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Index of Direct Workpapers of Marcos Munoz. Pdf
RPU-2014-0002

Ibbotson® SBBI®
2014 Classic Yearbook

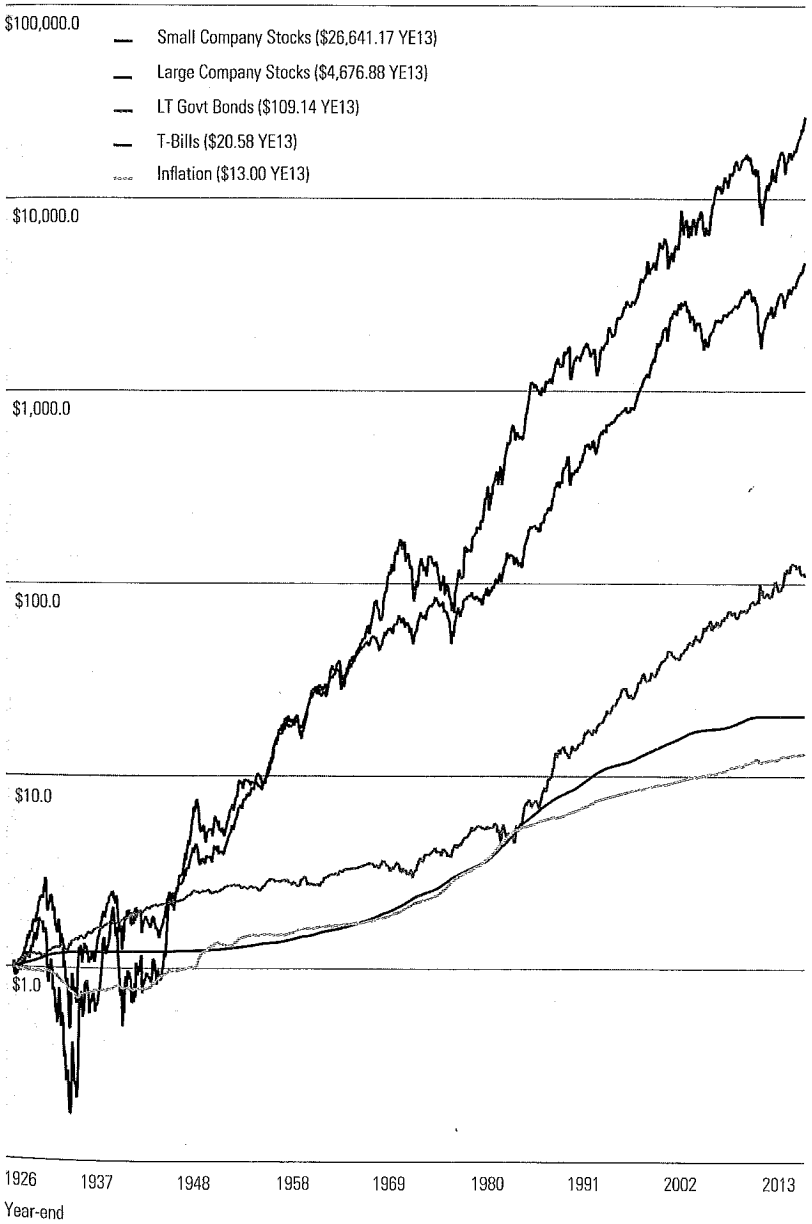
Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2013

MORNINGSTAR®

Chapter 2

The Long Run Perspective

Graph 2-1: Wealth Indices of Investments in the U.S. Capital Markets
Index (Year-End 1925 = $1.00)



Data from 1925–2013.

Motivation

A long view of capital market history, exemplified by the 88-year period (1926–2013) examined here, uncovers the basic relationships between risk and return among the different asset classes including alternative investments and between nominal and real (inflation-adjusted) returns. The goal of this study of asset returns is to provide a period long enough to include most or all of the major types of events that investors have experienced and may experience in the future. Such events include war and peace, growth and decline, bull and bear markets, inflation and deflation, and other less dramatic events that affect asset returns.

By studying the past, one can make inferences about the future. While the actual events that occurred during 1926–2013 will not be repeated, the event-types of that period can be expected to recur. It is sometimes said that only a few periods are unusual, such as the crash of 1929–1932 and World War II. This logic is suspicious because all periods are unusual. Some of the most unusual events of the century—the stock market crash of 1987, the equally remarkable inflation of the 1970s and early 1980s, the more recent events of September 11, 2001, and most recently, the 2008–2009 financial crisis—took place over the last three decades. From the perspective that historical event-types tend to repeat themselves, an 88-year examination of past capital market returns reveals a great deal about what may be expected in the future.

Historical Returns on Stocks, Bonds, Bills, and Inflation

Graph 2-1 depicts the growth of $1.00 invested in large company stocks, small company stocks, long-term government bonds, Treasury bills, and a hypothetical asset returning the inflation rate over the period from the end of 1925 to the end of 2013. All results assume reinvestment of dividends on stocks or coupons on bonds and no taxes. Transaction costs are not included, except in the small stock index starting in 1982.

Each of the cumulative index values is initialized at $1.00 at year-end 1925. The graph vividly illustrates that large company stocks and small company stocks were the big winners over the entire 88-year period: investments of $1.00 in these assets would have grown to $4,676.88 and $26,641.17, respectively, by year-end 2013. This phenomenal

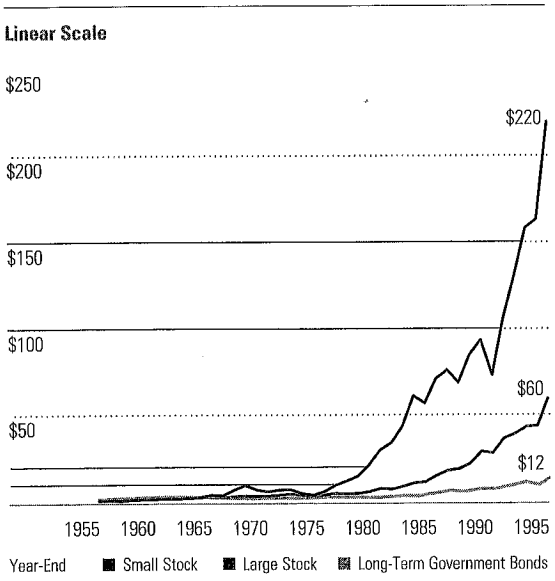
growth was earned by taking substantial risk. In contrast, long-term government bonds (with an approximate 30-year maturity), which exposed the holder to much less risk, grew to only $109.14.

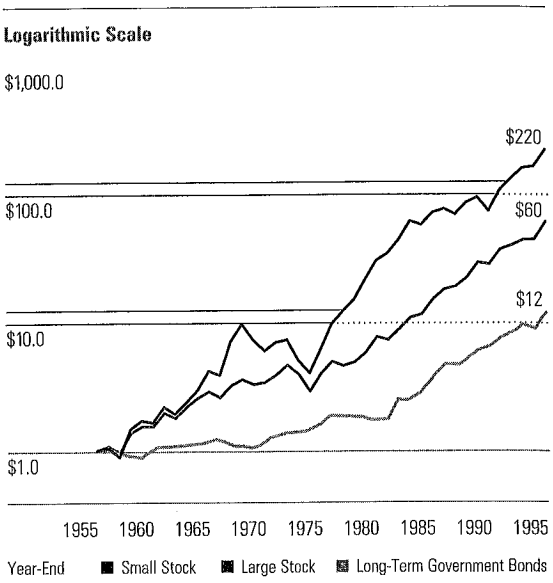
The lowest-risk strategy over the past 88 years (for those with short-term time horizons) was to buy U.S. Treasury bills. Since Treasury bills tended to track inflation, the resulting real (inflation-adjusted) returns were just above zero for the entire 1926–2013 period.

Logarithmic Scale on the Index Graphs

A logarithmic scale is used on the vertical axis of our index graphs. The date appears on the horizontal axis.

A logarithmic scale allows for the direct comparison of the series' behavior at different points in time. Specifically, the use of a logarithmic scale allows the following interpretation of the data: the same vertical distance, no matter where it is measured on the graph, represents the same percentage change in the series. On the log scale shown below, a 50 percent gain from $10 to $15 occupies the same vertical distance as a 50 percent gain from $100 to $150. On the linear scale, the same percentage gains look different.





A logarithmic scale allows the viewer to compare investment performance across different time periods; thus the viewer can concentrate on rates of return, without worrying about the number of dollars invested at any given time. An additional benefit of the logarithmic scale is the way the scale spreads the action out over time. This allows the viewer to more carefully examine the fluctuations of the individual time series in different periods.

Large Company Stocks

As noted above, an index of S&P 500 total returns, initialized on December 31, 1925, at $1.00, closed 2013 at $4,676.88, a compound annual growth rate of 10.1 percent. The inflation-adjusted S&P 500 total return index closed 2013 at a level of $359.74.

Small Company Stocks

Over the long run, small company stock returns surpassed the S&P 500, with the small company stock total return index ending 2013 at a level of $26,641.17. This represents a compound annual growth rate of 12.3 percent, the highest rate among the asset classes studied here.

Long-Term Corporate Bonds

Long-term corporate bonds outperformed both types of government bonds over the 1926–2013 period with a compound annual growth rate of 6.0 percent. One dollar invested in the long-term corporate bond index at year-end 1925 was worth $161.80 by the end of 2013. This higher return reflected the risk premium that investors require for investing in corporate bonds, which are subject to the risk of default.

Long-Term Government Bonds

The long-term government bond total return index, constructed with an approximate 20-year maturity, closed 2013 at a level of $109.14 (based on year-end 1925 equaling $1.00). Based on the capital appreciation component alone, the $1.00 index closed at $1.19, a 0.2 percent capital gain over the period 1926–2013. This indicates that the majority of the positive historical returns on long-term government bonds were due to income returns. The compound annual total return for long-term government bonds was 5.5 percent.

Intermediate-Term Government Bonds

One dollar invested in intermediate-term bonds at the end of 1925, with coupons reinvested, fell to $92.98 by year-end 2013, compared to $93.99 at year-end 2012. The compound annual total return for intermediate-term government bonds was 5.3 percent. Capital appreciation caused $1.00 to increase to $1.71 over the 88-year period, representing a compound annual growth rate of 0.6 percent.

Treasury Bills

One dollar invested in Treasury bills at the end of 1925 was worth $20.58 by year-end 2013, with a compound annual growth rate of 3.5 percent. Treasury bill returns followed distinct patterns, described on the next page. Moreover, Treasury bills tended to track inflation; therefore, the average annual inflation-adjusted return on Treasury bills (or real riskless rate of return) was only 0.5 percent over the 88-year period. This real return also followed distinct patterns.

Patterns in Treasury Bill Returns

During the late 1920s and early 1930s, Treasury bill returns were just above zero. (These returns were observed during a largely deflationary period.) Beginning in late 1941, the yields on Treasury bills were pegged by the government at low rates while high inflation was experienced.

Treasury bills closely tracked inflation after March 1951, when Treasury bill yields were deregulated in the U.S. Treasury-Federal Reserve Accord. (Treasury bill returns after that date reflect free market rates.) This tracking relationship has weakened since 1973. From about 1974 to 1980, Treasury bill returns were consistently lower than inflation rates. From 1981 to 2008, real returns on Treasury bills have been positive, with the exception of 2002–2005. Real treasury bill returns were also negative from 2009 to 2013.

Federal Reserve Operating Procedure Changes

The disparity between performance and volatility for the periods prior to and after October 1979 can be attributed to the Federal Reserve's new operating procedures. Prior to this date, the Fed used the federal funds rate as an operating target. Subsequently, the Fed de-emphasized this rate as an operating target and, instead, began to focus on the manipulation of the money supply (through nonborrowed reserves). As a result, the federal funds rate underwent much greater volatility, thereby bringing about greater volatility in Treasury returns.

In the fall of 1982, however, the Federal Reserve again changed the policy procedures regarding its monetary policy. The Fed abandoned its new monetary controls and returned to a strategy of preventing excessive volatility in interest rates. Volatility in Treasury bill returns from the fall of 1979 through the fall of 1982 was significantly greater than that which has occurred since.

Inflation

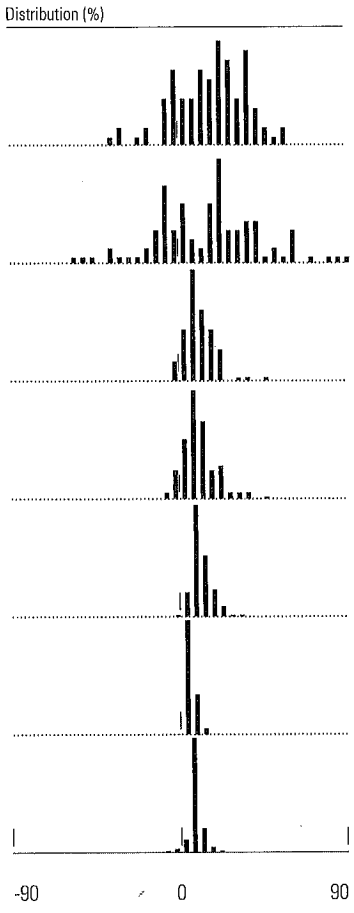
The compound annual inflation rate over 1926–2013 was 3.0 percent. The inflation index, initiated at $1.00 at year-end 1925, grew to $13.00 by year-end 2013. The entire increase occurred during the postwar period. The years 1926–1933 were marked by deflation; inflation then raised consumer prices to their 1926 levels by the middle of 1945. After a brief postwar spurt of inflation, prices rose slowly over most of the 1950s and 1960s. Then, in the 1970s, inflation reached a pace unprecedented in peacetime, peaking at 13.3 percent in 1979. The 1980s saw a reversion to more moderate, though still substantial, inflation rates averaging about 5 percent. Inflation rates continued to decline in the 1990s with a compound annual rate of 2.9 percent.

Summary Statistics of Total Returns

Table 2-1 presents summary statistics of the annual total returns on each asset class over the entire 88-year period of 1926–2013. The data presented in these exhibits are described in detail in Chapters 3 and 6.

Table 2-1: Basic Series: Summary Statistics of Annual Total Returns

Series	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)
Large Company Stocks	10.1	12.1	20.2
Small Company Stocks*	12.3	16.9	32.3
Long-Term Corporate Bonds	6.0	6.3	8.4
Long-Term Government Bonds	5.5	5.9	9.8
Intermediate-Term Government Bonds	5.3	5.4	5.7
U.S. Treasury Bills	3.5	3.5	3.1
Inflation	3.0	3.0	4.1



Data from 1926–2013. * The 1933 Small Company Stocks Total Return was 142.9 percent.

Note that in Table 2-1, the arithmetic mean returns are always higher than the geometric mean returns. The difference between these two means is related to the standard deviation, or variability, of the series. [See Chapter 6.]

The "skylines" or histograms in Table 2-1 show the frequency distribution of returns on each asset class. The height of the common stock skyline in the range between +10 and +20 percent, for example, shows the number of years in 1926–2013 that large company stocks had a return in that range. The histograms are shown in 5 percent increments to fully display the spectrum of returns as seen over the last 88 years, especially in stocks.

Riskier assets, such as large company stocks and small company stocks, have low, spread-out skylines, reflecting the broad distribution of returns from very poor to very good. Less risky assets, such as bonds, have narrow skylines that resemble a single tall building, indicating the tightness of the distribution around the mean of the series. The histogram for Treasury bills is one-sided, lying almost entirely to the right of the vertical line representing a zero return; that is, Treasury bills rarely experienced negative returns on a yearly basis over the 1926–2013 period. The inflation skyline shows both positive and negative annual rates. Although a few deflationary months and quarters have occurred recently, the last negative annual inflation rate occurred in 1954.

Capital Appreciation, Income, and Reinvestment Returns

Table 2-2 provides further detail on the returns of large company stocks, long-term government bonds, and intermediate-term government bonds. Total annual returns are shown as the sum of three components: capital appreciation returns, income returns, and reinvestment returns. The capital appreciation and income components are explained in Chapter 3. The third component, reinvestment return, reflects monthly income reinvested in the total return index in subsequent months in the year. Thus, for a single month the reinvestment return is zero, but over a longer period of time it is non-zero. Since the returns in Table 2-2 are annual, reinvestment return is relevant.

The annual total return formed by compounding the monthly total returns does not equal the sum of the annual capital appreciation and income components; the difference is reinvestment return. A simple example illustrates this point. In 1995, an "up" year on a total return basis, the total annual return on large company stocks was 37.58 percent. The annual capital appreciation was 34.11 percent and the annual income return was 3.04 percent, totaling 37.15 percent. The remaining 0.43 percent (37.58 percent minus 37.15 percent) of the 1995 total return came from the reinvestment of dividends in the market. For more information on calculating annual total and income returns, see Chapter 5.

Monthly income and capital appreciation returns for large company stocks are presented in Appendix A: Tables A-2 and A-3, respectively. Monthly income and capital appreciation returns are presented for long-term government

Table 2-2: Large Company Stocks, Long-Term Government Bonds, and Intermediate-Term Government Bonds
Annual Total, Income, Capital Appreciation, and Reinvestment Returns (%)

	Large Company Stocks				Long-Term Government Bonds					Intermediate-Term Government Bonds				
Year	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Year-end Yield	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Year-end Yield
1926	5.72	5.41	0.50	11.62	3.91	3.73	0.13	7.77	3.54	1.51	3.78	0.10	5.38	3.61
1927	30.91	5.71	0.87	37.49	5.40	3.41	0.12	8.93	3.17	0.96	3.49	0.07	4.52	3.40
1928	37.88	4.81	0.91	43.61	-3.12	3.22	0.01	0.10	3.40	-2.73	3.64	0.01	0.92	4.01
1929	-11.91	3.98	-0.49	-8.42	-0.20	3.47	0.15	3.42	3.40	1.77	4.07	0.18	6.01	3.62
1930	-28.48	4.57	-0.98	-24.90	1.28	3.32	0.05	4.66	3.30	3.30	3.30	0.11	6.72	2.91
1931	-47.07	5.35	-1.62	-43.34	-8.46	3.33	-0.17	-5.31	4.07	-5.40	3.16	-0.08	-2.32	4.12
1932	-15.15	6.16	0.80	-8.19	12.94	3.69	0.22	16.84	3.15	5.02	3.63	0.16	8.81	3.04
1933	46.59	6.39	1.01	53.99	-3.14	3.12	-0.05	-0.07	3.36	-0.99	2.83	-0.02	1.83	3.25
1934	-5.94	4.46	0.04	-1.44	6.76	3.18	0.09	10.03	2.93	5.97	2.93	0.09	9.00	2.49
1935	41.37	4.95	1.35	47.67	2.14	2.81	0.03	4.98	2.76	4.94	2.02	0.05	7.01	1.63
1936	27.92	5.36	0.64	33.92	4.64	2.77	0.10	7.52	2.55	1.60	1.44	0.02	3.06	1.29
1937	-38.59	4.66	-1.09	-35.03	-2.48	2.66	0.05	0.23	2.73	0.05	1.48	0.03	1.56	1.14
1938	25.21	4.83	1.07	31.12	2.83	2.64	0.06	5.53	2.52	4.37	1.82	0.04	6.23	1.52
1939	-5.45	4.69	0.35	-0.41	3.48	2.40	0.06	5.94	2.26	3.18	1.31	0.03	4.52	0.98
1940	-15.29	5.36	0.14	-9.78	3.77	2.23	0.09	6.09	1.94	2.04	0.90	0.02	2.96	0.57
1941	-17.86	6.71	-0.44	-11.59	-1.01	1.94	0.00	0.93	2.04	-0.17	0.67	0.00	0.50	0.82
1942	12.43	6.79	1.12	20.34	0.74	2.46	0.02	3.22	2.46	1.17	0.76	0.00	1.94	0.72
1943	19.45	6.24	0.21	25.90	-0.37	2.44	0.02	2.08	2.48	1.23	1.56	0.02	2.81	1.45
1944	13.80	5.48	0.47	19.75	0.32	2.46	0.03	2.81	2.46	0.35	1.44	0.01	1.80	1.40
1945	30.72	4.97	0.74	36.44	8.27	2.34	0.12	10.73	1.99	1.02	1.19	0.01	2.22	1.03
1946	-11.87	4.09	-0.29	-8.07	-2.15	2.04	0.01	-0.10	2.12	-0.08	1.08	0.00	1.00	1.12
1947	0.00	5.49	0.22	5.71	-4.70	2.13	-0.06	-2.62	2.43	-0.30	1.21	0.00	0.91	1.34
1948	-0.65	6.08	0.08	5.50	0.96	2.40	0.04	3.40	2.37	0.27	1.56	0.01	1.85	1.51
1949	10.26	7.50	1.03	18.79	4.15	2.25	0.06	6.45	2.09	0.95	1.36	0.01	2.32	1.23
1950	21.78	8.77	1.16	31.71	-2.06	2.12	0.00	0.06	2.24	-0.69	1.39	0.00	0.70	1.62
1951	16.46	6.91	0.65	24.02	-6.27	2.38	-0.04	-3.93	2.69	-1.63	1.98	0.01	0.36	2.17
1952	11.78	5.93	0.66	18.37	-1.48	2.66	-0.02	1.16	2.79	-0.57	2.19	0.01	1.63	2.35
1953	-6.62	5.46	0.18	-0.99	0.67	2.84	0.12	3.64	2.74	0.61	2.55	0.07	3.23	2.18
1954	45.02	6.21	1.39	52.62	4.35	2.79	0.05	7.19	2.72	1.08	1.60	0.01	2.68	1.72
1955	26.40	4.56	0.60	31.56	-4.07	2.75	0.03	-1.29	2.95	-3.10	2.45	0.00	-0.65	2.80
1956	2.62	3.83	0.11	6.56	-8.46	2.99	-0.12	-5.59	3.45	-3.45	3.05	-0.02	-0.42	3.63
1957	-14.31	3.84	-0.30	-10.78	3.82	3.44	0.20	7.46	3.23	4.05	3.59	0.20	7.84	2.84
1958	38.06	4.38	0.93	43.36	-9.23	3.27	-0.14	-6.09	3.82	-4.17	2.93	-0.05	-1.29	3.81
1959	8.48	3.31	0.16	11.96	-6.20	4.01	-0.07	-2.26	4.47	-4.56	4.18	-0.01	-0.39	4.98
1960	-2.97	3.26	0.19	0.47	9.29	4.26	0.23	13.78	3.80	7.42	4.15	0.19	11.76	3.31
1961	23.13	3.48	0.28	26.89	-2.86	3.83	0.00	0.97	4.15	-1.72	3.54	0.03	1.85	3.84
1962	-11.81	2.98	0.10	-8.73	2.78	4.00	0.11	6.89	3.95	1.73	3.73	0.10	5.56	3.50
1963	18.89	3.61	0.30	22.80	-2.70	3.89	0.02	1.21	4.17	-2.10	3.71	0.03	1.64	4.04
1964	12.97	3.33	0.18	16.48	-0.72	4.15	0.07	3.51	4.23	-0.03	4.00	0.07	4.04	4.03
1965	9.06	3.21	0.18	12.45	-3.45	4.19	-0.04	0.71	4.50	-3.10	4.15	-0.03	1.02	4.90
1966	-13.09	3.11	-0.08	-10.06	-1.06	4.49	0.22	3.65	4.55	-0.41	4.93	0.17	4.69	4.79
1967	20.09	3.64	0.25	23.98	-13.55	4.59	-0.23	-9.18	5.56	-3.85	4.88	-0.02	1.01	5.77
1968	7.66	3.18	0.22	11.06	-5.51	5.50	-0.25	-0.26	5.98	-0.99	5.49	0.03	4.54	5.96
1969	-11.36	2.98	-0.13	-8.50	-10.83	5.95	-0.19	-5.07	6.87	-7.27	6.65	-0.11	-0.74	8.29
1970	0.10	3.33	0.43	3.86	4.84	6.74	0.52	12.11	6.48	8.71	7.49	0.66	16.86	5.90

Table 2-2: Large Company Stocks, Long-Term Government Bonds, and Intermediate-Term Government Bonds (Continued)
Annual Total, Income, Capital Appreciation, and Reinvestment Returns (%)

