A. THE BUILDING BLOCKS MODEL

Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond returns in what is called the Building Blocks approach. They use 75 years of data and relate the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums. Among the variables included were inflation, real EPS and DPS growth, ROE and book value growth, and price-earnings (“P/E”) ratios. By relating the fundamental factors to the ex post historical returns, the methodology bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen (2003) illustrates this approach using the geometric returns and five fundamental variables – inflation (“CPI”), dividend yield (“D/P”), real earnings growth (“RG”), repricing gains (“PEGAIN”) and return interaction/reinvestment (“INT”). This is shown on page 1 of Exhibit JRW-C1. The first column breaks the 1926-2000 geometric mean stock return of 10.7% into the different return components demanded by investors: the historical U.S. Treasury bond return (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be broken down into the following fundamental elements: inflation (3.1%), dividend yield (4.3%), real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E ratios, and a small interaction term (0.2%).

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The third column in the graph on page 1 of Exhibit JRW-C1 shows current inputs to estimate an ex ante expected market return. These inputs include the following:

**CPI** – To assess expected inflation, I have employed expectations of the short-term and long-term inflation rate. Long term inflation forecasts are available in the Federal Reserve Bank of Philadelphia’s publication entitled *Survey of Professional Forecasters*. While this survey is published quarterly, only the first quarter survey includes long-term forecasts of gross domestic product (“GDP”) growth, inflation, and market returns. In the first quarter 2013 survey, published on February 15, 2013, the median long-term (10-year) expected inflation rate as measured by the CPI was 2.30% (see Panel A of page 2 of Exhibit JRW-C1).

The University of Michigan’s Survey Research Center surveys consumers on their short-term (one-year) inflation expectations on a monthly basis. As shown on page 3 of Exhibit JRW-C1, the current short-term expected inflation rate is 3.1%.

As a measure of expected inflation, I will use the average of the long-term (2.3%) and short-term (3.3%) inflation rate measures, or 2.75%.

**D/P** – As shown on page 4 of Exhibit JRW-C1, the dividend yield on the S&P 500 has fluctuated from 1.0% to almost 3.5% over the past decade. Ibbotson and Chen (2003) report that the long-term average dividend yield of the S&P 500 is 4.3%. As of March, 2013, the indicated S&P 500 dividend yield was 2.1%. I will use this figure in my ex ante risk premium analysis.
RG – To measure expected real growth in earnings, I use the historical real earnings growth rate S&P 500 and the expected real GDP growth rate. The S&P 500 was created in 1960 and includes 500 companies which come from ten different sectors of the economy. On page 5 of Exhibit JRW-C1, real EPS growth is computed using the CPI as a measure of inflation. The real growth figure over 1960-2011 period for the S&P 500 is 2.8%.

The second input for expected real earnings growth is expected real GDP growth. The rationale is that over the long-term, corporate profits have averaged 5.50% of U.S. GDP. Expected GDP growth, according to the Federal Reserve Bank of Philadelphia’s Survey of Professional Forecasters, is 2.5% (see Panel B of page 2 of Exhibit JRW-C1).

Given these results, I will use 2.65%, for real earnings growth.

PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000 period. In estimating an ex ante expected stock market return, one issue is whether investors expect P/E ratios to increase from their current levels. The P/E ratios for the S&P 500 over the past 25 years are shown on page 4 of Exhibit JRW-C1. The run-up and eventual peak in P/Es in the year 2000 is very evident in the chart. The average P/E declined until late 2006, and then increased to higher high levels, primarily due to the decline in EPS as a result of the financial crisis and the recession. As of March, 2013, the average P/E for the S&P 500 was 14X, which is in line with the historic average. Since the current figure is near the

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Appendix C
Building Blocks Equity Risk Premium

historic average, a PEGAIN would not be appropriate in estimating an ex ante expected stock market return.

Expected Return form Building Blocks Approach - The current expected market return is represented by the last column on the right in the graph entitled “Decomposing Equity Market Returns: The Building Blocks Methodology” set forth on page 1 of Exhibit JRW-C1. As shown, the expected market return of 7.50% is composed of 2.75% expected inflation, 2.10% dividend yield, and 2.65% real earnings growth rate.

This expected return of 7.50% is consistent other expected return forecasts.

1. In the first quarter 2013 Survey of Financial Forecasters, published on February 15, 2013 by the Federal Reserve Bank of Philadelphia, the median long-term expected return on the S&P 500 was 6.13% (see Panel D of page 2 of Exhibit JRW-C1).

2. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke University and CFO Magazine. In the March 2013 survey, the mean expected return on the S&P 500 over the next ten years was 6.13%.4

B. THE BUILDING BLOCKS EQUITY RISK PREMIUM

4 The survey results are available at www.cfosurvey.org.

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The current 30-year U.S. Treasury yield is 3.10%. This ex ante equity risk premium is simply the expected market return from the Building Blocks methodology minus this risk-free rate:

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\text{Ex Ante Equity Risk Premium} = 7.5\% - 3.10\% = 4.40\%
\]

This is only one estimate of the equity risk premium. As shown on page 6 of Exhibit JRW-11, I am also using the results of other studies and surveys to determine an equity risk premium for my CAPM.