LESSON 16: STOCK MARKET INDICES

Stock market indices are the barometers of the stock market. They mirror the stock market behavior. With some 7,000 companies listed on the Bombay stock exchange, it is not possible to look at the prices of every stock to find out whether the market movement is upward or downward. The indices give a broad outline of the market movement and represent the market. Some of the stock market indices are BSE Sensex, BSE-200, Dollex, NSE-50, CRISIL-500, Business Line 250 and RBI Indices of Ordinary Shares.

Usefulness of Indices
1. Indices help to recognise the broad trends in the market.
2. Index can be used as a benchmark for evaluating the investors portfolio.
3. Indices function as a status report on the general economy. Impacts of the various economic policies are reflected on the stock market.
4. The investor can use the indices to allocate funds rationally among stocks. To earn returns on par with the market movement, he can choose the stocks that reflect the market movement.
5. Index funds and futures are formulated with the help of the indices. Usually fund managers construct portfolios to emulate any one of the major stock market indices. ICICI has floated ICICI index bonds. The return of the bond is linked with the index movement.
6. Technical analysts studying the historical performance of the indices predict the future movement of the stock market. The relationship between the individual stock and index predicts the individual share price movement.

Computation of Stock Index
A stock market index may either be a price index or a wealth index. The unweighted price index is a simple arithmetical average of share prices with a base date. This index gives an idea about the general price movement of the constituents that reflects the entire market. In a wealth index the prices are weighted by market capitalisation. In such an index, the base period values are adjusted for subsequent rights and bonus offers. This gives an idea about the real wealth created for shareholders over a period of time. The following example gives the calculation procedure for the wealth index.

Let us take an example of an index constructed with three scrips X, Y and Z.

<table>
<thead>
<tr>
<th>Equity of the company</th>
<th>Market price of scrip</th>
<th>Market Capitalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X : 100 (Par value Rs. 10)</td>
<td>Rs. 20</td>
<td>100 × Rs. 20 = Rs. 2,000</td>
</tr>
<tr>
<td>Y : 200 (Par value Rs. 10)</td>
<td>Rs. 30</td>
<td>200 × Rs. 30 = Rs. 6,000</td>
</tr>
<tr>
<td>Z : 250 (Par value Rs. 10)</td>
<td>Rs. 40</td>
<td>250 × Rs. 40 = Rs. 10,000</td>
</tr>
</tbody>
</table>

Aggregate Market Capitalisation = Rs. 18,000.

Index at period N = 100

For the next period, the changes are as follows:

<table>
<thead>
<tr>
<th>Share price</th>
<th>Market capitalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Share price = Rs. 25</td>
<td>100 × Rs. 25 = Rs. 2,500</td>
</tr>
<tr>
<td>Y Share price = Rs. 40</td>
<td>200 × Rs. 40 = Rs. 8,000</td>
</tr>
<tr>
<td>Z Share price = Rs. 50</td>
<td>250 × Rs. 50 = Rs. 12,500</td>
</tr>
</tbody>
</table>

Aggregate Market Capitalisation = Rs. 23,000

Index at period N + 1 = 100 × Rs. 23,000 / 18,000 = 127.78

The weight may be the trading volume of the particular scrip. When the index uses the trading volume as weight, on its shows the depth of the market in terms of trading volumes and conditions. All India Equity index of Financial Express with base year 1979 uses the trading volume of the scrip as weight.

The Business Line - (BL) - 250 (Base January 17 1994 = 100) a comprehensive index comprising of 43 industry group is a wealth index and the weight uses is the market capitalisation. If the index is broad based it can indicate the market movement in a comprehensive manner. The influence of individual scrip is smaller in a broad based index. In the case of the unweighted price index selected scrips’ price average is calculated in relation to a base year. They show just the price movement. The Ordinary Share Price Index of the Economic Times with base year 1984-85 is of this types.

Differences Between the Indices
The indices are different from each other to a certain extent. Some times the Sensex may move up by 100 points but NSE Nifty may move up only 40 points. The main factors that differentiate one index from the other are given below:
1. The number of component stocks
2. The composition of the stocks
3. The weights

1. The Number of the Component Stocks
The number of stocks in an index influence the capable of reflecting the market movement.

The sensex has 30 scrips like the Dow Jones Industrial Average in the U.S. At the same time BSE-100 (National), BSE-200, the
Dollex, (dollar equivalent of BSE-200), the RBI Index (338 stocks) and Nifty (50 stocks) are also widely used. Private organisations like CRISIL has constructed its own index and named it as CRISIL - 500. From the above examples it is clear that the number of scrips differs from one index to another and hence their movements also vary. BSE National Index is considered to be more representative than Sensex because it has 100 stocks. Out of 100, 22 are quoted on the BSE and the rest are listed on the BSE and other exchanges.