	Large Company Stocks				Long-Term Government Bonds					Intermediate-Term Government Bonds				
Year	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Year-end Yield	Capital Apprec. Return	Income Return	Reinvest-ment Return	Total Return	Year-end Yield
1971	10.63	3.49	0.18	14.30	6.61	6.32	0.31	13.23	5.97	2.72	5.75	0.25	8.72	5.25
1972	15.79	2.95	0.25	18.99	-0.35	5.87	0.17	5.69	5.99	-0.75	5.75	0.16	5.16	5.85
1973	-17.37	2.86	-0.19	-14.69	-7.70	6.51	0.08	-1.11	7.26	-2.19	6.58	0.22	4.61	6.79
1974	-29.72	3.69	-0.44	-26.47	-3.45	7.27	0.54	4.35	7.60	-1.99	7.24	0.44	5.69	7.12
1975	31.55	5.37	0.31	37.23	0.73	7.99	0.47	9.20	8.05	0.12	7.35	0.36	7.83	7.19
1976	19.15	4.49	0.29	23.93	8.07	7.89	0.80	16.75	7.21	5.25	7.10	0.51	12.87	6.00
1977	-11.50	4.35	0.00	-7.16	-7.86	7.14	0.04	-0.69	8.03	-5.15	6.49	0.06	1.41	7.51
1978	1.06	5.33	0.18	6.57	-9.05	7.90	-0.03	-1.18	8.98	-4.49	7.83	0.14	3.49	8.83
1979	12.31	5.89	0.41	18.61	-9.84	8.86	-0.25	-1.23	10.12	-5.07	9.04	0.12	4.09	10.33
1980	25.77	5.74	0.99	32.50	-14.00	9.97	0.08	-3.95	11.99	-6.81	10.55	0.17	3.91	12.45
1981	-9.73	4.88	-0.08	-4.92	-10.33	11.55	0.64	1.86	13.34	-4.55	12.97	1.03	9.45	13.96
1982	14.76	5.61	1.18	21.55	23.95	13.50	2.91	40.36	10.95	14.23	12.81	2.06	29.10	9.90
1983	17.27	5.04	0.24	22.56	-9.82	10.38	0.09	0.65	11.97	-3.30	10.35	0.35	7.41	11.41
1984	1.40	4.57	0.31	6.27	2.32	11.74	1.42	15.48	11.70	1.22	11.68	1.12	14.02	11.04
1985	26.33	4.72	0.67	31.73	17.84	11.25	1.88	30.97	9.56	9.01	10.29	1.04	20.33	8.55
1986	14.62	3.92	0.13	18.67	14.99	8.98	0.56	24.53	7.89	6.99	7.72	0.43	15.14	6.85
1987	2.03	3.64	-0.41	5.25	-10.69	7.92	0.06	-2.71	9.20	-4.75	7.47	0.19	2.90	8.32
1988	12.40	3.99	0.22	16.61	0.36	8.97	0.34	9.67	9.19	-2.26	8.24	0.13	6.10	9.17
1989	27.25	4.03	0.40	31.69	8.62	8.81	0.68	18.11	8.16	4.34	8.46	0.49	13.29	7.94
1990	-6.56	3.43	0.03	-3.10	-2.61	8.19	0.61	6.18	8.44	1.02	8.15	0.56	9.73	7.70
1991	26.31	3.76	0.40	30.47	10.10	8.22	0.98	19.30	7.30	7.36	7.43	0.67	15.46	5.97
1992	4.46	2.98	0.17	7.62	0.34	7.26	0.45	8.05	7.26	0.64	6.27	0.28	7.19	6.11
1993	7.06	2.91	0.12	10.08	10.71	7.17	0.35	18.24	6.54	5.56	5.53	0.15	11.24	5.22
1994	-1.54	2.83	0.03	1.32	-14.29	6.59	-0.08	-7.77	7.99	-11.14	6.07	-0.08	-5.14	7.80
1995	34.11	3.04	0.43	37.58	23.04	7.60	1.03	31.67	6.03	9.66	6.69	0.45	16.80	5.38
1996	20.26	2.43	0.26	22.96	-7.37	6.18	0.26	-0.93	6.73	-3.90	5.82	0.18	2.10	6.16
1997	31.01	2.10	0.25	33.36	8.51	6.64	0.71	15.85	6.02	1.95	6.14	0.30	8.38	5.73
1998	26.67	1.67	0.24	28.58	6.89	5.83	0.34	13.06	5.42	4.66	5.29	0.25	10.21	4.68
1999	19.53	1.36	0.15	21.04	-14.35	5.57	-0.19	-8.96	6.82	-7.06	5.30	-0.01	-1.77	6.45
2000	-10.14	1.11	-0.07	-9.10	14.36	6.50	0.62	21.48	5.58	5.94	6.19	0.46	12.59	5.07
2001	-13.04	1.18	-0.03	-11.89	-1.89	5.53	0.06	3.70	5.75	3.23	4.27	0.12	7.62	4.42
2002	-23.37	1.39	-0.13	-22.10	11.69	5.59	0.56	17.84	4.84	8.65	3.98	0.30	12.93	2.61
2003	26.38	1.99	0.31	28.68	-3.36	4.80	0.01	1.45	5.11	-0.48	2.85	0.03	2.40	2.97
2004	8.99	1.76	0.13	10.88	3.26	5.02	0.23	8.51	4.84	-1.07	3.28	0.04	2.25	3.47
2005	3.00	1.84	0.07	4.91	3.02	4.69	0.10	7.81	4.61	-2.58	3.92	0.03	1.36	4.34
2006	13.62	2.01	0.17	15.79	-3.64	4.68	0.15	1.19	4.91	-1.51	4.54	0.11	3.14	4.65
2007	3.53	1.96	0.00	5.49	4.69	4.86	0.33	9.88	4.50	5.33	4.44	0.28	10.05	3.28
2008	-38.49	1.92	-0.43	-37.00	20.50	4.45	0.93	25.87	3.03	9.92	2.96	0.23	13.11	1.26
2009	23.45	2.48	0.53	26.46	-18.25	3.47	-0.12	-14.90	4.58	-4.42	2.01	0.00	-2.40	2.42
2010	12.78	2.02	0.26	15.06	5.89	4.25	0.00	10.14	4.14	5.16	1.92	0.04	7.12	1.70
2011	0.00	2.13	-0.01	2.11	23.74	3.81	0.68	28.23	2.48	7.79	1.58	0.09	9.46	0.59
2012	13.41	2.50	0.10	16.00	0.88	2.40	0.02	3.31	2.41	1.48	0.58	0.01	2.07	0.46
2013	29.60	2.48	0.32	32.39	-14.83	2.86	0.61	-11.36	3.67	-1.91	0.85	0.00	-1.07	1.13

bonds in Appendix A: Tables A-7 and A-8; and for intermediate-term government bonds in Tables A-11 and A-12.

Annual Total Returns

Table 2-3 shows annual total returns for the six basic asset classes and inflation for the full 88-year time period. This table can be used to compare the performance of each asset class for the same annual period. Monthly total returns for large company stocks, small company stocks, long-term corporate bonds, long-term government bonds, intermediate-term government bonds, Treasury bills, and inflation rates are presented in Appendix A: Tables A-1, A-4, A-5, A-6, A-10, A-14, and A-15, respectively.

Rolling Period Returns

Tables 2-4, 2-5, and 2-6 show the compound annual total returns of the six basic classes and inflation for 5-, 10-, and 20-year holding periods. Often, these calculations are referred to as rolling period returns since they are obtained by rolling a data window of fixed length along each time series. They are useful for examining the behavior of returns for holding periods similar to those actually experienced by investors and show the effects of time diversification. Holding assets for long periods of time has the effect of lowering the risk of experiencing a loss in asset value.

The highest and lowest returns on the SBBI basic series, expressed as annual rates, are shown for 1-, 5-, 10-, and 20-year holding periods in Table 2-7. This exhibit also shows the number of times that an asset had a positive return, and the number of times that an asset's return was the highest among all those studied. The number of times positive (or times highest) is compared to the total number of observations—that is, 88 annual, 84 overlapping 5-year, 79 overlapping 10-year, and 69 overlapping 20-year holding periods.

Portfolio Performance

A portfolio is a group of assets, such as stocks and bonds, that are held by an investor. Because stocks, bonds, and cash generally do not react identically to the same economic or market stimulus, combining these assets can often produce a more appealing risk-and-return tradeoff. By looking at Table 2-2, one notices that there are plenty of years in which stock returns were up at times when bond returns were down, and vice versa. These offsetting movements can assist in reducing portfolio volatility. Some recent examples include the years 2000 through 2002. Large company stocks posted negative returns of -9.10, -11.89, and -22.10 percent, while long-term government bonds posted positive returns of 21.48, 3.70, and 17.84 percent. This illustrates the low correlation of stocks and bonds; that is, they tend to move independently of each other. (See Chapter 6 for a more detailed discussion of correlation).

While bond prices tend to fluctuate less than stock prices, they are still subject to price movement. By investing in a mix of asset classes such as stocks, bonds, and Treasury bills (cash), an investor may protect their portfolio from major downswings in a single asset class. One of the main advantages of diversification is that it makes investors less dependent on the performance of any single asset class.

Rolling Period Portfolio Returns

While Table 2-7 displays the performance of single asset classes over various rolling periods, Tables 2-8 through 2-11 show the performance of different portfolio allocations over various periods. Once again, the table outlines the number of times that each portfolio has a positive return, and the number of times that each portfolio's return was the highest among all those studied. Maximum and minimum returns are also shown. The portfolios presented throughout the analysis are rebalanced so that the allocations remain the same. The exception to this is Table 2-10, which contains portfolios that never rebalance for comparison purposes. The data assumes reinvestment of all income and does not account for taxes or transaction costs.

The 1-year holding period results in Table 2-8 make it clear that 1933 was a great year for large company stocks, while long-term government bonds shined in 1982. The 30% stock and 70% bond portfolio was the only portfolio that posted positive returns during all 5-year holding periods, while the 70% stock and 30% bond portfolio was never the highest returning portfolio during the 5-year holding periods. The 10-year holding period analysis shows that the 100% stock/100% bond, the 90% stock/10% bond, and the 100% bond portfolios were the only portfolios that posted negative 10-year holding period returns. For the 20-year period, there were no negative holding period returns. The effects of time diversification are clearly evident. When portfolios, as well as individual asset classes, are held for longer periods of time, the possibility of losing portfolio value is lowered.

Table 2-3: Basic Series
Annual Total Returns (%)

Year	Large Comp Stocks	Small Comp Stocks	Long-Term Corp Bonds	Long-Term Govt Bonds	Inter-Term Govt Bonds	U.S. Treasury Bills	Inflation
1926	11.62	0.28	7.37	7.77	5.38	3.27	-1.49
1927	37.49	22.10	7.44	8.93	4.52	3.12	-2.08
1928	43.61	39.69	2.84	0.10	0.92	3.56	-0.97
1929	-8.42	-51.36	3.27	3.42	6.01	4.75	0.20
1930	-24.90	-38.15	7.98	4.66	6.72	2.41	-6.03
1931	-43.34	-49.75	-1.85	-5.31	-2.32	1.07	-9.52
1932	-8.19	-5.39	10.82	16.84	8.81	0.96	-10.30
1933	53.99	142.87	10.38	-0.07	1.83	0.30	0.51
1934	-1.44	24.22	13.84	10.03	9.00	0.16	2.03
1935	47.67	40.19	9.61	4.98	7.01	0.17	2.99
1936	33.92	64.80	6.74	7.52	3.06	0.18	1.21
1937	-35.03	-58.01	2.75	0.23	1.56	0.31	3.10
1938	31.12	32.80	6.13	5.53	6.23	-0.02	-2.78
1939	-0.41	0.35	3.97	5.94	4.52	0.02	-0.48
1940	-9.78	-5.16	3.39	6.09	2.96	0.00	0.96
1941	-11.59	-9.00	2.73	0.93	0.50	0.06	9.72
1942	20.34	44.51	2.60	3.22	1.94	0.27	9.29
1943	25.90	88.37	2.83	2.08	2.81	0.35	3.16
1944	19.75	53.72	4.73	2.81	1.80	0.33	2.11
1945	36.44	73.61	4.08	10.73	2.22	0.33	2.25
1946	-8.07	-11.63	1.72	-0.10	1.00	0.35	18.16
1947	5.71	0.92	-2.34	-2.62	0.91	0.50	9.01
1948	5.50	-2.11	4.14	3.40	1.85	0.81	2.71
1949	18.79	19.75	3.31	6.45	2.32	1.10	-1.80
1950	31.71	38.75	2.12	0.06	0.70	1.20	5.79
1951	24.02	7.80	-2.69	-3.93	0.36	1.49	5.87
1952	18.37	3.03	3.52	1.16	1.63	1.66	0.88
1953	-0.99	-6.49	3.41	3.64	3.23	1.82	0.62
1954	52.62	60.58	5.39	7.19	2.68	0.86	-0.50
1955	31.56	20.44	0.48	-1.29	-0.65	1.57	0.37
1956	6.56	4.28	-6.81	-5.59	-0.42	2.46	2.86
1957	-10.78	-14.57	8.71	7.46	7.84	3.14	3.02
1958	43.36	64.89	-2.22	-6.09	-1.29	1.54	1.76
1959	11.96	16.40	-0.97	-2.26	-0.39	2.95	1.50
1960	0.47	-3.29	9.07	13.78	11.76	2.66	1.48
1961	26.89	32.09	4.82	0.97	1.85	2.13	0.67
1962	-8.73	-11.90	7.95	6.89	5.56	2.73	1.22
1963	22.80	23.57	2.19	1.21	1.64	3.12	1.65
1964	16.48	23.52	4.77	3.51	4.04	3.54	1.19
1965	12.45	41.75	-0.46	0.71	1.02	3.93	1.92
1966	-10.06	-7.01	0.20	3.65	4.69	4.76	3.35
1967	23.98	83.57	-4.95	-9.18	1.01	4.21	3.04
1968	11.06	35.97	2.57	-0.26	4.54	5.21	4.72
1969	-8.50	-25.05	-8.09	-5.07	-0.74	6.58	6.11
1970	3.86	-17.43	18.37	12.11	16.86	6.52	5.49
1971	14.30	16.50	11.01	13.23	8.72	4.39	3.36
1972	18.99	4.43	7.26	5.69	5.16	3.84	3.41
1973	-14.69	-30.90	1.14	-1.11	4.61	6.93	8.80
1974	-26.47	-19.95	-3.06	4.35	5.69	8.00	12.20
1975	37.23	52.82	14.64	9.20	7.83	5.80	7.01
1976	23.93	57.38	18.65	16.75	12.87	5.08	4.81
1977	-7.16	25.38	1.71	-0.69	1.41	5.12	6.77
1978	6.57	23.46	-0.07	-1.18	3.49	7.18	9.03
1979	18.61	43.46	-4.18	-1.23	4.09	10.38	13.31
1980	32.50	39.88	-2.76	-3.95	3.91	11.24	12.40
1981	-4.92	13.88	-1.24	1.86	9.45	14.71	8.94
1982	21.55	28.01	42.56	40.36	29.10	10.54	3.87
1983	22.56	39.67	6.26	0.65	7.41	8.80	3.80
1984	6.27	-6.67	16.86	15.48	14.02	9.85	3.95
1985	31.73	24.66	30.09	30.97	20.33	7.72	3.77
1986	18.67	6.85	19.85	24.53	15.14	6.16	1.13
1987	5.25	-9.30	-0.27	-2.71	2.90	5.47	4.41
1988	16.61	22.87	10.70	9.67	6.10	6.35	4.42
1989	31.69	10.18	16.23	18.11	13.29	8.37	4.65
1990	-3.10	-21.56	6.78	6.18	9.73	7.81	6.11
1991	30.47	44.63	19.89	19.30	15.46	5.60	3.06
1992	7.62	23.35	9.39	8.05	7.19	3.51	2.90
1993	10.08	20.98	13.19	18.24	11.24	2.90	2.75
1994	1.32	3.11	-5.76	-7.77	-5.14	3.90	2.67
1995	37.58	34.46	27.20	31.67	16.80	5.60	2.54
1996	22.96	17.62	1.40	-0.93	2.10	5.21	3.32
1997	33.36	22.78	12.95	15.85	8.38	5.26	1.70
1998	28.58	-7.31	10.76	13.06	10.21	4.86	1.61
1999	21.04	29.79	-7.45	-8.96	-1.77	4.68	2.68
2000	-9.10	-3.59	12.87	21.48	12.59	5.89	3.39
2001	-11.89	22.77	10.65	3.70	7.62	3.83	1.55
2002	-22.10	-13.28	16.33	17.84	12.93	1.65	2.38
2003	28.68	60.70	5.27	1.45	2.40	1.02	1.88
2004	10.88	18.39	8.72	8.51	2.25	1.20	3.26
2005	4.91	5.69	5.87	7.81	1.36	2.98	3.42
2006	15.79	16.17	3.24	1.19	3.14	4.80	2.54
2007	5.49	-5.22	2.60	9.88	10.05	4.66	4.08
2008	-37.00	-36.72	8.78	25.87	13.11	1.60	0.09
2009	26.46	28.09	3.02	-14.90	-2.40	0.10	2.72
2010	15.06	31.26	12.44	10.14	7.12	0.12	1.50
2011	2.11	-3.26	17.95	28.23	9.46	0.04	2.96
2012	16.00	18.24	10.68	3.31	2.07	0.06	1.74
2013	32.39	45.07	-7.07	-11.36	-1.07	0.02	1.50

Table 2-4: Basic Series
Compound Annual Returns for 5-Year Holding Periods (% per annum)

Year	Large Comp Stocks	Small Comp Stocks	Long-Term Corp Bonds	Long-Term Govt Bonds	Inter-Term Govt Bonds	U.S. Treasury Bills	Inflation
1926-30	8.68	-12.44	5.76	4.93	4.69	3.42	-2.10
1927-31	-5.10	-23.74	3.87	2.25	3.11	2.98	-3.75
1928-32	-12.47	-27.54	4.52	3.69	3.95	2.54	-5.42
1929-33	-11.24	-19.06	6.01	3.66	4.13	1.89	-5.14
1930-34	-9.93	-2.37	8.09	4.95	4.71	0.98	-4.80
1931-35	3.12	14.99	8.42	5.01	4.77	0.53	-3.04
1932-36	22.47	45.83	10.26	7.71	5.90	0.35	-0.84
1933-37	14.29	23.96	8.60	4.46	4.45	0.22	1.96
1934-38	10.67	9.86	7.75	5.61	5.33	0.16	1.29
1935-39	10.91	5.27	5.81	4.81	4.46	0.13	0.78
1936-40	0.50	-2.64	4.59	5.03	3.65	0.10	0.38
1937-41	-7.51	-13.55	3.79	3.71	3.13	0.08	2.02
1938-42	4.62	10.70	3.76	4.32	3.21	0.07	3.21
1939-43	3.77	18.71	3.10	3.63	2.54	0.14	4.44
1940-44	7.67	29.28	3.25	3.01	2.00	0.20	4.98
1941-45	16.96	45.90	3.39	3.90	1.85	0.27	5.25
1942-46	17.87	45.05	3.19	3.69	1.95	0.33	6.82
1943-47	14.86	35.00	2.17	2.49	1.75	0.37	6.77
1944-48	10.87	18.43	2.43	2.75	1.55	0.47	6.67
1945-49	10.69	12.66	2.15	3.46	1.66	0.62	5.84
1946-50	9.91	7.72	1.76	1.39	1.36	0.79	6.57
1947-51	16.70	12.09	0.87	0.60	1.23	1.02	4.25
1948-52	19.37	12.55	2.05	1.37	1.37	1.25	2.65
1949-53	17.86	11.53	1.91	1.41	1.64	1.45	2.23
1950-54	23.92	18.27	2.31	1.55	1.72	1.41	2.50
1951-55	23.89	14.97	1.98	1.28	1.44	1.48	1.43
1952-56	20.18	14.21	1.10	0.93	1.28	1.67	0.84
1953-57	13.58	10.01	2.10	2.15	2.49	1.97	1.27
1954-58	22.31	23.22	0.96	0.16	1.58	1.91	1.49
1955-59	14.96	15.54	-0.29	-1.67	0.96	2.33	1.90
1956-60	8.92	10.58	1.36	1.16	3.37	2.55	2.12
1957-61	12.79	15.93	3.77	2.53	3.83	2.48	1.68
1958-62	13.31	16.65	3.63	2.42	3.39	2.40	1.33
1959-63	9.85	10.11	4.55	3.97	4.00	2.72	1.30
1960-64	10.73	11.43	5.73	5.17	4.91	2.83	1.24
1961-65	13.25	20.28	3.82	2.63	2.81	3.09	1.33
1962-66	5.72	12.13	2.88	3.17	3.38	3.61	1.86
1963-67	12.39	29.86	0.30	-0.14	2.47	3.91	2.23
1964-68	10.16	32.37	0.37	-0.43	3.04	4.33	2.84
1965-69	4.96	19.78	-2.22	-2.14	2.08	4.93	3.82
1966-70	3.31	7.51	1.23	-0.02	5.10	5.45	4.54
1967-71	8.38	12.47	3.32	1.77	5.90	5.38	4.54
1968-72	7.50	0.47	5.85	4.90	6.75	5.30	4.61
1969-73	1.97	-12.25	5.55	4.72	6.77	5.65	5.41
1970-74	-2.39	-11.09	6.68	6.72	8.11	5.93	6.60
1971-75	3.21	0.56	6.00	6.16	6.39	5.78	6.90
1972-76	4.89	6.80	7.42	6.82	7.19	5.92	7.20
1973-77	-0.19	10.77	6.29	5.50	6.41	6.18	7.89
1974-78	4.35	24.41	6.03	5.48	6.18	6.23	7.94
1975-79	14.82	39.80	5.78	4.33	5.86	6.69	8.15
1976-80	14.02	37.35	2.36	1.68	5.08	7.77	9.21
1977-81	8.13	28.75	-1.33	-1.05	4.44	9.67	10.06
1978-82	14.12	29.28	5.57	6.03	9.60	10.78	9.46
1979-83	17.35	32.51	6.87	6.42	10.42	11.12	8.39
1980-84	14.80	21.59	11.20	9.80	12.45	11.01	6.53
1981-85	14.67	18.82	17.86	16.83	15.80	10.30	4.85
1982-86	19.87	17.32	22.51	21.62	16.98	8.60	3.30
1983-87	16.47	9.51	14.06	13.02	11.79	7.59	3.41
1984-88	15.31	6.74	15.00	14.98	11.52	7.10	3.53
1985-89	20.36	10.34	14.88	15.50	11.38	6.81	3.67
1986-90	13.19	0.58	10.43	10.75	9.34	6.83	4.13
1987-91	15.36	6.86	10.44	9.81	9.40	6.71	4.52
1988-92	15.88	13.63	12.50	12.14	10.30	6.31	4.22
1989-93	14.55	13.28	13.00	13.84	11.35	5.61	3.89
1990-94	8.70	11.79	8.36	8.34	7.46	4.73	3.49
1991-95	16.59	24.51	12.22	13.10	8.81	4.29	2.79
1992-96	15.22	19.47	8.52	8.98	6.17	4.22	2.84
1993-97	20.27	19.35	9.22	10.51	6.40	4.57	2.60
1994-98	24.06	13.16	8.74	9.52	6.20	4.96	2.37
1995-99	28.56	18.49	8.35	9.24	6.95	5.12	2.37
1996-00	18.33	10.87	5.79	7.49	6.17	5.18	2.54
1997-01	10.70	11.82	7.66	8.48	7.29	4.90	2.18
1998-02	-0.59	4.31	8.29	8.85	8.18	4.17	2.32
1999-03	-0.57	16.44	7.20	6.51	6.60	3.40	2.37
2000-04	-2.30	14.32	10.70	10.32	7.46	2.70	2.49
2001-05	0.54	16.44	9.30	7.72	5.22	2.13	2.49
2002-06	6.19	15.16	7.79	7.19	4.33	2.32	2.69
2003-07	12.83	17.23	5.12	5.70	3.79	2.92	3.03
2004-08	-2.19	-2.71	5.81	10.36	5.88	3.04	2.67
2005-09	0.42	-1.16	4.68	5.13	4.90	2.81	2.56
2006-10	2.29	3.21	5.94	5.58	6.06	2.23	2.18
2007-11	-0.25	-0.50	8.80	10.70	7.33	1.29	2.26
2008-12	1.66	4.00	10.47	9.34	5.73	0.38	1.80
2009-13	17.94	22.78	7.04	1.94	2.93	0.07	2.08

Table 2-5: Basic Series
Compound Annual Returns for 10-Year Holding Periods (% per annum)

