

## BMV Indices Total Return Calculation Consultation

S&P Dow Jones Indices (“S&P DJI”) and the Mexican Stock Exchange (“Bolsa Mexicana de Valores” or “BMV”) are conducting a consultation with members of the investment community on potential total return calculation changes to the BMV Indices so that they conform with S&P Dow Jones Indices’ standard methodology used for all global total return equity indices.

### Current BMV Total Return Index Calculation

The BMV total return indices are currently calculated by multiplying the total return index level of the prior day by the variation between the Index Market Capitalization Value and the Adjusted Index Market Capitalization Value affected by dividends of the prior day.

$$Total\ Return\ Index_t = Total\ Return\ Index_{t-1} * \left( \frac{MCV}{AMCV} \right)$$

$$MCV = \left( \sum P_{it} * Q_{it} \right)$$

$$AMCV = \left( \sum AP_{it-1} * Q_{it-1} \right)$$

$$AP = P_{it} - D_{it}$$

where:

$MCV$  = Market Capitalization Value

$AMCV$  = Adjusted Market Capitalization Value affected by dividends of the prior day

$D_{it}$  = Dividend per share paid for stock  $i$  on day  $t$

$P_{it}$  = Closing price per share  $i$  on day  $t$

$AP_{it-1}$  = Adjusted Price per share  $i$  on day  $t - 1$

$Q_{it}$  = Number of index shares  $i$  on day  $t$

$i$  =  $1, \dots, n$

## **Proposed New BMV Total Return Index Calculation**

The total return index calculation is derived from the price return index and daily total dividend returns. The first step is to calculate the total dividend paid on a given day and convert this figure into points of the price return index:

$$TotalDailyDividend = \sum_i Dividend_i * Shares_i$$

where:

$Dividend_i$  = Dividend per share paid for stock  $i$

$Shares_i$  = Shares of stock  $i$

This is done for each trading day.  $Dividend_i$  is generally zero except when a company has a dividend payment. Some stocks do not pay a dividend and  $Dividend_i$  is always zero. This is converted to index points by dividing by the divisor for the underlying price index:

$$IndexDividend = \frac{TotalDailyDividend}{Divisor}$$

The next step is to apply the usual definition of a total return from a financial instrument to the price return index.

$$Total\ Return = \left( \frac{P_t + D_t}{P_{t-1}} \right) - 1$$

and

$$DTR_t = \left( \frac{IndexLevel_t + IndexDividend_t}{IndexLevel_{t-1}} - 1 \right)$$

where:

$P$  = Closing price per share on day  $t$  or  $t - 1$

$D$  = Dividend per share on day  $t$

$IndexLevel$  = Index level for the price return index on day  $t$  or  $t - 1$

and where the Total Return and the Daily Total Return for the index (DTR) is stated as a decimal. The DTR is used to update the total return index from one day to the next:

$$Total\ Return\ Index_t = Total\ Return\ Index_{t-1} * (1 + DTR_t)$$

For all total return intraday index calculations, an index dividend will be applied at the market open on the ex-date to properly reflect the dividend adjustment.

For more information on the proposed new total return calculation methodology, please refer to the *Total Return Calculations* section of S&P Dow Jones Indices' Index Mathematics Methodology available [here](#).

This change will have no impact on the price return index calculation and will not have a material impact on the total return index returns. Below is a comparison between the current total return calculation and the proposed new total return calculation methodology for the IRT Index.