2. The Composition of the Stocks
The composition of the stocks in the index should reflect the market movement as well as the macro economic changes. The Centre for Monitoring Indian Economy maintains an index. If often changes the composition of the index so as to reflect the market movements in a better manner. Some of the scrip’s traded volume may fall down and at the same time some other stock may attract the market interest should be dropped and others must be added. Only then, the index would become more representative. In 1993, sensex dropped one company and added another. In August 1996 sensex was thoroughly revamped. Half of the scrips was changed. The composition of the Nifty was changed in April 1996 and 1998. Crisils 500 was changed in November 1996. In October 1998 the Nifty Junior Index composition has been changed. Recognising the importance of the information technology scrips, they are included in the index.

3. The Weights
The weight assigned to each company’s scrip also influences the movement of the index. The indices may be weighted with the price or value. The Dow Jones Industrial Average and Nikkei Stock Average of 225 scrips to Tokyo stock exchange are weighted with the price. A weighted index is computed by adding the current prices of the stocks in the stock exchange and dividing the sum by the total number of stocks. The stocks with high price influence the index more than the low priced stock in the sample. The number of stocks is usually adjusted for any stock splits, bonus and right issues.

In the value weighted index the total market value of the share (the number of outstanding shares multiplied by the current market price) is the weight. Most of the indices all over the world and in India except Economic Times Ordinary Share Index are weighted with the price. The scrip influences the index in proportion to its importance in the market. The price changes the occur in scrip with heavy market capitalisation dominates the changes that occur in the index. The price changes caused by bonus issue or right of a particular scrip are reflected in the index. With the bonus issue or right issue the number of outstanding shares and their values used to change.

In an unweighted index, all stocks carry equal weights. The price or market volume of the scrip does not affect the index. The movement of the price is based on the percentage change in the average price of the stocks in the particular index. Here it assumes that equal amount of money is invested in each of the stocks in the index. Value Line Average in the US is calculated without weights but geometric mean is used in the computation instead of arithmetic mean.

4. Base year
The choice of base year also leads to variations among the index. The base year differs from each other in the various indices. The base year should be free from any unnatural fluctuations in the market. If the base year in close to the current year, the index would be more effective in reflecting the changes in the market movement. At the same time if it is too close, the investor cannot make historical comparison.

The Sensex has the base year as 1978-79 and the next oldest one is the RBI index of ordinary shares with 1980-81 as base year. The following table gives the summary of major stock market indices.

The Bse Sensitive Index
The BSE Sensitive index has long been known as the barometer of the daily temperature of Indian bourses. In 1978-79 stock market contained only private sector companies and they were mostly geared to commodity production. Hence, a sample 30 was drawn from them. With the passage of time more and more companies private as well as public came into the market. Even though the number of scrips in the Sensex basket remained the same 30, representations were given to new industrial sectors such as services, telecom, consumer goods, 2 and 3 whether auto sector. The continuity and integrity of the index are kept intact, so that a comparison of the current market condition with those of a decade ago is made easy and any distortion in the market analysis is avoided. The criteria adopted in the selection of 30 scrips are listed.

1. Industry Representation
The index should be able to capture the macro-industrial situation through price movements of individual scrips. The company’s scrip should reflect the present state of the industry and ACC in the Sensex is a representative of the cement industry. The logic here is that ACC reflects the fortunes of the cement industry that in turn is discounted by the market in the scrip’s pricing. Care is taken in selecting scrips across all the major industries to make the index act as a real barometer to the economy.

2. Market Capitalisation
The market capitalisation of the stock indicates the true value of the stock, as the outstanding number of shares is multiplied by the price. Price indicates the demand and growth potential for the stock. The outstanding shares depend on the equity base. Theselected scrip should have a wide equity base too.

3. Liquidity
The liquidity factor is based on the average number of deals of a scrip. The average number of deals in the two previous years is taken into account. The market fancy for the share can be found out by the trading volumes. The Financial Express Equity Index is weighted by trading volume and not by market capitalisation.

4. The Market Depth
The market depth factor is the average deal as a percentage of company’s shares outstanding. The market depth depends upon the wide equity base. If the equity base is broad based then number of deals in the market would increase. For example.
Reliance Industries has a wide equity base and larger number of outstanding shares.

5. Floating Stock Depth
The floating stock depth factor is the average number of deals as a percentage of floating stock. Low floating stock may get overpriced because the simple law of demand and supply applies here. For example MRF with its low floating stock is able to command high price. Its sound finance and internal generation of funds led growth may be the reason for the low floatation.

