

# 2016 SBBI Yearbook

## Stocks, Bonds, Bills, and Inflation

(Updates/Clarifications and Q&A)

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This document's purpose is to provide users of the *2016 SBBI Yearbook* with updates and clarifications to the content in the *2016 SBBI Yearbook* when necessary, and in a transparent fashion.

Our goal is to provide financial analysts with the best data and methodology possible. We welcome any feedback in regards to the content of the *SBBI Yearbook*. Your comments are an important (and appreciated) source of ideas for future additions to the *SBBI Yearbook*.

This document will be updated as needed at  
[www.duffandphelps.com/sbbi-yearbook-updates-and-clarifications](http://www.duffandphelps.com/sbbi-yearbook-updates-and-clarifications).

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**Question:** The long-term “supply-side” equity risk premia reported in the *2016 Stocks, Bonds, Bills, and Inflation® (SBBi®) Yearbook* in Exhibit 10.15 as of December 31, 2013 and December 31, 2014 are slightly different than those reported in the *2014 Valuation Handbook – Guide to Cost of Capital* and *2015 Valuation Handbook – Guide to Cost of Capital*, respectively.<sup>1,2,3</sup> Why is that?

**Response:** Exhibit 10.15 in the *2016 SBBi Yearbook* reports the supply-side ERP at the end of each of the most recent 25 years. The calculations in this table include all revisions (as supplied by the data provider) to prior year's data, as noted in Footnote 10.10 on page 10-30 of the *2016 SBBi Yearbook*, which is reproduced below:

*“The supply-side equity risk premia values in Exhibit 10.15 have been re-calculated by Duff & Phelps for the 2016 SBBi Yearbook using (i) the same methodologies and (ii) the same data sources as were used in previous editions of this book. For the calculations presented herein, all data (for each input required in these calculations) was refreshed over the entire 1926–2015 time horizon, thus capturing all prior data revisions. Some of the historical supply-side equity risk premia estimates published herein may therefore differ slightly from the historical supply-side equity risk premia estimates published in previous editions of this book.”*

The supply-side ERP is calculated as of a calendar year-end. One of the inputs in the calculation of the supply-side ERP is the price-to-earnings ratio (P/E) of the S&P 500 Index in aggregate, calculated on a 3-year average basis (from 1926–present, annually).

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<sup>1</sup> “Stocks, Bonds, Bills, and Inflation” and “SBBi” are registered trademarks of Morningstar, Inc. All rights reserved. Used with permission.

<sup>2</sup> Ibbotson Associates, and then Morningstar after them, previously published two “SBBi” books: the *SBBi “Classic” Yearbook*, and the *SBBi Valuation Yearbook*. (i) The *Ibbotson Stocks Bonds, Bills, and Inflation (SBBi) Classic Yearbook* (as it was previously named when published by Morningstar from 2006 to 2015, and Ibbotson Associates in prior years) has been published for over 30 years, and is focused on the analysis of the historical returns of U.S. asset classes (e.g., “stocks, bonds, bills, and inflation”). Starting in 2016, Duff & Phelps produces the book (which is updated annually), and it is published by John Wiley & Sons. In the *2016 SBBi Yearbook*, the word “Classic” was removed from the book title. (ii) The *Ibbotson Stocks Bonds, Bills, and Inflation (SBBi) Valuation Yearbook* (as it was previously named when published by Morningstar from 2006 to 2013, and Ibbotson Associates from 1999 to 2005), is focused on valuation inputs (e.g., size premia, risk-free rates and equity risk premia, industry risk premia, etc.). Starting in 2014, Duff & Phelps produces the *Valuation Handbook – Guide to Cost of Capital* (which is updated annually, with optional quarterly updates); this book has been published by John Wiley & Sons since the 2015 edition. The *Valuation Handbook – Guide to Cost of Capital* is the replacement for the former *SBBi Valuation Yearbook*.

<sup>3</sup> The supply-side ERP presented in the *SBBi Yearbook* is based on the work by Roger G. Ibbotson and Peng Chen. See Ibbotson, R.G., & Chen, P. 2003. “Long-Run Stock Returns: Participating in the Real Economy.” *Financial Analysts Journal*, Vol. 59, No. 1, P. 88.

For example, at the end of, say, 2015, the most recent 3-year average P/E used is the average of 2014, 2015, and 2016. At the end of the 2015, though, Standard & Poor's has not yet published the S&P 500 Index earnings figures for the fourth quarter of 2015 (i.e., October–December 2015), since the index constituents have yet to report their financial statements for that period, and all four quarters of the 2016 component are also unavailable. Standard and Poor's *does*, however, publish an estimate of index earnings as of year-end, and also publishes an estimate for the next 4 quarters; these estimates are used in the calculation of the supply-side ERP.<sup>4</sup>

As such, the figures used for the most recent quarter's S&P 500 Index earnings at the end of *prior* years would have no longer been "estimates" in later years: Standard and Poor's would have replaced these estimates with "actual" numbers as reported by index constituents for these previous years by the time Exhibit 10.15 in the *2016 SBBI Yearbook* was calculated.<sup>5</sup>

The methodology outlined in Footnote 10.10 in the *2016 SBBI Yearbook* is the same methodology (i.e., refreshing all data inputs over the entire time horizon) that Morningstar had been employing in recent years to create the equivalent table in the former *SBBI "Classic" Yearbook*.<sup>6</sup> Our goal with the *2016 SBBI Yearbook* was to faithfully update the data therein as it had been calculated in previous editions, but upon careful consideration, we are revising the way that Exhibit 10.15 in the *2016 SBBI Yearbook* (and future editions) will be produced:

- The data in this exhibit will be made to match (i) the "as published" supply-side ERP values from the 2004–2013 *SBBI Valuation Yearbooks* (see "Appendix C-1" in those books), and (ii) the "as published" values from the 2014 (and subsequent years) *Valuation Handbook – Guide to Cost of Capital* (see "Appendix 3" in those books).
- The data in this exhibit will only include the years for which supply-side ERP values were actually published in a hardcover book (instead of the most recent 25 years). The supply-side ERP was first published in *the 2004 SBBI Valuation Yearbook*, and so, going forward, the table will only include the years of 2004–present.

