

STOCK MARKET INDICES OF THE
LAHORE STOCK EXCHANGE
(GUARANTEE) LIMITED

AN INTRODUCTION TO THE 25-
COMPANY CAPITALIZATION-
WEIGHTED INDICES

EXECUTIVE SUMMARY

This paper outlines the basis of two distinct yet related indices that the Lahore Stock Exchange is introducing to replace the current LSE-101. The two distinct indices the LSETRI and the LSE-25 are weighted by their listed capital and have identical company selection criteria. Both the indices are composed of 25 companies selected on the basis of the highest turnover at the Lahore Stock Exchange. However, they are distinguishable from each other by the treatment of corporate actions of component companies (i.e dividends, bonus, rights, etc.). Of particular interest to analysts is the fact that the two indices are based on ordinary shares listed at the Lahore Stock Exchange, and the fact that the Exchange is making public the qualifying/disqualifying criteria as well as a negative list.

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CHAPTER 1

INTRODUCTION

Movements of stock exchange indices popularly considered as key indicators of the economy of a country. Stock exchange indices are not only barometers of the economy and public opinion of the state of economy, but are also used by many technical analysts to forecast and evaluate market trends and base their opinion on the future direction of the market. It is often more important for all observers of the index to not only take it at face value but to also delve deeper into the constituents of the index and the policy followed by the index managers in its maintenance. As indices of any stock market are being observed carefully by many stakeholders within the country and abroad, it is extremely important to consider their composition and management. In the case of Lahore Stock Exchange (GTE) Limited, the paper which follows provides the necessary information to the public regarding two indices which shall replace the LSE-101 Index.

On a very basic level, any stock market index is simply a numerical value that measures the change in the market. In Pakistan, the main objective for the construction of an index is to track the performance of the various listed stocks according to their market capitalization. In general, a capital weighted index is composed of a basket of securities, which captures the change in market capitalization due to the variation in prices. Mathematically this can be represented by:

$$LSE_{Index}^t = \frac{1000 \sum_{i=1}^n C_i^t P_i^t}{I \sum_{i=1}^n C_i^B P_i^B} \text{ such that } I \neq 0$$

where,

i denotes a component companies in the index,

n denotes the number of companies in the index,

C = issued ordinary shares of a component company,

P = market price of the equity of a component company, and,

I = Index Divisor

t = the current date

B = the base date

The index value itself is simply a number, which represent the total market value of all companies within the index at a particular point in time compared to a comparable calculation at the starting point also referred to as the base value. **The Lahore Stock Exchange through this paper is introducing two market value indices (stock price times number of share outstanding), which consist of 25 stocks each.** The same formula is applicable for both the indices and is represented by:

$$LSE'_{Index} = \frac{1000 \sum_{i=1}^{25} C_i^t P_i^t}{I \sum_{i=1}^{25} C_i^B P_i^B}$$

The base date for the indices is January 1, 2002 and the base value on this date is 1,000. The base value of the indices is calculated on the closing prices of component companies shares at the LSE on the base date. All movements of the indices are with reference to this date and these prices. A simple calculation of the base is provided in Box 1 for ease of reference.

Box 1

EXAMPLE OF BASE PERIOD CALCULATION

Consider a five stock index whose market capitalization is illustrated as on January 1, 2002 in the following table.

The formula for the index in this case would be:

$$LSE_{Index} = \frac{1000 \sum_{i=1}^{25} C_i^t P_i^t}{I \sum_{i=1}^{25} C_i^B P_i^B} \text{ where } t = B = \text{January 1, 2002}$$

COMPANY	NUMBER OF SHARES OUTSTANDING	PRICE PER SHARE	MARKET VALUE
A	200,000	10	2,000,000
B	300,000	11	3,300,000
C	400,000	12	4,800,000
D	500,000	13	6,500,000
E	50,000	14	700,000
Total	1,450,000		17,300,000

$$LSE_{Index}^{1/1/2002} = 1000 \left(\frac{2000000 + 3300000 + 4800000 + 6500000 + 700000}{17300000} \right) = 1000$$

It should be noted that the base divisor (I) is assumed to be unity (1) for this index at the base date. Therefore, the index value at base period is set to 1000.

Subsequently, the daily index value is calculated by dividing the total market value of all constituents companies by a similar sum selected at base period called the divisor. This ratio is then multiplied by the index's base value (1000):

$$LSE'_{Index} = \frac{1000 \sum_{i=1}^{25} C_i^t P_i^t}{I \sum_{i=1}^{25} C_i^B P_i^B}$$

Box 2
EXAMPLE OF A CHANGE IN INDEX CALCULATION

Consider the change in the 5-stock index already created in Box 1 above on January 2, 2002.

