap companies to ensure uniformity regarding the investment universe for equity mutual fund schemes.

In terms of full market capitalisation

LARGE CAP
The **1st** to the **100th** company

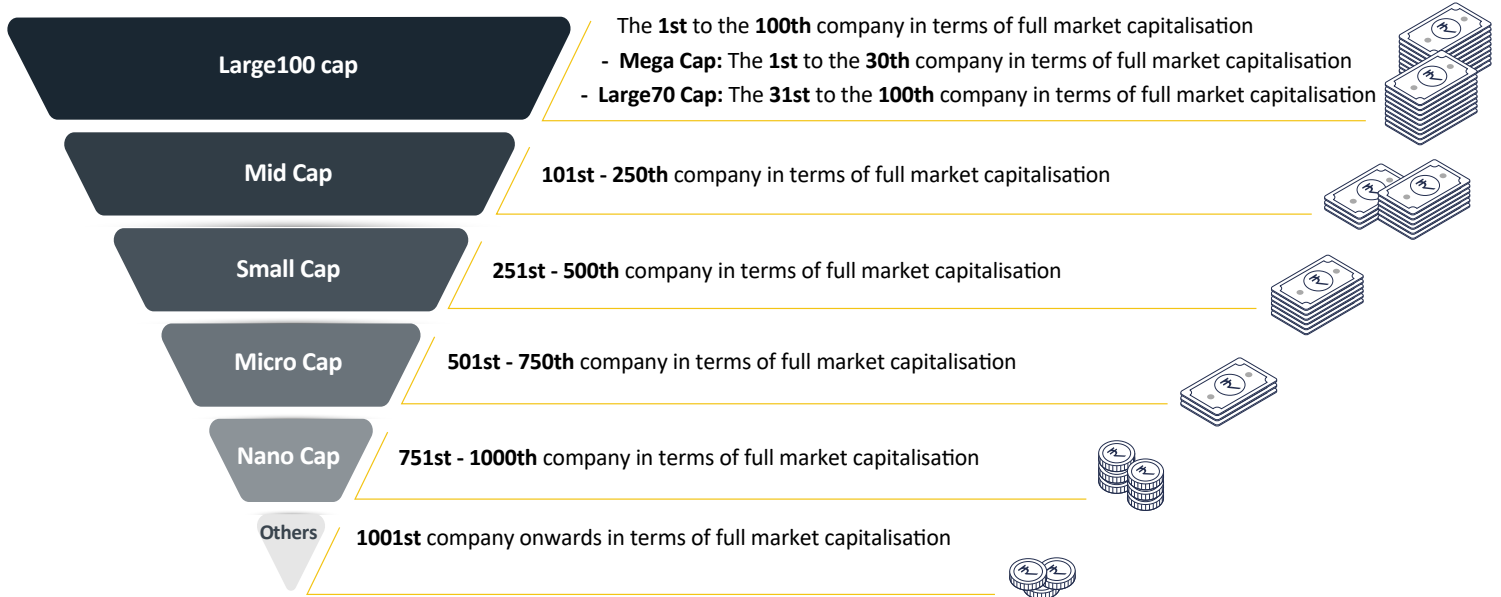**MID CAP**
The **101st** to the **250th** company

SMALL CAP
The **251st** company onwards

Unlocking Nuanced Market Segmentation

While the current categorisation is definitely a step in the right direction, the question to ponder upon is whether it sufficiently captures the risk and return potential of the entire universe of companies listed in India. For example, the top 100 companies in terms of market capitalisation are termed as large-cap companies. However, would it be wise to assume that the risk associated with the 1st company (in terms of market capitalisation) is similar to the risk associated with the 100th company? Perhaps not! Thus, it becomes important to evaluate whether there is potential to further bifurcate the large-cap category to better reflect the risk-return potential of the companies in this category.