Year	Large Comp Stocks	Small Comp Stocks	Long-Term Corp Bonds	Long-Term Govt Bonds	Inter-Term Govt Bonds	U.S. Treasury Bills	Inflation
1926-35	5.86	0.34	7.08	4.97	4.73	1.97	-2.57
1927-36	7.81	5.45	7.02	4.95	4.50	1.66	-2.30
1928-37	0.02	-5.22	6.54	4.08	4.20	1.37	-1.80
1929-38	-0.89	-5.70	6.88	4.63	4.73	1.02	-1.98
1930-39	-0.05	1.38	6.95	4.88	4.58	0.55	-2.05
1931-40	1.80	5.81	6.49	5.02	4.21	0.32	-1.34
1932-41	6.43	12.28	6.97	5.69	4.51	0.21	0.58
1933-42	9.35	17.14	6.15	4.39	3.83	0.15	2.59
1934-43	7.17	14.20	5.40	4.62	3.93	0.15	2.85
1935-44	9.28	16.66	4.53	3.91	3.22	0.17	2.86
1936-45	8.42	19.18	3.99	4.46	2.75	0.18	2.79
1937-46	4.41	11.98	3.49	3.70	2.54	0.20	4.39
1938-47	9.62	22.24	2.96	3.40	2.48	0.22	4.97
1939-48	7.26	18.57	2.77	3.19	2.04	0.30	5.55
1940-49	9.17	20.69	2.70	3.24	1.83	0.41	5.41
1941-50	13.38	25.37	2.57	2.64	1.60	0.53	5.91
1942-51	17.28	27.51	2.02	2.13	1.59	0.67	5.53
1943-52	17.09	23.27	2.11	1.93	1.56	0.81	4.69
1944-53	14.31	14.93	2.17	2.08	1.60	0.96	4.43
1945-54	17.12	15.43	2.23	2.51	1.69	1.01	4.16
1946-55	16.69	11.29	1.87	1.33	1.40	1.14	3.96
1947-56	18.43	13.14	0.98	0.76	1.25	1.35	2.53
1948-57	16.44	11.27	2.07	1.76	1.93	1.61	1.96
1949-58	20.06	17.23	1.43	0.79	1.61	1.68	1.86
1950-59	19.35	16.90	1.00	-0.07	1.34	1.87	2.20
1951-60	16.16	12.75	1.67	1.22	2.40	2.01	1.77
1952-61	16.43	15.07	2.43	1.73	2.55	2.08	1.26
1953-62	13.44	13.28	2.86	2.29	2.94	2.19	1.30
1954-63	15.91	16.48	2.74	2.05	2.78	2.31	1.40
1955-64	12.82	13.47	2.68	1.69	2.92	2.58	1.57
1956-65	11.06	15.33	2.58	1.89	3.09	2.82	1.73
1957-66	9.20	14.02	3.33	2.85	3.60	3.05	1.77
1958-67	12.85	23.08	1.95	1.13	2.93	3.15	1.78
1959-68	10.00	20.73	2.44	1.75	3.52	3.52	2.07
1960-69	7.81	15.53	1.68	1.45	3.48	3.88	2.52
1961-70	8.16	13.72	2.51	1.30	3.95	4.26	2.92
1962-71	7.04	12.30	3.10	2.47	4.63	4.49	3.19
1963-72	9.92	14.22	3.04	2.35	4.59	4.60	3.41
1964-73	5.99	7.77	2.93	2.11	4.89	4.98	4.12
1965-74	1.22	3.20	2.13	2.20	5.05	5.43	5.20
1966-75	3.26	3.98	3.59	3.03	5.74	5.62	5.71
1967-76	6.62	9.60	5.35	4.26	6.54	5.65	5.86
1968-77	3.58	5.50	6.07	5.20	6.58	5.74	6.24
1969-78	3.15	4.48	5.79	5.10	6.47	5.94	6.67
1970-79	5.87	11.49	6.23	5.52	6.98	6.31	7.37
1971-80	8.48	17.53	4.16	3.90	5.73	6.77	8.05
1972-81	6.50	17.26	2.95	2.81	5.80	7.78	8.62
1973-82	6.72	19.67	5.93	5.76	8.00	8.46	8.67
1974-83	10.66	28.40	6.45	5.95	8.28	8.65	8.16
1975-84	14.81	30.38	8.46	7.03	9.11	8.83	7.34
1976-85	14.34	27.75	9.84	8.99	10.31	9.03	7.01
1977-86	13.85	22.90	9.95	9.70	10.53	9.14	6.63
1978-87	15.29	18.99	9.73	9.47	10.69	9.17	6.39
1979-88	16.33	18.93	10.86	10.62	10.97	9.09	5.93
1980-89	17.55	15.83	13.02	12.62	11.91	8.89	5.09
1981-90	13.93	9.32	14.09	13.75	12.52	8.55	4.49
1982-91	17.59	11.97	16.32	15.56	13.13	7.65	3.91
1983-92	16.17	11.55	13.28	12.58	11.04	6.95	3.81
1984-93	14.93	9.96	14.00	14.41	11.43	6.35	3.71
1985-94	14.38	11.06	11.57	11.86	9.40	5.76	3.58
1986-95	14.88	11.90	11.32	11.92	9.08	5.55	3.46
1987-96	15.29	12.98	9.48	9.39	7.77	5.46	3.68
1988-97	18.05	16.46	10.85	11.32	8.33	5.44	3.41
1989-98	19.21	13.22	10.85	11.66	8.74	5.29	3.12
1990-99	18.21	15.09	8.36	8.79	7.20	4.92	2.93
1991-00	17.46	17.49	8.96	10.26	7.48	4.74	2.66
1992-01	12.94	15.58	8.09	8.73	6.73	4.56	2.51
1993-02	9.34	11.58	8.75	9.67	7.29	4.37	2.46
1994-03	11.07	14.79	7.97	8.01	6.40	4.18	2.37
1995-04	12.07	16.39	9.52	9.78	7.20	3.90	2.43
1996-05	9.07	13.62	7.53	7.60	5.69	3.64	2.52
1997-06	8.42	13.48	7.72	7.83	5.80	3.60	2.44
1998-07	5.91	10.58	6.69	7.26	5.96	3.54	2.68
1999-08	-1.38	6.44	6.50	8.42	6.24	3.22	2.52
2000-09	-0.95	6.30	7.65	7.69	6.17	2.76	2.52
2001-10	1.41	9.63	7.61	6.64	5.64	2.18	2.34
2002-11	2.92	7.05	8.30	8.93	5.82	1.80	2.48
2003-12	7.10	10.42	7.76	7.51	4.76	1.64	2.41
2004-13	7.41	9.29	6.42	6.07	4.40	1.54	2.37

Table 2-6: Basic Series
Compound Annual Returns for 20-Year Holding Periods (% per annum)

Year	Large Comp Stocks	Small Comp Stocks	Long-Term Corp Bonds	Long-Term Govt Bonds	Inter-Term Govt Bonds	U.S. Treasury Bills	Inflation
1926-45	7.13	9.36	5.52	4.72	3.73	1.07	0.07
1927-46	6.10	8.67	5.24	4.32	3.51	0.93	0.99
1928-47	4.71	7.64	4.74	3.74	3.33	0.80	1.53
1929-48	3.11	5.74	4.80	3.91	3.38	0.66	1.72
1930-49	4.46	10.61	4.80	4.06	3.20	0.48	1.61
1931-50	7.43	15.17	4.51	3.82	2.90	0.42	2.22
1932-51	11.72	19.65	4.47	3.90	3.04	0.44	3.02
1933-52	13.15	20.16	4.11	3.15	2.69	0.48	3.63
1934-53	10.68	14.56	3.77	3.34	2.76	0.55	3.64
1935-54	13.13	16.04	3.37	3.20	2.45	0.59	3.51
1936-55	12.48	15.17	2.92	2.89	2.07	0.66	3.37
1937-56	11.20	12.56	2.23	2.22	1.90	0.77	3.46
1938-57	12.98	16.63	2.52	2.58	2.20	0.91	3.45
1939-58	13.48	17.90	2.10	1.98	1.83	0.99	3.69
1940-59	14.15	18.78	1.85	1.57	1.58	1.14	3.79
1941-60	14.76	18.89	2.12	1.93	2.00	1.27	3.82
1942-61	16.86	21.13	2.22	1.93	2.07	1.37	3.37
1943-62	15.25	18.17	2.48	2.11	2.25	1.50	2.98
1944-63	15.11	15.70	2.45	2.06	2.19	1.63	2.90
1945-64	14.95	14.44	2.45	2.10	2.30	1.79	2.86
1946-65	13.84	13.29	2.23	1.61	2.24	1.97	2.84
1947-66	13.72	13.58	2.15	1.80	2.42	2.19	2.15
1948-67	14.63	17.03	2.01	1.45	2.43	2.38	1.87
1949-68	14.92	18.97	1.93	1.26	2.56	2.60	1.96
1950-69	13.43	16.21	1.34	0.69	2.41	2.87	2.36
1951-70	12.09	13.23	2.09	1.26	3.17	3.13	2.35
1952-71	11.64	13.67	2.77	2.10	3.58	3.28	2.22
1953-72	11.67	13.75	2.95	2.32	3.76	3.39	2.35
1954-73	10.84	12.04	2.83	2.08	3.83	3.64	2.75
1955-74	6.86	8.21	2.41	1.94	3.98	4.00	3.37
1956-75	7.09	9.51	3.08	2.46	4.41	4.21	3.70
1957-76	7.90	11.78	4.34	3.55	5.06	4.34	3.80
1958-77	8.12	13.95	3.99	3.15	4.74	4.44	3.98
1959-78	6.52	12.31	4.10	3.41	4.99	4.72	4.34
1960-79	6.83	13.49	3.93	3.46	5.22	5.09	4.92
1961-80	8.32	15.61	3.34	2.59	4.84	5.51	5.46
1962-81	6.77	14.75	3.03	2.64	5.21	6.12	5.87
1963-82	8.31	16.92	4.47	4.04	6.28	6.51	6.01
1964-83	8.30	17.63	4.68	4.01	6.57	6.80	6.12
1965-84	7.80	16.00	5.25	4.58	7.06	7.12	6.26
1966-85	8.66	15.25	6.67	5.97	8.00	7.31	6.36
1967-86	10.18	16.06	7.63	6.94	8.52	7.38	6.24
1968-87	9.28	12.04	7.88	7.31	8.62	7.44	6.31
1969-88	9.54	11.47	8.30	7.82	8.70	7.50	6.30
1970-89	11.56	13.64	9.58	9.01	9.42	7.59	6.22
1971-90	11.17	13.35	9.01	8.71	9.08	7.66	6.26
1972-91	11.91	14.58	9.43	9.00	9.40	7.72	6.24
1973-92	11.35	15.54	9.54	9.12	9.51	7.70	6.21
1974-93	12.78	18.82	10.16	10.10	9.85	7.49	5.91
1975-94	14.60	20.33	10.00	9.42	9.25	7.29	5.44
1976-95	14.61	19.57	10.58	10.45	9.69	7.28	5.22
1977-96	14.57	17.84	9.71	9.54	9.14	7.28	5.14
1978-97	16.66	17.71	10.29	10.39	9.51	7.29	4.89
1979-98	17.76	16.04	10.86	11.14	9.85	7.17	4.52
1980-99	17.88	15.46	10.66	10.69	9.53	6.89	4.00
1981-00	15.68	13.33	11.49	11.99	9.97	6.62	3.57
1982-01	15.24	13.76	12.13	12.09	9.88	6.09	3.21
1983-02	12.71	11.57	10.99	11.12	9.15	5.65	3.13
1984-03	12.98	12.35	10.94	11.16	8.89	5.26	3.04
1985-04	13.22	13.69	10.54	10.82	8.30	4.83	3.00
1986-05	11.94	12.76	9.41	9.74	7.37	4.59	2.98
1987-06	11.80	13.23	8.60	8.61	6.78	4.53	3.06
1988-07	11.82	13.48	8.75	9.27	7.14	4.49	3.04
1989-08	8.43	9.78	8.65	10.03	7.48	4.25	2.82
1990-09	8.21	10.61	8.00	8.24	6.69	3.83	2.73
1991-10	9.14	13.49	8.28	8.44	6.56	3.45	2.50
1992-11	7.81	11.23	8.19	8.83	6.27	3.17	2.49
1993-12	8.22	11.00	8.25	8.59	6.01	3.00	2.44
1994-13	9.22	12.01	7.19	7.03	5.39	2.85	2.37

Table 2-7: Basic Series
Maximum and Minimum Values of Compound Returns (%) for 1-, 5-, 10-, and 20-Year Holding Periods using data from 1926–2013

Annual Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 88 years)	Times Highest Returning Asset
Large Company Stocks	53.99	1933	-43.34	1931	12.05	64	16
Small Company Stocks	142.87	1933	-58.01	1937	16.86	61	40
Long-Term Corporate Bonds	42.56	1982	-8.09	1969	6.26	70	6
Long-Term Government Bonds	40.36	1982	-14.90	2009	5.91	65	11
Intermediate-Term Govt Bonds	29.10	1982	-5.14	1994	5.43	78	3
U.S. Treasury Bills	14.71	1981	-0.02	1938	3.54	87	6
Inflation	18.16	1946	-10.30	1932	3.04	78	6

5-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 84 periods)	Times Highest Returning Asset
Large Company Stocks	28.56	1995-99	-12.47	1928-32	9.94	72	23
Small Company Stocks	45.90	1941-45	-27.54	1928-32	13.08	72	44
Long-Term Corporate Bonds	22.51	1982-86	-2.22	1965-69	6.06	81	8
Long-Term Government Bonds	21.62	1982-86	-2.14	1965-69	5.63	78	5
Intermediate-Term Govt Bonds	16.98	1982-86	0.96	1955-59	5.42	84	3
U.S. Treasury Bills	11.12	1979-83	0.07	1938-42	3.62	84	0
Inflation	10.06	1977-81	-5.42	1928-32	3.13	77	1

10-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 79 periods)	Times Highest Returning Asset
Large Company Stocks	20.06	1949-58	-1.38	1999-08	10.46	75	20
Small Company Stocks	30.38	1975-84	-5.70	1929-38	13.68	77	46
Long-Term Corporate Bonds	16.32	1982-91	0.98	1947-56	6.01	79	6
Long-Term Government Bonds	15.56	1982-91	-0.07	1950-59	5.63	78	3
Intermediate-Term Govt Bonds	13.13	1982-91	1.25	1947-56	5.45	79	2
U.S. Treasury Bills	9.17	1978-87	0.15	1933-42	3.73	79	1
Inflation	8.67	1973-82	-2.57	1926-35	3.40	72	1

20-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 69 periods)	Times Highest Returning Asset
Large Company Stocks	17.88	1980-99	3.11	1929-48	11.18	69	9
Small Company Stocks	21.13	1942-61	5.74	1929-48	14.33	69	59
Long-Term Corporate Bonds	12.13	1982-01	1.34	1950-69	5.85	69	0
Long-Term Government Bonds	12.09	1982-01	0.69	1950-69	5.53	69	1
Intermediate-Term Govt Bonds	9.97	1981-00	1.58	1940-59	5.51	69	0
U.S. Treasury Bills	7.72	1972-91	0.42	1931-50	4.00	69	0
Inflation	6.36	1966-85	0.07	1926-45	3.71	69	0

Table 2-8: Portfolios

Maximum and Minimum Values of Compound Returns (%) for 1-, 5-, 10-, and 20-Year Holding Periods using data from 1926–2013

Annual Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 88 years)	Times Highest Returning Port
100% Large Stocks	53.99	1933	-43.34	1931	12.05	64	54
90% Stocks/10% Bonds	49.03	1933	-39.73	1931	11.40	65	0
70% Stocks/30% Bonds	38.68	1933	-32.31	1931	10.12	67	0
50% Stocks/50% Bonds	34.71	1995	-24.70	1931	8.88	69	0
30% Stocks/70% Bonds	34.72	1982	-16.96	1931	7.67	71	0
10% Stocks/90% Bonds	38.48	1982	-11.23	2009	6.49	68	0
100% Long-Term Govt Bonds	40.36	1982	-14.90	2009	5.91	65	34

5-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 84 periods)	Times Highest Returning Port
100% Large Stocks	28.56	1995-99	-12.47	1928-32	9.94	72	55
90% Stocks/10% Bonds	26.62	1995-99	-10.31	1928-32	9.66	76	1
70% Stocks/30% Bonds	22.75	1995-99	-6.31	1928-32	8.99	79	0
50% Stocks/50% Bonds	20.99	1982-86	-2.77	1928-32	8.20	79	3
30% Stocks/70% Bonds	21.30	1982-86	0.12	1965-69	7.27	84	2
10% Stocks/90% Bonds	21.53	1982-86	-1.38	1965-69	6.21	81	1
100% Long-Term Govt Bonds	21.62	1982-86	-2.14	1965-69	5.63	78	22

10-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 79 periods)	Times Highest Returning Port
100% Large Stocks	20.06	1949-58	-1.38	1999-08	10.46	75	52
90% Stocks/10% Bonds	18.52	1989-98	-0.25	1999-08	10.13	78	3
70% Stocks/30% Bonds	17.31	1982-91	1.74	1965-74	9.36	79	6
50% Stocks/50% Bonds	16.96	1982-91	1.98	1965-74	8.46	79	6
30% Stocks/70% Bonds	16.49	1982-91	2.13	1965-74	7.43	79	1
10% Stocks/90% Bonds	15.90	1982-91	1.81	1950-59	6.26	79	5
100% Long-Term Govt Bonds	15.56	1982-91	-0.07	1950-59	5.63	78	6

20-Year Rolling Period Returns	Maximum Value Return and Year(s)		Minimum Value Return and Year(s)		Arithmetic Annualized Average	Times Positive (out of 69 periods)	Times Highest Returning Port
100% Large Stocks	17.88	1980-99	3.11	1929-48	11.18	69	59
90% Stocks/10% Bonds	17.28	1980-99	3.58	1929-48	10.75	69	0
70% Stocks/30% Bonds	16.04	1979-98	4.27	1929-48	9.79	69	4
50% Stocks/50% Bonds	14.75	1979-98	4.60	1929-48	8.71	69	4
30% Stocks/70% Bonds	13.38	1979-98	3.62	1955-74	7.52	69	1
10% Stocks/90% Bonds	12.53	1982-01	1.98	1950-69	6.22	69	0
100% Long-Term Govt Bonds	12.09	1982-01	0.69	1950-69	5.53	69	1

Table 2-9, 2-10, and 2-11: Portfolios: Summary Statistics of Annual Returns
Always Rebalanced, Never Rebalanced, and by Decade

Table 2-9: Summary Statistics of Annual Returns (%)

Portfolio (Always Rebalance)	Geometric Mean	Arithmetic Mean	Standard Deviation
100% Large Company Stocks	10.1	12.1	20.2
90% Stocks/10% Bonds	9.8	11.4	18.2
70% Stocks/30% Bonds	9.1	10.1	14.4
50% Stocks/50% Bonds	8.3	8.9	11.2
30% Stocks/70% Bonds	7.3	7.7	9.2
10% Stocks/90% Bonds	6.1	6.5	9.1
100% Long-Term Govt Bonds	5.5	5.9	9.8

Data from 1926–2013.

Table 2-10: Summary Statistics of Annual Returns (%)

Portfolio (Never Rebalanced)	Ending Portfolio Large Company Stocks (% of Portfolio–12/13)	Ending Portfolio Bonds (% of Portfolio–12/13)	Geometric Mean	Arithmetic Mean	Standard Deviation
100% Large Company Stocks	100.0	0.0	10.1	12.1	20.2
90% Stocks/10% Bonds	99.7	0.3	10.0	11.7	19.2
70% Stocks/30% Bonds	99.0	1.0	9.6	11.1	17.5
50% Stocks/50% Bonds	97.6	2.4	9.2	10.4	15.8
30% Stocks/70% Bonds	94.6	5.4	8.6	9.6	14.0
10% Stocks/90% Bonds	82.0	18.0	7.5	8.0	11.1
100% Long-Term Govt Bonds	0	100.0	5.5	5.9	9.8

Data from 1926–2013.

Table 2-11: Compound Annual Rates of Return by Decade (%)

Portfolio (Always Rebalance)	1920s*	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2004-13
100% Large Company Stocks	19.2	-0.1	9.2	19.4	7.8	5.9	17.6	18.2	-0.9	7.4
90% Stocks/10% Bonds	18.0	1.0	8.7	17.4	7.2	5.9	17.2	17.3	0.1	7.5
70% Stocks/30% Bonds	15.3	2.8	7.6	13.4	6.1	6.0	16.5	15.5	2.1	7.5
50% Stocks/50% Bonds	12.5	4.1	6.5	9.5	4.8	6.0	15.5	13.6	3.9	7.3
30% Stocks/70% Bonds	9.6	4.8	5.2	5.6	3.5	5.9	14.5	11.7	5.5	6.9
10% Stocks/90% Bonds	6.6	5.0	3.9	1.8	2.1	5.7	13.3	9.8	7.0	6.4
100% Long-Term Govt Bonds	5.0	4.9	3.2	-0.1	1.4	5.5	12.6	8.8	7.7	6.1

*Based on the period 1926–1929.

Summary Statistics of Portfolio Total Returns

Table 2-9 presents summary statistics of the annual total returns on each portfolio over the entire 88-year period of 1926 to 2013. The summary statistics presented are geometric mean, arithmetic mean, and standard deviation. As more fixed-income is added to the portfolio, the returns as well as the standard deviations decrease. Moving from a 100% stock portfolio to a 70% stock and 30% bond portfolio decreases the geometric mean by 0.9 percent but also decreases the standard deviation by 5.8 percent. This corresponds to the risk-return tradeoff. Large company stocks have a higher level of risk than long-term government bonds and are rewarded accordingly. One exception to the risk-return tradeoff is the return and standard deviation of the 100% bond portfolio compared to that of the 10% stock and 90% bond portfolio. This obviously defies the risk-return tradeoff and serves as an extreme case highlighting the benefits of diversification.

The portfolio's asset mix originally created by an investor inevitably changes as a result of differing returns among the various asset classes. As a result, the percentage allocated to the different asset classes will change. This change may have a dramatic effect on the risk of the portfolio. Table 2-10 presents summary statistics of the annual total returns of the portfolios that were never rebalanced and presents the new allocations that result. Since stocks have outperformed bonds over the long run, it only makes sense that the proportion allocated to stocks will inevitably grow over time as well. The 50% stock and 50% bond portfolio, after 88 years, turned into a 97.6% stock and 2.4% bond portfolio. The never-rebalanced portfolio has a geometric mean of 9.2 percent, while the rebalanced portfolio is lower at 8.3 percent. The standard deviation is also greater at 15.8 when compared to 11.2, respectively. Large company stocks are much more volatile than long-term government bonds.

Table 2-11 shows the compound returns by decade for the various portfolios. The 100% stock portfolio was the highest returning portfolio in every full decade except the 1930s, 1970s, and 2000s. The 100% bond portfolio was the top performer through the 2000s but was outperformed by the 70% stock and 30% bond portfolio as well as the 90% stock and 10% bond portfolio in the 2004 to 2013 period.

Real Estate Investment Trusts

Real estate investment trusts, commonly referred to as REITs, are companies that own and operate, as well as finance, income-generating real estate. To qualify as a REIT, a company is obligated to pay out at least 90 percent of its taxable profit to shareholders on an annual basis. This distribution comes in the form of dividends. By achieving REIT status, the real estate company avoids paying income taxes since it distributes almost all of its taxable income to shareholders. Taxes are paid by the shareholders. REITs were created by the United States Congress in 1960 to allow any investor, big or small, the opportunity to invest in large institutional-grade commercial real estate—pieces of property that may have been unaffordable any other way.

REITs have been an attractive investment vehicle to investors because they have traditionally had a relatively low and declining correlation to stocks and bonds. Though the reasons are not quite clear, this relationship changed after 2002 with REITs becoming increasingly correlated with stocks and bonds, though the overall level of correlation remains fairly low. A low correlation allows for the possibility of increased returns without a corresponding increase in risk. For instance, from 1972 to 2013, a portfolio (rebalanced annually) with a mix of 60% stocks and 40% bonds returned 10.2 percent with a standard deviation of 11.9 percent. If the portfolio is altered to include a 13% mix of REITs, the returns increase to 10.5 percent and the standard deviation decreases to 11.7 percent.

