



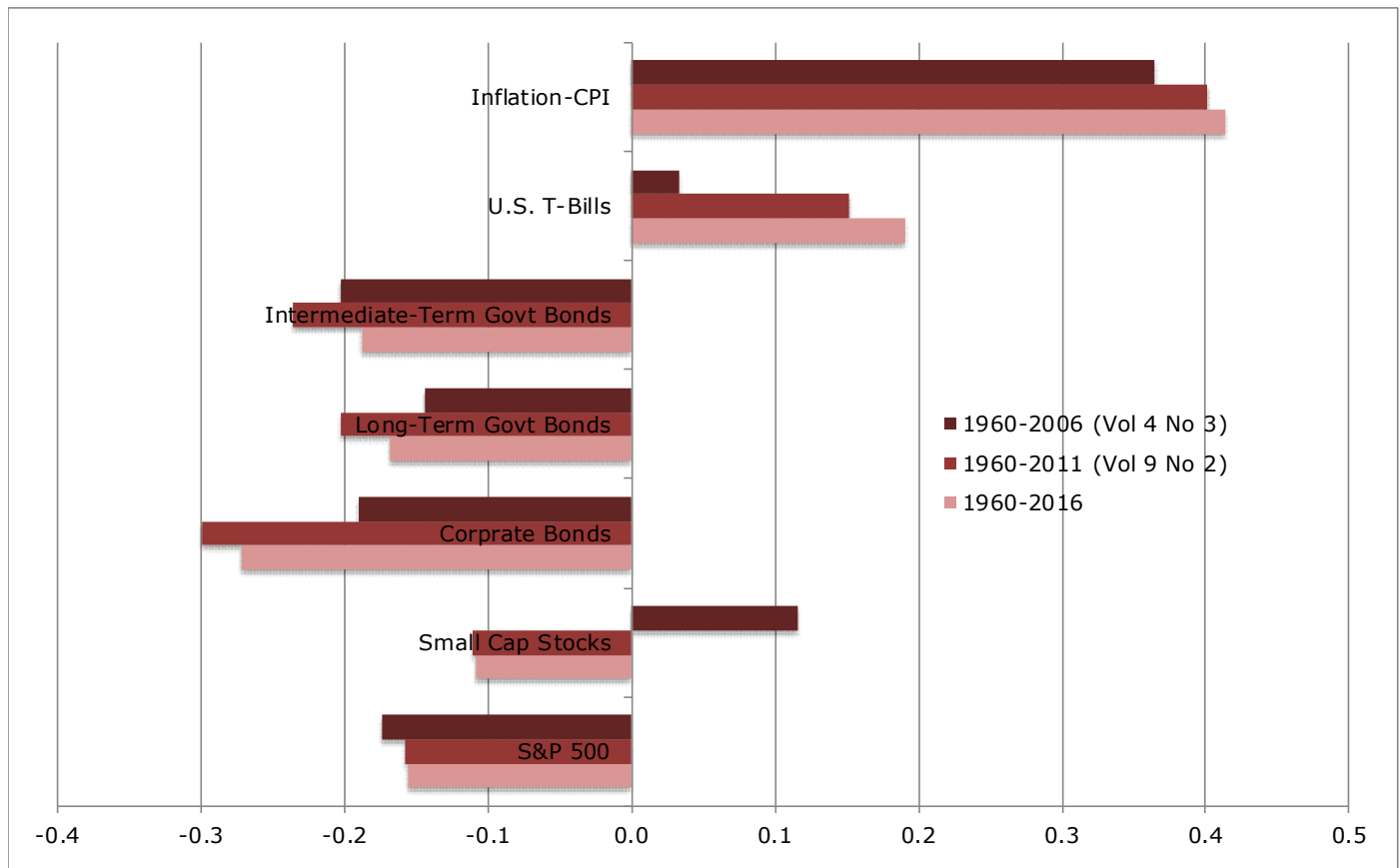
## Inflation and Timberland Returns – Update

It has been five years since we updated our work on inflation and timberland returns (*Forest Research Notes*, Vol 4 No 3 and Vol 9 No 2). As we noted five years ago, correlations among asset classes can change over time, but timberland has tended to remain strongly correlated with inflation. This still appears to be the case.

