SUMMARY OUTPUT 2009 - 2013 (Jan - April)
X Axis (dependent variable in years)

Regression Statistics	
Multiple R	0.994747
R Square	0.989521
Adjusted R Square	0.986028
Standard Error	24.24665
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	166544.2	166544.218	283.2866	0.000457
Residual	3	1763.7	587.900101		
Total	4	168307.9			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	263791.6	15419.27	17.10791	0.000435	214720.5	312862.6	214720.5	312862.5775
X Variable 1	-129.052	7.667464	-16.83112	0.000457	-153.453	-104.651	-153.453	-104.6507185

Year	Average Residential Consumption Jan - April
2009	4,535.23
2010	4,402.45
2011	4,232.07
2012	4,157.77
2013	4,012.31

SUMMARY OUTPUT 2010 - 2014 (November - March)
X - Axis (dependent variable in years)

Regression Statistics	
Multiple R	0.68939
R Square	0.475259
Adjusted R Square	0.300345
Standard Error	100.5567
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	27474.38	27474.38497	2.717101	0.197837
Residual	3	30334.96	10111.65437		
Total	4	57809.35			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	109651.4	63979.26	1.713859157	0.185069	-93959.1	313262	-93959.1	313261.985
X Variable 1	-52.416	31.79883	-1.64836309	0.197837	-153.614	48.78205	-153.614	48.7820477

Year	Average Residential Consumption Nov - March
2010	4,308.61
2011	4,311.83
2012	4,108.76
2013	4,040.88
2014	4,182.00

Data from Excel Worksheet titled IN usage_winter ave_update 5.10.13 and
and Petitioner's response to OUCC data request question 66-001 and 79-002(supplemental)

SUMMARY OUTPUT First Differences

Regression Statistics	
Multiple R	0.183967
R Square	0.033844
Adjusted R Square	-0.44923
Standard Error	49.03965
Observations	4

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	168.4835	168.4835359	0.070059	0.816033
Residual	2	4809.775	2404.887272		
Total	3	4978.258			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	11807.26	44114.61	0.267649605	0.814044	-178003	201617.1	-178003	201617.1142
X Variable 1	-5.80489	21.9312	-0.264686245	0.816033	-100.167	88.55744	-100.167	88.55744329

Year	Average Residential Consumption Jan - April	Change
2009	4,535.23	
2010	4,402.45	(132.78)
2011	4,232.07	(170.39)
2012	4,157.77	(74.30)
2013	4,012.31	(145.46)

First Quarter 2014 Survey of Professional Forecasters

Release Date: February 14, 2014

Forecasters Predict Higher Growth and Lower Unemployment over the Next Three Years

The outlook for growth in the U.S. economy over the next three years looks stronger than that of three months ago, according to 45 forecasters surveyed by the Federal Reserve Bank of Philadelphia. On an annual-average over annual-average basis, the forecasters predict faster real GDP growth in 2014, 2015, and 2016. The forecasters see real GDP growing 2.8 percent in 2014, up from their prediction of 2.6 percent in the last survey. The forecasters predict real GDP will grow 3.1 percent in 2015, higher than their prediction of 2.8 percent in the last survey. For 2016, the forecast for real GDP growth, at 3.1 percent, is 0.4 percentage point higher than the last survey.

A brighter outlook for the unemployment rate accompanies the more positive outlook for growth. The forecasters predict that the unemployment rate will be an annual average of 6.5 percent in 2014, before falling to 6.1 percent in 2015, 5.7 percent in 2016, and 5.5 percent in 2017. The projections for 2014, 2015, and 2016 are below those of the last survey.

On the jobs front, the forecasters see little change in job growth in 2014. The forecasters' projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 187,700 in 2014 and 206,900 in 2015, as the table below shows. (These annual-average estimates are computed as the year-to-year change in the annual-average level of nonfarm payroll employment, converted to a monthly rate.)

Median Forecasts for Selected Variables in the Current and Previous Surveys

	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly Data:						
2014:Q1	2.5	2.0	7.1	6.7	187.0	177.4
2014:Q2	2.9	3.0	7.0	6.6	193.5	193.5
2014:Q3	2.9	2.8	6.9	6.4	201.8	195.2
2014:Q4	2.9	2.7	6.8	6.3	202.1	215.0
2015:Q1	N.A.	3.2	N.A.	6.2	N.A.	201.0
Annual Data (projections are based on annual-average levels):						
2014	2.6	2.8	7.0	6.5	189.9	187.7
2015	2.8	3.1	6.4	6.1	N.A.	206.9
2016	2.7	3.1	6.0	5.7	N.A.	N.A.

First Quarter 2014 Survey of Professional Forecasters - Philadelphia Fed

	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
2017	N.A.	2.4	N.A.	5.5	N.A.	N.A.