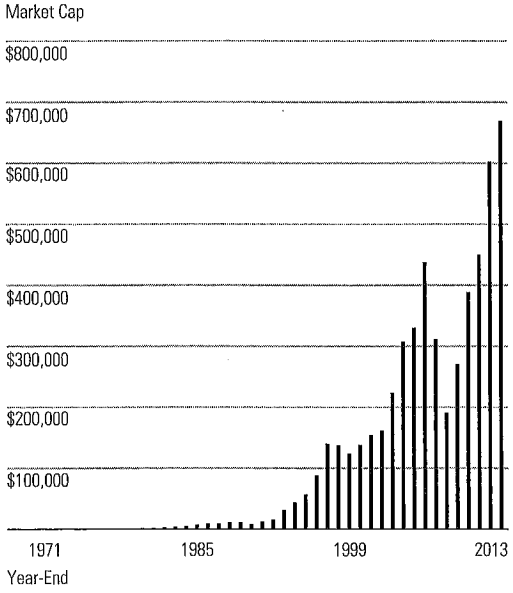
The number of REITs in the United States has grown dramatically in the last several decades; in 1971, there were 34 REITs in existence, but by the end of 2013, there were over 200 REITs. This growth has enabled a broader group of investors to add real estate to their portfolios and enjoy greater liquidity than they would otherwise be able. Graph 2-2 below displays the growth in market cap of REITs in the United States between 1971 and 2013.

Table 2-12: Portfolio Annual Total Returns (%)

Year	100% Large Comp Stocks	Stocks %/Bonds % 90/10	70/30	50/50	30/70	10/90	100% Long-Term Govt Bonds
1926	11.62	11.30	10.61	9.87	9.07	8.22	7.77
1927	37.49	34.45	28.49	22.69	17.06	11.60	8.93
1928	43.61	38.74	29.35	20.44	11.98	3.95	0.10
1929	-8.42	-6.76	-3.77	-1.19	0.97	2.71	3.42
1930	-24.90	-22.08	-16.33	-10.46	-4.48	1.59	4.66
1931	-43.34	-39.73	-32.31	-24.70	-16.96	-9.19	-5.31
1932	-8.19	-4.45	2.43	8.28	12.85	15.93	16.84
1933	53.99	49.03	38.68	27.89	16.80	5.56	-0.07
1934	-1.44	-0.13	2.38	4.76	6.99	9.05	10.03
1935	47.67	42.94	33.80	25.06	16.73	8.80	4.98
1936	33.92	31.15	25.69	20.35	15.12	10.02	7.52
1937	-35.03	-31.93	-25.44	-18.58	-11.34	-3.72	0.23
1938	31.12	29.24	24.93	19.99	14.51	8.61	5.53
1939	-0.41	0.65	2.51	4.00	5.09	5.77	5.94
1940	-9.78	-8.04	-4.65	-1.40	1.70	4.66	6.09
1941	-11.59	-10.33	-7.81	-5.30	-2.80	-0.31	0.93
1942	20.34	18.62	15.18	11.75	8.32	4.91	3.22
1943	25.90	23.43	18.54	13.73	9.00	4.37	2.08
1944	19.75	17.98	14.49	11.06	7.71	4.43	2.81
1945	36.44	33.72	28.39	23.18	18.11	13.16	10.73
1946	-8.07	-7.17	-5.42	-3.78	-2.23	-0.78	-0.10
1947	5.71	4.89	3.24	1.58	-0.10	-1.78	-2.62
1948	5.50	5.46	5.26	4.91	4.41	3.77	3.40
1949	18.79	17.55	15.07	12.60	10.13	7.68	6.45
1950	31.71	28.24	21.50	15.04	8.85	2.93	0.06
1951	24.02	20.97	15.05	9.36	3.88	-1.38	-3.93
1952	18.37	16.60	13.10	9.64	6.22	2.83	1.16
1953	-0.99	-0.50	0.47	1.41	2.32	3.21	3.64
1954	52.62	47.50	37.65	28.33	19.51	11.18	7.19
1955	31.56	27.98	21.02	14.32	7.89	1.70	-1.29
1956	6.56	5.42	3.08	0.68	-1.79	-4.31	-5.59
1957	-10.78	-8.99	-5.39	-1.75	1.92	5.61	7.46
1958	43.36	37.57	26.60	16.38	6.89	-1.93	-6.09
1959	11.96	10.49	7.59	4.72	1.90	-0.88	-2.26
1960	0.47	1.83	4.53	7.21	9.86	12.48	13.78
1961	26.89	24.10	18.65	13.38	8.29	3.37	0.97
1962	-8.73	-7.11	-3.90	-0.74	2.37	5.40	6.89
1963	22.80	20.52	16.03	11.66	7.40	3.25	1.21
1964	16.48	15.13	12.46	9.84	7.27	4.75	3.51
1965	12.45	11.26	8.89	6.53	4.19	1.86	0.71
1966	-10.06	-8.72	-6.02	-3.29	-0.53	2.25	3.65
1967	23.98	20.28	13.14	6.36	-0.10	-6.23	-9.18
1968	11.06	9.98	7.79	5.54	3.25	0.92	-0.26
1969	-8.50	-8.08	-7.28	-6.56	-5.91	-5.33	-5.07
1970	3.86	4.78	6.57	8.27	9.87	11.39	12.11
1971	14.30	14.29	14.21	14.04	13.78	13.44	13.23
1972	18.99	17.62	14.90	12.22	9.57	6.97	5.69
1973	-14.69	-13.31	-10.57	-7.83	-5.12	-2.44	-1.11
1974	-26.47	-23.66	-17.87	-11.82	-5.53	1.00	4.35
1975	37.23	34.30	28.51	22.84	17.29	11.86	9.20
1976	23.93	23.28	21.93	20.52	19.06	17.54	16.75
1977	-7.16	-6.50	-5.20	-3.90	-2.61	-1.33	-0.69
1978	6.57	5.86	4.40	2.88	1.30	-0.34	-1.18
1979	18.61	16.52	12.40	8.39	4.47	0.64	-1.23
1980	32.50	28.71	21.19	13.80	6.57	-0.49	-3.95
1981	-4.92	-4.16	-2.69	-1.30	0.02	1.27	1.86
1982	21.55	23.42	27.19	30.95	34.72	38.48	40.36
1983	22.56	20.24	15.68	11.25	6.92	2.71	0.65
1984	6.27	7.26	9.18	11.05	12.87	14.62	15.48
1985	31.73	31.72	31.65	31.53	31.35	31.11	30.97
1986	18.67	19.34	20.64	21.86	23.00	24.04	24.53
1987	5.25	5.07	4.24	2.83	0.93	-1.40	-2.71
1988	16.61	15.92	14.55	13.16	11.77	10.37	9.67
1989	31.69	30.37	27.70	25.00	22.26	19.50	18.11
1990	-3.10	-2.15	-0.26	1.61	3.46	5.28	6.18
1991	30.47	29.41	27.24	25.03	22.77	20.47	19.30
1992	7.62	7.69	7.81	7.91	7.98	8.04	8.05
1993	10.08	10.90	12.53	14.16	15.80	17.43	18.24
1994	1.32	0.40	-1.42	-3.25	-5.06	-6.87	-7.77
1995	37.58	37.02	35.88	34.71	33.51	32.29	31.67
1996	22.96	20.41	15.41	10.56	5.85	1.29	-0.93
1997	33.36	31.59	28.06	24.55	21.05	17.58	15.85
1998	28.58	27.33	24.60	21.59	18.33	14.86	13.06
1999	21.04	17.75	11.36	5.23	-0.63	-6.25	-8.96
2000	-9.10	-6.30	-0.53	5.46	11.70	18.16	21.48
2001	-11.89	-10.18	-6.85	-3.64	-0.58	2.32	3.70
2002	-22.10	-18.45	-10.90	-3.04	5.12	13.54	17.84
2003	28.68	25.86	20.27	14.77	9.36	4.06	1.45
2004	10.88	10.70	10.29	9.84	9.34	8.80	8.51
2005	4.91	5.28	5.96	6.58	7.12	7.60	7.81
2006	15.79	14.30	11.33	8.40	5.49	2.61	1.19
2007	5.49	6.03	7.03	7.95	8.79	9.54	9.88
2008	-37.00	-32.14	-21.55	-9.72	3.43	18.02	25.87
2009	26.46	21.86	12.97	4.49	-3.58	-11.23	-14.90
2010	15.06	14.97	14.52	13.70	12.53	11.02	10.14
2011	2.11	4.77	10.07	15.34	20.56	25.70	28.23
2012	16.00	14.83	12.42	9.91	7.32	4.66	3.31
2013	32.39	27.34	17.70	8.69	0.26	-7.62	-11.36

In 2001, Standard & Poor's added REITs to the most widely followed investment performance benchmark for the U.S. equity markets—the Standard & Poor's 500 Index. The addition to this famed index recognizes the significance of real estate in the overall economy.

Graph 2-2: All REITs Market Cap ($Mill)



Data from 1971–2013.

Types of REITs

REITs can be categorized into three different types: equity, mortgage, and hybrid. Equity REITs are companies that own and operate income-generating real estate, while mortgage REITs invest in mortgages (loans secured by real estate). Hybrid REITs take both direct ownership in real estate and invest in mortgages. Of the 202 publicly-traded REITs in the United States as of December 31, 2013, 161 were equity and 41 were mortgage. NAREIT's Hybrid Index was discontinued in December 2010. In most cases these companies are traded on major stock market exchanges.

Investors can buy shares through a stock broker or by purchasing shares in a mutual fund, which is managed by a portfolio manager skilled in the real estate industry.

Equity REIT Index Construction Methodology

As discussed earlier, most REITs fall into the equity REIT category. The source of the data presented throughout this section, in commentary, graphs, and tables, is that of the National Association of Real Estate Investment Trusts® (NAREIT) Equity Index.

NAREIT Equity Index

NAREIT Equity Index data is based upon the last closing price of the month for all tax-qualified REITs listed on the New York Stock Exchange (NYSE), the NYSE Amex (AMEX), and the NASDAQ National Market System. The data is market-value-weighted. Prior to 1987, REITs were added to the index the January following their listing. Since 1987, newly formed or listed REITs are added to the index in the month in which they become public. Newly issued shares by existing REITs are added to the total shares outstanding figure in the month that the shares are issued. Only common shares issued by the REIT are included in the index. The total return calculation is based upon the weighting at the beginning of the period. Only those REITs listed for the entire period are used in the total return calculation. Dividends are included in the month based upon their payment date. There is no smoothing of income. Liquidating dividends, whether full or partial, are treated as income.

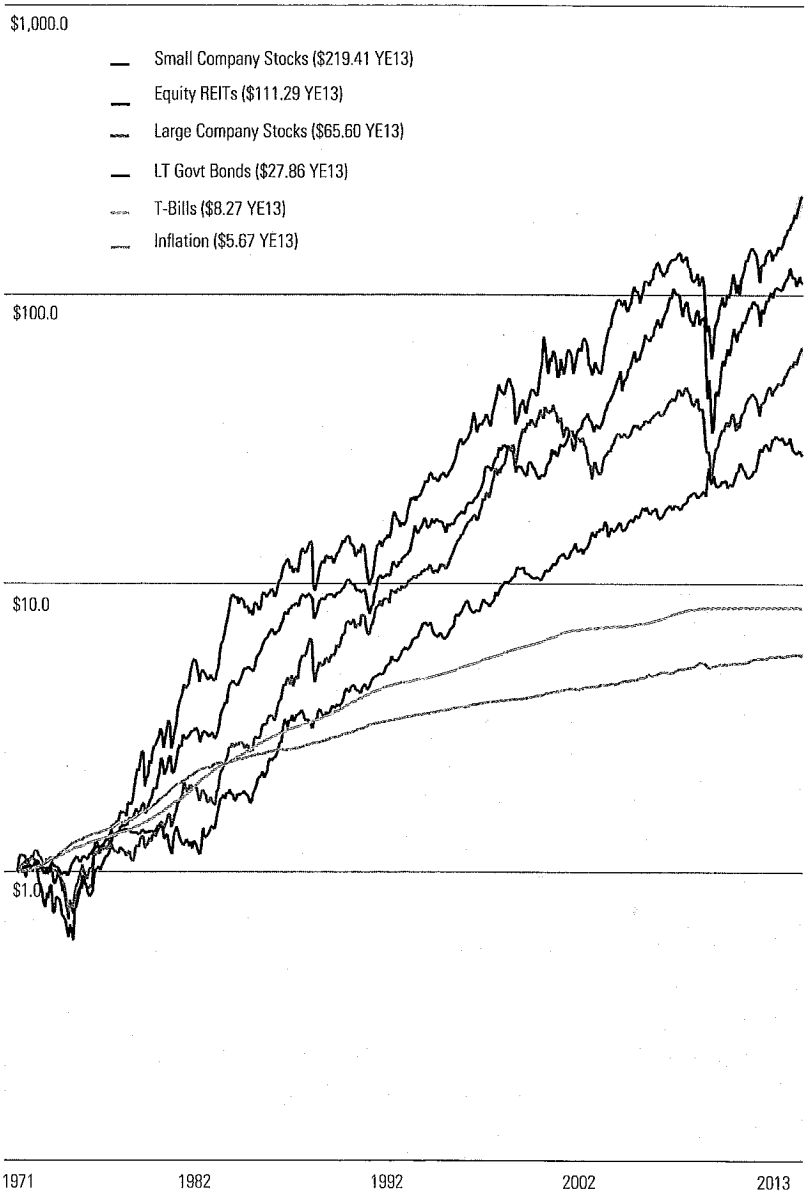
Historical Returns on Equity REITs

Graph 2-3 depicts the growth of $1.00 invested in equity REITs as well as U.S. small and large company stocks, long-term government bonds, Treasury bills, and a hypothetical asset returning the inflation rate over the period from the end of 1971 to the end of 2013. Of the asset classes shown, small company stocks accumulated the highest ending wealth. An investment of $1.00 in small company stocks at year-end 1971 would have grown to $219.41 by the end of December 2013, a compound return of 13.7 percent. Notice, however, that the same investment in equity REITs would have returned $111.29, a compound return of 11.9 percent. Equity REITs outperformed large company stocks, long-term government bonds, Treasury bills, and inflation during the time period.

Income Returns

REITs are obligated to pay out at least 90 percent of their taxable profit to shareholders on an annual basis. As a result, the income generated from REITs has proven to be steady and reasonably predictable.

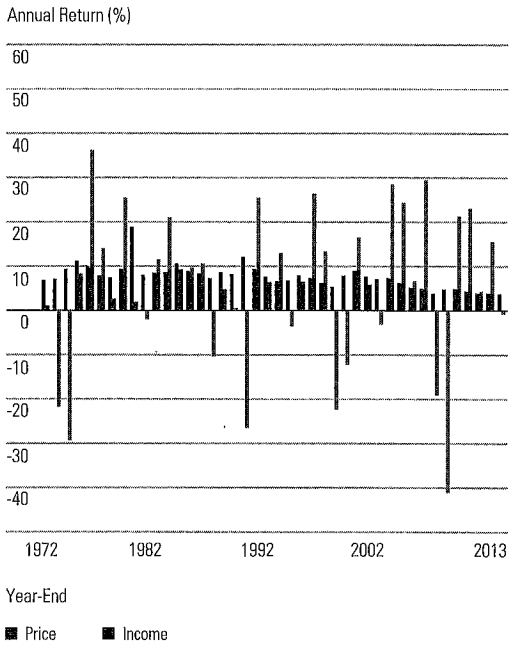
Graph 2-3: Wealth Indices of Investments in Equity REITs and Basic Series
Index (Year-End 1971 = $1.00)



Data from 1971–2013.

Graph 2-4 shows both the income return and capital appreciation return of REITs on an annual basis from 1972 to 2013. REITs, similar to equity asset classes, can be quite volatile but offer the potential for price appreciation. However, price appreciation is by no means guaranteed (note the large negative price returns of 2007 and 2008). On the other hand, the income produced by REITs has been relatively stable since 1972. Equity REITs posted an average annual income return during that period of 7.6 percent. The highest annual income return was 18.8 percent in 1980, while the lowest was 3.7 percent in 2013.

Graph 2-4: Annual Returns on Equity REITs



Data from 1972–2013.

Diversification

Along with the relatively predictable revenue stream provided by equity REITs, they can also offer another important advantage to investors—diversification. As the REIT industry has grown over time, REITs have exhibited characteristics similar to both bonds and stocks. REITs typically provide a consistent stream of dividend payments similar to bonds, and hold the potential for long-term capital appreciation, similar to stocks.

In addition, REIT returns have had a low and declining correlation to both stocks and bonds. The cross-correlation between two asset classes measures the extent to which they are linearly related. The correlation coefficient measures the sensitivity of returns on one asset class to the returns of another. A value of +1 indicates a perfectly positive relationship, –1 indicates a perfectly inverse relationship, and 0 indicates no relationship between the two asset classes. Correlation is discussed in greater detail in Chapter 6, Statistical Analysis of Returns.

Graph 2-5 shows the cross-correlations between large company stocks and equity REITs and between long-term government bonds and equity REITs for 60-month rolling periods. The first rolling period covered is January 1972 to December 1976. The graph illustrates that correlation between large company stocks and equity REITs generally fell throughout the 1990s, but steadily rose in the 2000s. The correlation between long-term government bonds and equity REITs generally fell throughout the 1990s (and actually was negative over some periods), but rose slightly in the 2000s.

Graph 2-5: Rolling 60-Month Correlations of Equity REITs

Data from January 1972–December 1976 to January 2009–December 2013.

Summary Statistics For Equity REITs and Basic Series

Table 2-13 shows summary statistics of annual total returns for REITs and the basic series over the period 1972 to 2013. The summary statistics presented are geometric mean, arithmetic mean, and standard deviation.

While small company stocks posted the highest geometric mean over the time period analyzed, it was accompanied by the highest amount of risk. When comparing equity REITs to large company stocks, equity REITs produced a higher return with only slightly higher risk.

Table 2-14 presents annual cross-correlations and serial correlations from 1972 to 2013 for equity REITs and the six basic asset classes plus inflation. The serial correlation, or the extent to which the return in one period is related to the return in the next period (discussed in greater detail in Chapter 6) of equity REITs suggests no strong pattern, and the return from period to period can best be interpreted as mostly random or unpredictable.

In conclusion, equity REITs have historically offered an attractive risk/return trade-off for investors. They have provided a current income stream along with the potential for long-term capital appreciation. The recent increase in correlation of REIT returns with other investments may lead to a decrease in the overall diversification benefit to investors, but they remain an attractive option.

Commodities Overview

A broad and practical definition of a commodity is any basic substance for which there is demand and supply and exhibits no differentiating qualitative characteristics. Examples of commodities include corn, soybeans, hogs, wheat, crude oil, gold, silver, and others. Investing in commodity futures is appealing to investors because commodities have low correlations to traditional asset classes, offer a hedge against inflation, and provide diversification through superior returns when they are needed most. Three ways investors can gain exposure to commodities are:

1. Direct physical investment
2. Investment in a basket of commodity-related stocks
3. Commodity futures

Table 2-13: Summary Statistics of Annual Returns (%)

	Geometric Mean	Arithmetic Mean	Standard Deviation
Equity REITs	11.9	13.5	18.4
Large Company Stocks	10.5	12.1	18.0
Small Company Stocks	13.7	16.1	23.2
Long-Term Corporate Bonds	8.4	8.9	10.3
Long-Term Government Bonds	8.2	8.9	12.4
Intermediate-Term Govt Bonds	7.5	7.7	6.6
U.S. Treasury Bills	5.2	5.2	3.4
Inflation	4.2	4.3	3.1

Data from 1972-2013.

Table 2-14: Serial and Cross-Correlations of Annual Returns

	Equity REITs	Large Company Stocks	Small Company Stocks	LT-Corp Bonds	LT-Govt Bonds	IT-Govt Bonds	T-Bills	Inflation
Equity REITs	1.00							
Large Company Stocks	0.54	1.00						
Small Company Stocks	0.76	0.73	1.00					
Long-Term Corporate Bonds	0.25	0.23	0.09	1.00				
Long-Term Government Bonds	0.01	0.01	-0.14	0.90	1.00			
Intermediate-Term Govt Bonds	0.01	0.05	-0.08	0.87	0.90	1.00		
U.S. Treasury Bills	0.01	0.05	0.00	-0.04	0.09	0.36	1.00	
Inflation	-0.03	-0.12	0.03	-0.36	-0.29	-0.12	0.66	1.00
Serial Correlation	0.13	0.00	0.02	-0.06	-0.25	-0.01	0.87	0.73

Data from 1972-2013.

Direct physical investment in commodities is simply not practical in many cases because the majority of commodities are perishable and thus cannot be stored for long periods of time. One exception is precious metals, in which a direct physical investment is possible. Precious metals such as gold and silver are resistant to deterioration over time and therefore can be stored as an investment.

Commodity-related stocks are another way of gaining access to commodities; however, this method also provides exposure to the management skills, practices, and additional business lines of the companies represented in the portfolio.

Lastly, commodity futures constitute a third way of gaining exposure to commodities. Commodity futures may be accessed through a commodity trading advisor (CTA) or an investment in a passive or active investment product designed to track the performance of a commodity index.

Commodities as a Hedge Against Inflation

Investors often invest in commodities as a means to preserve asset values in periods of rising inflation. Gold is one example of a store-of-value asset that investors have historically turned to in order to protect wealth. Unlike stock and bond returns, commodity returns tend to increase in periods of high inflation. Table 2-15 includes the five highest and five lowest annual changes in the inflation rate since 1980 and the corresponding annual returns of large-company stocks, long-term government bonds, and commodities.[1] The change in the inflation rate is represented by the percentage change in the Consumer Price Index for All Urban Consumers (CPI-U).

As can be seen in the upper half of Table 2-15, commodities performed better than stocks and bonds in the five years that experienced the highest change in the inflation rate, with the exception of 2009 and 2011. In the bottom half of Table 2-15, where the five years which experienced the lowest change in the inflation rate are displayed, stocks and bonds outperformed commodities; except in 2008, where commodities outperformed stocks. ■

Table 2-15: Five Highest and Lowest Changes in Annual Inflation Rate and Corresponding Large Company Stock, Long-Term Government Bond, and Commodities Annual Total Returns (%) per Series

Top 5 Years of Percent Change in Inflation

Year	Large Company Stocks	Long-Term Government Bonds	Commodities	Change in Inflation
2009	26.5	-14.9	18.3	3,169%
1987	5.2	-2.7	22.1	290
2011	2.1	28.2	-5.3	98
2004	10.9	8.5	17.6	73
1999	21.0	-9.0	31.1	67

Bottom 5 Years of Percent Change in Inflation

Year	Large Company Stocks	Long-Term Government Bonds	Commodities	Change in Inflation
1991	30.5	19.3	-5.3	-50%
2001	-11.9	3.7	-23.1	-54
1982	21.4	40.4	5.6	-57
1986	18.5	24.5	-0.5	-70
2008	-37.0	25.9	-33.8	-98

Endnotes

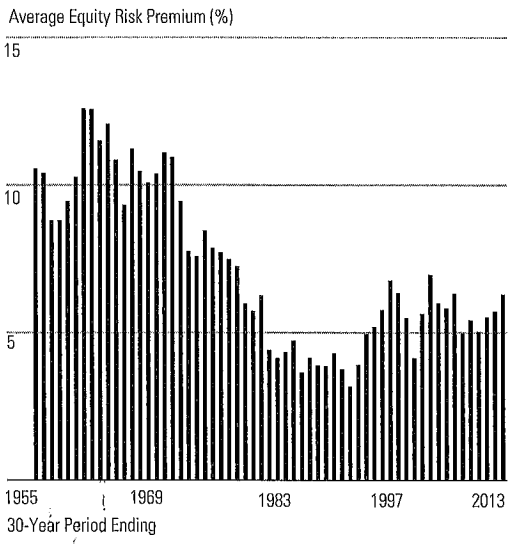
[1] Commodity returns are represented by the Morningstar® Long-Only Commodity℠ Index. The Morningstar Commodity Index family consists of five indexes that employ different strategic combinations of long futures, short futures, and cash (referred to as flat positions). The index family is based on a transparent, rules-based methodology that is designed to serve investors seeking a passive approach to commodities and support investment product creation. For more information on the Morningstar Index family, please call 1 (312) 384-3735 or visit us on the web at: http://indexes.morningstar.com

Concentrating on the left side of Graph 11-8, one notices that the realized equity risk premium, when measured over long periods of time, is relatively stable. In viewing the graph from left to right, moving from longer to shorter historical periods, one sees that the value of the realized equity risk premium begins to decline significantly. Why does this occur? The reason is that the severe bear market of 1973–1974 is receiving proportionately more weight in the shorter, more recent average. If you continue to follow the line to the right, however, you will also notice that when 1973 and 1974 fall out of the recent average, the realized equity risk premium jumps up by nearly 1.2 percent.