Figure 1 shows a correlation chart updated from Vol 9 No 2, showing the results then and now. The timberland returns are calculated using the

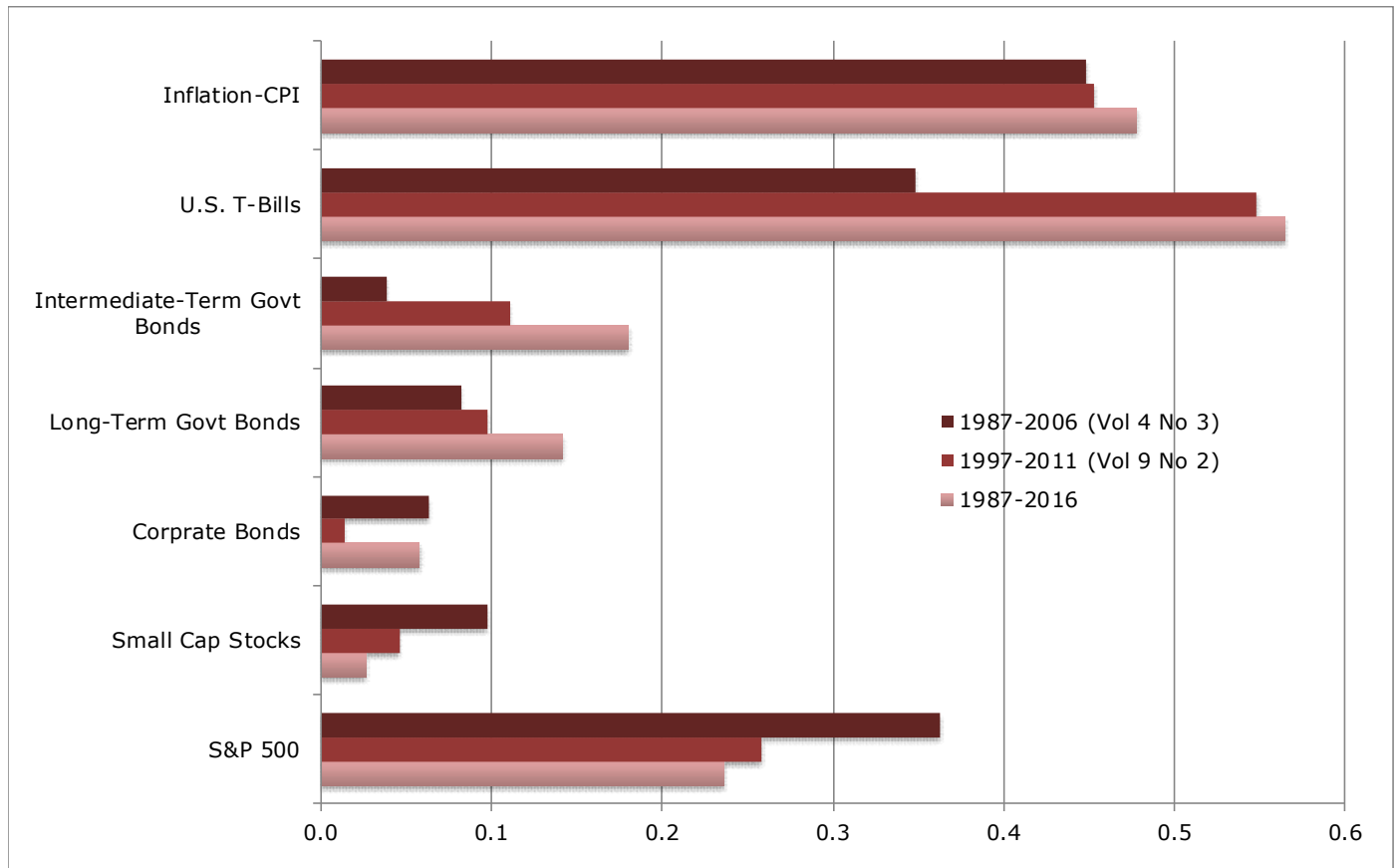
NCREIF Timberland Index for the period 1987-2016 and the Wilson Model (commonly known as the John Hancock Timber Index) for the period 1960-1986. The timberland/inflation correlation coefficient for 1960-2016 is 0.41, while it was 0.40 for 1960-2011 and 0.36 for 1960-2006. Note the large shift in correlation with T-bills and small-cap stocks when just five years of data are added to the analysis.