Index Name: IRT					
Index Code: RT0000					
Index Date	Current Total Return Calculation Methodology	Current Index Return	Proposed New Total Return Calculation Methodology	New Index Return	Difference in Daily Index Return
2-Jan-17	59,551.28860	-	59,551.28860	-	-
3-Jan-17	60,109.40681	0.9372%	60,109.40681	0.9372%	-
4-Jan-17	60,714.61230	1.0068%	60,714.61230	1.0068%	-
5-Jan-17	60,886.95450	0.2839%	60,886.95450	0.2839%	-
6-Jan-17	60,041.91886	-1.3879%	60,041.91886	-1.3879%	-
9-Jan-17	59,366.76246	-1.1245%	59,366.76246	-1.1245%	-
10-Jan-17	59,800.42805	0.7305%	59,800.42805	0.7305%	-
11-Jan-17	59,862.17015	0.1032%	59,862.17015	0.1032%	-
12-Jan-17	60,028.11125	0.2772%	60,028.11125	0.2772%	-
13-Jan-17	60,186.39292	0.2637%	60,186.39292	0.2637%	-
16-Jan-17	59,610.30158	-0.9572%	59,610.30158	-0.9572%	-
17-Jan-17	59,951.98599	0.5732%	59,951.98599	0.5732%	-
18-Jan-17	60,418.62878	0.7784%	60,418.62878	0.7784%	-
19-Jan-17	60,294.34277	-0.2057%	60,294.34277	-0.2057%	-
20-Jan-17	60,380.79760	0.1434%	60,380.79760	0.1434%	-
23-Jan-17	61,403.36002	1.6935%	61,403.36002	1.6935%	-
24-Jan-17	62,750.07868	2.1932%	62,750.07868	2.1932%	-
25-Jan-17	62,914.57904	0.2622%	62,914.57904	0.2622%	-
26-Jan-17	62,048.72963	-1.3762%	62,048.72963	-1.3762%	-
27-Jan-17	61,800.69592	-0.3997%	61,800.69592	-0.3997%	-
30-Jan-17	61,371.53863	-0.6944%	61,371.53863	-0.6944%	-
31-Jan-17	61,253.25444	-0.1927%	61,253.25444	-0.1927%	-
1-Feb-17	61,264.26634	0.0180%	61,264.26634	0.0180%	-
2-Feb-17	61,375.77984	0.1820%	61,375.77984	0.1820%	-
3-Feb-17	61,545.23949	0.2761%	61,545.23949	0.2761%	-
7-Feb-17	60,898.63528	-1.0506%	60,898.63527	-1.0506%	-
8-Feb-17	61,149.85024	0.4125%	61,149.85024	0.4125%	-
9-Feb-17	61,554.45348	0.6617%	61,554.45348	0.6617%	-
10-Feb-17	62,290.61122	1.1959%	62,290.61121	1.1959%	-
13-Feb-17	62,114.21127	-0.2832%	62,114.21127	-0.2832%	-
14-Feb-17	61,761.74814	-0.5674%	61,761.74814	-0.5674%	-
15-Feb-17	61,462.66323	-0.4843%	61,462.66323	-0.4843%	-
16-Feb-17*	61,650.46385	0.3056%	61,650.41623	0.3055%	-0.000077%
17-Feb-17	61,482.12359	-0.2731%	61,482.07610	-0.2731%	-
20-Feb-17*	61,378.43183	-0.1687%	61,378.38742	-0.1686%	0.000005%
21-Feb-17	62,070.87724	1.1282%	62,070.83233	1.1282%	-
22-Feb-17	61,524.26624	-0.8806%	61,524.22172	-0.8806%	-
23-Feb-17*	61,543.74620	0.0317%	61,543.69991	0.0317%	-0.000003%
24-Feb-17*	61,356.14599	-0.3048%	61,356.15881	-0.3047%	0.000096%
27-Feb-17	61,749.37033	0.6409%	61,749.38323	0.6409%	-
28-Feb-17	61,107.21497	-1.0399%	61,107.22774	-1.0399%	-

\* Days when dividends were applied.

Your participation in this consultation is important as we gather information from various market participants in order to properly evaluate your views and preferences. Your responses will be kept confidential. Please respond to this survey by **May 2, 2017**. After this date, S&P Dow Jones Indices and Bolsa Mexicana de Valores will no longer accept survey responses. Prior to the Index Committee's final review, S&P Dow Jones Indices and Bolsa Mexicana de Valores will consider the issues and may request clarifications from respondents as part of that review. Alternative options to the proposed questions after the deadline require that the consultation be re-opened to the public.

To participate in this consultation, please respond to [www.surveymonkey.com/r/BMV\\_TR](http://www.surveymonkey.com/r/BMV_TR).

Please contact S&P Dow Jones Indices at [index\\_services@spglobal.com](mailto:index_services@spglobal.com) or Bolsa Mexicana de Valores at [indices@grupobmv.com.mx](mailto:indices@grupobmv.com.mx) for any questions regarding this consultation.

*Please be advised that all comments from this consultation will be reviewed and considered before a final decision is made; however, S&P Dow Jones Indices and Bolsa Mexicana de Valores make no guarantees or are under any obligation to comply with any of the responses. The survey may result in no changes or outcome of any kind. If S&P Dow Jones Indices and Bolsa Mexicana de Valores decide to change the index methodology, an announcement will be posted on our website.*

Thank you for taking the time to complete this survey.

For more information about S&P Dow Jones Indices, please visit [www.spdji.com](http://www.spdji.com).

## **ABOUT S&P DOW JONES INDICES**

S&P Dow Jones Indices is the largest global resource for essential index-based concepts, data and research, and home to iconic financial market indicators, such as the S&P 500<sup>®</sup> and the Dow Jones Industrial Average<sup>®</sup>. More assets are invested in products based on our indices than based on any other provider in the world. With over 1,000,000 indices and more than 120 years of experience constructing innovative and transparent solutions, S&P Dow Jones Indices defines the way investors measure and trade the markets.

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## **ABOUT BMV**

BMV Group is a fully integrated Exchange Group that operates cash, listed derivatives and OTC markets for multiple asset classes, including equities, fixed income and exchange traded funds, as well as custody, clearing and settlement facilities and data products for the local and international financial community.

## **FOR MORE INFORMATION:**

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