Additionally, use of recent historical periods for estimation purposes can lead to illogical conclusions. As seen in Table 11-6, the bear market in the early 2000's and in 2008 has caused the realized equity risk premium in the shorter historical periods to be lower than the long-term average.

The impact of adding one additional year of data to a historical average is lessened the greater the initial time period of measurement. Short-term averages can be affected considerably by one or more unique observations. On the other hand, long-term averages produce more stable results.

Graph 11-9: Equity Risk Premium Over 30-Year Periods



Data from 1926–2013.

Some practitioners argue for a shorter historical time period, such as 30 years, as a basis for the equity risk premium estimation. The logic for the use of a shorter period is that historical events and economic scenarios present before this time are unlikely to be repeated. Graph 11-9 shows the equity risk premium measured over 30-year periods, and it appears from the graph that the premium has been trending downwards. The 30-year equity risk premium remained close to 4 percent for several years in the 1980s and 1990s. However, it has fallen and then risen in the most recent 30-year periods.

The key to understanding this result lies again in the years 1973 and 1974. The oil embargo during this period had a tremendous effect on the market. The equity risk premium for these years alone was -21 and -34 percent, respectively. Periods that include the years 1973 and 1974 result in average equity risk premia as low as 3.2 percent. The 2000s have also had an enormous effect on the equity risk premium.

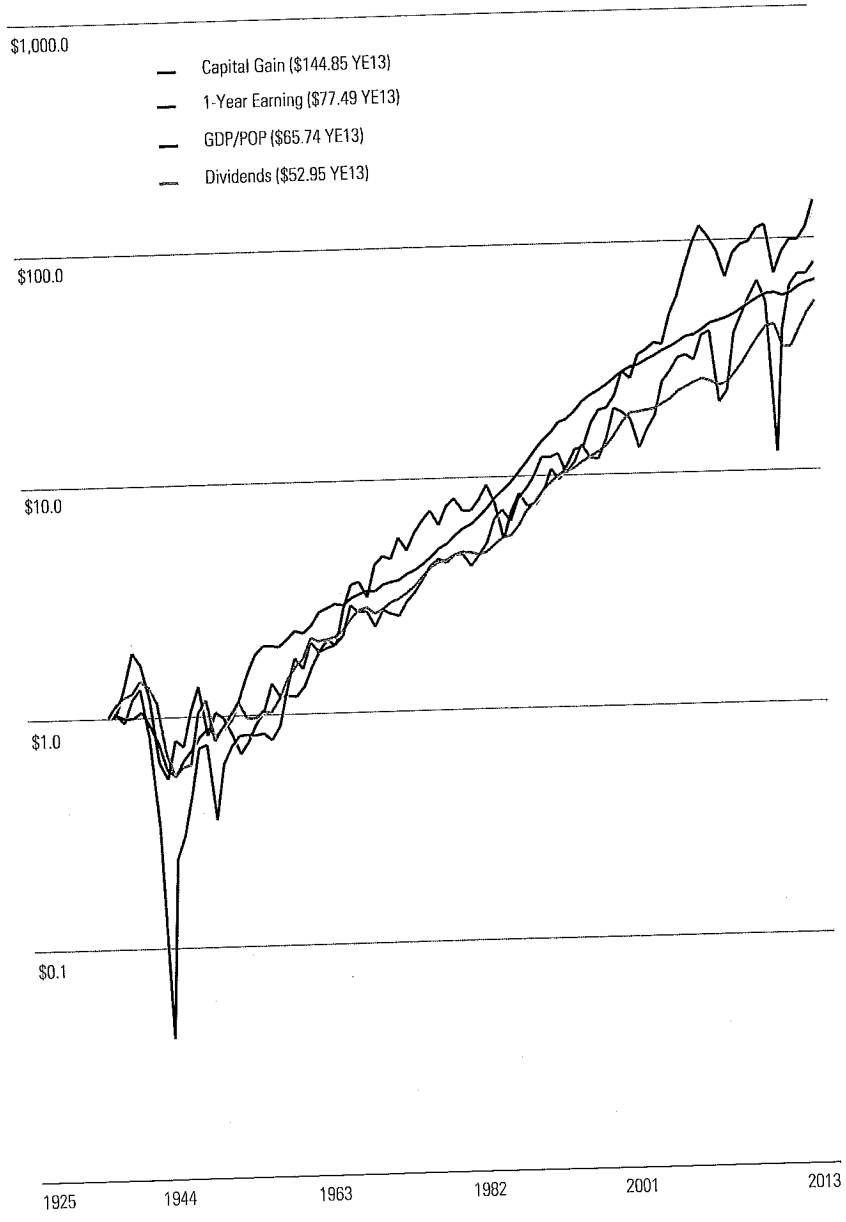
It is difficult to justify such a large divergence in estimates of return over such a short period of time. This does not suggest, however, that the years 1973 and 1974 should be excluded from any estimate of the equity risk premium; rather, it emphasizes the importance of using a long historical period when measuring the equity risk premium in order to obtain a reliable average that is not overly influenced by short-term returns. The same holds true when analyzing the poor performance of the early 2000s and 2008.

Supply Model

This section is based upon the work by Roger G. Ibbotson and Peng Chen, who combined the first and second approaches to arrive at their forecast of the equity risk premium.[19] By proposing a new supply side methodology, the Ibbotson-Chen study challenges current arguments that future returns on stocks over bonds will be negative or close to zero. The results affirm the relationship between the stock market and the overall economy.

Long-term expected equity returns can be forecasted by the use of supply side models. The supply of stock market returns is generated by the productivity of the corporations in the real economy. Investors should not expect a much higher or lower return than that produced by the companies in the real economy. Thus, over the long run, equity return should be close to the long-run supply estimate.

Graph 11-10: Capital Gains, GDP Per Capita, Earnings, and Dividends
Index (Year-End 1925 = $1.00)



Data from 1925–2013.

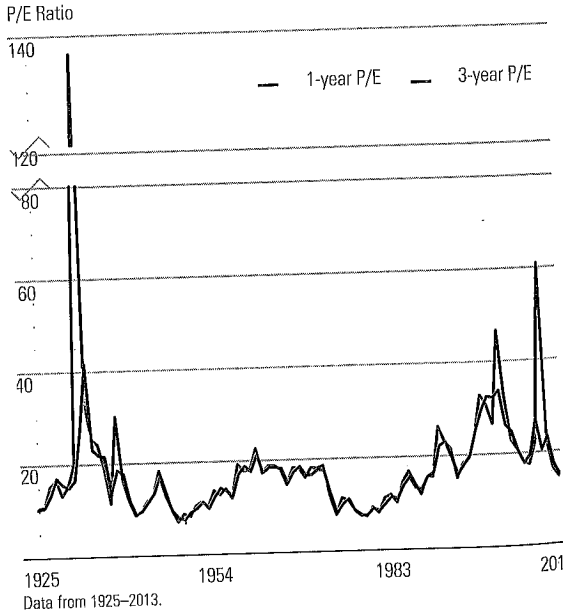
Earnings, dividends, and capital gains are supplied by corporate productivity. Graph 11-10 illustrates that earnings and dividends have historically grown in tandem with the overall economy (GDP per capita). However, GDP per capita did not outpace the stock market. This is primarily because the P/E ratio increased 1.87 times during the same period. So, assuming that the economy will continue to grow, all three should continue to grow as well.

Forward-Looking Earnings Model

Roger G. Ibbotson and Peng Chen forecast the equity risk premium through a supply side model using historical data. They utilized an earnings model as the basis for their supply side estimate. The earnings model breaks the historical equity return into four pieces, with only three historically being supplied by companies: inflation, income return, and growth in real earnings per share. The growth in the P/E ratio, the fourth piece, is a reflection of investors' changing prediction of future earnings growth. The past supply of corporate growth is forecasted to continue; however, a change in investors' predictions is not. P/E rose dramatically from 1980 through 2001 because people believed that corporate earnings were going to grow faster in the future. This growth in P/E drove a small portion of the rise in equity returns over the same period.

Graph 11-11 illustrates the price to earnings ratio from 1926 to 2013. The P/E ratio, using one-year average earnings, was 10.22 at the beginning of 1926 and ended the year 2013 at 19.11, an average increase of 0.71 percent per year. The highest P/E was 136.55 recorded in 1932, while the lowest was 7.07 recorded in 1948. Ibbotson Associates revised the calculation of the P/E ratio from a one-year to a three-year average earnings for use in equity forecasting.

Graph 11-11: Large Company Stocks P/E Ratio



Data from 1925–2013.

This is because reported earnings are affected not only by the long-term productivity, but also by "one-time" items that do not necessarily have the same consistent impact year after year. The three-year average is more reflective of the long-term trend than the year-by-year numbers. The P/E ratio calculated using the three-year average of earnings had an increase of 0.67 percent per year.

The historical P/E growth factor, using three-year earnings, of 0.67 percent per year is subtracted from the equity forecast, because it is not believed that P/E will continue to increase in the future. The market serves as the cue. The current P/E ratio is the market's best guess for the future of corporate earnings and there is no reason to believe, at this time, that the market will change its mind. Using this top-down approach, the geometric supply-side equity risk premium is 4.08 percent, which equates to an arithmetic supply-side equity risk premium of 6.12 percent.

Another approach in calculating the premium would be to add up the components that comprise the supply of equity return, excluding the P/E component. Thus, the supply of equity return only includes inflation, the growth in real earnings per share, and income return. The forward-looking earnings model calculates the long-term supply of U.S. equity returns to be 9.37 percent:

$$SR = [(1+CPI)\times(1+g_{REPS})-1]+Inc+Rinv$$

$$9.37\%^{*} = [(1+2.96\%)\times(1+2.07\%)-1]+4.05\%+0.22\%$$

*difference due to rounding

where:

SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
g_{REPS} = the growth in real earning per share;
Inc = the income return;
Rinv = the reinvestment return.

The equity risk premium, based on the supply-side earnings model, is calculated to be 4.11 percent on a geometric basis:

$$SERP = \frac{(1+SR)}{(1+CPI)\times(1+RRf)}-1$$

$$4.11\%^{*} = \frac{1+9.37\%}{(1+2.96\%)\times(1+2.04\%)}-1$$

*difference due to rounding

where:

SERP = the supply-side equity risk premium;
SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
RRf = the real risk-free rate.

Converting the geometric average into an arithmetic average results in an equity risk premium of 6.14 percent:

$$R_A = R_G + \frac{\sigma^2}{2}$$

$$6.14\%^{*} = 4.11\% + \frac{20.19\%^2}{2}$$

*difference due to rounding

where:

R_A = the arithmetic average;
R_G = the geometric average;
σ = the standard deviation of equity returns.

As mentioned earlier, one of the key findings of the Ibbotson and Chen study is that P/E increases account for only a small portion of the total return of equity. The reason we present supply-side equity risk premium going back only 25 years in Table 11-7 (see next page) is because the P/E ratio rose dramatically over this time period, which caused the growth rate in the P/E ratio calculated from 1926 to be relatively high. The subtraction of the P/E growth factor from equity returns has been responsible for the downward adjustment in the supply side equity risk premium compared to the historical estimate. Beyond the last 25 years, the growth factor in the P/E ratio has not been dramatic enough to require an adjustment.

Table 11-7 presents the supply side equity risk premium, on an arithmetic basis, beginning in 1926 and ending in each of the last 25 years.

Table 11-7: Supply-Side and Historical Equity Risk Premium Over Time

Period Length (Yrs.)	Period Dates	g(P/E)	Arithmetic Average Supply Side Equity Risk Premium (%)	Arithmetic Average Historical Equity Risk Premium (%)
88	1926–2013	0.67*	6.12	6.96
87	1926–2012	0.46*	6.09	6.70
86	1926–2011	0.40	6.07	6.62
85	1926–2010	0.59	5.97	6.72
84	1926–2009	0.94	5.57	6.67
83	1926–2008	0.79	5.53	6.47
82	1926–2007	1.15	5.74	7.06
81	1926–2006	0.75	6.22	7.13
80	1926–2005	0.65	6.29	7.08
79	1926–2004	0.83	6.18	7.17
78	1926–2003	1.09	5.94	7.19
77	1926–2002	1.17	5.65	6.97
76	1926–2001	1.53	5.71	7.43
75	1926–2000	1.49	6.06	7.76
74	1926–1999	1.52	6.32	8.07
73	1926–1998	1.40	6.35	7.97
72	1926–1997	1.20	6.37	7.77
71	1926–1996	0.87	6.46	7.50
70	1926–1995	0.74	6.47	7.37
69	1926–1994	0.59	6.32	7.04
68	1926–1993	0.90	6.17	7.22
67	1926–1992	1.15	5.98	7.29
66	1926–1991	1.12	6.12	7.39
65	1926–1990	0.67	6.36	7.16
64	1926–1989	0.60	6.72	7.45

Data from 1926–2013. *Contains earnings estimate(s).

Long-Term Market Predictions

The supply side model estimates that stocks will continue to provide significant returns over the long run, averaging around 9.37 percent per year, assuming historical inflation rates. The equity risk premium, based on the top-down supply-side earnings model, is calculated to be 4.08 percent on a geometric basis and 6.12 percent on an arithmetic basis.

In the future, Ibbotson and Chen predict increased earnings growth that will offset lower dividend yields. The fact that earnings will grow as dividend payouts shrink is in line with the Miller and Modigliani Theory.

The forecasts for the market are in line with both the historical supply measures of public corporations (i.e. earnings) and overall economic productivity (GDP per capita). ■

Endnotes

1 The standard deviation is the square root of the variance; hence the term "mean-variance" in describing this form of the optimization problem.

2 Markowitz, Harry M., Portfolio Selection: Efficient Diversification of Investments, New York: John Wiley & Sons, 1959.

3 For more information about Morningstar *EnCorr*® software, refer to the Investment Tools and Resources page at the back of this book, or within the United States, call +1 866 910-0840. Outside the United States, call +44 020 3107-0020.

4 It is also possible to conduct a simulation using entire data sets, that is, without estimating the statistical parameters of the data sets. Typically, in such a nonparametric simulation, the frequency of an event occurring in the simulated history is equal to the frequency of the event occurring in the actual history used to construct the data set.

5 The expected capital gain on a par bond is self-evidently zero. For a zero-coupon (or other discount) bond, investors expect the price to rise as the bond ages, but the expected portion of this price increase should not be considered a capital gain. It is a form of income return.

6 See Chapter 12, "Wealth Forecasting with Monte Carlo Simulation" for more information.

7 See Markowitz and Usmen [2003].

8 Ranking investment strategies by forecasted GM is sometimes described as applying the Kelly Criterion; an idea promoted by William Poundstone [2005].

9 Other researchers have also proposed using GM and CVaR as the measures or reward and risk in an efficient frontier. See for example Sheikh and Qiao, [2009].

10 "Long-Run Stock Returns: Participating in the Real Economy," Roger G. Ibbotson and Peng Chen, Financial Analysts Journal, January/February 2003.

Table B-1
Large Company Stocks: Total Return Index

from December 1925 to December 1970

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1925												1.000	1925	1.000
1926	1.000	0.962	0.906	0.929	0.946	0.989	1.036	1.062	1.089	1.058	1.095	1.116	1926	1.116
1927	1.095	1.154	1.164	1.187	1.259	1.251	1.334	1.403	1.466	1.393	1.493	1.535	1927	1.535
1928	1.529	1.509	1.676	1.733	1.768	1.700	1.724	1.862	1.910	1.942	2.193	2.204	1928	2.204
1929	2.332	2.328	2.325	2.366	2.280	2.540	2.660	2.933	2.794	2.243	1.963	2.018	1929	2.018
1930	2.147	2.203	2.382	2.363	2.340	1.960	2.035	2.064	1.800	1.646	1.631	1.516	1930	1.516
1931	1.592	1.782	1.662	1.506	1.314	1.500	1.392	1.418	0.996	1.085	0.999	0.859	1931	0.859
1932	0.836	0.883	0.781	0.625	0.488	0.487	0.672	0.933	0.900	0.779	0.746	0.789	1932	0.789
1933	0.795	0.654	0.678	0.966	1.129	1.280	1.169	1.310	1.164	1.064	1.184	1.214	1933	1.214
1934	1.344	1.301	1.301	1.268	1.175	1.202	1.066	1.131	1.127	1.095	1.198	1.197	1934	1.197
1935	1.148	1.109	1.077	1.182	1.231	1.317	1.429	1.469	1.507	1.624	1.700	1.767	1935	1.767
1936	1.886	1.928	1.980	1.831	1.931	1.995	2.135	2.167	2.174	2.342	2.374	2.367	1936	2.367
1937	2.459	2.506	2.487	2.286	2.280	2.165	2.391	2.276	1.957	1.765	1.612	1.538	1937	1.538
1938	1.561	1.666	1.252	1.433	1.386	1.733	1.862	1.820	1.850	1.993	1.939	2.016	1938	2.016
1939	1.881	1.954	1.692	1.688	1.811	1.701	1.889	1.766	2.062	2.036	1.955	2.008	1939	2.008
1940	1.941	1.966	1.991	1.986	1.531	1.655	1.712	1.772	1.793	1.869	1.810	1.812	1940	1.812
1941	1.728	1.718	1.730	1.624	1.653	1.749	1.850	1.852	1.839	1.718	1.670	1.602	1941	1.602
1942	1.627	1.602	1.497	1.437	1.552	1.586	1.640	1.666	1.715	1.831	1.827	1.927	1942	1.927
1943	2.070	2.190	2.310	2.318	2.446	2.500	2.368	2.409	2.472	2.446	2.286	2.427	1943	2.427
1944	2.468	2.479	2.527	2.502	2.628	2.771	2.717	2.760	2.758	2.764	2.801	2.906	1944	2.906
1945	2.952	3.154	3.015	3.287	3.351	3.349	3.288	3.499	3.652	3.770	3.919	3.965	1945	3.965
1946	4.248	3.976	4.167	4.330	4.455	4.290	4.188	3.906	3.516	3.495	3.486	3.645	1946	3.645
1947	3.738	3.709	3.654	3.521	3.526	3.721	3.863	3.785	3.743	3.832	3.765	3.853	1947	3.853
1948	3.707	3.563	3.846	3.958	4.305	4.329	4.109	4.174	4.059	4.347	3.929	4.065	1948	4.065
1949	4.081	3.960	4.090	4.017	3.913	3.919	4.174	4.265	4.377	4.526	4.605	4.829	1949	4.829
1950	4.924	5.022	5.057	5.303	5.573	5.267	5.330	5.566	5.895	5.949	6.050	6.360	1950	6.360
1951	6.765	6.871	6.764	7.109	6.896	6.739	7.218	7.563	7.573	7.495	7.567	7.888	1951	7.888
1952	8.030	7.804	8.197	7.867	8.137	8.536	8.703	8.642	8.490	8.507	8.993	9.336	1952	9.336
1953	9.291	9.192	8.997	8.783	8.851	8.732	8.971	8.521	8.551	9.012	9.196	9.244	1953	9.244
1954	9.739	9.848	10.168	10.693	11.139	11.173	11.831	11.506	12.485	12.277	13.393	14.108	1954	14.108
1955	14.387	14.528	14.485	15.059	15.142	16.416	17.437	17.393	17.618	17.118	18.533	18.561	1955	18.561
1956	17.917	18.657	19.982	19.973	18.788	19.557	20.594	19.919	19.043	19.169	19.072	19.778	1956	19.778
1957	18.986	18.485	18.882	19.614	20.472	20.481	20.749	19.701	18.516	17.957	18.372	17.646	1957	17.646
1958	18.431	18.170	18.767	19.400	19.810	20.363	21.277	21.651	22.735	23.348	24.012	25.298	1958	25.298
1959	25.430	25.554	25.605	26.635	27.273	27.213	28.199	27.911	26.674	27.017	27.519	28.322	1959	28.322
1960	26.340	26.729	26.400	25.976	26.821	27.388	26.748	27.596	25.968	25.949	27.154	28.455	1960	28.455
1961	30.291	31.257	32.100	32.262	33.033	32.125	33.223	34.029	33.404	34.401	35.940	36.106	1961	36.106
1962	34.784	35.511	35.349	33.204	30.512	28.061	29.891	30.512	29.092	29.279	32.459	32.954	1962	32.954
1963	34.620	33.794	35.045	36.798	37.510	36.805	36.726	38.692	38.318	39.617	39.435	40.469	1963	40.469
1964	41.612	42.222	42.917	43.238	43.940	44.721	45.592	45.055	46.409	46.856	46.878	47.139	1964	47.139
1965	48.763	48.913	48.264	49.984	49.833	47.477	48.177	49.488	51.140	52.618	52.453	53.008	1965	53.008
1966	53.335	52.634	51.555	52.688	50.096	49.363	48.769	45.234	44.993	47.214	47.662	47.674	1966	47.674
1967	51.478	51.846	53.967	56.325	53.641	54.658	57.215	56.817	58.758	57.136	57.507	59.104	1967	59.104
1968	56.592	55.113	55.718	60.363	61.334	61.980	60.916	61.913	64.387	64.945	68.393	65.642	1968	65.642
1969	65.193	62.414	64.653	66.131	66.303	62.708	59.024	61.705	60.251	63.014	61.141	60.059	1969	60.059
1970	55.594	58.693	58.949	53.793	50.685	48.321	52.035	54.522	56.495	56.025	58.858	62.375	1970	62.375

