Overview

- MSCI is consulting with investors to better understand the need for potential enhancements to the MSCI Hedged Indices methodology.
- The main proposed enhancements to the MSCI Hedged Indices include the following:
  - Adopt a revised rebalancing and announcement schedule for the notional amount of FX forwards to be sold for hedging.
  - Determine the notional amount of FX forwards from the aggregate free float market capitalization of the countries in the underlying MSCI equity index rather than from the currencies.
  - Adopt a revised methodology for mark to market valuation of odd-day forwards for daily valuation of index using shorter term forwards.
- Further, MSCI would also like to understand investors’ desire for more flexibility in terms of customized hedging/rebalancing cycles, such as weekly or quarterly rebalancing, in addition to the standard monthly cycle.
- Please note, this consultation may or may not lead to the adoption, in whole or in part, of the enhancements described herein and may not lead to any change to the current MSCI Hedged Indices methodology.
Background: Understanding Currency Hedging Investment Process

- How do you employ currency hedging in your international investments?
  - Is the currency hedging done by the equity manager or by a separate overlay manager?
  - What is periodicity of hedging – weekly, monthly or quarterly?
  - Do you hedge all currencies and what is your typical hedge ratio – static or dynamic?

- Do you currently use hedged equity indices?
  - If yes, do you use a daily or monthly version?
  - Why do you use the hedged index? To enhance return or to lower risk?
  - Is the strategic allocation benchmark a hedged or not?
  - Is the performance benchmark/mandate a hedged or not?
MSCI calculates currency hedged indices for Developed and Emerging Market countries which provide a close estimation of local equity returns after hedging the currency exposures.

- Each foreign currency in the index is hedged back to the base currency of the index by selling the foreign currency at the one-month Forward rate.
- The amount of Forwards sold represents the value (or the market capitalization) of foreign currencies of securities included in the index as of the close of the last trading day of the month i.e. reflecting changes in the composition of the index implemented as of the close of that day.
- In the daily mark to market valuation of the daily Hedged Indices, MSCI uses a linear interpolation based solely on the spot and 1-month Forwards premium(discount) to estimate the value of odd-days Forwards every day during the month.
Proposed Enhancements
Proposal: Determining the Notional Amount of FX Forwards for Hedging

- In the current MSCI Hedged Indices each foreign currency in the Index is hedged back to the base currency of the index
  - By selling each foreign currency at the one-month Forward rate and
  - The amount of Forwards sold represents the value (or the market capitalization) of currencies of securities included in the index as of the close of the last trading day of the month i.e. reflecting changes in the composition of the index implemented as of the close of that day
- MSCI proposes to announce the notional amount of FX forwards to be sold for hedging
  - Two business days before the end of the calendar month, but taking into account any month end changes in the index constituents due to rebalancing and corporate actions
- This proposal is intended to facilitate the replicability of the index and provide sufficient time in the implementation of hedges

Will it be useful to announce the notional value of FX forwards to be sold 2 business days before the end of the calendar month?
Proposal: Determining the Notional Amount of FX Forwards for Hedging (continued)

- MSCI currently determines the notional amount of FX forwards to be sold by aggregating the free float market capitalization using the currency of securities included in the index (currency weights). MSCI now proposes to determine the notional amount of FX forwards to be sold by aggregating the free float market capitalization using the country classification of the securities included in the underlying MSCI equity index (country weights).

  This is relevant only for a few countries like China, Russia, Israel and Peru where the MSCI equity indices includes stocks that trade in a currency different from the currency of the country.

| Stock Prices |
|---------------|-----------------|-----------------|
|               | Price (previous Month end) | Price (current Month end) | Beginning Portfolio Weight |
| Russian Stock A (Traded locally in Rubles) | 100 | 100 | 50.0% |
| Russian Stock A (Traded as ADR in USD) | 100 | 50 | 50.0% |

<table>
<thead>
<tr>
<th>Currency Rate and Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Month End (USD/Ruble)</td>
</tr>
<tr>
<td>Current Month End (USD/Ruble)</td>
</tr>
<tr>
<td>One Month Forward as Previous Month End (USD/Ruble)</td>
</tr>
<tr>
<td>Return of USD/Rouble for the month</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock A</td>
</tr>
<tr>
<td>Return (&quot;Local currency&quot;)</td>
</tr>
<tr>
<td>Return (unhedged in USD)</td>
</tr>
<tr>
<td>Hedged Return (current methodology using currency exposures)</td>
</tr>
<tr>
<td>Hedge Return (if using country exposures)</td>
</tr>
</tbody>
</table>

- Is the determination of notional amount for FX forwards using the country weights more appropriate than using the currency weights of the index?
Proposal - Mark to Market of the Forwards

- Currently, in the daily mark to market valuation of the current MSCI daily Hedged Indices, MSCI uses a linear interpolation based solely on the spot and 1-month Forwards premium(discount) to estimate the value of odd-days Forwards every day during the whole month.

- In the daily mark to market valuation of the MSCI daily Hedged Indices, MSCI proposes to use a linear interpolation based on the spot, 1-week and 1-month Forwards premium(discount) to estimate the value of odd-days Forwards every day during the whole month.
  - This will improve the current linear interpolation methodology and take into account any change in swap point differential at the beginning and end of month.