Though the public holding is fairly high at around 40 per cent due to small equity of Rs. 4.24 Cr, the free float of the company stock is low.

Trading volumes are directly linked to the public holding in the equity of the company. Wide public holding is a pre-requisite for high trading volume. Reliance Industries is a good example. The free float of company is 45 per cent and it has its positive effect on the trading volume.

Revision of Sensex Scrips
In 1998, the index committee of the BSE decided to give a wide representation to the four market favourites at its meeting. The need to have a broad-based and liquid index was felt with index futures on its way. The revised index has a representation of 15 industries. It has assigned the food and beverages sector a weight of 12.75 per cent with the market cap at Rs. 21,113 crore. Health care industry has been given a weight of 4.70 per cent. Consumer non-durables - 21.74 percent and auto industry 7.92 per cent. IT accounts for a weight of 4.33 per cent, oil and gas - 6.22 per cent, petrochemicals - 6.70 percent, telecom - 7.71 per cent, power - 1.98.

NSE - 50 Index - (NIFTY)
This index is built by India Index Services Product Ltd (IISL) and Credit Rating Information Services of India Ltd. (CRISIL). The CRISIL has a strategic alliance with Standard and Poor rating Services. Hence, the index is named as S & P CNX Nifty. NSE - 50 index was introduced on April 22, 1996 with the objectives given below:

* Reflecting market movement more accurately
* Providing fund managers a tool for measuring portfolio returns vis-market return.
* Serving as a basis for introducing index based derivatives.

Nifty replaced the earlier NSE - 100 index, which was established as an interim measure till the time the automated trading system stabilised. To make the process of building an index as interactive and user driven as possible an index committee is appointed. The composition of the committee is structured to represent stock exchanges, mutual fund managers and academicians. To reflect the dynamic changes in the capital market, the index set is reduced and modified by the index committee based on certain predetermined entry and exit criteria.

There has been a recast of basket of Nifty stocks and the new basket came into effect on October 9, 1998. The accompanying Take 7.2 shows the earlier and present composition of the Nifty index. IT stocks are included. The Nifty composition in April 2000 is given below.

Table : The Nifty 2000

<table>
<thead>
<tr>
<th>Compositon of S &amp; P CNX Nifty</th>
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<tbody>
<tr>
<td>ACC</td>
</tr>
<tr>
<td>Asea Brown Boveri</td>
</tr>
<tr>
<td>Asian Paints</td>
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<tr>
<td>B H E L</td>
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<tr>
<td>Britannia</td>
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<tr>
<td>B S E S</td>
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<tr>
<td>Bank of India</td>
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<tr>
<td>Bajaj Auto</td>
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<tr>
<td>Castrol</td>
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<tr>
<td>Cipla</td>
</tr>
<tr>
<td>Cochin Refineries</td>
</tr>
<tr>
<td>Colgate</td>
</tr>
<tr>
<td>Dabur</td>
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<tr>
<td>Dr. Reddys</td>
</tr>
<tr>
<td>Glaxo India</td>
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<tr>
<td>Grasim</td>
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<tr>
<td>Gujarat Ambuja</td>
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<tr>
<td>H D F C</td>
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<tr>
<td>H D F C Bank</td>
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<tr>
<td>HCL Infosystems</td>
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<tr>
<td>Hero Honda</td>
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<tr>
<td>Hindustan Petroleum</td>
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<tr>
<td>Hindalco</td>
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<tr>
<td>Hindustan Lever</td>
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<td>ICICI</td>
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</tbody>
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Selection Criteria
The selection criteria are the market capitalisation and liquidity. The selection criterion for the index was applied to the entire universe of securities admitted on NSE. Thus, the sample set covers a large number of industry groups and includes equities of more than 1200 companies.

The market capitalisation of the companies should be Rs. 5 billion (US $ 118 Million) or more. The selected securities are given weights in proportion to their market capitalisation.

Liquidity (Impact Cost)
Here the liquidity is defined as the cost of executing a transaction in security in proportion to the weightage of its market capitalisation as against the index market capitalisation at any point of time. This is calculated by finding out the percentage mark up suffered while buying/selling the desired quantity of security compared to its price (best buy + best sell) / 2.

Impact cost for selling price also can be calculated. The company scrip should be traded for 85% of the trading days at an impact cost less than 1.5%.

Base Period
The base period of the S & P CNX Nifty index is the closing prices on November 3, 1995. The base period is selected to commensurate the completion of one year operation of NSE in the stock market. The base value of index is fixed at 100 with the base capital of Rs. 2.06 of trillion. Its unique features area:
1. S & P. CNX Nifty provides an effective hedge against risk. The effectiveness of hedging was compared with several portfolios that consist of small cap, midcap and large cap companies and found to be higher.

