

# **MSCI FRONTIER MARKETS 100 INDEX METHODOLOGY**

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## 1 INTRODUCTION

The MSCI Frontier Markets 100 Index is based on the MSCI Frontier Markets (FM) Investable Market Index (IMI) (the “Parent Index”). The MSCI Frontier Markets 100 Index aims to reflect the performance of frontier markets while putting stronger emphasis on tradability compared to the Parent Index. This is achieved through six main features:

- A minimum liquidity level<sup>1</sup> is required for securities to be included in the MSCI Frontier Markets 100 Index
- Only stocks exhibiting sufficient foreign room<sup>2</sup> are eligible for inclusion
- A higher minimum free float-adjusted market capitalization requirement is applied compared to the Parent Index
- An additional minimum length of trading requirement is applied compared to the Parent Index
- The number of constituents can fluctuate within a specific target range at the time of an Index Review
- The eligibility of new Frontier Markets for the MSCI Frontier Markets 100 Index is subject to prior public consultation

In addition, a country cap is applied in the MSCI Frontier Markets 100 Index in order to avoid excessive country concentration.

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<sup>1</sup> Measured by the 12-month Annualized Traded Value Ratio (ATVR).

<sup>2</sup> Foreign room is defined as the proportion of shares still available to foreign investors relative to the maximum allowed.

## 2 INDEX CONSTRUCTION

### 2.1 ELIGIBLE UNIVERSE

The Eligible Universe for the MSCI Frontier Markets 100 Index is derived by applying investability screens to securities in the Parent Index. In order to be included in the Eligible Universe, a security:

- Must not be subject to a Limited Investability Factor (LIF) due to low foreign room;
- Must have a 12-month Annualized Traded Value Ratio (ATVR) above 10% and;
- Must have started trading at least two months before the implementation date of the Index Review.

### 2.2 MINIMUM FREE FLOAT-ADJUSTED MARKET CAPITALIZATION REQUIREMENT

In order to be included in the MSCI Frontier Markets 100 Index, a security from the Eligible Universe must meet a specific Minimum Free Float-Adjusted Market Capitalization Requirement.

The Minimum Free Float-Adjusted Market Capitalization Requirement is derived as follows:

- First, the securities in the Parent Index are sorted in descending order of free float-adjusted market capitalization and the cumulative coverage of the free float-adjusted market capitalization of the parent index is calculated at each security.
- Second, when the cumulative free float-adjusted market capitalization coverage of 90% of the sorted Parent Index is achieved the free float-adjusted market capitalization of the security at that point defines the Minimum Free Float-Adjusted Market Capitalization Requirement.

### 2.3 INCLUDING SECURITIES IN THE MSCI FRONTIER MARKETS 100 INDEX

First, the securities in the Eligible Universe that have a free float-adjusted market capitalization above or equal to the Minimum Free Float-Adjusted Market Capitalization Requirement are counted.

Then, if the resulting number is:

- Between 85 and 115: all the securities counted are included in the MSCI Frontier Markets 100 Index.

- Above 115: the securities in the Eligible Universe are ranked by decreasing free float-adjusted market capitalization and the top 115 securities are selected for inclusion in the MSCI Frontier Markets 100 Index.
- Below 85: the securities in the Eligible Universe are ranked by decreasing free float-adjusted market capitalization and the top 85 securities are selected for inclusion in the MSCI Frontier Markets 100 Index, even if the smallest securities fail the Minimum Free Float-Adjusted Market Capitalization Requirement.

## 2.4 COUNTRY CAP

A cap of 40% is applied to the cumulative weight of the two largest countries in the MSCI Frontier Markets 100 Index.

If the total free float-adjusted market capitalization weight of the largest two countries is greater than 40% after application of the rules described in Section 2.3, the weights of these two countries (and their respective securities) are proportionally decreased in order to achieve a cumulative weight of exactly 40%. The weights of the other countries (and their respective securities) are then proportionally increased but not beyond the capped weight of the second largest country prior to the capping step.