Table B-1 (Continued)
Large Company Stocks: Total Return Index

from January 1971 to December 2013

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1971	65.070	65.830	68.422	71.082	68.306	68.532	65.879	68.436	68.132	65.465	65.478	71.295	1971	71.295
1972	72.762	74.778	75.396	75.909	77.404	75.898	76.260	79.072	78.872	79.807	83.648	84.838	1972	84.838
1973	83.573	80.627	80.692	77.602	76.340	76.035	79.127	76.429	79.809	79.823	70.971	72.376	1973	72.376
1974	71.857	71.804	70.334	67.812	65.763	65.016	60.193	54.994	48.660	56.840	54.062	53.220	1974	53.220
1975	59.989	63.815	65.435	68.771	72.048	75.486	70.625	69.384	67.220	71.612	73.630	73.033	1975	73.033
1976	81.925	81.234	83.971	83.318	82.391	86.043	85.631	85.473	87.683	86.050	85.698	90.508	1976	90.508
1977	86.229	84.657	83.767	84.116	82.466	86.542	85.465	83.996	84.125	80.849	83.406	84.029	1977	84.029
1978	79.205	77.599	79.881	87.089	87.890	86.679	91.734	94.494	94.193	85.980	87.826	89.551	1978	89.551
1979	93.520	90.517	95.913	96.811	94.421	98.528	99.850	105.611	106.065	99.273	103.993	106.216	1979	106.216
1980	112.819	112.809	101.842	106.550	112.034	115.579	123.622	124.871	128.545	131.147	145.119	140.741	1980	140.741
1981	134.852	137.194	142.681	139.922	140.280	139.402	139.688	131.623	125.137	131.890	137.333	133.812	1981	133.812
1982	132.064	124.682	124.032	129.638	125.218	123.338	121.143	135.849	137.543	153.374	159.568	162.643	1982	162.643
1983	168.691	172.558	178.933	193.029	191.350	198.797	192.931	195.827	198.531	196.236	200.375	199.328	1983	199.328
1984	198.216	191.241	194.553	196.399	185.527	189.557	187.205	207.881	207.932	208.733	206.395	211.833	1984	211.833
1985	228.337	231.134	231.287	231.069	244.420	248.249	247.888	245.771	238.084	249.081	266.165	279.041	1985	279.041
1986	280.599	301.573	318.399	314.813	331.562	337.165	318.307	341.911	313.645	331.733	339.795	331.124	1986	331.124
1987	375.712	390.558	401.827	398.259	401.712	421.998	443.376	459.920	449.837	352.959	323.879	348.511	1987	348.511
1988	363.169	380.098	368.356	372.430	375.651	392.890	391.400	378.113	394.222	405.199	399.424	406.392	1988	406.392
1989	436.151	425.282	435.203	457.799	476.321	473.620	516.383	526.478	524.342	512.167	522.612	535.162	1989	535.162
1990	499.234	505.664	519.063	506.114	555.463	551.715	549.946	500.236	475.892	473.865	504.496	518.550	1990	518.550
1991	541.133	579.832	593.873	595.279	620.959	592.511	620.127	634.819	624.196	632.588	607.099	676.530	1991	676.530
1992	663.923	672.522	659.442	678.804	682.131	671.983	699.435	685.121	693.171	695.566	719.251	728.078	1992	728.078
1993	734.165	744.171	759.872	741.505	761.341	763.571	760.499	789.355	783.301	799.505	791.884	801.458	1993	801.458
1994	828.706	806.213	771.064	780.952	793.769	774.312	799.738	832.527	812.168	830.415	800.172	812.041	1994	812.041
1995	833.100	865.567	891.108	917.348	954.012	976.172	1,008.544	1,011.080	1,053.750	1,049.983	1,096.076	1,117.188	1995	1,117.188
1996	1,155.213	1,165.924	1,177.146	1,194.502	1,225.307	1,229.982	1,175.641	1,200.440	1,268.007	1,302.979	1,401.467	1,373.698	1996	1,373.698
1997	1,459.520	1,470.959	1,410.520	1,494.725	1,585.730	1,656.774	1,788.599	1,688.399	1,780.866	1,721.390	1,801.078	1,832.009	1997	1,832.009
1998	1,852.272	1,985.867	2,087.561	2,108.563	2,072.322	2,156.497	2,133.534	1,825.072	1,941.989	2,099.953	2,227.227	2,355.571	1998	2,355.571
1999	2,454.072	2,377.802	2,472.935	2,568.700	2,508.044	2,647.234	2,564.575	2,551.887	2,481.930	2,638.988	2,692.634	2,851.219	1999	2,851.219
2000	2,707.967	2,656.707	2,916.609	2,828.860	2,770.821	2,839.130	2,794.743	2,968.337	2,811.628	2,799.741	2,579.011	2,591.633	2000	2,591.633
2001	2,683.582	2,438.889	2,284.385	2,461.905	2,478.399	2,418.078	2,394.274	2,244.389	2,063.149	2,102.491	2,263.765	2,283.597	2001	2,283.597
2002	2,250.272	2,206.875	2,289.874	2,151.043	2,135.196	1,983.107	1,828.515	1,840.520	1,640.494	1,784.883	1,889.940	1,778.910	2002	1,778.910
2003	1,732.309	1,706.318	1,722.885	1,864.799	1,963.051	1,988.092	2,023.145	2,062.601	2,040.697	2,156.139	2,175.110	2,289.182	2003	2,289.182
2004	2,331.201	2,363.603	2,327.945	2,291.401	2,322.844	2,368.012	2,289.639	2,298.900	2,323.799	2,359.299	2,454.760	2,538.293	2004	2,538.293
2005	2,476.422	2,528.536	2,483.761	2,436.655	2,514.186	2,517.755	2,611.386	2,587.560	2,608.518	2,565.031	2,662.046	2,662.973	2005	2,662.973
2006	2,733.483	2,740.899	2,775.017	2,812.279	2,731.338	2,735.041	2,751.912	2,817.388	2,889.992	2,984.166	3,040.913	3,083.570	2006	3,083.570
2007	3,130.204	3,068.981	3,103.307	3,240.769	3,353.856	3,298.137	3,195.879	3,243.786	3,365.100	3,418.628	3,275.706	3,252.981	2007	3,252.981
2008	3,057.862	2,958.525	2,945.750	3,089.217	3,129.230	2,865.425	2,841.338	2,882.437	2,625.591	2,184.628	2,027.871	2,049.448	2008	2,049.448
2009	1,876.707	1,676.880	1,823.766	1,998.318	2,110.089	2,114.275	2,274.193	2,356.301	2,444.227	2,398.820	2,542.710	2,591.824	2009	2,591.824
2010	2,498.586	2,575.985	2,731.433	2,774.556	2,553.006	2,419.361	2,588.868	2,471.996	2,692.608	2,795.060	2,795.418	2,982.240	2010	2,982.240
2011	3,052.924	3,157.514	3,158.770	3,252.318	3,215.504	3,161.904	3,097.607	2,929.340	2,723.410	3,021.060	3,014.384	3,045.218	2011	3,045.218
2012	3,181.691	3,319.274	3,428.511	3,406.991	3,202.228	3,334.166	3,380.475	3,456.612	3,545.938	3,480.464	3,500.654	3,532.562	2012	3,532.562
2013	3,715.531	3,765.969	3,907.205	3,982.484	4,075.642	4,020.911	4,225.511	4,103.132	4,231.804	4,426.467	4,561.475	4,676.880	2013	4,676.880

Table B-5

Long-Term Government Bonds: Total Return Index

from December 1925 to December 1970

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1925												1.000	1925	1.000
1926	1.014	1.020	1.024	1.032	1.034	1.038	1.038	1.038	1.042	1.053	1.069	1.078	1926	1.078
1927	1.086	1.095	1.123	1.122	1.135	1.127	1.132	1.141	1.143	1.154	1.166	1.174	1927	1.174
1928	1.170	1.177	1.182	1.182	1.173	1.178	1.152	1.161	1.156	1.174	1.175	1.175	1928	1.175
1929	1.165	1.146	1.130	1.161	1.142	1.155	1.155	1.151	1.154	1.198	1.226	1.215	1929	1.215
1930	1.208	1.224	1.234	1.232	1.249	1.256	1.260	1.262	1.271	1.276	1.281	1.272	1930	1.272
1931	1.257	1.267	1.280	1.291	1.310	1.311	1.305	1.307	1.270	1.228	1.231	1.204	1931	1.204
1932	1.208	1.258	1.256	1.332	1.307	1.315	1.379	1.379	1.387	1.385	1.389	1.407	1932	1.407
1933	1.428	1.391	1.405	1.400	1.443	1.450	1.447	1.454	1.457	1.444	1.422	1.406	1933	1.406
1934	1.442	1.454	1.483	1.501	1.521	1.531	1.537	1.519	1.497	1.524	1.530	1.547	1934	1.547
1935	1.575	1.590	1.596	1.609	1.600	1.615	1.622	1.600	1.602	1.611	1.613	1.624	1935	1.624
1936	1.633	1.647	1.664	1.670	1.677	1.680	1.690	1.709	1.704	1.705	1.740	1.746	1936	1.746
1937	1.744	1.759	1.687	1.693	1.702	1.699	1.723	1.705	1.712	1.720	1.736	1.750	1937	1.750
1938	1.760	1.770	1.763	1.800	1.808	1.809	1.817	1.817	1.821	1.837	1.833	1.847	1938	1.847
1939	1.858	1.873	1.896	1.919	1.951	1.946	1.968	1.929	1.824	1.898	1.929	1.957	1939	1.957
1940	1.954	1.959	1.994	1.987	1.927	1.977	1.987	1.993	2.015	2.021	2.062	2.076	1940	2.076
1941	2.034	2.039	2.058	2.085	2.090	2.104	2.109	2.113	2.110	2.140	2.133	2.096	1941	2.096
1942	2.110	2.112	2.132	2.126	2.142	2.142	2.146	2.154	2.155	2.160	2.152	2.163	1942	2.163
1943	2.170	2.169	2.171	2.181	2.192	2.196	2.196	2.201	2.203	2.204	2.204	2.208	1943	2.208
1944	2.213	2.220	2.224	2.227	2.234	2.235	2.243	2.249	2.253	2.255	2.261	2.270	1944	2.270
1945	2.299	2.317	2.321	2.358	2.372	2.412	2.391	2.397	2.410	2.435	2.466	2.514	1945	2.514
1946	2.520	2.528	2.531	2.497	2.493	2.511	2.501	2.473	2.471	2.489	2.475	2.511	1946	2.511
1947	2.510	2.515	2.520	2.511	2.519	2.522	2.537	2.558	2.547	2.537	2.493	2.445	1947	2.445
1948	2.450	2.462	2.470	2.481	2.516	2.495	2.490	2.490	2.494	2.496	2.514	2.529	1948	2.529
1949	2.549	2.562	2.581	2.584	2.589	2.632	2.641	2.670	2.667	2.672	2.678	2.692	1949	2.692
1950	2.675	2.681	2.683	2.691	2.700	2.693	2.708	2.712	2.692	2.679	2.689	2.693	1950	2.693
1951	2.709	2.689	2.646	2.630	2.612	2.596	2.632	2.657	2.636	2.639	2.603	2.587	1951	2.587
1952	2.595	2.598	2.627	2.672	2.663	2.664	2.658	2.640	2.606	2.644	2.640	2.617	1952	2.617
1953	2.620	2.598	2.575	2.548	2.510	2.566	2.576	2.574	2.651	2.671	2.658	2.713	1953	2.713
1954	2.737	2.802	2.819	2.848	2.823	2.869	2.908	2.897	2.894	2.896	2.889	2.907	1954	2.907
1955	2.837	2.815	2.840	2.840	2.861	2.839	2.810	2.811	2.832	2.872	2.859	2.870	1955	2.870
1956	2.894	2.893	2.850	2.818	2.881	2.889	2.829	2.776	2.790	2.775	2.759	2.710	1956	2.710
1957	2.803	2.810	2.804	2.741	2.735	2.686	2.675	2.675	2.696	2.682	2.825	2.912	1957	2.912
1958	2.887	2.916	2.946	3.001	3.001	2.953	2.871	2.746	2.714	2.751	2.785	2.734	1958	2.734
1959	2.712	2.744	2.749	2.717	2.715	2.718	2.734	2.723	2.708	2.748	2.716	2.673	1959	2.673
1960	2.702	2.757	2.835	2.787	2.829	2.878	2.984	2.964	2.986	2.978	2.958	3.041	1960	3.041
1961	3.008	3.068	3.057	3.092	3.078	3.055	3.065	3.054	3.093	3.115	3.109	3.070	1961	3.070
1962	3.066	3.098	3.176	3.202	3.217	3.192	3.158	3.217	3.236	3.263	3.270	3.282	1962	3.282
1963	3.281	3.284	3.287	3.283	3.290	3.297	3.307	3.314	3.315	3.307	3.324	3.322	1963	3.322
1964	3.317	3.313	3.326	3.341	3.358	3.381	3.384	3.390	3.407	3.422	3.428	3.438	1964	3.438
1965	3.452	3.457	3.475	3.488	3.494	3.511	3.518	3.514	3.502	3.511	3.490	3.462	1965	3.462
1966	3.427	3.341	3.440	3.418	3.398	3.393	3.380	3.310	3.420	3.498	3.447	3.589	1966	3.589
1967	3.644	3.564	3.634	3.528	3.515	3.405	3.428	3.399	3.398	3.262	3.198	3.259	1967	3.259
1968	3.366	3.355	3.284	3.359	3.373	3.451	3.550	3.549	3.513	3.466	3.373	3.251	1968	3.251
1969	3.184	3.197	3.201	3.337	3.174	3.242	3.267	3.245	3.073	3.185	3.107	3.086	1969	3.086
1970	3.079	3.260	3.238	3.104	2.959	3.103	3.202	3.196	3.269	3.233	3.489	3.460	1970	3.460

Table B-5 (Continued)
Long-Term Government Bonds: Total Return Index

from January 1971 to December 2013

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1971	3.634	3.575	3.763	3.657	3.655	3.597	3.607	3.777	3.854	3.918	3.900	3.917	1971	3.917
1972	3.892	3.927	3.895	3.905	4.011	3.985	4.071	4.082	4.049	4.143	4.237	4.140	1972	4.140
1973	4.007	4.013	4.046	4.064	4.021	4.013	3.839	3.989	4.116	4.205	4.128	4.094	1973	4.094
1974	4.060	4.050	3.932	3.833	3.880	3.897	3.886	3.796	3.890	4.080	4.200	4.272	1974	4.272
1975	4.368	4.426	4.308	4.229	4.319	4.445	4.407	4.377	4.334	4.539	4.490	4.665	1975	4.665
1976	4.707	4.736	4.815	4.824	4.747	4.846	4.884	4.987	5.059	5.102	5.274	5.447	1976	5.447
1977	5.236	5.210	5.257	5.295	5.361	5.449	5.411	5.518	5.502	5.451	5.502	5.410	1977	5.410
1978	5.366	5.368	5.357	5.355	5.323	5.290	5.366	5.483	5.425	5.316	5.416	5.346	1978	5.346
1979	5.448	5.375	5.444	5.383	5.524	5.696	5.647	5.627	5.559	5.091	5.250	5.280	1979	5.280
1980	4.889	4.660	4.514	5.201	5.419	5.613	5.346	5.115	4.982	4.851	4.899	5.071	1980	5.071
1981	5.013	4.795	4.979	4.721	5.015	4.925	4.751	4.568	4.502	4.875	5.562	5.166	1981	5.166
1982	5.189	5.284	5.406	5.608	5.627	5.501	5.777	6.228	6.613	7.033	7.031	7.251	1982	7.251
1983	7.027	7.372	7.303	7.558	7.267	7.295	6.940	6.954	7.305	7.209	7.341	7.298	1983	7.298
1984	7.476	7.343	7.228	7.152	6.782	6.884	7.361	7.557	7.816	8.254	8.352	8.427	1984	8.427
1985	8.734	8.304	8.558	8.766	9.551	9.686	9.512	9.759	9.738	10.067	10.471	11.037	1985	11.037
1986	11.009	12.270	13.215	13.109	12.447	13.210	13.068	13.720	13.034	13.410	13.769	13.745	1986	13.745
1987	13.966	14.247	13.930	13.271	13.132	13.260	13.024	12.810	12.337	13.106	13.154	13.372	1987	13.372
1988	14.263	14.337	13.897	13.675	13.536	14.035	13.797	13.876	14.355	14.796	14.506	14.665	1988	14.665
1989	14.963	14.695	14.875	15.111	15.717	16.582	16.977	16.537	16.569	17.198	17.332	17.322	1989	17.322
1990	16.728	16.686	16.613	16.278	16.954	17.344	17.530	16.796	16.992	17.358	18.056	18.392	1990	18.392
1991	18.632	18.689	18.760	19.023	19.024	18.904	19.202	19.855	20.458	20.569	20.738	21.942	1991	21.942
1992	21.231	21.339	21.140	21.173	21.687	22.121	23.001	23.155	23.584	23.117	23.140	23.709	1992	23.709
1993	24.374	25.237	25.290	25.472	25.591	26.739	27.251	28.433	28.448	28.722	27.979	28.034	1993	28.034
1994	28.755	27.462	26.378	25.981	25.767	25.508	26.435	26.209	25.342	25.280	25.447	25.856	1994	25.856
1995	26.561	27.322	27.572	28.039	30.255	30.675	30.161	30.873	31.413	32.337	33.143	34.044	1995	34.044
1996	34.007	32.366	31.687	31.163	30.994	31.622	31.678	31.237	32.142	33.440	34.612	33.727	1996	33.727
1997	33.459	33.476	32.633	33.465	33.783	34.448	36.603	35.441	36.560	37.807	38.366	39.074	1997	39.074
1998	39.856	39.570	39.668	39.771	40.497	41.421	41.256	43.173	44.876	43.896	44.320	44.178	1998	44.178
1999	44.713	42.390	42.355	42.444	41.660	41.337	41.012	40.803	41.147	41.099	40.849	40.218	1999	40.218
2000	41.135	42.220	43.768	43.437	43.200	44.254	45.018	46.100	45.376	46.227	47.699	48.856	2000	48.856
2001	48.882	49.816	49.447	47.899	48.079	48.488	50.309	51.343	51.758	54.160	51.607	50.662	2001	50.662
2002	51.361	51.951	49.686	51.721	51.798	52.769	54.368	56.888	59.258	57.517	56.817	59.699	2002	59.699
2003	59.065	61.011	60.186	60.798	64.397	63.406	57.178	58.129	61.306	59.573	59.732	60.564	2003	60.564
2004	61.699	63.117	64.007	60.244	59.939	60.666	61.609	64.040	64.657	65.649	64.115	65.717	2004	65.717
2005	67.691	66.826	66.348	68.820	70.862	72.047	69.973	72.302	69.860	68.489	69.010	70.852	2005	70.852
2006	70.018	71.687	67.821	66.148	66.213	66.819	68.148	70.186	71.383	71.932	73.425	71.694	2006	71.694
2007	70.961	73.335	72.272	72.887	71.428	70.782	72.790	74.235	74.323	75.476	79.009	78.779	2007	78.779
2008	80.460	80.608	81.460	79.111	77.812	79.526	79.330	81.251	82.164	79.016	90.416	99.161	2008	99.161
2009	88.012	87.518	93.129	87.081	84.921	85.629	85.790	87.769	89.314	87.790	89.620	84.383	2009	84.383
2010	86.608	86.881	85.328	87.921	91.762	95.851	96.085	102.831	101.255	98.041	96.696	92.942	2010	92.942
2011	91.121	92.152	92.095	93.929	97.261	96.022	101.074	108.355	115.765	112.589	115.437	119.183	2011	119.183
2012	119.206	116.405	113.526	118.273	125.070	124.331	127.690	125.956	124.898	123.485	126.422	123.125	2012	123.125
2013	119.472	121.072	120.322	125.673	118.417	113.318	112.354	110.870	112.213	113.859	110.956	109.138	2013	109.138

Table B-9

U.S. Treasury Bills: Total Return Index

from December 1925 to December 1970

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1925												1.000	1925	1.000
1926	1.003	1.006	1.009	1.013	1.013	1.016	1.018	1.021	1.023	1.027	1.030	1.033	1926	1.033
1927	1.035	1.038	1.041	1.044	1.047	1.049	1.053	1.055	1.058	1.060	1.063	1.065	1927	1.065
1928	1.068	1.071	1.074	1.077	1.080	1.084	1.087	1.091	1.093	1.098	1.102	1.103	1928	1.103
1929	1.107	1.111	1.114	1.118	1.123	1.129	1.133	1.137	1.141	1.147	1.151	1.155	1929	1.155
1930	1.157	1.160	1.164	1.167	1.170	1.173	1.175	1.176	1.179	1.180	1.181	1.183	1930	1.183
1931	1.185	1.185	1.187	1.188	1.189	1.190	1.190	1.191	1.191	1.192	1.194	1.196	1931	1.196
1932	1.198	1.201	1.203	1.205	1.205	1.206	1.206	1.206	1.207	1.207	1.207	1.207	1932	1.207
1933	1.207	1.207	1.208	1.209	1.209	1.210	1.210	1.210	1.210	1.210	1.211	1.211	1933	1.211
1934	1.211	1.212	1.212	1.212	1.212	1.212	1.212	1.212	1.212	1.213	1.213	1.213	1934	1.213
1935	1.213	1.213	1.213	1.213	1.214	1.214	1.214	1.214	1.214	1.214	1.215	1.215	1935	1.215
1936	1.215	1.215	1.215	1.216	1.216	1.216	1.216	1.216	1.217	1.217	1.217	1.217	1936	1.217
1937	1.217	1.217	1.218	1.218	1.219	1.219	1.219	1.220	1.220	1.220	1.221	1.221	1937	1.221
1938	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1938	1.221
1939	1.220	1.221	1.220	1.220	1.220	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1939	1.221
1940	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1940	1.221
1941	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.221	1.222	1941	1.222
1942	1.222	1.222	1.222	1.222	1.222	1.223	1.223	1.223	1.224	1.224	1.225	1.225	1942	1.225
1943	1.225	1.226	1.226	1.226	1.227	1.227	1.227	1.228	1.228	1.228	1.229	1.229	1943	1.229
1944	1.229	1.230	1.230	1.230	1.231	1.231	1.231	1.232	1.232	1.233	1.233	1.233	1944	1.233
1945	1.233	1.234	1.234	1.234	1.235	1.235	1.235	1.236	1.236	1.237	1.237	1.237	1945	1.237
1946	1.238	1.238	1.238	1.239	1.239	1.239	1.240	1.240	1.240	1.241	1.241	1.242	1946	1.242
1947	1.242	1.242	1.243	1.243	1.243	1.244	1.244	1.244	1.245	1.246	1.247	1.248	1947	1.248
1948	1.249	1.250	1.251	1.252	1.253	1.254	1.255	1.256	1.256	1.257	1.257	1.258	1948	1.258
1949	1.259	1.260	1.262	1.263	1.264	1.265	1.266	1.267	1.269	1.270	1.271	1.272	1949	1.272
1950	1.273	1.274	1.275	1.276	1.278	1.279	1.280	1.281	1.283	1.284	1.286	1.287	1950	1.287
1951	1.289	1.290	1.291	1.293	1.295	1.296	1.298	1.300	1.301	1.303	1.305	1.306	1951	1.306
1952	1.308	1.310	1.311	1.313	1.314	1.316	1.318	1.320	1.322	1.324	1.326	1.328	1952	1.328
1953	1.330	1.332	1.334	1.337	1.339	1.341	1.343	1.345	1.348	1.349	1.350	1.352	1953	1.352
1954	1.354	1.355	1.356	1.357	1.357	1.358	1.359	1.360	1.361	1.362	1.363	1.364	1954	1.364
1955	1.365	1.366	1.367	1.369	1.371	1.372	1.373	1.376	1.378	1.380	1.383	1.385	1955	1.385
1956	1.388	1.391	1.393	1.396	1.399	1.402	1.405	1.407	1.410	1.413	1.416	1.419	1956	1.419
1957	1.423	1.426	1.430	1.433	1.437	1.441	1.445	1.448	1.452	1.456	1.460	1.464	1957	1.464
1958	1.468	1.470	1.471	1.472	1.474	1.474	1.475	1.476	1.479	1.481	1.483	1.486	1958	1.486
1959	1.489	1.492	1.496	1.499	1.502	1.505	1.509	1.512	1.517	1.521	1.525	1.530	1959	1.530
1960	1.535	1.540	1.545	1.548	1.552	1.556	1.558	1.561	1.563	1.567	1.569	1.571	1960	1.571
1961	1.574	1.576	1.579	1.582	1.585	1.588	1.591	1.593	1.596	1.599	1.601	1.604	1961	1.604
1962	1.608	1.612	1.615	1.618	1.622	1.626	1.630	1.634	1.637	1.641	1.645	1.648	1962	1.648
1963	1.652	1.656	1.660	1.664	1.668	1.672	1.677	1.681	1.685	1.690	1.695	1.700	1963	1.700
1964	1.705	1.709	1.715	1.720	1.724	1.729	1.734	1.739	1.744	1.749	1.754	1.760	1964	1.760
1965	1.765	1.770	1.776	1.782	1.787	1.794	1.799	1.805	1.811	1.817	1.823	1.829	1965	1.829
1966	1.836	1.842	1.849	1.856	1.863	1.870	1.877	1.885	1.892	1.901	1.908	1.916	1966	1.916
1967	1.924	1.931	1.939	1.945	1.951	1.957	1.963	1.969	1.975	1.983	1.990	1.997	1967	1.997
1968	2.005	2.012	2.020	2.029	2.038	2.046	2.056	2.065	2.074	2.083	2.092	2.101	1968	2.101
1969	2.112	2.121	2.131	2.143	2.153	2.164	2.175	2.186	2.200	2.213	2.225	2.239	1969	2.239
1970	2.252	2.266	2.279	2.291	2.303	2.316	2.328	2.341	2.353	2.364	2.375	2.385	1970	2.385