- Would the use of linear Interpolation of the forward based on spot, 1-week, and 1-month swap points be preferable?
Other Proposals

- MSCI proposes to provide the flexibility to have customized hedging/rebalancing cycles apart from the standard monthly cycle, for example, weekly or quarterly rebalancing
  
  - Would customized rebalancing solution that allow currency hedging in weekly, quarterly or other periods be useful?
Current Methodology: Linear Interpolation of Forwards

Current Linear Interpolation methodology

MSCI use a linear interpolation formula to compute odd-days forwards. The general formula is as follows:

\[ FFRate_{odd-days} = FXRate_{t} + \left( (FFRate_{(t+1\text{~month})} - FXRate_{t}) \times \frac{Odd-days}{\text{TotalNumberOfCalendarDaysDuringMonth}} \right) \]
Proposed Methodology: Linear Interpolation of Forwards

Proposed Linear Interpolation methodology

Marked to Market of FX Forwards

\[ F_i(t) = F_i^j(t) + \frac{d(j, r+1)}{d(j, j+1)} (F_i^{j+1}(t) - F_i^j(t)) \]

For \( r \leq t \leq r+1 \) (where \( r \) and \( r+1 \) are the roll dates):

- \( F_i^j(t) = \)
  - 1 week market FX forward rate on date \( t \), if \( 1w < r+1 \leq 1m \)
  - Market FX Spot on date \( t \), if \( 0 < r+1 \leq 1w \)

The closest available FX forward/Spot rate shorter than next roll dates to index calculation day \( t \) in currency \( i \) per USD on day. The possible chosen rates are FX Spot, and FX 1 week forward rates.

\[ F_i^{j+1}(t) = \]

- 1 month market FX forward rate on date \( t \), if \( 1w < r+1 \leq 1m \)
- 1 week market FX forward rate on date \( t \), if \( 0 < r+1 \leq 1w \)

The next available FX forward rate after \( F_i^{j+1}(t) \) on index calculation day \( t \) in currency \( i \) per USD on day \( t \). The possible chosen rates are FX 1-week forward, and FX 1 month forward rates.

\[ d(j, r+1) = \text{Number of calendar days between the expiry date of the first chosen FX forward rate } F_i^j(t) \text{ and the roll date (last day of business)} \]

\[ d(j, j+1) = \text{Number of calendar days between the expiry date of the first chosen FX forward/Spot rate } F_i^j(t) \text{ and the expiry date of the second chosen FX forward rate } F_i^{j+1}(t) \]

\[ = \text{Total number of calendar days during the current month} - 7 \text{ days (if the FX 1 week forward and FX 1 month forwards are used)} \text{ or } 7 \text{ days (if Spot and FX 1 week forwards are used)} \]

\[ S_i(t) = \text{Spot mid FX rate, in currency per USD observed on day } t \]

On Roll date period \( F_i(t) = S_i(t) \)
### Americas

- **Americas**: 1.888.588.4567 (toll free)
- **Atlanta**: +1.404.551.3212
- **Boston**: +1.617.532.0920
- **Chicago**: +1.312.706.4999
- **Montreal**: +1.514.847.7506
- **New York**: +1.212.804.3901
- **San Francisco**: +1.415.576.2323
- **São Paulo**: +55.11.3706.1340
- **Toronto**: +1.416.628.1007

### Europe, Middle East & Africa

- **Amsterdam**: +31.20.462.1382
- **Cape Town**: +27.21.683.3245
- **Frankfurt**: +49.69.133.859.00
- **Geneva**: +41.22.817.9000
- **London**: +44.20.7618.2222
- **Madrid**: +34.91.700.7275
- **Milan**: +39.02.5849.0415
- **Paris**: 0800.91.59.17 (toll free)
- **Zurich**: +41.44.220.9300

### Asia Pacific

- **China North**: 10800.852.1032 (toll free)
- **China South**: 10800.152.1032 (toll free)
- **Hong Kong**: +852.2844.9333
- **Singapore**: +65.6834.6777
- **Sydney**: +61.2.9033.9333
- **Tokyo**: +81.3.5226.8222

---

clientservice@mscibarra.com
Notice and Disclaimer

- This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the “Information”) is the property of MSCI Inc., Barra, Inc. (“Barra”), or their affiliates (including without limitation Financial Engineering Associates, Inc.) (alone or with one or more of them, “MSCI Barra”), or their direct or indirect suppliers or any third party involved in the making or compiling of the Information (collectively, the “MSCI Barra Parties”), as applicable, and is provided for informational purposes only. The Information may not be reproduced or redisseminated in whole or in part without prior written permission from MSCI or Barra, as applicable.

- The Information may not be used to verify or correct other data, to create indices, risk models or analytics, or in connection with issuing, offering, sponsoring, managing or marketing any securities, portfolios, financial products or other investment vehicles based on, linked to, tracking or otherwise derived from any MSCI or Barra product or data.

- Historical data and analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction.

- None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), or a promotion or recommendation of, any security, financial product or other investment vehicle or any trading strategy, and none of the MSCI Barra Parties endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies. None of the Information, MSCI Barra indices, models or other products or services is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such.

- The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information.

- NONE OF THE MSCI BARRA PARTIES MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY LAW, MSCI AND BARRA, EACH ON THEIR BEHALF AND ON THE BEHALF OF EACH MSCI BARRA PARTY, HEREBY EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

- Without limiting any of the foregoing and to the maximum extent permitted by law, in no event shall any of the MSCI Barra Parties have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

- Any use of or access to products, services or information of MSCI or Barra or their subsidiaries requires a license from MSCI or Barra, or their subsidiaries, as applicable. MSCI, Barra, MSCI Barra, EAFE, Aegis, Cosmos, BarraOne, and all other MSCI and Barra product names are the trademarks, registered trademarks, or service marks of MSCI, Barra or their affiliates, in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and Standard & Poor’s. “Global Industry Classification Standard (GICS)” is a service mark of MSCI and Standard & Poor’s.

© 2009 MSCI Barra. All rights reserved.