MALTA STOCK EXCHANGE

INDEX

METHODOLOGY

TABLE OF CONTENTS

1. Introduction

This document details the calculation of the official equity Index of the Malta Stock Exchange, the MSE Index.

The Exchange produces the Index, which is calculated real-time during the trading day.

2. MSE Index Overview

The MSE Index is weighted by the current market capitalization of its constituents and based on the last closing trade prices of shares of all eligible companies.

Securities will be eligible for inclusion in the MSE Index if:

- the security is an ordinary share,
- the security is admitted to trading on the Malta Stock Exchange official list.

Securities will be removed from the MSE Index effective after the close of trading on delisting date.

The MSE Index is based at 1,000 on December 27, 1995.

Historic data for the MSE Index from the 27th December 1995 onwards is available.

3. MSE Index Calculation Formulae

The basic equation for the Index at time 't' is:

$$\text{Index}_t = \frac{\sum_{i=1}^{n} (P_{it} * Q_{it})}{\sum_{i=1}^{n} (P_{it-1} * Q_{it-1})} \times \text{Index}_{t-1}$$

Whereby:

	t	=	Computation date of the Index
	n	=	Number of shares included in the calculation of the Index
	P_{it}	=	Closing price of share i at time t
	Q_{it}	=	Number of shares of company i at time t
	t-1	=	The last day a change in the base market capitalization occurred
	P_{it-1}	=	Closing price of share i at time t-1
	Q_{it-1}	=	Number of shares of company i at time t-1

The value of the MSE Index is calculated on a daily basis, (Monday – Friday) using the closing share prices and the entire amount of issued shares of all the securities included in the calculation of the Index.

If no trading takes place for a security on the trading day concerned, the last known price will be used.

The aim of the compiler of the MSE Index when making adjustments is to ensure that the Index continues to reflect as closely as possible the value of the underlying portfolio.

4. Corporate Actions

The composition of the portfolio on which the MSE Index is based may change as a result of corporate actions of one or more of the constituent securities. Such actions will therefore be reflected in the calculation of the MSE Index.

4.1 Corporate Action Types – Company Joins the MSE Index

A newly listed company on the Exchange shall be added to the MSE Index on the listing day. If the new company trades at par with its listing price, the index will not be affected.

Additions to the Index shall be accounted for through the following equation:

$$\text{Index}_t = \frac{\sum_{i=1}^{n} (P_{it} * Q_{it}) + \Sigma (P_{j1t} * Q_{j1t})}{\sum_{i=1}^{n} (P_{it-1} * Q_{it-1}) + \Sigma (P_{j2t} * Q_{j2t})} * \text{Index}_{t-1}$$

Whereby:

$\sum_{i=1}^{n}(P_{it-1}*Q_{it-1})$ = Total capitalization of all firms prevalent at the session before the change occurs

$\Sigma(P_{j1t} * Q_{j1t})$ = Market capitalization of the new equity

$\Sigma(P_{j2t} * Q_{j2t})$ = Market capitalization of the new equity at listing price

Index_{t-1} = Index reading of the session before the change in capitalization

4.2 Corporate Action Types – Company Leaves the MSE Index

Whenever a constituent company leaves the index, the MSE Index is recalculated in such a manner that it will remain unaltered.

Computation of the Index under this condition is indicated by the following equation:

$$\text{Index}_t = \frac{\sum_{i=1}^{n} (P_{it} * Q_{it})}{\sum_{i=1}^{n} (P_{it-1} * Q_{it-1}) - \Sigma (P_{j2t} * Q_{j2t})} * \text{Index}_{t-1}$$

Whereby:

$\sum_{i=1}^{n}(P_{it-1}*Q_{it-1})$ = Total capitalization of all firms prevalent at the session before the change occurs

$\Sigma(P_{j2t} * Q_{j2t})$= Latest market capitalization of the equity leaving the index

Index_{t-1} = Index reading of the session before the change in capitalization

4.3 Corporate Action Types – Addition of shares of a company already included in the MSE Index

Changes in the capital structure of a constituent company are accounted for in the calculation of the Index. The index shall remain unaffected if the security is not traded. Hence an adjustment is made to its capitalisation until it is traded on the market.

4.4 Corporate Action Types – Rights Issue of a company included in the MSE Index

In the event of a Rights Issue, the Index will be recalculated through the following equation. Say, 'Firm B'gives a rights issue the computation will be made as follows:

$$\text{Index}_t = \frac{\sum_{i=1}^{n} (P_{it} * Q_{it}) + \Sigma (P_{Bt} * Q_{Bt})}{\sum_{i=1}^{n} (P_{it-1} * Q_{it-1}) + \Sigma \{(P_{Bt-1} * Q_{Bt-1}) + (P_{Brt} * Q_{Brt})\}} * \text{Index}_{t-1}$$

Whereby:

$\sum_{i=1}^{n}(P_{it-1}*Q_{it-1})$ = Total capitalization of all firms prevalent at the session before the change occurs

P_{Brt} = Price at which shares are offered in the Rights Issue

Q_{Brt} = Quantity of shares offered in the Rights Issue

Index_{t-1} = Index reading of the session prior to the change in capitalization

$(P_{Bt} * Q_{Bt})$ = New Capitalisation of Firm B

In case where the security does not trade, the capitalisation for the security will be adjusted so that the index will not be affected until the security is traded on the market.

4.5 Corporate Action Types – Bonus Issue of a company included in the MSE Index

In the event of a Bonus Issue, the Index will be adjusted in such a way that the value of the Index remains the same. Hence if the security does not trade on the listing date an adjustment factor will be used so that any change in the index will be due to a change in price.

$$Index_t = \frac{\sum_{i=1}^{n} (P_{it} * Q_{it} * C_{it}) + \Sigma (P_{Bbt} * Q_{Bbt})}{\sum_{i=1}^{n} (P_{it-1} * Q_{it-1})} * Index_{t-1}$$

Whereby:

$\sum_{i=1}^{n} (P_{it-1}*Q_{it-1})$	=	Total capitalization of all firms prevalent at the session before the change occurs
P_{Bbt}	=	The price at which shares are offered in the Bonus Issue
Q_{Bbt}	=	The quantity of shares offered in the Bonus Issue
$Index_{t-1}$	=	Index reading of the session before the change in capitalization

The procedure set out in section 4.4 will also be followed if a change in market capitalization of a company included in the calculation of the Index is due to a Share Split.

5. Capital denominated in foreign currencies

The MSE index contains companies whose equity is denominated in foreign currency. In such cases the capitalisation of such companies shall be discounted by the median exchange rate issued by the central bank of Malta on the day of listing and henceforth updated every first trading of the month or when the compiler of the Index deems necessary.

6. MSE Index Adjustments

All adjustments must meet the requirement that the Index shall remain unchanged as a result of an operational adjustment. Hence, Index shall not be affected before trading occurs in a security submitted to a change.

7. Disclaimer

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