**Figure 1. Correlation of Inflation and Investment Assets with Timberland, 1960-2006, 1960-2011 and 1960-2016**



Source: Morningstar and NCREIF

**Figure 2. Correlation of Inflation and Investment Assets with Timberland, 1987-2006, 1987-2011 and 1987-2016**



Source: Morningstar and NCREIF

Figure 2 shows the same type of analysis comparing 1987-2006 and 1987-2011 with 1987-2016. Note that, for these time period, all of the assets are positively correlated with timberland. The correlation between timberland and inflation changed the least, increasing very slightly from 0.448 (1987-2006) to 0.453 (1987-2011) to 0.478 (1987-2016).

Many investors use correlation as an indicator of an asset’s ability to hedge against inflation. Under this criterion, timberland is a better inflation hedge than most of the assets in our analysis (Figure 3). Only T-bills have been more strongly correlated.

**Figure 3. Correlation of Inflation with Asset Classes**

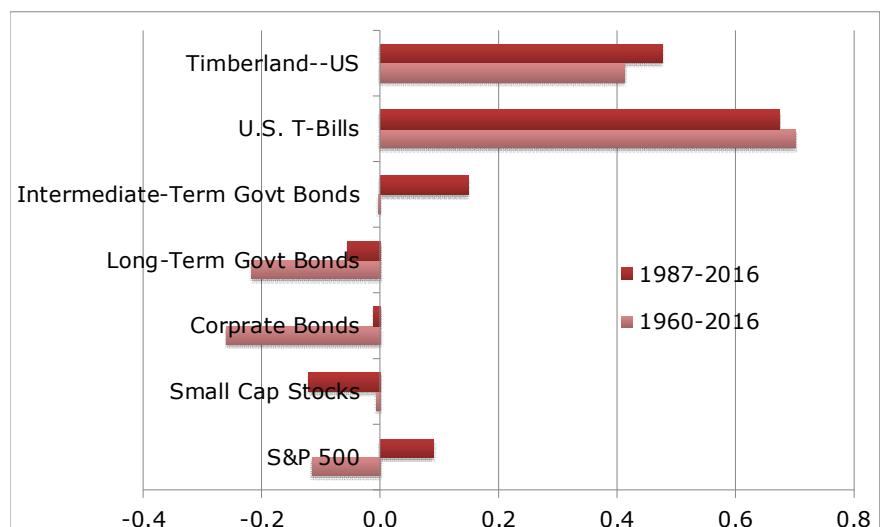


Figure 3 suggests both timberland and T-bills have stayed positively correlated with inflation over time and further analysis shows this to be the case. Figure 4 shows the correlation between inflation and timberland and US T-bills for every 10-year investment period (e.g., 1960-1969, 1985-1994, etc.) since 1960. T-bills have been far more strongly correlated, with the correlation coefficient for many investment periods exceeding 0.8 and 65% of the periods exceeding 0.40. In contrast, only 35% of

the timberland/inflation correlations have exceeded 0.40.

But, if investors are looking for investment assets that provide protection from inflation (i.e., capital preservation), the correlation coefficient may not provide the most complete indication of an asset's ability to preserve capital or provide returns that are protected from, or greater than, inflation.