STOCK	NUMBER OF SHARES	PRICE	MARKET VALUE
A	200,000	10	2,000,000
B	300,000	12	3,600,000
C	400,00	12	4,800,000
D	500,000	13	6,500,000
E	50,000	14	700,000
Total	1,450,000		17,600,000

$$LSE'_{Index}^{2/1/2002} = 1000 \left(\frac{2000000 + 3600000 + 4800000 + 6500000 + 700000}{17300000} \right) = 1017.34$$

This value signifies that the index has risen by 1.7% between January 1, 2002 and January 2, 2002 in terms of the market capitalization of the index.

CHAPTER 2

DEFINITIONS & ADJUSTMENT PROCESSES

In order that an index remains a reliable and consistent indicator of the market, its index divisor needs to be adjusted when certain events occur in the component stocks that alter their capitalization. The current paper offers two 25-company indices, which will replace the current LSE101 index. These are:

LSETRI: The Lahore Stock Exchange Total Return Index calculates the performance of stocks assuming that all payouts are reinvested in the index on the ex-date. The LSETRI assumes that if a component company issues bonus shares or announces a rights issue it will increase the listed capital. Additionally, the LSETRI also assumes that all pay-outs by a component company are 100% reinvested in the index. Therefore, the LSETRI is adjusted against such payouts announced by any of index constituents on its ex-date allowing the index value to remain comparable over time.

General Policy Regarding Action on LSETRI

Type of Action (Corporate or Otherwise)	Adjust the # of Outstanding Shares	Adjust the Previous Close Price	Adjustment in Base Divisor
Addition/Deletion	<i>YES</i>	<i>NO</i>	<i>YES</i>
Bonus Shares/Right Shares	<i>YES</i>	<i>YES</i> <i>The change is represented by:</i> $\frac{P}{1+b}$	<i>YES</i>
Cash Dividend	<i>NO</i>	<i>YES</i> <i>The change is represented by:</i> <i>Closing Price – Dividend per Share</i>	<i>YES</i>

Note: In the third column, the formula represents the adjustment of the closing price (P) to the bonus or right share announcement. The term "b" is the percentage bonus or right offered by a component company.

LSE25: The Lahore Stock Exchange Twenty Five company index also calculates the performance of stocks assuming that all rights issues and bonus share issues only increase the listed capital. In the case of bonuses or rights the prices of the shares are not adjusted as they are in the case of the LSETRI. However, the LSE25 assumes that dividends paid out by a component company are not reinvested. In summary, in the LSE25, no price adjustments are made when any component company issues cash dividends.

General Policy Regarding Action on LSE25

Type of Action (Corporate or Otherwise)	Adjust the # of Outstanding Shares	Adjust the Previous Close Price	Adjustment in Base Divisor
Addition/Deletion	<i>YES</i>	<i>NO</i>	<i>YES</i>
Bonus Shares/Right Shares	<i>YES</i>	<i>NO</i>	<i>YES</i>
Cash Dividend	<i>NO</i>	<i>NO</i>	<i>NO</i>

The difference in treatment of cash dividends between the LSETRI and LSE25 reveals a very important issue. As the Pakistani stock market is considered a heavy dividend payout market, the treatment of the cash dividends can mean that any index would be questioned mainly on its treatment of this corporate action. A debate on this has been ongoing for the past few years, mainly since reserves became taxable for profitable companies foregoing issuing cash dividends if their accumulated profits/reserves exceeded a certain percentage of their paid-up capital. The LSE, in launching two indices, is simply attempting to make the difference quantifiable and identifiable for analytical purposes.

The main issue with cash dividends regards the fact that when a company announces a cash dividend, there is no increase in the listed capital of the company. Capitalization weighted indices (such as the LSETRI and LSE25) need to only incorporate those actions by the company, which affect their capital. If this argument is accepted, then the LSE25 would be the appropriate measure of such actions as it assumes that no dividend payout is reinvested back into the secondary capital market to increase its market capitalization. The LSE25 does not make any adjustments when a component company makes a dividend payment and goes ex-dividend (XD) in the market.

Alternatively, there is also strength in if the dividend paid by the company to its shareholders is reinvested by the shareholders in the purchase of more shares. In such a scenario, the LSETRI would be an appropriate indicator of the market.

Such adjustments keep the value of the indices consistent and ensure that their movements reflect the true picture of the market. The main issue becomes one of the treatment of the corporate actions and the policies followed by the index managers determine as to how time-series comparisons should be made. For both the LSETRI and the LSE25, these policies have been clarified at the this initial stage. The four events are: addition/deletion of a component company from the index basket, issuance of bonus shares, issuance of right shares, and cash dividends.