The security capped weights in the MSCI Frontier Markets 100 Index are determined by applying a capping factor to the security free float-adjusted market capitalizations. The capping factor is the same for all securities classified in a given country.

## 2.5 THE 25/50 RULE

The MSCI Frontier Markets 100 Index is designed to take into account US Internal Revenue Code investment constraints needed for a fund to qualify as a regulated investment company in the US. The MSCI 25/50 Index Methodology is therefore applied after the step described in section 2.4.

The details of this methodology are available at

<http://www.msci.com/index-methodology>

### **3 INDEX MAINTENANCE**

#### **3.1 SEMI-ANNUAL INDEX REVIEWS**

The composition of the MSCI Frontier Markets 100 Index is fully reviewed on a semi-annual basis coinciding with the May and November Semi-Annual Index Reviews (SAIRs) of the MSCI Global Investable Market Indexes.

The pro forma MSCI Frontier Markets 100 Index is announced nine business days before the effective date of the Semi-Annual Index Reviews. MSCI uses pro forma data as of the close of the business day prior to the announcement to derive the pro forma MSCI Frontier Markets 100 Index.

Changes in Foreign Inclusion Factors (FIFs) and updates in number of shares for existing constituents effective at the SAIRs as per the MSCI Global Investable Market Indexes methodology are reflected in the MSCI Frontier Markets 100 Index.

##### **3.1.1 ELIGIBLE MARKETS**

MSCI maintains a list of Eligible Markets for the MSCI Frontier Markets 100 Index. Changes to the list are announced with the February Quarterly Index Reviews following public consultation and are implemented as part of subsequent May Semi-Annual Index Reviews. The list of Eligible Markets can be found in Appendix I.

##### **3.1.2 UPDATING THE ELIGIBLE UNIVERSE**

During an SAIR, the Eligible Universe is reviewed according to the rules described in Section 2.1. Only securities from Eligible Markets can be included in the updated Eligible Universe. In addition, to minimize index turnover, an existing constituent of the MSCI Frontier Markets 100 Index may remain in the Eligible Universe if its 12-month ATVR falls below the minimum level requirement of 10% as long as it is above 2/3rd of that level.

##### **3.1.3 UPDATING THE MINIMUM FREE FLOAT-ADJUSTED MARKET CAPITALIZATION REQUIREMENT**

During an SAIR, the Minimum Free Float-Adjusted Market Capitalization Requirement is updated using the rules described in Section 2.2.

##### **3.1.4 INCLUDING THE SECURITIES IN THE MSCI FRONTIER MARKETS 100 INDEX**

This section describes the rules used for including securities in the MSCI Frontier Markets 100 Index during SAIRs.

As a first step, the following securities in the updated Eligible Universe are counted:

- Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to 2/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement
- Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to the Minimum Free Float-Adjusted Market Capitalization Requirement

Then, if the resulting number is:

- between 85 and 115: all the securities counted are included in the MSCI Frontier Markets 100 Index.
- above 115: the following securities in the updated Eligible Universe are selected for inclusion in the MSCI Frontier Markets 100 Index with the following priority until 115 securities are selected:
  - Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to the Minimum Free Float-Adjusted Market Capitalization Requirement
  - Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal 1.5x the Minimum Free Float-Adjusted Market Capitalization Requirement
  - Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to 2/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement
  - Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to the Minimum Free Float-Adjusted Market Capitalization Requirement

Within each of the above steps, the securities are selected in descending order of free float-adjusted market capitalization.

- below 85: the following securities in the updated Eligible Universe are selected for inclusion in the MSCI Frontier Markets 100 Index with the following priority until 85 securities are selected:
  - Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to 2/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement



- Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization above or equal to the Minimum Free Float-Adjusted Market Capitalization Requirement
- Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization between 1/3rd and 2/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement
- Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization between 2/3rd and one time of the Minimum Free Float-Adjusted Market Capitalization Requirement
- Existing constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization below 1/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement
- Securities not currently constituents of the MSCI Frontier Markets 100 Index that have a free float-adjusted market capitalization below 2/3rd of the Minimum Free Float-Adjusted Market Capitalization Requirement

Within each of the above steps, the securities are selected in descending order of free float-adjusted market capitalization.