To bridge these gaps, and enable better comparison, we recommend introducing two additional market cap tiers: Micro and Nano, each composed of 250 stocks and further dividing the large-caps into Mega and Large70. The definitions outlined in this article are as follows:
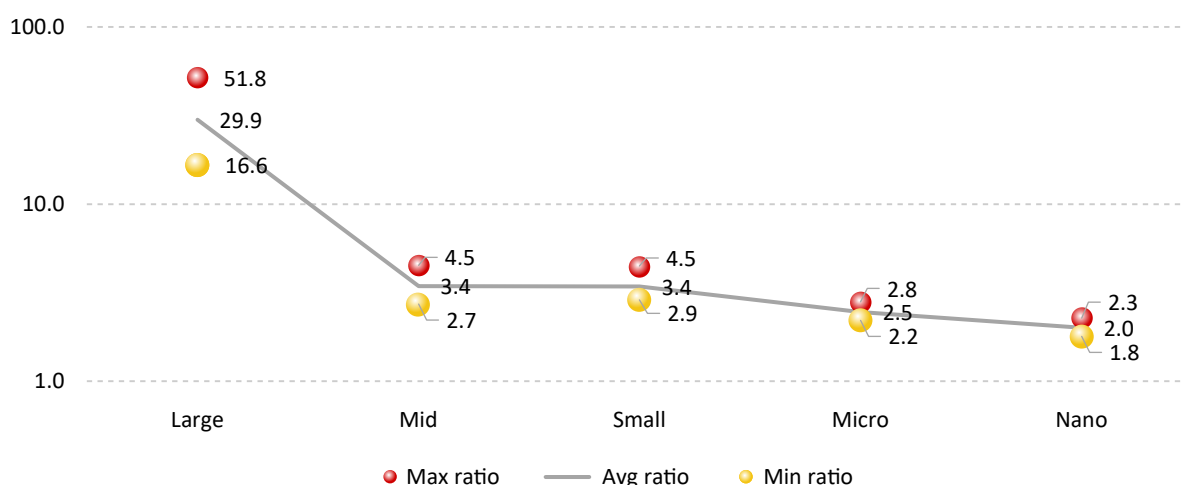
Large100 cap	The **1st** to the **100th** company in terms of full market capitalisation - **Mega Cap:** The **1st** to the **30th** company in terms of full market capitalisation - **Large70 Cap:** The **31st** to the **100th** company in terms of full market capitalisation
Mid Cap	**101st - 250th** company in terms of full market capitalisation
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

Data used in the study: August 2006 to May 2024

Comparing market-cap distribution

An ideal way to compare market caps is to assess the relative size of the largest company in the category with the size of the smallest. To put this simply, if the size of the largest company in the category is 100 and the size of the smallest company in the category is 20, then the ratio would be 100 divided by 20, i.e., 5. This comparison reveals the dispersion of market capitalisation across caps. The ratio of market caps highlights this distribution, with large-cap companies exhibiting a significantly higher ratio compared to others.

Exhibit: Distribution of largest / smallest market caps across existing categories

	Large	Mid	Small	Micro	Nano
Max ratio	51.8	4.5	4.5	2.8	2.3
Avg ratio	29.9	3.4	3.4	2.5	2.0
Min ratio	16.6	2.7	2.9	2.2	1.8

● Max ratio — Avg ratio ○ Min ratio

How to read the above exhibit?

The chart is plotted on a logarithmic Y axis (1-10-100) to ensure that the lower values of smaller caps are visible alongside the larger values of large caps. The maximum and minimum values of the ratio (largest divided by smallest market cap) illustrate the extent of dispersion of market capitalisation within each class.

It is interesting to note that while the average dispersion in the mid-small, micro, and nano caps is narrow, when it comes to the large-cap space, the dispersion is significantly higher. The average ratio of the largest versus the lowest company in each market cap ranges from 2 to 4.5 for most caps. However, in the case of large-caps, this increases to ~30. Thus, while in the other segments one might expect a company to be compared with another having 3 to 4 times its market cap, in the case of large caps, a company could potentially be compared with another having 52 times its market cap! Inarguably, this can lead to sub-optimal investment decision making.

But, why is there such a high variance in market caps among large-caps?

Perhaps the answer lies in simple statistics. When you analyse the distribution of data, it usually results in a recognisable pattern. However, every data set will have some extreme data points, i.e., the outliers, that do not conform to the established pattern. If the number of outliers is minimal, their presence will not have a large impact on the overall distribution. On the other hand, if the number of outliers is sufficiently large, it can have a significant impact on the distribution. This is the case observed with the large-cap category. In the case of large-cap stocks, where the top 100 companies are considered, we essentially focus on the extreme right end of the data plot. Consequently, the disparity between the largest and smallest companies is notably high, resulting in a wider dispersion range. This creates the need to further divide the large-cap category into two sub-sets, i.e., Mega and Large70, subsequently name the current large-cap category as the Large100 cap.