1. Additions/Deletions of a Component Company From the Index

Reasons For Addition/ Deletions	Date of Review	Review Period
Regular annual Review	December 31 or last working day before December 31	<i>January 1 to December 31 of the previous calendar year.</i>
	June 30 or last working day before June 30	<i>July 1 to June 30 of the preceding financial year.</i>
Methodology		
	<ol style="list-style-type: none"> 1. <i>On the date of review, turnover at LSE is presented to the index review committee for the Review Period in descending order by regular market turnover.</i> 2. <i>Those top 25 companies, which qualify on the criteria as specified below and are not on the negative list, are used as the new basket.</i> 3. <i>Some of the companies that were already index component companies are removed and replaced by others which were previously not on the index.</i> 4. <i>To maintain continuity of the index value the base divisor is adjusted.</i> 	
Deletion from Basket due to Suspension, Delisting, Merger/ Acquisition of a Component Company	Date of official delisting as notified by the LSE.	<i>One year prior to the date of delisting of the component company.</i>
Methodology		
	<ol style="list-style-type: none"> 1. <i>On the date of delisting, suspension, merger/acquisition of a particular company, turnover at LSE is presented to the index review committee for the Review Period in descending order by regular market turnover.</i> 2. <i>The Index Review Committee has to determine whether the suspension is such that the component company needs to be replaced. If the Index Review Committee decides to replace the component company, then the next steps will be taken.</i> 	

3.	<i>The highest turnover company, which is currently not a component company of the index, replaces the company that is being removed.</i>
4.	<i>To maintain continuity of the index value the base divisor is adjusted.</i>

2. Issue of Bonus Shares

Index	Date of Review	Methodology	
LSETRI	The last day of spot trading at the LSE (i.e. the day before a component company share that has announced a bonus, opens in regular trading (T+3)).	1.	All adjustments take place after the market has closed on the last day of spot trading.
		2.	The listed capital of the component company that has issued the bonus (and is going to open on ex-bonus basis on the next working day) is increased by the percentage of the bonus issue.
		3.	The closing price of the component company is also adjusted downward by the percentage of the bonus.
		4.	The index divisor is adjusted so that index value prior to the adjustments in price and listed capital is maintained.
LSE25		1.	All adjustments take place after the market has closed on the last day of spot trading.
		2.	The listed capital of the component company that has issued the bonus (and is going to open on ex-bonus basis on the next working day) is increased by the percentage of the bonus issue.
		3.	The index divisor is adjusted so that index value prior to the adjustments in price and listed capital is maintained.

3. Issue of Right Shares

Index	Date of Review	Methodology	
LSETRI	The last day of redemption of right shares and making payment to the bankers to the right issue as announced by the component company.	1.	All adjustments take place after the market has closed on the last day of redemption right letters.
		2.	The listed capital of the component company that has issued the right shares is increased by the percentage of the rights issue.
		3.	The closing price of the component company is also adjusted downward by the percentage of the rights issue.
		4.	The index divisor is adjusted so that index value prior to the adjustments in price and listed capital is maintained.
LSE25		1.	All adjustments take place after the market has closed on the last day of redemption right letters.
		2.	The listed capital of the component company that has issued the right shares is increased by the percentage of the rights issue.
		3.	The index divisor is adjusted so that index value prior to the adjustments in price and listed capital is maintained.

4. Issue of Cash Dividends

Index	Date of Review	Methodology	
LSETRI	The last day of spot trading at the LSE (i.e. the day before a component company share that has announced the cash dividend, opens in regular trading (T+3)).	1.	All adjustments take place after the market has closed on the last day of spot trading.
		2.	The closing price (per share) of the component company is adjusted downward by the announced dividend per share.
		3.	The index divisor is adjusted so that index value prior to the price adjustments (for dividends) is maintained.
LSE25	No Review		

CHAPTER 3

GENERAL POLICIES & REVIEW

All actions regarding adjustments to the index will be made by the Index Review Committee (IRC) of the Lahore Stock Exchange. The Committee will be composed of the following:

1. Managing Director/Chief Executive Officer
2. Chief Operating Officer
3. Manager (MIS)
4. Secretary (LSE)
5. Market Controller (who will also be the IRC Secretary and responsible for implementing IRC decisions)

The IRC will meet on the regular basis first working day after June 30 and December 31 and make regular additions/deletion decisions as outlined in Chapter 2 above. There are other criteria the must be considered also in the deliberations of the IRC and these are outlined below.

	LSETRI	LSE25
Definition	Calculates the performance of stocks assuming that all payouts (dividend, bonus shares and right merger) are reinvested in the index on the ex-dividend date. It is adjusted against such payouts announced by any of index constituents on its ex-date allowing the index value to remain comparable over time.	Reflects the stock price movement and does not adjust for cash dividend(s).
Type of Indices	Capital Weighted. Basis for weighting is listed capital.	
Number of Component Companies	LSETRI and LSE25 both will have the same 25 component companies at any given time.	
Base Value on Base Date	1,000 on closing January 1, 2002	
Regular Revision Schedule	Closing Prices on December 31 and June 30.	
Qualifying Criteria	<p>Only companies listed on the LSE would be considered.</p> <p>Indices will only be composed of ordinary shares.</p> <p>25 companies ranked by turnover in the past year.</p>	
Disqualifying Criteria	Delisting of a company from the LSE while it is also a component company on the indices.	

	Suspension in trading of the shares of a company when it is a component company or is being considered for induction onto the index.
Negative List	Open and Closed End Mutual Funds Modaraba Companies TFCs Any other listed or quoted instruments that are not ordinary shares.