Table B-9 (Continued)
U.S. Treasury Bills: Total Return Index

from January 1971 to December 2013

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr-end	Index
1971	2.394	2.402	2.409	2.416	2.423	2.432	2.442	2.453	2.462	2.471	2.480	2.490	1971	2.490
1972	2.497	2.503	2.510	2.517	2.525	2.532	2.540	2.547	2.556	2.566	2.575	2.585	1972	2.585
1973	2.596	2.607	2.619	2.633	2.646	2.660	2.677	2.695	2.714	2.732	2.747	2.764	1973	2.764
1974	2.782	2.798	2.813	2.835	2.856	2.873	2.893	2.911	2.934	2.949	2.965	2.986	1974	2.986
1975	3.003	3.016	3.028	3.042	3.055	3.067	3.082	3.097	3.113	3.131	3.144	3.159	1975	3.159
1976	3.174	3.184	3.197	3.210	3.222	3.237	3.252	3.265	3.280	3.293	3.306	3.319	1976	3.319
1977	3.331	3.343	3.356	3.368	3.381	3.394	3.408	3.423	3.438	3.455	3.472	3.489	1977	3.489
1978	3.506	3.522	3.541	3.560	3.578	3.597	3.618	3.638	3.660	3.685	3.711	3.740	1978	3.740
1979	3.769	3.796	3.827	3.858	3.889	3.921	3.951	3.981	4.014	4.049	4.089	4.128	1979	4.128
1980	4.161	4.198	4.248	4.302	4.336	4.363	4.386	4.414	4.447	4.489	4.532	4.592	1980	4.592
1981	4.639	4.689	4.746	4.797	4.852	4.917	4.978	5.042	5.105	5.166	5.221	5.267	1981	5.267
1982	5.309	5.358	5.411	5.472	5.530	5.583	5.641	5.684	5.713	5.747	5.783	5.822	1982	5.822
1983	5.862	5.899	5.936	5.978	6.020	6.060	6.105	6.151	6.198	6.245	6.289	6.335	1983	6.335
1984	6.383	6.428	6.475	6.528	6.579	6.629	6.683	6.738	6.796	6.864	6.914	6.959	1984	6.959
1985	7.004	7.044	7.088	7.138	7.186	7.225	7.271	7.311	7.355	7.403	7.448	7.496	1985	7.496
1986	7.538	7.578	7.623	7.663	7.700	7.741	7.781	7.817	7.852	7.889	7.919	7.958	1986	7.958
1987	7.991	8.025	8.063	8.099	8.129	8.169	8.206	8.245	8.282	8.331	8.360	8.393	1987	8.393
1988	8.418	8.456	8.493	8.532	8.576	8.617	8.661	8.712	8.766	8.819	8.869	8.926	1988	8.926
1989	8.975	9.030	9.090	9.152	9.224	9.289	9.354	9.423	9.485	9.549	9.614	9.673	1989	9.673
1990	9.728	9.783	9.846	9.914	9.981	10.043	10.111	10.178	10.238	10.308	10.366	10.429	1990	10.429
1991	10.483	10.533	10.579	10.635	10.685	10.730	10.782	10.832	10.881	10.928	10.970	11.012	1991	11.012
1992	11.049	11.081	11.118	11.154	11.185	11.221	11.255	11.285	11.314	11.340	11.366	11.398	1992	11.398
1993	11.425	11.450	11.479	11.506	11.531	11.561	11.588	11.617	11.647	11.673	11.702	11.728	1993	11.728
1994	11.758	11.783	11.814	11.846	11.884	11.921	11.954	11.998	12.042	12.088	12.132	12.186	1994	12.186
1995	12.237	12.286	12.342	12.397	12.464	12.522	12.579	12.638	12.692	12.752	12.806	12.868	1995	12.868
1996	12.923	12.974	13.025	13.084	13.140	13.192	13.252	13.306	13.365	13.421	13.476	13.538	1996	13.538
1997	13.599	13.652	13.710	13.769	13.837	13.888	13.948	14.005	14.067	14.127	14.182	14.250	1997	14.250
1998	14.311	14.367	14.423	14.485	14.544	14.603	14.662	14.725	14.792	14.840	14.886	14.942	1998	14.942
1999	14.994	15.048	15.112	15.168	15.219	15.280	15.338	15.397	15.457	15.517	15.573	15.641	1999	15.641
2000	15.706	15.774	15.848	15.920	16.001	16.064	16.141	16.223	16.305	16.397	16.480	16.563	2000	16.563
2001	16.652	16.715	16.784	16.850	16.905	16.952	17.004	17.056	17.103	17.142	17.172	17.197	2001	17.197
2002	17.221	17.243	17.266	17.293	17.318	17.340	17.367	17.391	17.416	17.440	17.460	17.480	2002	17.480
2003	17.497	17.512	17.530	17.547	17.563	17.580	17.592	17.604	17.619	17.631	17.644	17.659	2003	17.659
2004	17.671	17.682	17.697	17.711	17.722	17.737	17.754	17.774	17.794	17.814	17.842	17.871	2004	17.871
2005	17.900	17.930	17.968	18.005	18.048	18.089	18.132	18.186	18.238	18.288	18.345	18.403	2005	18.403
2006	18.468	18.530	18.598	18.664	18.745	18.819	18.894	18.974	19.051	19.128	19.209	19.287	2006	19.287
2007	19.372	19.447	19.529	19.615	19.694	19.773	19.851	19.934	19.998	20.063	20.131	20.186	2007	20.186
2008	20.229	20.256	20.291	20.326	20.363	20.398	20.429	20.455	20.486	20.503	20.509	20.509	2008	20.509
2009	20.509	20.512	20.515	20.518	20.518	20.520	20.522	20.525	20.527	20.527	20.527	20.529	2009	20.529
2010	20.529	20.529	20.531	20.533	20.535	20.538	20.541	20.544	20.546	20.549	20.551	20.553	2010	20.553
2011	20.555	20.557	20.559	20.560	20.560	20.561	20.560	20.562	20.562	20.562	20.562	20.562	2011	20.562
2012	20.562	20.563	20.564	20.564	20.565	20.566	20.567	20.568	20.569	20.571	20.572	20.574	2012	20.574
2013	20.575	20.575	20.576	20.577	20.577	20.577	20.577	20.578	20.578	20.578	20.579	20.579	2013	20.579

Edison Electric Institute

701 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2696
202.508.5000
www.eei.org

Rate Case Summary

Q2 2014
FINANCIAL UPDATE

QUARTERLY REPORT
OF THE U.S. SHAREHOLDER-OWNED
ELECTRIC UTILITY INDUSTRY

About EEI

The Edison Electric Institute (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ more than 500,000 workers. With $90 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the economy and enhances the lives of all Americans. EEI has 70 international electric companies as Affiliate Members, and 270 industry suppliers and related organizations as Associate Members. Organized in 1933, EEI provides public policy leadership, strategic business intelligence, and essential conferences and forums.

About EEI's Quarterly Financial Updates

EEI's quarterly financial updates present industry trend analyses and financial data covering 55 U.S. shareholder-owned electric utility companies. These 55 companies include 49 electric utility holding companies whose stocks are traded on major U.S. stock exchanges and six electric utilities who are subsidiaries of non-utility or foreign companies. Financial updates are published for the following topics:

Dividends	Rate Case Summary
Stock Performance	SEC Financial Statements (Holding Companies)
Credit Ratings	FERC Financial Statements (Regulated Utilities)
Construction	Fuel

For EEI Member Companies

The EEI Finance and Accounting Division is developing current year and historical data sets that cover a wide range of industry financial and operating metrics. We look forward to serving as a resource for member companies who wish to produce customized industry financial data and trend analyses for use in:

- Investor relations studies and presentations
- Internal company presentations
- Performance benchmarking
- Peer group analyses
- Annual and quarterly reports to shareholders

We Welcome Your Feedback

EEI is interested in ensuring that our financial publications and industry data sets best address the needs of member companies and the financial community. We welcome your comments, suggestions and inquiries.

Contact:
Mark Agnew
Director, Financial Analysis
(202) 508-5049, magnew@eei.org

Aaron Trent
Manager, Financial Analysis
(202) 508-5526, atrent@eei.org

Bill Pfister
Senior Financial Analyst
(202) 508-5531, bpfister@eei.org

Future EEI Finance Meetings

49th EEI Financial Conference
November 11-14, 2014
Hilton Anatole
Dallas, Texas

For more information about EEI Finance Meetings, please contact Debra Henry, (202) 508-5496, dhenry@eei.org

Edison Electric Institute
701 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2696
202-508-5000
www.eei.org

The 55 U.S. Shareholder-Owned Electric Utilities

The companies listed below all serve a regulated distribution territory. Other utilities, such as transmission provider ITC Holdings, are not shown below because they do not serve a regulated distribution territory. However, their financial information is included in relevant EEI data sets, such as transmission-related construction spending.

ALLETE, Inc. (ALE)
Alliant Energy Corporation (LNT)
Ameren Corporation (AEE)
American Electric Power Company, Inc. (AEP)
Avista Corporation (AVA)
Berkshire Hathaway Energy
Black Hills Corporation (BKH)
CenterPoint Energy, Inc. (CNP)
Cleco Corporation (CNL)
CMS Energy Corporation (CMS)
Consolidated Edison, Inc. (ED)
Dominion Resources, Inc. (D)
DPL, Inc.
DTE Energy Company (DTE)
Duke Energy Corporation (DUK)
Edison International (EIX)
El Paso Electric Company (EE)
Empire District Electric Company (EDE)
Energy Future Holdings Corp. (formerly TXU Corp.)
Entergy Corporation (ETR)
Exelon Corporation (EXC)
FirstEnergy Corp. (FE)
Great Plains Energy Incorporated (GXP)
Hawaiian Electric Industries, Inc. (HE)
Iberdrola USA
IDACORP, Inc. (IDA)
Integrys Energy Group, Inc. (TEG)
IPALCO Enterprises, Inc.
MDU Resources Group, Inc. (MDU)
MGE Energy, Inc. (MGEE)
NextEra Energy, Inc. (NEE)
NiSource Inc. (NI)
Northeast Utilities (NU)
NorthWestern Corporation (NWE)
OGE Energy Corp. (OGE)
Otter Tail Corporation (OTTR)
Pepco Holdings, Inc. (POM)
PG&E Corporation (PCG)
Pinnacle West Capital Corporation (PNW)
PNM Resources, Inc. (PNM)
Portland General Electric Company (POR)
PPL Corporation (PPL)
Public Service Enterprise Group Inc. (PEG)
Puget Energy, Inc.
SCANA Corporation (SCG)
Sempra Energy (SRE)
Southern Company (SO)
TECO Energy, Inc. (TE)
UIL Holdings Corporation (UIL)
Unitil Corporation (UTL)
UNS Energy Corporation (UNS)
Vectren Corporation (VVC)
Westar Energy, Inc. (WR)
Wisconsin Energy Corporation (WEC)
Xcel Energy, Inc. (XEL)

Companies Listed by Category
(as of 12/31/2013)

Please refer to the Quarterly Financial Updates webpage for previous years' lists.

Given the diversity of utility holding company corporate strategies, no single company categorization approach will be useful for all EEI members and utility industry analysts. Nevertheless, we believe the following classification provides an informative framework for tracking financial trends and the capital markets' response to business strategies as companies depart from the traditional regulated utility model.

Regulated	80%+ of total assets are regulated
Mostly Regulated	50% to 80% of total assets are regulated
Diversified	Less than 50% of total assets are regulated

Categorization of the 49 publicly traded utility holding companies is based on year-end business segmentation data presented in 10Ks, supplemented by discussions with company IR departments. Categorization of the six non-publicly traded companies (*shown in italics*) is based on estimates derived from FERC Form 1 data and information provided by parent company IR departments.

The EEI Finance and Accounting Division continues to evaluate our approach to company categorization and business segmentation. In addition, we can produce customized categorization and peer group analyses in response to member company requests. We welcome comments, suggestions and feedback from EEI member companies and the financial community.

Regulated (39 of 55)

ALLETE, Inc.
Alliant Energy Corporation
Ameren Corporation
American Electric Power Company, Inc.
Avista Corporation
Black Hills Corporation
Cleco Corporation
CMS Energy Corporation
Consolidated Edison, Inc.
DPL, Inc.
DTE Energy Company
Duke Energy Corporation
Edison International
El Paso Electric Company
Empire District Electric Company
Entergy Corporation
Great Plains Energy Incorporated
Iberdrola USA
IDACORP, Inc.
Integrys Energy Group
IPALCO Enterprises, Inc.
Northeast Utilities
NorthWestern Energy
OGE Energy Corp.
Otter Tail Corporation
Pepco Holdings, Inc.
PG&E Corporation
Pinnacle West Capital Corporation
PNM Resources, Inc.
Portland General Electric Company
Puget Energy, Inc.
Southern Company
TECO Energy, Inc.
UIL Holdings Corporation
Unitil Corporation
UNS Energy Corporation
Westar Energy, Inc.
Wisconsin Energy Corporation
Xcel Energy, Inc.

Mostly Regulated (13 of 55)

Berkshire Hathaway Energy
CenterPoint Energy, Inc.
Dominion Resources, Inc.
Exelon Corporation
FirstEnergy Corp.
MGE Energy, Inc.
NextEra Energy, Inc.
NiSource Inc.
PPL Corporation
Public Service Enterprise Group, Inc.
SCANA Corporation
Sempra Energy
Vectren Corporation

Diversified (3 of 55)

Energy Future Holdings
Hawaiian Electric Industries, Inc.
MDU Resources Group, Inc.

Note: Based on assets at 12/31/2013

Q2 2014

Rate Case Summary

HIGHLIGHTS

- Investor-owned electric utilities filed 25 rate cases in Q2 2014, the most in our almost three decades of data. The more than decade-long trend of rising rate case activity continues.
- In addition to capital expenditures and rate mechanisms (typical reasons for filings), the serious storms of 2012 are finding their way into many filings now, after some degree of regulatory lag, in the form of requests for storm cost recovery. However, storms also factored into filings driven by capex and rate mechanisms as some requested capital recovery is for undergrounding and other infrastructure investment to protect against storm damage. And some of the riders and surcharges reflect recovery for vegetation management and other storm-related costs.
- The average awarded ROE in Q2 was 9.83%, the third-lowest on record. Requested ROE in Q2 was 10.48%.

COMMENTARY

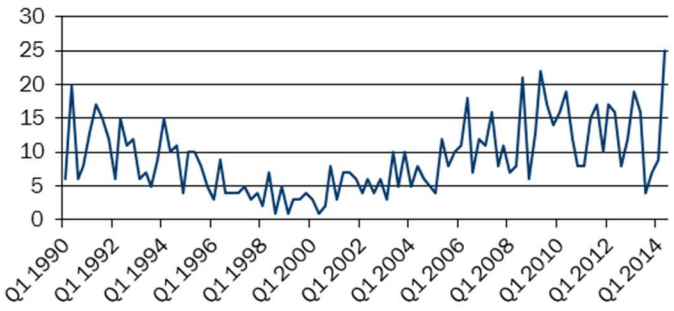
Investor-owned electric utilities filed 25 rate cases during the second quarter of 2014, the highest quarterly total in our almost-three-decades of data. We expect the number of filings to remain elevated, reflecting the industry's ongoing construction cycle driven by the need to replace and upgrade infrastructure and reduce the environmental impact of power generation.

The average awarded ROE in Q2 was 9.83%, the third-lowest quarterly percentage in our data set, with the two lowest occurring within the last two years. This is in alignment with the long-term trend of declining ROEs. The average requested ROE in Q2, at 10.48%, is similarly low and consistent with a similar downward trend.

Average regulatory lag for the quarter, at 7.83 months, was the lowest in almost three years but not meaningfully below the long-term trend of about 10 months. Average lag

I. Number of Rate Cases Filed (Quarterly)

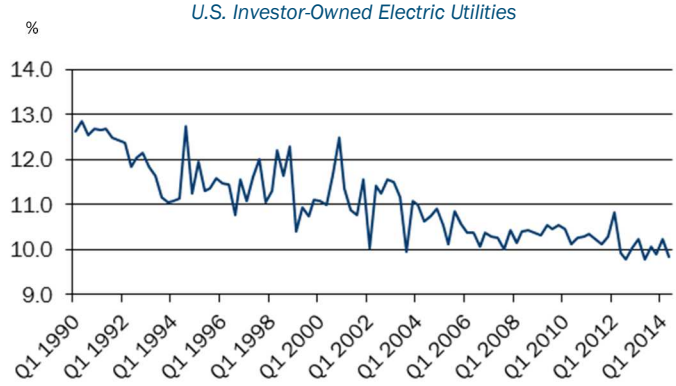
U.S. Investor Owned Electric Utilities



Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

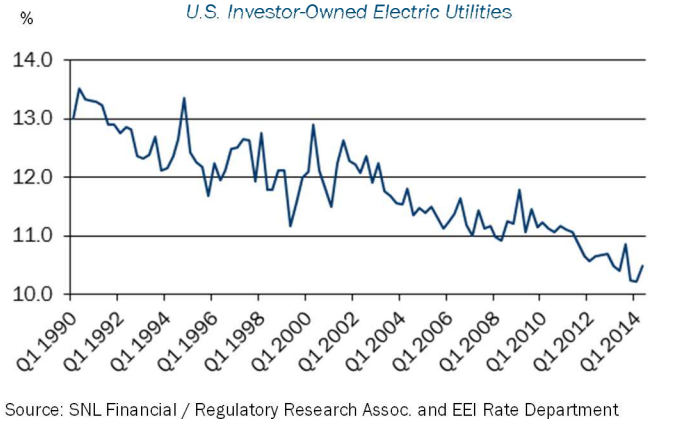
II. Average Awarded ROE (Quarterly)

U.S. Investor-Owned Electric Utilities



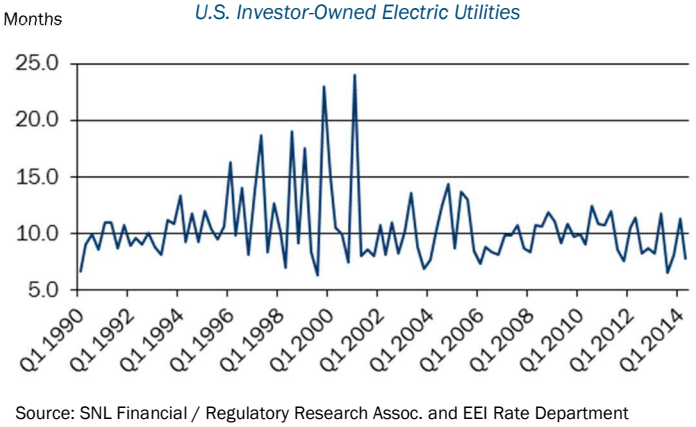
Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

III. Average Requested ROE (Quarterly)



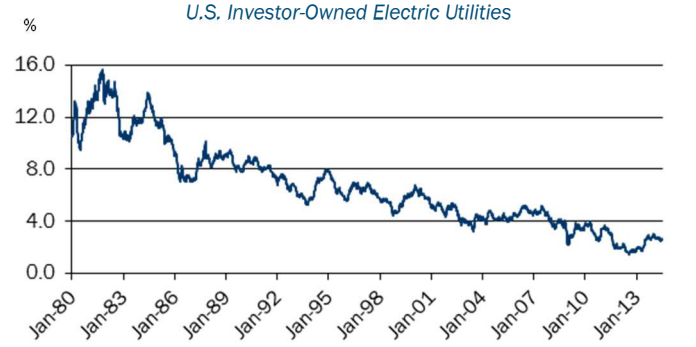
Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

IV. Average Regulatory Lag (Quarterly)



Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

V. 10-Year Treasury Yield (1/1980 — 6/2014)



Source: U.S. Federal Reserve

was higher and more volatile at the end of the 1990s and early 2000s, when the industry was going through a period of restructuring, but has otherwise kept close to this 10-month average level.

Filed Cases in Q2

The main driver of filed cases in Q2, as has been true consistently for almost three decades, was capital expenditures. The second most frequently mentioned cause was companies' interest in establishing riders, surcharges and other rate mechanisms. While riders, surcharges, and other mechanisms are often the second or third most frequently mentioned driver of rate case filings, storm cost recovery, which was Q2's third most frequently mentioned driver, is seldom that significant. After some degree of regulatory lag, the serious storms of 2012 are now finding their way into many filings. The need to repair storm damage was also a factor in recovering for capital expenditures and in companies' interest in establishing riders and surcharges; some of the requested capital recovery is for undergrounding and other infrastructure investment to protect against storm damage. Some of the riders and surcharges reflect recovery for vegetation management and other storm-related costs.

Storm Cost Recovery

Wisconsin Public Service filed in part to recover costs associated with converting distribution lines from overhead to underground. Florida Public Utilities filed to recover storm hardening project expenses. Monongahela Power and Potomac Edison filed in West Virginia to recover storm costs from a derecho and from Hurricane Sandy, along with vegetation management program costs.

Operation and Maintenance (O&M) Expenses

Florida Public Utilities filed to recover O&M expenses, particularly those associated with customer service and reliability initiatives. Monongahela Power and Potomac Edison in West Virginia filed to recover increased operating costs at power stations. Part of the reason for Black Hills Colorado Electric's filing was recovery of higher operating expenses.

Economic Development

Florida Public Utilities filed in part to recover costs from economic development initiatives. Entergy Mississippi's filing proposes rate incentives to attract new and expanding industrial customers and rate mechanisms and regulatory mechanisms to aid in providing electrical service to attractive industrial sites. The company hopes this will help with economic development and job creation in its service territory.

Workforce-Related

Monongahela Power and Potomac Edison in West Virginia filed in part to increase the workforce to enhance service reliability. Entergy Mississippi filed in part to maintain its work force.

Dominion Virginia Power

Dominion Virginia Power filed three cases in Q2. Each seeks to recover for generation with lower net emissions than more traditional generation sources. The company seeks to recover for converting generation facilities to burn

VI. Rate Case Data: From Tables I-V

U.S. Investor-Owned Electric Utilities

Quarter	Number of Rate Cases Filed	Average Awarded ROE	Average Requested ROE	Average 10-Year Treasury Yield	Average Regulatory Lag
Q4 1988	1	NA	14.30	8.96	NA
Q1 1989	4	NA	15.26	9.21	NA
Q2 1989	4	NA	13.30	8.77	NA
Q3 1989	14	NA	13.65	8.11	NA
Q4 1989	13	NA	13.47	7.91	NA
Q1 1990	6	12.62	13.00	8.42	6.71
Q2 1990	20	12.85	13.51	8.68	9.07
Q3 1990	6	12.54	13.34	8.70	9.90
Q4 1990	8	12.68	13.31	8.40	8.61
Q1 1991	13	12.66	13.29	8.02	11.00
Q2 1991	17	12.67	13.23	8.13	11.00
Q3 1991	15	12.49	12.89	7.94	8.70
Q4 1991	12	12.42	12.90	7.35	10.70
Q1 1992	6	12.38	12.77	7.30	8.90
Q2 1992	15	11.83	12.86	7.38	9.61
Q3 1992	11	12.03	12.81	6.62	9.00
Q4 1992	12	12.14	12.36	6.74	10.10
Q1 1993	6	11.84	12.33	6.28	8.87
Q2 1993	7	11.64	12.39	5.99	8.10
Q3 1993	5	11.15	12.70	5.62	11.20
Q4 1993	9	11.04	12.12	5.61	10.90
Q1 1994	15	11.07	12.15	6.07	13.40
Q2 1994	10	11.13	12.37	7.08	9.28
Q3 1994	11	12.75	12.66	7.33	11.80
Q4 1994	4	11.24	13.36	7.84	9.26
Q1 1995	10	11.96	12.44	7.48	12.00
Q2 1995	10	11.32	12.26	6.62	10.40
Q3 1995	8	11.37	12.19	6.32	9.50
Q4 1995	5	11.58	11.69	5.89	10.60
Q1 1996	3	11.46	12.25	5.91	16.30
Q2 1996	9	11.46	11.96	6.72	9.80
Q3 1996	4	10.76	12.13	6.78	14.00
Q4 1996	4	11.56	12.48	6.34	8.12
Q1 1997	4	11.08	12.50	6.56	13.80
Q2 1997	5	11.62	12.66	6.70	18.70
Q3 1997	3	12.00	12.63	6.24	8.33
Q4 1997	4	11.06	11.93	5.91	12.70
Q1 1998	2	11.31	12.75	5.59	10.20
Q2 1998	7	12.20	11.78	5.60	7.00
Q3 1998	1	11.65	NA	5.20	19.00
Q4 1998	5	12.30	12.11	4.67	9.11
Q1 1999	1	10.40	NA	4.98	17.60
Q2 1999	3	10.94	11.17	5.54	8.33
Q3 1999	3	10.75	11.57	5.88	6.33
Q4 1999	4	11.10	12.00	6.14	23.00
Q1 2000	3	11.08	12.10	6.48	15.10
Q2 2000	1	11.00	12.90	6.18	10.50
Q3 2000	2	11.68	12.13	5.89	10.00
Q4 2000	8	12.50	11.81	5.57	7.50
Q1 2001	3	11.38	11.50	5.05	24.00
Q2 2001	7	10.88	12.24	5.27	8.00
Q3 2001	7	10.78	12.64	4.98	8.62
Q4 2001	6	11.57	12.29	4.77	8.00
Q1 2002	4	10.05	12.22	5.08	10.80
Q2 2002	6	11.41	12.08	5.10	8.16
Q3 2002	4	11.25	12.36	4.26	11.00
Q4 2002	6	11.57	11.92	4.01	8.25

VI. Rate Case Data: From Tables I-V (cont.)

U.S. Investor-Owned Electric Utilities

Quarter	Number of Rate Cases Filed	Average Awarded ROE	Average Requested ROE	Average 10-Year Treasury Yield	Average Regulatory Lag
Q1 2003	3	11.49	12.24	3.92	10.20
Q2 2003	10	11.16	11.76	3.62	13.60
Q3 2003	5	9.95	11.69	4.23	8.80
Q4 2003	10	11.09	11.57	4.29	6.83
Q1 2004	5	11.00	11.54	4.02	7.66
Q2 2004	8	10.64	11.81	4.60	10.00
Q3 2004	6	10.75	11.35	4.30	12.50
Q4 2004	5	10.91	11.48	4.17	14.40
Q1 2005	4	10.55	11.41	4.30	8.71
Q2 2005	12	10.13	11.49	4.16	13.70
Q3 2005	8	10.84	11.32	4.21	13.00
Q4 2005	10	10.57	11.14	4.49	8.44
Q1 2006	11	10.38	11.23	4.57	7.33
Q2 2006	18	10.39	11.38	5.07	8.83
Q3 2006	7	10.06	11.64	4.90	8.33
Q4 2006	12	10.38	11.19	4.63	8.11
Q1 2007	11	10.30	11.00	4.68	9.88
Q2 2007	16	10.27	11.44	4.85	9.82
Q3 2007	8	10.02	11.13	4.73	10.80
Q4 2007	11	10.44	11.16	4.26	8.75
Q1 2008	7	10.15	10.98	3.66	7.33
Q2 2008	8	10.41	10.93	3.89	10.80
Q3 2008	21	10.42	11.26	3.86	10.60
Q4 2008	6	10.38	11.21	3.25	11.90
Q1 2009	13	10.31	11.79	2.74	11.10
Q2 2009	22	10.55	11.01	3.31	9.13
Q3 2009	17	10.46	11.43	3.52	10.90
Q4 2009	14	10.54	11.15	3.46	9.69
Q1 2010	16	10.45	11.24	3.72	10.00
Q2 2010	19	10.12	11.12	3.49	9.00
Q3 2010	12	10.27	11.07	2.79	12.40
Q4 2010	8	10.30	11.17	2.86	10.90
Q1 2011	8	10.35	11.11	3.46	10.80
Q2 2011	15	10.24	11.06	3.21	12.00
Q3 2011	17	10.13	10.86	2.43	8.64
Q4 2011	10	10.29	10.66	2.05	7.60
Q1 2012	17	10.84	10.57	2.04	10.50
Q2 2012	16	9.92	10.66	1.82	11.40
Q3 2012	8	9.78	10.68	1.64	8.20
Q4 2012	12	10.05	10.69	1.71	8.65
Q1 2013	19	10.23	10.49	1.95	8.24
Q2 2013	16	9.77	10.40	2.00	11.80
Q3 2013	4	10.06	10.85	2.71	6.55
Q4 2013	7	9.90	10.24	2.75	8.14
Q1 2014	9	10.23	10.22	2.76	11.30
Q2 2014	25	9.83	10.48	2.62	7.83

NA = Not available
Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

biomass fuels, a combined cycle natural gas and oil-fired facility (and transmission line), and a circulating fluidized bed coal-fired generating facility employing carbon capture technology. The company is asking for a slightly higher ROE for these facilities, as a higher recovery would be consistent with commission precedent for plants employing lower emission technologies.