Exhibit: Distribution of largest / smallest market caps across suggested categories
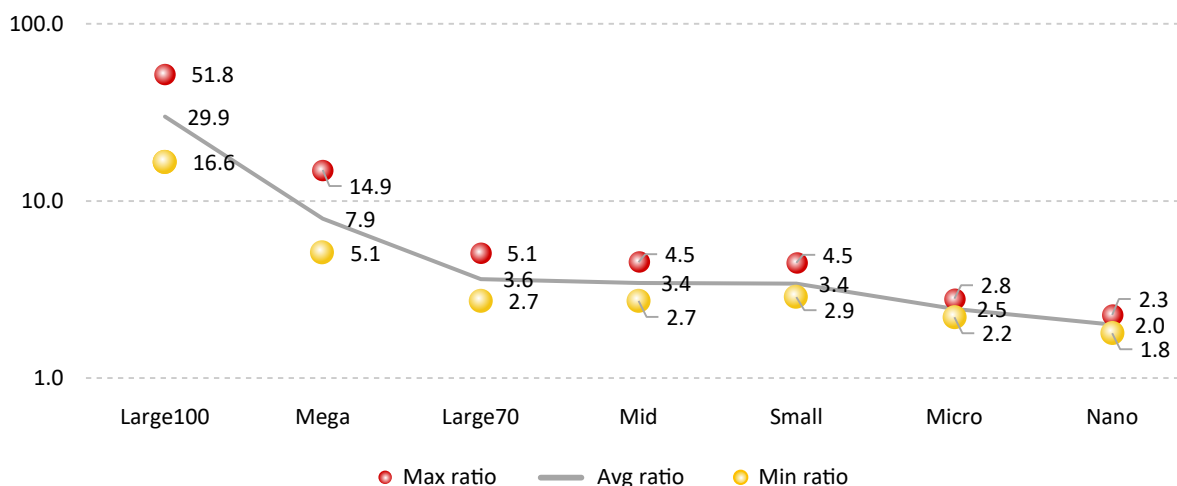
The ratio of the highest to the lowest market cap in Large70 is now comparable with the rest of the classes. Even the Mega cap has a quarter of the spread of market caps compared to the original Large100 cap. It can now be affirmed that all the classes feature companies of comparable size.

Impact on risk and returns

One of the key purposes of investment analysis is to identify opportunities that can potentially generate the desired return within the established risk boundaries. From this stems the logic that large companies represent a low risk-low return opportunity while smaller companies represent a high risk- high return opportunity. The Fama-French three-factor model utilises size-risk premium, which represents the additional returns anticipated by investors for companies of smaller size. This suggests that smaller caps should yield higher returns to compensate for the higher risk. Basis the new suggested categorisation, the risk-return metrics were computed.

Exhibit: Average returns and risk across suggested market-cap categories

Caps	Large100	Mega	Large70	Mid	Small	Micro	Nano
Average returns	17.1%	13.7%	18.5%	18.7%	20.6%	22.4%	25.2%
Stdev	19.5%	15.9%	21.7%	28.6%	37.8%	42.9%	49.3%
CoV	1.25	1.25	1.30	1.82	2.42	2.68	2.81
CAGR	15.6%	12.8%	16.7%	15.7%	15.6%	16.0%	17.5%

The above table indicates that in the period 1st August 2006 to 31st May 2024, small caps yielded higher returns than the Large100, the Mega, the Large70, and the mid-cap segments. However, the risk (as measured by standard deviation) was also relatively higher. Now, logic dictates that the increase in risk should ideally result in a commensurate increase in returns. This can be assessed in two ways:

Coefficient of Variation (CoV):

This is a statistical metric that measures relative standard deviation. CoV is a unitless number used to compare different samples, with lower values indicating better comparability. As we transition from larger caps to smaller caps, the CoV worsens.

Compound Average Growth Rate (CAGR):

This represents the return that would be compounded if one were to invest in each cap. Although average returns are higher for smaller caps, their elevated standard deviation brings down the CAGR to levels that are lower or comparable to those of larger caps.

Market cap-wise distribution of returns

Average returns can often smoothen the impact of extreme numbers and showcase a slightly inaccurate picture of potential returns. Thus, it becomes important to also analyse the dispersion of returns to gather a better understanding of potential returns.