### 3.1.5 COUNTRY CAP

During SAIRs, a cap of 40% is applied to the cumulative weight of the two largest countries in the MSCI Frontier Markets 100 Index as described in section 2.4.

## 3.2 QUARTERLY INDEX REVIEWS

The composition of the MSCI Frontier Markets 100 Index is partially reviewed at the time of the February and August Quarterly Index Reviews (QIRs) of the MSCI Global Investable Market Indexes.

The pro forma MSCI Frontier Markets 100 Index is announced nine business days before the effective date of the Quarterly Index Reviews. MSCI uses pro forma data as of the close of the business day prior to the announcement to derive the pro forma MSCI Frontier Markets 100 Index.

Changes in Foreign Inclusion Factors (FIFs) and updates in number of shares for existing constituents effective at the QIRs as per the MSCI Global Investable Market Indexes methodology are reflected in the MSCI Frontier Markets 100 Index.

**3.2.1 UPDATING THE MINIMUM FREE FLOAT-ADJUSTED MARKET CAPITALIZATION REQUIREMENT**

During a QIR, the Minimum Free Float-Adjusted Market Capitalization Requirement is updated using the rules described in Section 2.2.

**3.2.2 ADDITIONS DURING QUARTERLY INDEX REVIEWS**

During a QIR, securities from the pro forma Parent Index are added to the MSCI Frontier Markets 100 Index if they:

- Meet the investability screens described in section 2.1 and;
- Have a free float-adjusted market capitalization above 1.8 times the Minimum Free Float-Adjusted Market Capitalization Requirement.

The securities are added to the MSCI Frontier Markets 100 Index with a capping factor equal to the capping factor determined at the previous SAIR for securities classified in the same country.

**3.2.3 DELETIONS DURING QUARTERLY INDEX REVIEWS**

Deletions from the Parent Index at the time of QIRs are simultaneously deleted from the MSCI Frontier Markets 100 Index.

**3.3 POLICY REGARDING TRADING SUSPENSIONS FOR INDIVIDUAL SECURITIES DURING INDEX REVIEWS**

If a security that is scheduled to be added to or deleted from the MSCI Frontier Markets 100 Index is suspended from trading on the day before the effective implementation date of the index review, MSCI will cancel the implementation for the security. When the implementation of a deletion from the Parent Index is postponed, the implementation of the deletion from the MSCI Frontier Markets 100 Index will also be postponed. When the deletion is implemented in the Parent Index after the security resumes trading, the security will be simultaneously deleted from the MSCI Frontier Markets 100 Index.

**3.4 ONGOING EVENT RELATED CHANGES**

With the exception of treatment of IPOs and other early inclusions, the MSCI Frontier Markets 100 Index follows the event maintenance of the Parent Index. Details regarding the treatment of corporate events not covered below can be found in the MSCI Corporate Events Methodology Book, available at:

<http://www.msci.com/index-methodology>

**3.4.1 SPIN-OFFS, IPOS AND OTHER EARLY INCLUSIONS**

Companies spun off from existing constituents of the MSCI Frontier Markets 100 Index that are added to the Parent Index at the time of the event will be simultaneously added to the MSCI Frontier Markets 100 Index.

Other early inclusions, including IPOs, will only be considered for inclusion in the MSCI Frontier Markets 100 Index at the Index Review following the event.

**3.4.2 NUMBER OF SECURITIES IN THE INDEX FOLLOWING CORPORATE EVENTS**

In the event that the number of securities in the MSCI Frontier Markets 100 Index would fall below 85 or rise above 115 due to corporate events, no additions or deletions would be made to restore the number of securities to 85 or 115 until the next Semi-Annual Index Review.