Public Service Colorado

Public Service Colorado filed in Q2 to recover for increased infrastructure investments to comply with the state's Clean Air Clean Jobs Act (CACJ) and for a rider to recover compliance costs related to CACJ. The CACJ was implemented in 2010 and requires investor-owned utilities that own or operate coal plants in the state to convert to gas, retrofit or retire the lesser of 900 MW or 50% of coal generation assets by 1/1/2018. Additionally, the company hopes to replace its Significant Revenue Reduction Adjustment mechanism with a revenue decoupling mechanism.

Potomac Electric Power in Washington, D.C.

Potomac Electric Power's (Pepco) filing in Washington, D.C. proposes a power line undergrounding initiative in compliance with a recently passed D.C. law. The initiative would be funded by combining Pepco investment ($500 million), D.C. government funding through transportation capital improvement funds ($62 million), and bonds issued by the city government ($375 million). Two surcharges on Pepco customer bills will recover the Pepco investment (labeled as Underground Charge, Pepco) and the debt service on the bonds.

Hawaiian Electric

Hawaiian Electric's filing says "Hawaiian Electric is foregoing the opportunity to seek an increase in base rates . . . in recognition that its customers are already in a challenging high bill environment." The company says that it has a revenue requirement deficiency of $56.2 million (2.7%). Plant in service additions not captured by the company's alternative regulation framework (ARF), which provides for annual rate adjustments outside a base rate case, caused the deficiency. The ARF can recover costs for new activities undertaken since the last rate case, an increase in cost of capital from an unexpected interest rate increase or increased volatility in equity costs, and pension and other post-employment benefit costs. The case was filed in compliance with the ARF, which requires a case to be filed every three years.

Miscellaneous

Florida Public Utilities filed in part due to lower system demand and revenues caused by the lingering economic downturn. PacifiCorp in Washington state filed in part to implement an alternative cost of capital calculation to recover for a fish passage facility required by FERC. Connecticut Light & Power filed in part to implement a revenue decoupling mechanism. Entergy Mississippi filed in part to change its formula rate plan to allow the company to use a forecasted rather than historic test year.

Decided Cases in Q2

While the number of filed cases set a record in Q2, only six cases were decided, half of which were settlements. In Duquesne Light's decision in Pennsylvania, the commission approved a settlement and addressed its policy on settlements versus fully litigated cases, saying "The policy of the Commission is to encourage settlements, and the Commission has stated that settlement rates are often preferable to those achieved at the conclusion of a fully litigated proceeding. . . . Despite the policy favoring settlements, the Commission does not simply rubber stamp settlements . . . Based on our review of the settlement, we find that there are a number of settled issues within the Non-Unanimous Settlement that are beneficial to customers. . . . The Settlement resolves the majority of issues impacting residential customers, small business, large business customers and the public at large. The benefits of the Settlement are numerous and will result in significant savings of time and expenses for all Parties involved by avoiding the necessity of further administrative proceedings, as well as possible appellate court proceedings."

Similarly, in Entergy Texas's case, the commission commented on the settlement, saying "the Stipulation is the result of compromise from each party, and these efforts, as well as the overall result of the Stipulation viewed in light of the record evidence as a whole, support the reasonableness and benefits of the terms of the Stipulation."

Storm Hardening and Recovery

Duquesne Light's settlement in Pennsylvania specifies that the company spend $15 million annually for three years on distribution system vegetation management programs. Emera Maine's settlement requires it to spend $4.1 million annually on vegetation management. The settlement also allows the company a $1.2 million distribution cost to recover expenses related to winter 2013 storms.

Failed Proposals for Riders and Rate Mechanisms

As part of its settlement, Entergy withdrew its requests for a transmission cost recovery rider, a market value load modifying rider (MVLM), a market value demand response rider (MVDR) and a deferred tax accounting rider. The MVLM would have provided a mechanism for customers with interruptible load to participate in a Midwest Independent System Operator (MISO) load modifying program. The MVDR would have provided a day-ahead energy product for customers wishing to participate in MISO's demand response program.

Fitchburg Gas & Electric Light had proposed in Massachusetts either a capital cost adjustment mechanism (CCAM) or a performance-based multi-year rate plan (MYRP). Either

would have modified the company's existing electric revenue decoupling mechanism. The CCAM would have allowed the company to adjust its target level of revenue to reflect incremental costs for post-test-year capital additions. The MYRP would have annually adjusted the company's target base revenues by a measure of inflation. The commission rejected both plans saying the company failed to demonstrate that they "are reasonable in design and necessary to recover incremental costs associated with anticipated capital expenditures between distribution rate cases."

Duquesne Light in Pennsylvania

Duquesne's settlement in Pennsylvania in Q2 reflects a forward-looking test year. The agreement required Duquesne to deposit $37.2 million per year into its pension trusts, but only recognized $18.6 million per year in base rates. The settlement permits the company to include 50% of actual pension contributions from 2007 forward in rate base, net of deferred taxes. The agreement says the approved increase reflects an annual expense of approximately $1.3 million for other post-employment benefits (OPEB), which is approximately one half the actuarial forecasted costs. The settlement specifies that the company must capitalize the remaining OPEB costs.

Approximately $34 million of the $48 million approved increase is allocated to the residential class, resulting in rate increases of 15% to 48%. The remaining $14 million is allocated to the commercial customer class, resulting in rate increases of 7% to 17%. No increase is allocated to the industrial customer class. The stipulation raises the residential customer charge from $7 to $10.

NRG Energy objected to the settlement because it did not change Duquesne's Rider 18, which specifies that the company purchase energy from a Public Utilities Regulatory Policies Act (PURPA) qualifying facility at the greater of avoided cost or six cents/kWh. NRG argued that this violates the state's utility restructuring laws and is anti-competitive. The commission denied NRG's objection, saying there was "insufficient time to render a thorough and reasoned decision on these issues within the regulatory time constraints inherent in a . . . base rate proceeding. It is important to note that Duquesne itself did not propose any changes to its currently effective Rider No. 18."

Emera Maine

Emera Maine's settlement specifies a $1.2 million distribution cost to recover for winter 2013 storms and allows the company to recover the costs of its new customer information system over a 15-year period. In accepting the settlement, the commission found the 9.55% ROE specified by the settlement "is reasonable when compared to decisions of the Commission." ■

Corporate Bond Yield Averages

	AV. CORP.	CORPORATE BY RATINGS				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS					INDUSTRIAL BONDS					RAILROAD BONDS			
		Aaa	Aa	A	Baa	P.U.	IND.	R.R.		Aaa	Aa	A	Baa		Aaa	Aa	A	Baa		Aaa	Aa	A	Baa
2009																							
Feb.	6.64	5.27	6.02	6.47	8.08	6.72	6.56	----	Feb.	----	6.11	6.30	7.74	Feb.	5.27	5.93	6.62	8.42	Feb.	----	----	----	----
Mar.	6.84	5.50	6.11	6.66	8.42	6.85	6.83	----	Mar.	----	6.14	6.42	8.00	Mar.	5.50	6.07	6.90	8.84	Mar.	----	----	----	----
Apr.	6.85	5.39	6.17	6.70	8.39	6.90	6.79	----	Apr.	----	6.20	6.48	8.03	Apr.	5.39	6.14	6.90	8.74	Apr.	----	----	----	----
May	6.79	5.54	6.24	6.67	8.06	6.83	6.75	----	May	----	6.23	6.49	7.76	May	5.54	6.24	6.84	8.36	May	----	----	----	----
June	6.52	5.61	6.12	6.39	7.50	6.54	6.49	----	June	----	6.13	6.20	7.30	June	5.61	6.11	6.58	7.69	June	----	----	----	----
July	6.17	5.41	5.71	6.09	7.09	6.15	6.18	----	July	----	5.63	5.97	6.87	July	5.41	5.78	6.20	7.30	July	----	----	----	----
Aug.	5.83	5.26	5.45	5.78	6.58	5.80	5.86	----	Aug.	----	5.33	5.71	6.36	Aug.	5.26	5.56	5.84	6.79	Aug.	----	----	----	----
Sept.	5.61	5.13	5.21	5.56	6.31	5.60	5.62	----	Sept.	----	5.15	5.53	6.12	Sept.	5.13	5.27	5.58	6.50	Sept.	----	----	----	----
Oct.	5.63	5.15	5.24	5.57	6.29	5.64	5.61	----	Oct.	----	5.23	5.55	6.14	Oct.	5.15	5.25	5.59	6.44	Oct.	----	----	----	----
Nov.	5.68	5.19	5.29	5.64	6.32	5.71	5.64	----	Nov.	----	5.33	5.64	6.18	Nov.	5.19	5.26	5.64	6.46	Nov.	----	----	----	----
Dec.	5.78	5.26	5.44	5.77	6.37	5.86	5.71	----	Dec.	----	5.52	5.79	6.26	Dec.	5.26	5.36	5.74	6.47	Dec.	----	----	----	----
2010																							
Jan.	5.76	5.26	5.50	5.76	6.25	5.83	5.69	----	Jan.	----	5.55	5.77	6.16	Jan.	5.26	5.44	5.73	6.33	Jan.	----	----	----	----
Feb.	5.86	5.35	5.62	5.84	6.34	5.94	5.79	----	Feb.	----	5.69	5.87	6.25	Feb.	5.35	5.55	5.80	6.43	Feb.	----	----	----	----
Mar.	5.81	5.27	5.57	5.80	6.27	5.90	5.71	----	Mar.	----	5.64	5.84	6.22	Mar.	5.27	5.49	5.75	6.32	Mar.	----	----	----	----
Apr.	5.80	5.29	5.57	5.78	6.25	5.87	5.71	----	Apr.	----	5.62	5.81	6.19	Apr.	5.29	5.50	5.74	6.32	Apr.	----	----	----	----
May	5.52	4.96	5.25	5.49	6.05	5.59	5.44	----	May	----	5.29	5.50	5.97	May	4.96	5.19	5.47	6.13	May	----	----	----	----
June	5.52	4.88	5.16	5.44	6.23	5.62	5.42	----	June	----	5.22	5.46	6.18	June	4.88	5.11	5.42	6.28	June	----	----	----	----
July	5.32	4.72	4.96	5.25	6.01	5.41	5.23	----	July	----	4.99	5.26	5.98	July	4.72	4.92	5.23	6.04	July	----	----	----	----
Aug.	5.05	4.49	4.72	5.00	5.66	5.10	4.98	----	Aug.	----	4.75	5.01	5.55	Aug.	4.49	4.68	4.98	5.77	Aug.	----	----	----	----
Sept.	5.05	4.53	4.72	5.01	5.66	5.10	5.00	----	Sept.	----	4.74	5.01	5.53	Sept.	4.53	4.70	5.00	5.78	Sept.	----	----	----	----
Oct.	5.15	4.68	4.83	5.09	5.72	5.20	5.08	----	Oct.	----	4.89	5.10	5.62	Oct.	4.68	4.77	5.07	5.81	Oct.	----	----	----	----
Nov.	5.37	4.87	5.07	5.33	5.92	5.45	5.29	----	Nov.	----	5.12	5.37	5.85	Nov.	4.87	5.02	5.29	5.99	Nov.	----	----	----	----
Dec.	5.55	5.02	5.26	5.52	6.10	5.64	5.46	----	Dec.	----	5.32	5.56	6.04	Dec.	5.02	5.19	5.47	6.15	Dec.	----	----	----	----
2011																							
Jan.	5.56	5.04	5.26	5.53	6.09	5.64	5.46	----	Jan.	----	5.29	5.57	6.06	Jan.	5.04	5.22	5.48	6.11	Jan.	----	----	----	----
Feb.	5.66	5.22	5.37	5.64	6.15	5.73	5.58	----	Feb.	----	5.42	5.68	6.10	Feb.	5.22	5.31	5.59	6.19	Feb.	----	----	----	----
Mar.	5.55	5.13	5.28	5.52	6.03	5.62	5.48	----	Mar.	----	5.33	5.56	5.97	Mar.	5.13	5.22	5.48	6.09	Mar.	----	----	----	----
Apr.	5.56	5.16	5.29	5.52	6.02	5.62	5.49	----	Apr.	----	5.32	5.55	5.98	Apr.	5.16	5.25	5.48	6.06	Apr.	----	----	----	----
May	5.33	4.96	5.06	5.29	5.78	5.38	5.27	----	May	----	5.08	5.32	5.74	May	4.96	5.04	5.26	5.81	May	----	----	----	----
June	5.30	4.99	5.04	5.26	5.75	5.33	5.27	----	June	----	5.04	5.26	5.67	June	4.99	5.02	5.25	5.82	June	----	----	----	----
July	5.30	4.93	5.03	5.26	5.76	5.34	5.25	----	July	----	5.05	5.27	5.70	July	4.93	4.99	5.25	5.81	July	----	----	----	----
Aug.	4.79	4.37	4.47	4.74	5.36	4.78	4.79	----	Aug.	----	4.44	4.69	5.22	Aug.	4.37	4.50	4.79	5.49	Aug.	----	----	----	----
Sept.	4.60	4.09	4.23	4.54	5.27	4.61	4.58	----	Sept.	----	4.24	4.48	5.11	Sept.	4.09	4.21	4.59	5.42	Sept.	----	----	----	----
Oct.	4.60	3.98	4.16	4.54	5.37	4.66	4.54	----	Oct.	----	4.21	4.52	5.24	Oct.	3.98	4.11	4.56	5.50	Oct.	----	----	----	----
Nov.	4.39	3.87	3.97	4.34	5.14	4.37	4.41	----	Nov.	----	3.92	4.25	4.93	Nov.	3.87	4.01	4.43	5.34	Nov.	----	----	----	----
Dec.	4.47	3.93	4.03	4.40	5.25	4.47	4.47	----	Dec.	----	4.00	4.33	5.07	Dec.	3.93	4.06	4.46	5.43	Dec.	----	----	----	----
2012																							
Jan.	4.45	3.85	4.01	4.39	5.23	4.48	4.41	----	Jan.	----	4.03	4.34	5.06	Jan.	3.85	3.98	4.43	5.39	Jan.	----	----	----	----
Feb.	4.42	3.85	3.99	4.39	5.14	4.47	4.37	----	Feb.	----	4.02	4.36	5.02	Feb.	3.85	3.96	4.41	5.26	Feb.	----	----	----	----
Mar.	4.54	3.99	4.14	4.51	5.23	4.59	4.50	----	Mar.	----	4.16	4.48	5.13	Mar.	3.99	4.12	4.53	5.33	Mar.	----	----	----	----
Apr.	4.49	3.96	4.08	4.44	5.19	4.53	4.44	----	Apr.	----	4.10	4.40	5.11	Apr.	3.96	4.06	4.48	5.27	Apr.	----	----	----	----
May	4.33	3.80	3.91	4.26	5.07	4.36	4.30	----	May	----	3.92	4.20	4.97	May	3.80	3.90	4.32	5.17	May	----	----	----	----
June	4.22	3.64	3.78	4.14	5.02	4.26	4.18	----	June	----	3.79	4.08	4.91	June	3.64	3.77	4.18	5.13	June	----	----	----	----
July	4.03	3.40	3.54	3.93	4.87	4.12	3.93	----	July	----	3.58	3.93	4.85	July	3.40	3.49	3.93	4.89	July	----	----	----	----
Aug.	4.09	3.48	3.61	3.99	4.91	4.18	3.99	----	Aug.	----	3.65	4.00	4.88	Aug.	3.48	3.57	3.98	4.93	Aug.	----	----	----	----
Sept.	4.09	3.49	3.68	4.01	4.84	4.17	4.00	----	Sept.	----	3.69	4.02	4.81	Sept.	3.49	3.66	4.00	4.87	Sept.	----	----	----	----
Oct.	3.97	3.47	3.63	3.90	4.58	4.05	3.89	----	Oct.	----	3.68	3.91	4.54	Oct.	3.47	3.58	3.89	4.62	Oct.	----	----	----	----
Nov.	3.92	3.50	3.57	3.87	4.51	3.95	3.88	----	Nov.	----	3.60	3.84	4.42	Nov.	3.50	3.54	3.89	4.60	Nov.	----	----	----	----
Dec.	4.05	3.65	3.70	3.98	4.63	4.10	3.99	----	Dec.	----	3.75	4.00	4.56	Dec.	3.65	3.65	3.96	4.70	Dec.	----	----	----	----
2013																							
Jan.	4.19	3.80	3.87	4.14	4.73	4.24	4.14	----	Jan.	----	3.90	4.15	4.66	Jan.	3.80	3.84	4.13	4.81	Jan.	----	----	----	----
Feb.	4.27	3.90	3.95	4.19	4.85	4.29	4.25	----	Feb.	----	3.95	4.18	4.74	Feb.	3.90	3.95	4.20	4.95	Feb.	----	----	----	----
Mar.	4.29	3.93	3.97	4.23	4.85	4.29	4.29	----	Mar.	----	3.95	4.20	4.72	Mar.	3.93	3.98	4.25	4.99	Mar.	----	----	----	----
Apr.	4.07	3.73	3.77	4.03	4.59	4.08	4.07	----	Apr.	----	3.74	4.00	4.49	Apr.	3.73	3.79	4.05	4.69	Apr.	----	----	----	----
May	4.23	3.89	3.94	4.19	4.73	4.24	4.22	----	May	----	3.91	4.17	4.65	May	3.89	3.97	4.20	4.80	May	----	----	----	----
June	4.63	4.27	4.32	4.56	5.19	4.63	4.63	----	June	----	4.27	4.53	5.08	June	4.27	4.36	4.58	5.29	June	----	----	----	----
July	4.76	4.34	4.46	4.69	5.32	4.78	4.74	----	July	----	4.44	4.68	5.21	July	4.34	4.47	4.69	5.43	July	----	----	----	----
Aug.	4.88	4.54	4.63	4.78	5.42	4.85	4.92	----	Aug.	----	4.53	4.73	5.28	Aug.	4.54	4.72	4.83	5.57	Aug.	----	----	----	----
Sept.	4.95	4.64	4.69	4.85	5.47	4.90	4.99	----	Sept.	----	4.58	4.80	5.31	Sept.	4.64	4.80	4.90	5.62	Sept.	----	----	----	----
Oct.	4.82	4.53	4.59	4.73	5.31	4.78	4.86	----	Oct.	----	4.48	4.70	5.17	Oct.	4.53	4.69	4.76	5.44	Oct.	----	----	----	----
Nov.	4.91	4.63	4.67	4.82	5.38	4.86	4.95	----	Nov.	----	4.56	4.77	5.24	Nov.	4.63	4.79	4.85	5.52	Nov.	----	----	----	----
Dec.	4.92	4.62	4.68	4.85	5.38	4.89	4.95	----	Dec.	----	4.59	4.81	5.25	Dec.	4.62	4.76	4.89	5.51	Dec.	----	----	----	----
2014																							
Jan.	4.76	4.49	4.53	4.69	5.19	4.72	4.78	----	Jan.	----	4.44	4.63	5.09	Jan.	4.49	4.62	4.74	5.29	Jan.	----	----	----	----
Feb.	4.68	4.45	4.46	4.60	5.10	4.64	4.71	----	Feb.	----	4.38	4.53	5.01	Feb.	4.45	4.54	4.66	5.19	Feb.	----	----	----	----
Mar.	4.65	4.38	4.44	4.56	5.06	4.63	4.65	----	Mar.	----	4.40	4.51	5.00	Mar.	4.38	4.49	4.60	5.13	Mar.	----	----	----	----
Apr.	4.52	4.24	4.33	4.45	4.90	4.52	4.51	----	Apr.	----	4.30	4.41	4.85	Apr.	4.24	4.36	4.48	4.96	Apr.	----	----	----	----
May	4.38	4.16	4.20	4.31	4.76	4.37	4.40	----	May	----	4.16	4.26	4.69	May	4.16	4.24	4.35	4.83	May	----	----	----	----
June	4.44	4.25	4.26	4.35	4.80	4.42	4.45	----	June	----	4.23	4.29	4.73	June	4.25	4.29	4.41	4.86	June	----	----	----	----
July	4.37	4.16	4.20	4.28	4.73	4.35	4.39	----	July	----	4.16	4.23	4.66	July	4.16	4.23	4.34	4.80	July	----	----	----	----
Aug.	4.29	4.08	4.10	4.20	4.69	4.29	4.30	----	Aug.	----	4.07	4.13	4.65	Aug.	4.08	4.13	4.26	4.72	Aug.	----	----	----	----

Notes: Moody's® Long-Term Corporate Bond Yield Averages have been published daily since 1929. They are derived from pricing data on a regularly-replenished population of nearly 75 seasoned corporate bonds in the US market, each with current outstandings over $100 million. The bonds have maturities as close as possible to 30 years; they are dropped from the list if their remaining life falls below 20 years, if their ratings change. Bonds with deep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Because of the dearth of **Aaa** -rated railroad term bond issues, Moody's® **Aaa** railroad bond yield average was discontinued as of December 18, 1967. Moody's® **Aaa** public utility average suspended from Jan. 1984 thru Sept. 1984. Oct. 1984 figure for last 14 business days only. The Railroad Bond Averages were discontinued as of July 17, 1989 because of insufficient frequently tradable bonds. The July figures were based on 8 business days.
Because of the dearth of Aaa rated public utility bond issues, Moody's Aaa public utility bond yield average was discontinued as of December 10, 2001.