Methodology for Estimating All India Market Capitalisation

Market capitalisation is the aggregate valuation of the company based on its current share price and the total number of outstanding stocks. It is calculated by multiplying the current market price of the company's share with the total outstanding shares of the company. Full market cap represents the total value of company i.e., total issued securities/shares multiple of share price at a given time.

Methodology for computing total market cap:

The general methodology for computing the full market cap where companies are listed multiple exchanges is given below:

n= Total no of exchanges

Ai = Total no of companies listed at i^{th} exchange

Thus, $\sum_{i=1}^{n} Ai$ will give the total no of companies listed on all the exchanges (multiple counted if one company listed more than one exchanges). Therefore, we would use the theorem of principle of inclusion–exclusion to find out the unique no of companies listed all the exchanges.

The principle of inclusion–exclusion states that for finite sets A_1, ..., A_n, one has the identity

$$\left|\bigcup_{i=1}^{n} A_i\right| = \sum_{i=1}^{n} |A_i| - \sum_{1\le i<j\le n} |A_i \cap A_j| + \sum_{1\le i<j<k\le n} |A_i \cap A_j \cap A_k| - \ldots + (-1)^{n-1} |A_1 \cap \cdots \cap A_n| .$$

Where, $|A|$ indicates the cardinality of a set S (which may be considered as the number of elements of the set, if the set is finite)

Therefore, to count the unique number of listed companies among all the exchanges equals to first sum the cardinalities of the individual exchanges, then subtract the number of companies which listed at exactly one exchange , then add back the number of companies listed at exactly two exchanges, then subtract the number of companies listed at exactly three exchanges, and so on. This process naturally ends since there can be no companies listed at more than the number of exchanges in the union (n).

Now to find out unique name of the listed company among the exchanges, consider a matrix B==((bij))

where bij= $\begin{bmatrix} \mathbf{1}\ \boldsymbol{if\ one\ company\ (Ci) listed\ any\ of\ the\ exchange} \\ \mathbf{0}\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\ \boldsymbol{elsewhere} \end{bmatrix}$

therefore bi0=$\sum bij$ belongs to 1 to n, where 1= unique listed companies, 2=listed at two exchanges and n=listed all the exchanges and so on;

Now to find out respective price of the listed company, consider a matrix Q==((qij))

where qij= $\begin{cases} \boldsymbol{pij} & \boldsymbol{if\ bij = 1} \\ \boldsymbol{0} & \boldsymbol{elsewhere} \end{cases}$

so respective price of ith company

pi=$\sum_j qij$/bi0

Therefore, market cap of all the companies=$\sum_i pi$*no of total shares of company i

In India, BSE, NSE and MSEI are the three main exchanges report market cap separately. The methodology for computing market cap of all companies listed BSE, NSE and MSEI is as follows:

Market Cap=

$$\sum_{i=1}^{n} total\ no\ of\ share\ of\ companies\ which\ are\ exclusively\ listed\ at\ BSE * current\ price\ of\ the\ share$$

$$+$$

$$\sum_{i=1}^{n} total\ no\ of\ share\ of\ companies\ which\ are\ exclusively\ listed\ at\ NSE * current\ price\ of\ the\ share$$

$$+$$

$$\sum_{i=1}^{n} total\ no\ of\ share\ of\ companies\ which\ are\ exclusively\ listed\ at\ MSEI * current\ price\ of\ the\ share$$

$$+$$

$$\sum_{i=1}^{n} total\ no\ of\ share\ of\ common\ listed\ companies * average\ price\ traded\ at\ BSE, MSEI\ and\ NSE$$