Exhibit: Distribution of returns across suggested market-cap categories
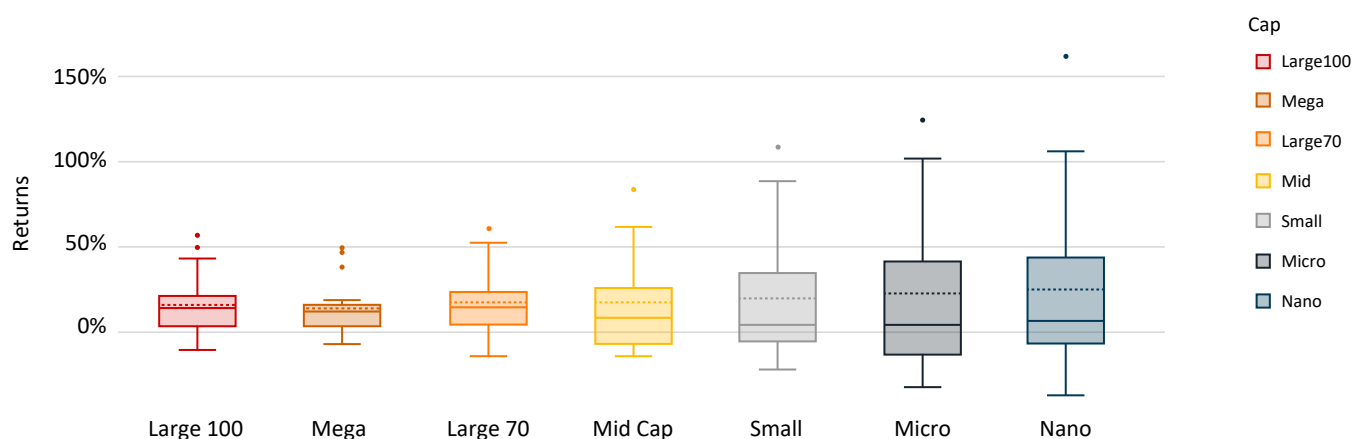
The above exhibit presents the distribution of returns within each market cap using box plots. Returns calculated are then bifurcated into percentiles and all data that falls within the range of 25th and 75th percentile returns falls inside the box. The median returns, i.e., the returns with the highest number of occurrences, is indicated by a solid line inside the box. The average returns are represented by a dotted line within each box. The lines extending from the box's ends on both sides are termed as 'whiskers,' – they indicate the calculated upper and lower limits of the data. Any observations exceeding these limits are marked by a 'dot'.

Exhibit: Analysis of return distribution across suggested market-cap categories

Caps	Large100	Mega	Large70	Mid	Small	Micro	Nano
Lower fence	-21.1%	-12.3%	-23.8%	-51.6%	-62.5%	-88.8%	-77.2%
Q1	3.6%	3.7%	4.0%	-4.9%	-5.1%	-11.1%	-6.6%
Median	**14.1%**	**11.2%**	**14.6%**	**8.0%**	**4.3%**	**4.5%**	**6.5%**
Q3	20.1%	14.4%	22.5%	26.2%	33.2%	40.6%	40.4%
Upper fence	44.9%	30.4%	50.3%	72.9%	90.7%	118.2%	111.0%

Key takeaways from the above analysis

- All **dotted lines** (average returns) are above the **middle solid** (median returns) lines in each box. This indicates that average returns exceed the median, suggesting that positive returns generally outweigh negative ones.

- Large100, Mega, and Large 70 exhibit higher median returns ranging from 11% to 15%. This suggests that more than half of the time, the average returns of these caps surpass 11% to 15%.

- A smaller box indicates lower dispersion. Large caps (Large100, Mega, and Large70) are less volatile than smaller ones.

- Smaller caps display longer positive tails, with a median ranging from 4% to 8%. Despite these caps making lesser money half of the time, their positive returns are considerably higher, lifting the average up. Therefore, stock selection becomes appealing (albeit riskier) in smaller caps, offering the potential for larger returns.

Conclusion

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.

About the authors

Aniruddha Meher has +15 years of investment experience and has been managing the Sankhya India Portfolio since its inception. He is a statistician having M.Phil. (Stats) from Pune University. Being the founding member of the Quant team, he leads a team of 5 statisticians.

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