

Appendix B  
Building Blocks Equity Risk Premium

1           **Q.   PLEASE DISCUSS YOUR DEVELOPMENT OF AN EQUITY RISK**  
2           **PREMIUM COMPUTED USING THE BUILDING BLOCKS**  
3           **METHODOLOGY.**

4  
5           A.   Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond  
6           returns in what is called the Building Blocks approach.<sup>1</sup> They use 75 years of  
7           data and relate the compounded historical returns to the different fundamental  
8           variables employed by different researchers in building ex ante expected equity  
9           risk premiums. Among the variables included were inflation, real EPS and DPS  
10          growth, ROE and book value growth, and price-earnings (“P/E”) ratios. By  
11          relating the fundamental factors to the ex post historical returns, the methodology  
12          bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen  
13          (2003) illustrates this approach using the geometric returns and five fundamental  
14          variables – inflation (“CPI”), dividend yield (“D/P”), real earnings growth  
15          (“RG”), repricing gains (“PEGAIN”) and return interaction/reinvestment  
16          (“INT”).<sup>2</sup> This is shown on page 7 of Exhibit JRW-11. The first column breaks  
17          the 1926-2000 geometric mean stock return of 10.7% into the different return  
18          components demanded by investors: the historical U.S. Treasury bond return  
19          (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This  
20          10.7% annual stock return over the 1926-2000 period can then be broken down  
21          into the following fundamental elements: inflation (3.1%), dividend yield (4.3%),

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<sup>1</sup> Roger Ibbotson and Peng Chen, “Long Run Returns: Participating in the Real Economy,” *Financial Analysts Journal*, (January 2003).

<sup>2</sup> Antti Ilmanen, “Expected Returns on Stocks and Bonds,” *Journal of Portfolio Management*, (Winter 2003), p. 11.

Appendix B  
Building Blocks Equity Risk Premium

1 real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E  
2 ratios, and a small interaction term (0.2%).

3 **Q. HOW ARE YOU USING THIS METHODOLOGY TO DERIVE AN EX**  
4 **ANTE EXPECTED EQUITY RISK PREMIUM?**

5  
6 A. The third column in the graph on page 7 of Exhibit JRW-11 shows current inputs  
7 to estimate an ex ante expected market return. These inputs include the  
8 following:

9 CPI – To assess expected inflation, I have employed expectations of the short-  
10 term and long-term inflation rate. Long term inflation forecasts are available in the  
11 Federal Reserve Bank of Philadelphia’s publication entitled *Survey of*  
12 *Professional Forecasters*. While this survey is published quarterly, only the first  
13 quarter survey includes long-term forecasts of gross domestic product (“GDP”)  
14 growth, inflation, and market returns. In the first quarter 2010 survey, published  
15 on February 12, 2010, the average long-term (10-year) expected inflation rate as  
16 measured by the CPI was 2.39% (see Panel A of page 8 of Exhibit JRW-11).

17 The University of Michigan’s Survey Research Center surveys consumers  
18 on their short-term (one-year) inflation expectations on a monthly basis. As  
19 shown on page 9 of Exhibit JRW-11, the current short-term expected inflation  
20 rate is 2.9%.

21 As a measure of expected inflation, I will use the average of the long-term  
22 (2.39%) and short-term (2.9%) inflation rate measures, or 2.65%.

23

Appendix B  
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1            D/P – As shown on page 10 of Exhibit JRW-11, the dividend yield on the S&P  
2            500 has fluctuated from 1.0% to almost 3.5% over the past decade. Ibbotson and  
3            Chen (2003) report that the long-term average dividend yield of the S&P 500 is  
4            4.3%. Currently, the S&P 500 dividend yield is 1.90%. I will use this figure in  
5            my ex ante risk premium analysis.

6            RG – To measure expected real growth in earnings, I use the historical real  
7            earnings growth rate for the S&P 500 and the expected real GDP growth. The  
8            S&P 500 was created in 1960. It includes 500 companies which come from ten  
9            different sectors of the economy. On page 11 of Exhibit JRW-11, real EPS  
10           growth is computed using the CPI as a measure of inflation. The real growth  
11           figure over 1960-2008 period for the S&P 500 is 2.0%.

12           The second input for expected real earnings growth is expected real GDP  
13           growth. The rationale is that over the long-term, corporate profits have averaged  
14           a relatively consistent 5.50% of U.S. GDP.<sup>3</sup> Real GDP growth, according to  
15           McKinsey, has averaged 3.5% over the past 80 years. Expected GDP growth,  
16           according to the Federal Reserve Bank of Philadelphia's *Survey of Professional*  
17           *Forecasters*, is 2.72% (see Panel B of page 8 of Exhibit JRW-11).