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<sup>4</sup> The *2016 SBBI Yearbook* includes analysis performed over the time period 1926–2015 (90 years). The calculation of the supply-side ERP requires a 3-year average estimate of P/E for each of those 90 years, which in turn requires data over the time horizon 1925–2016, (92 years). The aggregate earnings *estimates* for the S&P 500 Index (published by Standard & Poor's and used in this calculation) for (i) the last quarter of 2015 and (ii) the four quarters of 2016 (total five quarters, or 1.25 years) therefore represents 1.4% (1.25 years ÷ 92 years) of the total annual earnings inputs required in this calculation.

<sup>5</sup> The *2016 SBBI Yearbook* was on a delayed schedule. The *SBBI Yearbook* is traditionally published with data through the previous year (specifically, December 31), and printed and shipped in late March of the present year (e.g., the 2014 book was published with data through December 31, 2013, and printed and shipped in late March 2014; last year's 2015 book was published with data through December 31, 2014, and printed and shipped in late March 2015). The *2016 SBBI Yearbook*, however, was on a delayed publication schedule because of the extensive work involved in gathering the data and establishing the necessary data permissions needed to produce the book (production of this book switched from Morningstar to Duff & Phelps starting with the 2016 edition). The *2017 SBBI Yearbook* will be back on a "regular" schedule of shipping in March 2017.

<sup>6</sup> For example, see the *2015 SBBI "Classic" Yearbook*, Table 11-7, "Supply-Side and Historical Equity Risk Premiums [sic] Over Time", page 158.

The revised values to the supply-side ERP values in the *2016 SBBI Yearbook* are provided in Exhibit 1 below.

**Exhibit 1:** Originally Published and Revised Supply-Side ERP Values in the *2016 SBBI Yearbook*, Exhibit 10.15<sup>7</sup>

Period Length (Years)	Period	Source of Revised Values	Revised Values	Original Values (for reference only)
			Supply-Side Equity Risk Premia (%) (revised Exhibit 10.15)	Supply-Side Equity Risk Premia (%) (as originally published in Exhibit 10.15 in the <i>2016 SBBI Yearbook</i> )
90	1926–2015	<i>2016 Valuation Handbook – Guide to Cost of Capital</i>	6.03	6.03
89	1926–2014	<i>2015 Valuation Handbook – Guide to Cost of Capital</i>	6.21	6.05
88	1926–2013	<i>2014 Valuation Handbook – Guide to Cost of Capital</i>	6.18	6.12
87	1926–2012	<i>2013 SBBI Valuation Yearbook</i>	6.11	6.11
86	1926–2011	<i>2012 SBBI Valuation Yearbook</i>	6.14	6.07
85	1926–2010	<i>2011 SBBI Valuation Yearbook</i>	5.99	5.97
84	1926–2009	<i>2010 SBBI Valuation Yearbook</i>	5.18	5.57
83	1926–2008	<i>2009 SBBI Valuation Yearbook</i>	5.73	5.54
82	1926–2007	<i>2008 SBBI Valuation Yearbook</i>	6.23	5.74
81	1926–2006	<i>2007 SBBI Valuation Yearbook</i>	6.35	6.22
80	1926–2005	<i>2006 SBBI Valuation Yearbook</i>	6.28	6.29
79	1926–2004	<i>2005 SBBI Valuation Yearbook</i>	6.14	6.18
78	1926–2003	<i>2004 SBBI Valuation Yearbook</i>	5.93	5.94

<sup>7</sup> In reference to the revised supply-side ERP as calculated over 1926–2012 (see the fourth row down in Exhibit 1): 6.11% is the supply-side ERP value reported in Appendix C (“Key Variables in Estimating the Cost of Capital”) in the hardcover *2013 SBBI Valuation Yearbook*. Appendix C was also reproduced as the “back page” of the former *SBBI Valuation Yearbooks* (the “back page” is the most cited page in the former *SBBI Valuation Yearbooks*). 6.11% is also the supply-side ERP value reported in Chapter 5 of the 2013 book in Table 5-6, “Supply-Side and Historical Equity Risk Premium [sic] Over Time”.

However, in an equation on page 66 of the 2013 book, the supply-side ERP is shown to be calculated as 6.13%. This discrepancy of 0.02% is likely a “precision” error (e.g., using only the two decimals shown in the equation on page 66 to calculate the 6.13%, rather than using the full-precision values (e.g., 8 decimal places) that were presumably used to calculate the 6.11% result shown in Table 5-6, in Appendix C, and on the “back page” of the 2013 book).

In Exhibit 1, we defer to and publish the 6.11% value that was originally published in Table 5-6, in Appendix C, and on the “back page” of the *2013 SBBI Valuation Handbook* as the “correct” value.