## APPENDIX I: LIST OF ELIGIBLE MARKETS

List of Eligible Markets for the MSCI Frontier Markets 100 Index (as of the November 2016 Semi-Annual Index Review):

Argentina	Mauritius
Bahrain	Morocco
Bangladesh	Nigeria
Croatia	Oman
Estonia	Pakistan
Jordan	Romania
Kazakhstan	Serbia
Kenya	Slovenia
Kuwait	Sri Lanka
Lebanon	Tunisia
Lithuania	Vietnam

## APPENDIX II: METHODOLOGY CHANGES AND PHASING IN THE CONTEXT OF THE RECLASSIFICATION OF QATAR AND UAE

The reclassifications of Qatar and UAE from Frontier Markets to Emerging Markets were implemented as part of the May 2014 Semi-Annual Index Review (SAIR). MSCI revised the methodology for the MSCI Frontier Markets 100 Index in order to address the impact on the Index of these reclassifications.

	Previous Methodology	Revised Methodology
Parent Index	MSCI Frontier Markets (FM) Index	MSCI Frontier Markets (FM) Investable Market Index (IMI)
Free float-adjusted market capitalization requirement	No additional minimum free float-adjusted market capitalization requirement compared to the Parent Index	Application of a higher minimum free float-adjusted market capitalization requirement compared to the Parent Index
Number of constituents	Number of constituents set to 100 at the time of an Index Review	Number of constituents allowed to fluctuate between 85 and 115 at the time of an Index Review
Country cap	Cap of 50% applied to the weight of a country in the MSCI Frontier Markets 100 Index	Cap of 40% applied to the cumulative weight of the two largest countries in the MSCI Frontier Markets 100 Index

The revised methodology for the MSCI Frontier Markets 100 Index became effective starting from the May 2014 Semi-Annual Index Review. The transition from the previous methodology for the MSCI Frontier Markets 100 Index occurred in seven monthly phases:

- Phase 1: as of the close of May 30, 2014 (effective June 2, 2014) to coincide with the May 2014 Semi-Annual Index Review
- Phase 2: as of the close of June 30, 2014 (effective July 1, 2014)
- Phase 3: as of the close of July 31, 2014 (effective August 1, 2014)
- Phase 4: as of the close of August 29, 2014 (effective September 1, 2014)
- Phase 5: as of the close of September 30, 2014 (effective October 1, 2014)
- Phase 6: as of the close of October 31, 2014 (effective November 3, 2014)
- Phase 7: as of the close of November 25, 2014 (effective November 26, 2014) to coincide with the November 2014 Semi-Annual Index Review

Each phase involved the following activities:

- Determine the post-transition MSCI Frontier Markets 100 Index
- Determine the difference between the current MSCI Frontier Markets 100 Index (at the time of each phase) and the post-transition MSCI Frontier Markets 100 Index
- Implement only a portion of this difference in the MSCI Frontier Markets 100 Index (except for phase 7 when the MSCI Frontier Markets 100 Index converged with the post-transition MSCI Frontier Markets 100 Index)

In order to minimize reverse turnover, only the final step of the transition to the revised methodology was implemented as part of the November 2014 Semi-Annual Index Review, i.e. the MSCI Frontier Markets 100 Index was not rebalanced. The Semi-Annual Index Reviews for the MSCI Frontier Markets 100 Index, as described in this methodology book, will resume at the time of the May 2015 Semi-Annual Index Review.

Changes in the number of shares and Foreign Inclusion Factors (FIFs) for the Parent Index resulting from regular Index Reviews or corporate events were implemented simultaneously in the MSCI Frontier Markets 100 Index. In addition companies deleted from the Parent Index due to corporate events or Index Reviews (as defined in the MSCI GIMI methodology) were also deleted from the MSCI Frontier Markets 100 Index during this transition period.