18           Given these results, I will use 2.50%, for real earnings growth.

19           PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E  
20           ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000  
21           period. In estimating an ex ante expected stock market return, one issue is

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<sup>3</sup>Marc. H. Goedhart, et al, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p.14.

Appendix B  
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1 whether investors expect P/E ratios to increase from their current levels. The P/E  
2 ratios for the S&P 500 over the past 25 years are shown on page 10 of Exhibit  
3 JRW-11. The run-up and eventual peak in P/Es in the year 2000 is very evident  
4 in the chart. The average P/E declined until late 2006, and then increased to very  
5 high levels, primarily due to the decline in EPS as a result of the financial crisis  
6 and the recession. The average P/E for the S&P 500 as of December 31, 2009 30,  
7 2009 was 21.43.

8 Given the current economic and capital markets environment, I do not  
9 believe that investors expect even higher P/E ratios. Therefore, a PEGAIN would  
10 not be appropriate in estimating an ex ante expected stock market return. The  
11 current P/E for the S&P 500 is above the average historical S&P 500 P/E ratio of  
12 approximately 16.0. Hence, investors are not likely to expect to get stock market  
13 gains from lower interest rates and higher P/E ratios.

14 **Q. GIVEN THIS DISCUSSION, WHAT IS THE EX ANTE EXPECTED**  
15 **MARKET RETURN AND EQUITY RISK PREMIUM USING THE**  
16 **“BUILDING BLOCKS METHODOLOGY”?**

17  
18 A. My expected market return is represented by the last column on the right in the  
19 graph entitled “Decomposing Equity Market Returns: The Building Blocks  
20 Methodology” set forth on page 7 of Exhibit JRW-11. As shown, my expected  
21 market return of 7.05% is composed of 2.65% expected inflation, 1.90% dividend  
22 yield, and 2.50% real earnings growth rate.

23 **Q. GIVEN THAT THE HISTORICAL COMPOUNDED ANNUAL MARKET**  
24 **RETURN IS IN EXCESS OF 10%, WHY DO YOU BELIEVE THAT AN**  
25 **EXPECTED MARKET RETURN OF 7.05% IS REASONABLE?**

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1           A.     As discussed above, in the development of the expected market return, stock  
2                   prices are still high at the present time in relation to earnings and dividends, and  
3                   interest rates are relatively low. Hence, it is unlikely that investors are going to  
4                   experience high stock market returns due to higher P/E ratios and/or lower interest  
5                   rates. In addition, as shown in the decomposition of equity market returns,  
6                   whereas the dividend portion of the return was historically 4.3%, the current  
7                   dividend yield is only 1.90%. Due to these reasons, lower market returns are  
8                   expected for the future.

9           **Q.     IS AN EXPECTED MARKET RETURN OF 7.05% CONSISTENT WITH**  
10           **THE FORECASTS OF MARKET PROFESSIONALS?**

11           A.     Yes. In the first quarter 2010 *Survey of Financial Forecasters*, published on  
12                   February 12, 2010 by the Federal Reserve Bank of Philadelphia, the mean long-  
13                   term expected return on the S&P 500 was 7.27% (see Panel D of page 8 of  
14                   Exhibit JRW-11).  
15

16  
17           **Q.     IS AN EXPECTED MARKET RETURN OF 7.05% CONSISTENT WITH**  
18           **THE EXPECTED MARKET RETURNS OF CORPORATE CHIEF**  
19           **FINANCIAL OFFICERS (CFOs)?**

20           A.     Yes. John Graham and Campbell Harvey of Duke University conduct a quarterly  
21                   survey of corporate CFOs. The survey is a joint project of Duke University and  
22                   *CFO Magazine*. In the June 2010 survey, the mean expected return on the S&P  
23                   500 over the next ten years was 6.85%.<sup>4</sup>  
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<sup>4</sup> The survey results are available at [www.cfosurvey.org](http://www.cfosurvey.org).

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1       **Q.    GIVEN THIS EXPECTED MARKET RETURN, WHAT IS THE EX ANTE**  
2       **EQUITY RISK PREMIUM USING THE BUILDING BLOCKS**  
3       **METHODOLOGY?**

4  
5       A.    As shown on page 2 of Exhibit JRW-11, the current 30-year U.S. Treasury yield  
6       is 4.17%. This ex ante equity risk premium is simply the expected market return  
7       from the Building Blocks methodology minus this risk-free rate:

8  
9       Ex Ante Equity Risk Premium       =       7.05%   -   4.17%   =   2.88%

10  
11       **Q.    HOW ARE YOU USING THIS EQUITY RISK PREMIUM ESTIMATE IN**  
12       **YOUR CAPM EQUITY COST RATE STUDY?**

13  
14       A.    This is only one estimate of the equity risk premium. As shown on page 5 of  
15       Exhibit JRW-11, I am also using the results of over thirty other studies and  
16       surveys to determine an equity risk premium for my CAPM.