**Figure 4. Correlation of Timberland and US T-Bill Returns With Inflation over 10-Year Investment Periods**

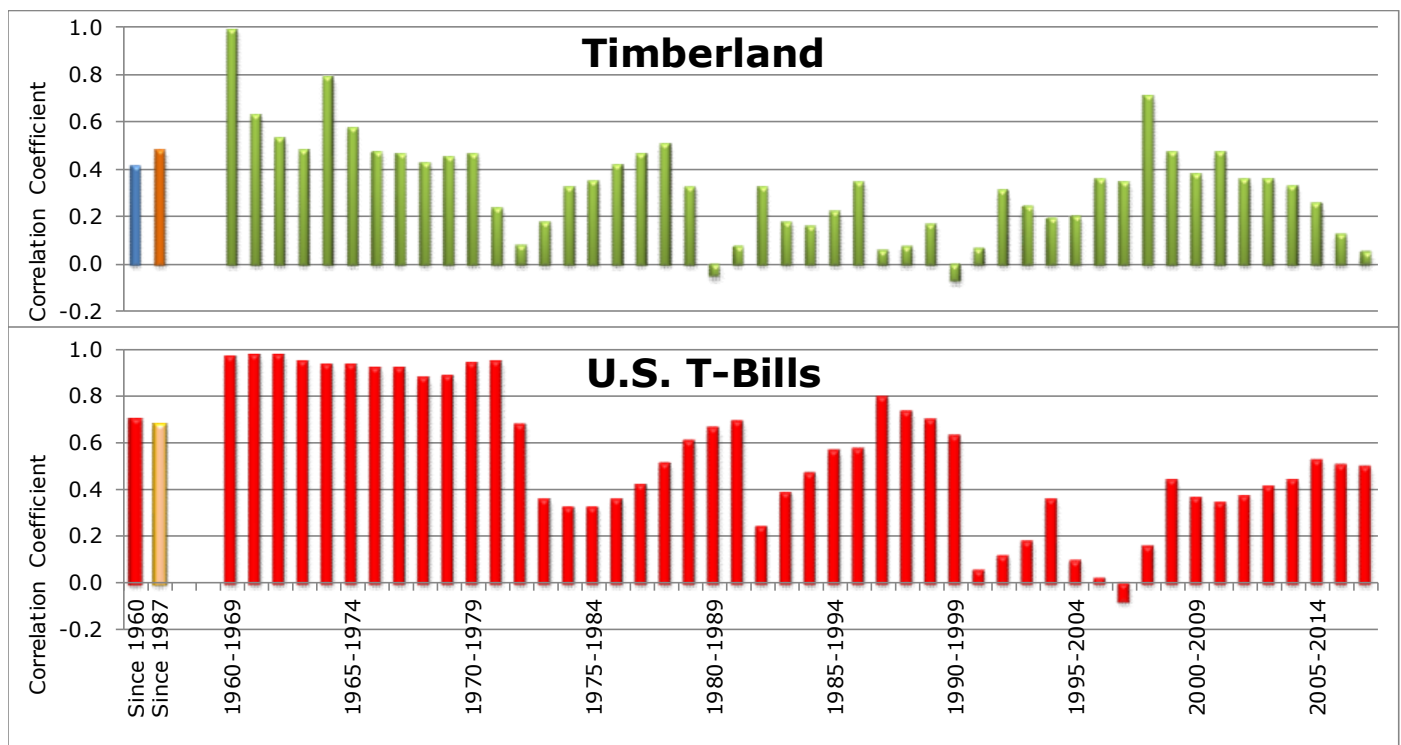
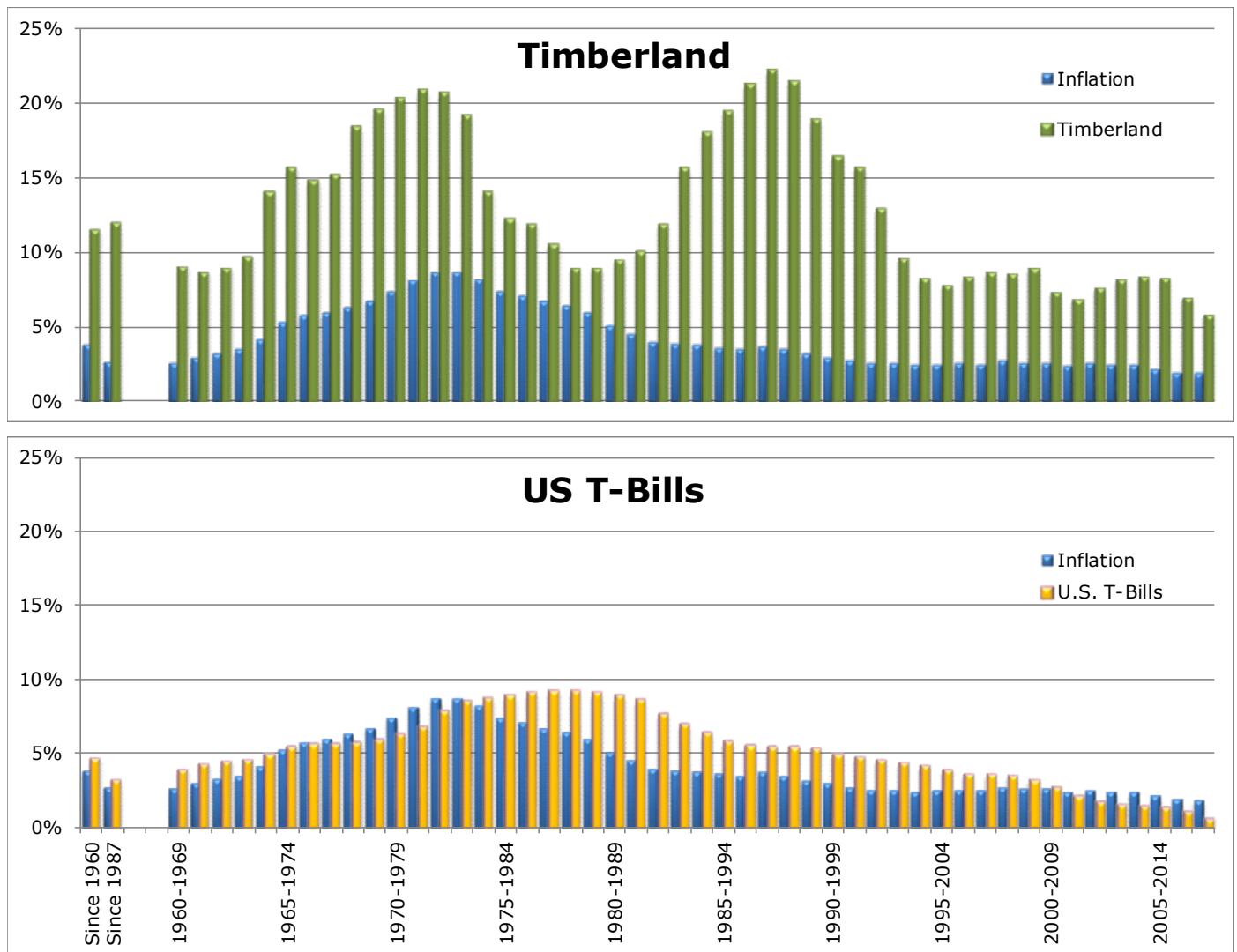