A NOTE TO USERS OF THE DATA FOR DENSITY PROJECTIONS AND LONG-TERM FORECASTS FOR THE RATE ON 10-YEAR CONSTANT MATURITY TREASURY BONDS

We made two permanent changes to the survey's design. First, we changed the definitions of the bins for the density questions on unemployment and GDP inflation. For unemployment, we shaved 2 percentage points from the endpoints of each bin. For GDP inflation, we defined the endpoints of each bin to correspond with those of core CPI inflation and core PCE inflation.

Second, we changed the phrasing of the question for the long-term (10-year annual-average) rate on 10-year constant maturity Treasury bonds. This question, which appears only in first-quarter surveys, has always been ambiguous. In previous first-quarter surveys, we asked for the return on 10-year Treasury bonds over the next 10 years. It was never clear whether we meant the return to buying a 10-year Treasury bond on the survey date and holding it until maturity or whether we meant the average return from buying a 10-year constant maturity Treasury bond each quarter (or month or day) over the next 10 years and holding the bonds until they mature. We have changed the question to emphasize the latter: We now ask for the yield on 10-year constant maturity Treasury bonds, and we make it clear to the panelists that we mean the average yield in the current year and the following nine years. This adjustment to the way we now ask the question might or might not change the panelists' responses compared with the way they would have answered had we not changed the question.

We caution users of the data against comparing the *long-term* (10-year annual-average) forecasts for 10-year Treasury bonds in this survey with those of previous first-quarter surveys. Note that we have not changed the questions on *short-term* projections for 10-year Treasury rates that appear in each quarterly survey. Thus, the short-term projections in this survey are comparable with those of all previous surveys.

For additional information, please contact:

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The charts below provide some insight into the degree of uncertainty the forecasters have about their projections for the rate of growth in the annual-average level of real GDP. Each chart (except the chart for 2017) presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The forecasters have shifted the distributions of density to the right for 2014, 2015, and 2016, indicating their expectations for higher real GDP growth compared with their previous estimates.

- Mean Probabilities for Real GDP Growth in 2014 (chart)
- Mean Probabilities for Real GDP Growth in 2015 (chart)
- Mean Probabilities for Real GDP Growth in 2016 (chart)
- Mean Probabilities for Real GDP Growth in 2017 (chart)

The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart for unemployment presents the forecasters' current estimates of the probability that unemployment will fall into each of 10 ranges. The forecasters estimate a near-40 percent chance that unemployment will average 6.0 to 6.4 percent in 2014 and 2015. They see a 35 percent chance of unemployment averaging 5.5 to 5.9 percent in 2016 and a substantial chance that unemployment will be below 5.5 percent in 2017.

- Mean Probabilities for Unemployment Rate in 2014 (chart)

- Mean Probabilities for Unemployment Rate in 2015 (chart)
- Mean Probabilities for Unemployment Rate in 2016 (chart)
- Mean Probabilities for Unemployment Rate in 2017 (chart)

Forecasters See Lower Inflation

The forecasters expect current-quarter headline CPI inflation to average 1.7 percent, lower than the last survey's estimate of 1.8 percent. The forecasters predict current-quarter headline PCE inflation of 1.3 percent, lower than the prediction of 1.8 percent from the survey of three months ago.

The forecasters also see lower headline and core measures of CPI and PCE inflation during the next two years. Measured on a fourth-quarter over fourth-quarter basis, headline CPI inflation is expected to average 1.8 percent in 2014, down from 2.0 percent in the last survey, and 2.0 percent in 2015, down 0.2 percentage point from the previous estimate. Forecasters expect fourth-quarter over fourth-quarter headline PCE inflation to average 1.6 percent in 2014, down from 1.9 percent in the last survey, and 1.8 percent in 2015, down 0.1 percentage point from the previous estimate.

Over the next 10 years, 2014 to 2023, the forecasters expect headline CPI inflation to average 2.3 percent at an annual rate. The corresponding estimate for 10-year annual-average PCE inflation is 2.0 percent.

Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)

	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Quarterly								
2014:Q1	1.8	1.7	1.9	1.8	1.8	1.3	1.7	1.5
2014:Q2	2.0	1.7	1.9	1.8	1.9	1.5	1.8	1.5
2014:Q3	2.0	1.9	2.0	1.9	1.9	1.7	1.7	1.6
2014:Q4	2.1	2.0	2.0	1.9	1.9	1.7	1.8	1.7
2015:Q1	N.A.	2.0	N.A.	2.1	N.A.	1.8	N.A.	1.8
Q4/Q4 Annual Averages								
2014	2.0	1.8	2.0	1.9	1.9	1.6	1.7	1.6
2015	2.2	2.0	2.1	2.0	1.9	1.8	1.9	1.8
2016	N.A.	2.1	N.A.	2.1	N.A.	2.0	N.A.	1.9
Long-Term Annual Averages								
2013-2017	2.1	N.A.	N.A.	N.A.	1.8	N.A.	N.A.	N.A.
2014-2018	N.A.	2.1	N.A.	N.A.	N.A.	1.9	N.A.	N.A.
2013-2022	2.3	N.A.	N.A.	N.A.	2.0	N.A.	N.A.	N.A.
2014-2023	N.A.	2.3	N.A.	N.A.	N.A.	2.0	N.A.	N.A.