2. The index represents 45 percent of the total market capitalisation.

3. The impact cost of S & P. CNX Nifty portfolio is less compared with other portfolios.

4. Nifty index is chosen for derivative trading.

**CNX NIFTY Junior**
The Nifty Junio also consists of fifty stocks, but these stocks belong to the midcap companies. Stocks that are having market capitalisation greater than Rs.2 billion are included with the objective of measuring the performance of stock in the midcap range. The liquidity criterion is same as that of S & P. CNX Nifty. The impact cost should not be greater than 2.5% for 85% of the traded days. The base data is the same for Nifty and Nifty Junior but the base capital is Rs. 0.42 trillion. Nifty Junior represents about 7 per cent of the total market capitalisation and it is an ideal index to be used in derivative trading.

There is a recast in the Nifty Junior in 1998 with the number of stocks going up to the Nifty. The composition of the Nifty Junior has also been overhauled. Apart from the six that moved to the Nifty, Ispat Industries, Hindustan Powerplus, Alstom India, Kotak Mahindra and Lakme have been excluded. The eleven stocks replacing these in the Nifty Junior are: Bank of Baroda, Tata Infotech, D r. Reddy's Labs, Satyam Computers Zee Telefilm, Pentafour Software, Nirma, Nicholas Piramal, ICI India, ICICI Bank and G SPC. Nifty Junior turns out to be as nimble as its predecessor. The odds are high because of the sluggish nature of five of the excluded stocks as well as the quality of the new entrants.

**S & P CNX 500**
It is a broad based index consisting of 500 scrips. The companies are selected on the basis of their market capitalisation, industry representation, trading interest and financial performance. The market capitalisation is used as weights. The companies influence on the index depends upon their market capitalisation. The companies selected are either leaders or representative of their industries. They should reflect the movement of their industry. The industry groups included in the S & P.CNX 500 are 79. The number of representation from each industry group is changed to reflect the market.

The selected companies should have minimum record of three years of operation with positive net worth. The base year is 1994 because it is considered to be closer the post liberalisation era.

Since the index is a broad based one, it represents 72 percent of the total market capitalisation and 98 percent of the total traded value. As it is weighted with market capitalisation, it mirrors the market movement more effectively. The broad base of the index provides a benchmark for comparing portfolio return with market return.

**Summary**
- Stock indices reflect the stock market behavior.
- The unweighted price index is a simple arithmetical average of share prices on base date.
- In the wealth index, prices are weighted by market capitalisation.
- The indices differ from each other on the basis of the number, the composition of the stock, the weights and the base year.
- BSE sensitive index comprises of 30 scrips on the basis of industry representation, market capitalisation, liquidity, the market depth, and the floating stock depth.
- S & P.CNX Nifty, CNX Nifty Junior and S & P.CNX 500 are some of the indices based on stocks traded on NSE.

**Questions**
1. Why does an investor need stock market indices? How are they built?
2. What are the factors that differentiate one index from another?
3. Name some of the well-known national and international stock indices? How is BSE sensitive index constructed?
4. Discuss any two indices built with the help of the scrips traded on NSE.
5. ‘Stock market indices are the barometers of the stock market’ - Discuss
6. What are the basic factors to be considered in the indices?
7. What are the basic requirement for a stock to be included in the Sensex?
8. Explain the criteria adopted in the selection of scrips for Sensex.
9. Discuss the salient features of Sensex and the recent changes in its composition.
10. Explain the stock selection criteria adopted in the NSE-Nifty.

**Multiple Choice Questions**
1. In the Indian stock market, one of the following indices is calculated without weights
   a. Economic Times ordinary share index
   b. Financial Times ordinary share index
   c. BSE-100
   d. Business line-250
2. The Sensex has
   a. 25 stocks
   b. 30 stocks
   c. 33 stocks
   d. 35 stocks
3. The software stock included in BSE Sensex is
   a. APTECH
   b. Satyam Computers
   c. Penta Software
4. Dollex is the dollar equivalent of
   a. Nifty
   b. Sensex
   c. BSE-200
   d. BSE-100

5. The liquidity factor of the stock included in BSE Sensex is based on
   a. Average deal as a percentage of company shares outstanding
   b. The average number of deal of a scrip
   c. Market capitalisation of the stock
   d. Capital stock of the company

6. The NSE-Nifty's base period is

7. The selected companies in S&P CNX 500 should have positive net worth for a period of
   a. One year    b. Two years    c. Three years    d. Five years

Notes