Details on each phase are provided in the table below:

	Post-transition index	Data used	Changes implemented
<b>Phase 1</b>	The post-transition index was derived from applying the revised index maintenance methodology as described in Section 3.	Pro forma data of the parent index (i.e. reflecting the results of the May 2014 Semi-Annual Index Review) as of the close of the business day before the announcement date of phase 1.	1/7th of the difference (measured by security index market cap) between the current index and the post-transition index was implemented.
<b>Phase 2</b>	<p>At each phase from phase 2 to phase 7, securities in the post-transition index were updated to reflect market performance as well as changes in the parent index due to past corporate events and index reviews.</p> <p>The list of constituents in the post-transition index remained unchanged, with the exception of securities deleted from the parent index due to past corporate events or index reviews which were excluded from the post-transition index.</p> <p>The country cap described in Section 2.4 was then applied to the post-transition index.</p>	Data of the parent index as of the close of the business day before the announcement date of phase 2.	1/6th of the difference between the current index and the post-transition index was implemented.
<b>Phase 3</b>		Data of the parent index as of the close of the business day before the announcement date of phase 3.	1/5th of the difference between the current index and the post-transition index was implemented.
<b>Phase 4</b>		Pro forma data of the parent index (i.e. reflecting the results of the August 2014 Quarterly Index Review) as of the close of the business day before the announcement date of phase 4.	1/4th of the difference between the current index and the post-transition index was implemented.
<b>Phase 5</b>		Data of the parent index as of the close of the business day before the announcement date of phase 5.	1/3rd of the difference between the current index and the post-transition index was implemented.
<b>Phase 6</b>		Data of the parent index as of the close of the business day before the announcement date of phase 6.	One half of the difference between the current index and the post-transition index was implemented.
<b>Phase 7</b>		Pro forma data of the parent index (i.e. reflecting the results of the November 2014 Semi-Annual Index Review) as of the close of the business day before the announcement date of phase 7.	The full difference between the current index and the post-transition index was implemented.

## APPENDIX III: METHODOLOGY CHANGE AND PHASING IN THE CONTEXT OF THE RECLASSIFICATION OF PAKISTAN

The reclassification of Pakistan from Frontier Markets to Emerging Markets will be implemented as part of the May 2017 Semi-Annual Index Review (SAIR). In this context, the Minimum Free Float Adjusted Market Capitalization Requirement will be lowered to correspond to a cumulative coverage of 90% of the Parent Index instead of the previous threshold of 80%.

MSCI will phase the May 2017 SAIR changes for the MSCI Frontier Markets 100 Index over four successive months:

- Phase 1: as of close of May 31, 2017 (effective June 1, 2017) to coincide with the May 2017 Semi-Annual Index Review
- Phase 2: as of close of June 30, 2017 (effective July 3, 2017)
- Phase 3: as of close of July 31, 2017 (effective August 1, 2017)
- Phase 4: as of close of August 31, 2017 (effective September 1, 2017) to coincide with the August 2017 Quarterly Index Review

A larger proportion of the changes (40% of the weight difference) will be implemented in the first phase in May, while the remaining changes will be spread over three subsequent phases of 20% each.

Each phase will involve the following activities:

- Determine the post-reclassification MSCI Frontier Markets 100 Index (see table below for details)
- Calculate the difference between the current security weights in the MSCI Frontier Markets 100 Index and the security weights in the post-reclassification MSCI Frontier Markets 100 Index («Weight Difference»)
- Calculate the pro forma security weights in the MSCI Frontier Markets 100 Index («Pro Forma Weights»)
  - Phase 1 => Pro Forma Weight = Current Weight + (Weight Difference \* 40%)
  - Phase 2 => Pro Forma Weight = Current Weight + (Weight Difference \* 33.3%)
  - Phase 3 => Pro Forma Weight = Current Weight + (Weight Difference \* 50%)



- Phase 4 => Pro Forma Weight = Post-Reclassification Weight

The pro forma MSCI Frontier Markets 100 Index will be announced nine business days before the effective date of each phase. For each phase, MSCI will use data as of the close of the business day prior to the announcement to derive the pro forma weights.

During the phasing period, corporate events will be implemented as usual in the MSCI Frontier Markets 100 Index as per Section 3.3.

