MSCI SHORT AND LEVERAGED DAILY INDEXES METHODOLOGY

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CONTENTS

1 INTRODUCTION

The MSCI Short and Leveraged Daily Indexes aim to replicate the payoff to daily shorting and leveraged investment strategies, respectively. These indexes can serve as benchmarks for strategies that involve short or leveraged exposure to certain segments of the equity market or hedge existing portfolio exposures without the need to short individual stocks or use derivative instruments.

2 SHORT DAILY INDEX METHODOLOGY HIGHLIGHTS

The objective of the MSCI Short Daily Indexes is to replicate the payoff to daily shorting investment strategies. The MSCI Short Daily Indexes take into account four main components of the payoff to daily shorting investment strategies:

(1) Capital gains associated with the underlying equity securities.

(2) Cash dividends paid by the underlying equity securities.

(3) Interest earned on the initial capital as well as on the proceeds of the short sale.

(4) Stock borrowing costs, typically fees paid to the beneficial owners of the borrowed stocks.

The formula used in the daily return calculation of the MSCI Short Daily Indexes is as follows:

$$R_S = -R + 2 \times r_f \times \frac{T}{360} - r_c \times \frac{T}{360}$$

The terms in this formula correspond to the different components of daily shorting investment strategies. Assuming that *t* denotes the day of calculation and *t-1* denotes the previous business day, the terms in the above calculation formula can be interpreted as follows:

- R_S is the short daily index total return, including gross dividends, between dates *t-1* and *t*
- R is the underlying index total return, including gross dividends, between dates *t-1* and *t*
- r_f is the annual overnight risk-free rate (EONIA for EUR, LIBOR for other currencies)
- r_c is the annual stock borrowing cost (estimated from various sources including OTC swap data)
- T is the number of actual calendar days between dates *t-1* and *t*

The MSCI Short Daily Indexes are derived from existing underlying MSCI Indexes. As a result, corporate events are reflected in the MSCI Short Daily Indexes as they occur and as they are captured in the underlying MSCI Indexes.

The MSCI Short Daily Indexes are calculated daily using the formula presented and discussed above. The daily accrual of interest income and daily amortization of stock borrowing costs implied by this formula means that using the same formula to calculate short index returns over a horizon other than daily would result in different calculated index returns.

Stock borrowing costs used in the calculation of the MSCI Short Daily Indexes will be updated quarterly.

2.1 RATIONALE FOR INCLUDING BORROWING COSTS IN SHORT DAILY INDEXES

Investors pay stock borrowing fees to borrow securities and return them at a later date in the same way that they pay interest when they borrow cash and repay it at a future date. Therefore, stock borrowing costs, unlike transaction costs, are an inventory cost, more akin to interest and dividend payments. Given that MSCI includes interest and dividend payments in the calculation of short daily indexes, it is also appropriate to reflect stock borrowing costs in these indexes.

MSCI held extensive consultations with market participants during the development of the methodology used to construct the MSCI Short Daily Indexes. In these consultations, the majority of market participants commented that it is appropriate to take stock borrowing costs into account. Also, market participants felt that even though there is no single universal stock borrowing cost rate applicable to all stocks and all investors, using proxies for stock borrowing costs such as total return equity swap repo rates or average stock borrowing fees would be acceptable and preferable to ignoring them completely.

3 LEVERAGED DAILY INDEX METHODOLOGY HIGHLIGHTS

The objective of the MSCI Leveraged Daily Indexes is to replicate the payoff to daily leveraged investment strategies. The MSCI Leveraged Daily Indexes take into account three main components of the payoff to daily leveraged investment strategies:

(1) Capital gains associated with the underlying equity securities.

(2) Cash dividends paid by the underlying equity securities.

(3) Interest paid to the lender of the capital that is used to lever the portfolio.

The formula that computes the daily return of the MSCI Leveraged Daily Indexes is as follows:

$$R_L = g \times R + (1 - g) \times r_f \times \frac{T}{360}$$

The terms in this formula correspond to the different components of daily leveraged investment strategies. Assuming that *t* denotes the day of calculation and *t-1* denotes the previous business day, the terms in the above calculation formula can be interpreted as follows:

- R_L is the leveraged daily index total return, including gross dividends, between dates *t-1* and *t*
- *R* is the underlying index total return, including gross dividends, between dates *t-1* and *t*
- r_f is the annual overnight risk-free rate (EONIA for EUR, LIBOR for other currencies)
- *g* is the strictly higher than one leverage ratio, defined as total capital over initial capital
- *T* is the number of actual calendar days between dates *t-1* and *t*

The MSCI Leveraged Daily Indexes are derived from existing underlying MSCI Indexes. As a result, corporate events are reflected in the MSCI Leveraged Daily Indexes as they occur and as they are captured in the underlying MSCI Indexes. With respect to calculation frequency, the MSCI Leveraged Daily Indexes are calculated daily using the above formula. The daily amortisation of interest expense implied by this formula means that using the same formula to calculate leveraged index returns over a horizon other than daily would result in different calculated index returns.

The following sections have been modified since November 2014:

Appendix 1: Annual Stock Borrowing Costs

The following sections have been modified since February 2015:

Appendix 1: Annual Stock Borrowing Costs – Deleted

The following sections have been modified since May 2015:

Section 1: Introduction

- Updates to the description.

Section 2: Short Daily Index Methodology Highlights

- Updates to the data description.

Section 3: Leveraged Daily Index Methodology Highlights

- Updates to the data description.

Appendix 1: Examples of Simulated Short and Leveraged Daily Index Performance – Deleted

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