Figure 5 shows that timberland returns have always exceeded inflation over any and all 10-year investment periods since 1960. US T-bill returns have not, and in fact, T-bill returns were less than inflation from the 1965-1974 investment period through to the 1973-1982 investment period. For much of this time, the correlation between T-bill returns and inflation was over well 0.80. So, US T-bill returns were less than inflation when the correlation with inflation was strongest. T-bill

returns have also been lower than inflation since the 2001-2010 investment period.

This means a strong correlation with inflation is not a guarantee that an asset will maintain its value (or its returns) against inflation. Consider an extreme hypothetical example: an asset whose return is always exactly 90% of the inflation rate would be perfectly correlated with inflation, yet an investor in that asset would always lose ground to inflation.

Figure 5. Timberland and US T-Bill Returns and Inflation over 10-Year Investment Periods



**Summary**

With five years more years of return data available, timberland returns are still strongly correlated with inflation. In addition, timberland has been positively correlated with inflation for all but two 10-year investment periods since 1960.

The results from US T-bills show that strong correlation with inflation does not necessarily mean an asset’s returns will exceed inflation during an investment period. While timberland is not as strongly correlated with inflation as T-bills, timberland returns have always been greater than inflation during all investment periods. They have

exceeded inflation by at least 250 basis points, and, on average, by just under 900 basis points.

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Jack Lutz, PhD  
Forest Economist  
Forest Research Group  
78 Stoneybrook Way  
Hermon, ME 04401  
207-605-0037

[jlutz@forestresearchgroup.com](mailto:jlutz@forestresearchgroup.com)  
[www.forestresearchgroup.com](http://www.forestresearchgroup.com)