Details on the calculation of the post-reclassification index for each phase are provided in the table below:

	Post-reclassification index
<b>Phase 1</b>	The post-reclassification index will be derived from applying the Semi-Annual Index Review methodology described in Section 3.1.
<b>Phases 2 and 3</b>	At phases 2 and 3, securities in the post-reclassification index will be updated to reflect market performance, as well as corporate events implemented in the MSCI Frontier Markets 100 Index. The country cap described in Section 2.4 will then be applied to the post-reclassification index.
<b>Phase 4</b>	The post-reclassification index will be updated to reflect market performance, corporate events implemented in the MSCI Frontier Markets 100 Index, as well as the results of the August 2017 Quarterly Index Review. The country cap described in Section 2.4 will then be applied to the post-reclassification index.

## METHODOLOGY BOOK TRACKED CHANGES

### The following sections have been modified since April 2012:

The following changes were made in the context of the implementation of a new methodology for the MSCI Frontier Markets 100 Index which became effective at the time of the May 2014 Semi-Annual Index Review:

#### 1: Introduction

- Updates in this section

#### 2: Index Construction

- Updates in this section

#### 3: Index Maintenance

- Updates in this section

#### Appendix I: Transition

- New section

#### Appendix II: Differences Between the Previous and the Current MSCI Frontier Markets 100 Methodology

- New section

### The following sections have been modified since April 2014:

The following changes were made following the transition to the new methodology for the MSCI Frontier Markets 100 Index which was completed at the time of the November 2014 Semi-Annual Index Review:

#### Appendix I: Transition

- Updates in this section

#### Appendix II: Differences Between the Previous and the Current MSCI Frontier Markets 100 Methodology

- Updates in this section

### The following sections have been modified since November 2014:

#### 3.1: Semi-Annual Index Reviews

- Updates in this section

3.2: Quarterly Index Reviews

- Updates in this section

**The following sections have been modified since February 2015:**

2.4: Country Cap

- Updates in this section

**The following sections have been modified since November 2016:**

1: Introduction

- Updates in this section

3.1.1: Eligible Markets

- New section

3.1.2: Updating the Eligible Universe

- Updates in this section

3.1.5: Inclusion of New Markets

- Section deleted

Appendix I: List of Eligible Markets

- New section

**The following sections have been modified since March 2017:**

1: Introduction

- Added minimum length of trading requirement

2.1: Eligible Universe

- Added minimum length of trading requirement

2.2: Minimum Free Float-Adjusted Market Capitalization Requirement

- Cumulative free float-adjusted market capitalization coverage threshold increased from 80% to 90%

2.4: Country Cap

- Last paragraph added

3.2: Quarterly Index Reviews

- Updates in this section

### 3.2.1: Updating the Minimum Free Float-Adjusted Market Capitalization Requirement

- New section

### 3.2.2: Additions During Quarterly Index Reviews

- New section

### 3.2.3: Deletions During Quarterly Index Reviews

- New section

### 3.3: Policy Regarding Trading Suspensions for Individual Securities during Index Reviews

- New section (previously included in sections 3.1 and 3.2)

### 3.4.1: Spin-offs, IPOs and Other Early Inclusion

- Updates in this section

### Appendix III: Methodology Change and Phasing in the Context of the Reclassification of Pakistan

- New appendix

## CONTACT US

clientservice@msci.com

### AMERICAS

Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
Monterrey	+ 52 81 1253 4020
New York	+ 1 212 804 3901
San Francisco	+ 1 415 836 8800
São Paulo	+ 55 11 3706 1360
Toronto	+ 1 416 628 1007

### EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
London	+ 44 20 7618 2222
Milan	+ 39 02 5849 0415
Paris	0800 91 59 17 *

### ASIA PACIFIC

China North	10800 852 1032 *
China South	10800 152 1032 *
Hong Kong	+ 852 2844 9333
Mumbai	+ 91 22 6784 9160
Seoul	00798 8521 3392 *
Singapore	800 852 3749 *
Sydney	+ 61 2 9033 9333
Taipei	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Tokyo	+ 81 3 5290 1555

\* = toll free

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