

MSCI GDP WEIGHTED INDEXES METHODOLOGY

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1 INTRODUCTION

The MSCI GDP (Gross Domestic Product) Weighted Indexes offer an alternative to market capitalization-weighted indexes for global and regional asset allocation purposes. In the MSCI GDP Weighted Indexes, country weights are based on the size of the country's economy rather than the size of its equity market.

2 CONSTRUCTING THE MSCI GDP WEIGHTED INDEXES

The MSCI GDP Weighted Indexes are constructed from the applicable MSCI Regional Indexes (herein, “Parent Indexes”) using the GDP of the countries included in that MSCI Regional Index.

The country weights of the MSCI GDP Weighted Indexes are reset every year on the basis of the previous year’s GDP figures. Thereafter, the country weights fluctuate only with changes in performance in the Parent Indexes until the next index review. Changes in market capitalization resulting from additions and deletions of securities to/from the Parent Indexes between two annual index reviews would not result in any change in the country weights.

The primary sources for GDP data are the Organization for Economic Cooperation and Development (OECD), Economist Intelligence Unit (EIU), the International Monetary Fund (IMF) and other various government organizations. In some cases, GDP estimates from the aforementioned sources may be used if final figures are not available at the time of the rebalancing.

GDP figures provided by the OECD and EIU are in USD at current prices and current exchanges rates. IMF GDP figures are provided in local currency and converted in USD at the period average market rate. For GDP figures in local currency provided by other sources, MSCI applies an average of the previous year’s daily exchange rates to calculate the USD-equivalent GDP figures.

3 INDEX CALCULATION METHODOLOGY

3.1 COUNTRY LEVEL WEIGHTS

At every annual rebalancing, the pro forma weight of a country in the MSCI GDP Weighted Indexes is determined as follows:

$$CW_{GDP} = \frac{(Country_{GDP})}{SUM(Country_{GDP})}$$

Where:

$Country_{GDP}$ previous year's GDP of the country (nominal USD)

In between two annual index reviews, the weights of the countries in the MSCI GDP Weighted Index would fluctuate with changes in performance of the underlying countries. The weights of the countries calculated using the below formula are then normalized to sum up to 100%.

$$CW_{GDP,t,i} = \frac{CW_{GDP,t-1,i} \times (R_{country(i)} + 1)}{R_{GDP} + 1}$$

Where:

$CW_{GDP,t,i}$ Weight of the country i in the MSCI GDP Weighted Index as of t, calculated at the close of t-1

$CW_{GDP,t-1,i}$ Weight of the country i in the MSCI GDP Weighted Index as of previous day (t-1)

$R_{country(i)}$ Return of the country index (from the close of t-2 to the close of t-1)

R_{GDP} Return of the MSCI GDP Weighted Index (from the close of t-2 to close of t-1)

3.2 SECURITY LEVEL WEIGHTS

For each country included in the MSCI GDP Weighted Index, a country constraint factor is calculated daily as follows:

$$CF_{country(i)} = \frac{CW_{GDP(i)}}{CW_{Parent(i)}}$$

Where:

$CF_{country}$ Constraint Factor of the country

CW_{GDP} Weight of the country in the MSCI GDP Weighted Index

CW_{Parent} Weight of the country in the Parent Index

The security weight in the MSCI GDP Weighted Indexes is determined by multiplying the weight of the security in the Parent Index (based on free float adjusted market capitalization) by the constraint factor of its country. The weights of the securities calculated using the below formula are then normalized to sum up to 100%.

$$SW_{GDP(i)} = SW_{STD(i)} \times CF_{country(i)}$$

Where:

- SW_{GDP} security weight in the MSCI GDP Weighted Index
- SW_{STD} security weight in the corresponding MSCI Parent Index
- $CF_{country}$ Country constraint factor

4 MAINTAINING THE MSCI GDP WEIGHTED INDEXES

The MSCI GDP Weighted Indexes are rebalanced annually. The changes in general are implemented as of the close of the last business day of May, coinciding with the May Annual Index Review of the Parent Indexes. The pro forma Indexes will be announced nine business days before the effective date.

In general, the MSCI GDP Weighted Indexes follow the event maintenance of the Parent Index. Changes in the Parent Index are reflected simultaneously in the MSCI GDP Weighted Indexes. All additions to the corresponding Parent Indexes are simultaneously added to the MSCI GDP Weighted Indexes. Constituents deleted from the Parent Indexes are deleted from the MSCI GDP Weighted Indexes at the same time.

A security added to the Parent Index following a corporate event (acquisition, spinoff or merger) will also be added to the MSCI GDP Weighted Indexes.

If a new country is added to the underlying Parent Index in between the annual reviews, it will not be added to the MSCI GDP Weighted Indexes at the same time, but will be included at the next annual index review. Countries deleted from the underlying Parent Index are simultaneously deleted from the MSCI GDP Weighted Index.

APPENDIX: INDEX CALCULATION METHODOLOGY TRANSITION

The MSCI GDP Weighted Indexes will transition to the enhanced calculation methodology as described in Section 3 from May 2012 Index Review.

In the previous methodology, the country weights fluctuate with changes in performance and market capitalization in the Parent Indexes in between two annual rebalancings.

The current weight of a country in the MSCI GDP Weighted Indexes is determined as follows:

$$CW_{GDP_CUR} = \frac{(CountryGDP_{INI} \times McapCountry_{CUR} \div McapCountry_{INI})}{SUM(CountryGDP_{INI} \times McapCountry_{CUR} \div McapCountry_{INI})}$$

Where:

CountryGDP_{INI} initial country weight in the MSCI GDP Weighted Index at the last rebalancing

McapCountry_{CUR} current country market capitalization in the Parent Index

McapCountry_{INI} initial country market capitalization at the last rebalancing in the Parent Index

The following sections have been modified since May 2012:

Section 1: Introduction

- Updates to the description

The following sections have been modified since Sep 2017:

Section 4: Maintaining the MSCI GDP Weighted Indexes

- Updated the rebalancing notification from five days to nine days

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