The charts below show the median projections (the red line) and the associated interquartile ranges (the gray area around the red line) for 10-year annual-average CPI and PCE inflation. The top panel shows the unchanged long-term projection for CPI inflation, at 2.3 percent. The bottom panel highlights the unchanged 10-year forecast for PCE inflation, at 2.0 percent.

- Projections for the 10-Year Annual-Average Rate of CPI Inflation (chart)
- Projections for the 10-Year Annual-Average Rate of PCE Inflation (chart)

The figures below show the probabilities that the forecasters are assigning to the possibility that fourth-quarter over fourth-quarter core PCE inflation in 2014 and 2015 will fall into each of 10 ranges. For 2014, the forecasters assign a higher chance than previously noted that core PCE inflation will fall in the range of 1.0 to 1.9 percent (and a lower probability that inflation will fall in the range of 2.0 to 2.4 percent).

- Mean Probabilities for Core PCE Inflation in 2014 (chart)
- Mean Probabilities for Core PCE Inflation in 2015 (chart)

Risk of a Negative Quarter Remains Low

For the current quarter, the forecasters predict an 11.2 percent chance of negative growth. As the table below shows, the forecasters have kept their risk estimates for a downturn in the following quarters nearly unchanged, compared with their previous estimates.

Risk of a Negative Quarter (%)
Survey Means

Quarterly Data:	Previous	New
2014: Q1	11.1	11.2
2014: Q2	11.6	9.3
2014: Q3	11.7	10.6
2014: Q4	12.2	11.4
2015: Q1	N.A.	11.7

Forecasters State Their Views on House Prices

In this survey, a special question asked panelists to provide their forecasts for fourth-quarter over fourth-quarter growth in house prices, as measured by a number of alternative indices. The panelists were allowed to choose from a provided list of indices or to write in their own index. For each index of their choosing, the panelists provided forecasts for growth in 2014 and 2015.

Twenty-three panelists answered the special question. Some panelists provided projections for more than one index. The table below provides a summary of the forecasters' responses. The number of responses (N) is low for each index. The median estimates for the six house-price indices listed in the table below range from 2.1 percent to 7.0 percent in 2014 and from 2.7 percent to 4.9 percent in 2015.

Projections for Growth in Various Indices of House Prices
Q4/Q4, Percentage Points

First Quarter 2014 Survey of Professional Forecasters - Philadelphia Fed

	2014 (Q4/Q4 Percent Change)			2015 (Q4/Q4 Percent Change)		
Index	N	Mean	Median	N	Mean	Median
S&P/Case-Shiller: U.S. National	6	5.6	5.9	6	4.4	4.9
S&P/Case-Shiller: Composite 20	6	4.8	4.5	6	3.5	3.2
FHFA: U.S. Total	6	7.2	6.3	6	3.1	2.7
FHFA: Purchase Only	5	5.1	5.8	5	2.7	2.9
CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined)	6	6.4	7.0	6	4.8	4.8
NAR Median: Total Existing	1	2.1	2.1	1	2.8	2.8

Forecasters See Little Reason to Revise Long-Run Estimates of Growth in Output and Productivity

In the first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets.

As the table below shows, the forecasters have slightly increased their estimates for the annual-average rate of growth in real GDP over the next 10 years. Currently, the forecasters expect real GDP to grow at an annual-average rate of 2.6 percent over the next 10 years, up from 2.5 percent in the first-quarter survey of 2013.

The forecasters' current projection for 10-year annual-average productivity growth is 1.80 percent, the same rate they predicted in last year's first-quarter survey. Stocks are seen returning 6.00 percent annually over the next 10 years, while Treasury bills will return 2.50 percent annually over the same period.

Median Long-Term (10-Year) Forecasts (%)		
	First Quarter 2013	Current Survey
Real GDP Growth	2.50	2.60
Productivity Growth	1.80	1.80
Stock Returns (S&P 500)	6.13	6.00
Rate on 10-Year Treasury Bonds	N.A.	4.35
Bill Returns (3-Month)	2.40	2.50

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

Lewis Alexander, Nomura Securities; **Scott Anderson**, Bank of the West (BNP Paribas Group); **Robert J. Barbera**, Johns Hopkins University Center for Financial Economics; **Peter Bernstein**, RCF Economic and Financial Consulting, Inc.; **Christine Chmura, Ph.D.** and **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero, CFA**, GLC Financial Economics; **Julia Coronado**, BNP Paribas; **David Crowe**, National Association of Home Builders; **Nathaniel Curtis**, Navigant; **Rajeev Dhawan**, Georgia State University; **Shawn Dubravac**, Consumer Electronics Association; **Gregory Daco**, Oxford Economics USA, Inc.; **Michael R. Englund**, Action Economics, LLC; **Timothy Gill**, NEMA; **Matthew Hall** and **Daniil Manaenkov**, RSQE, University of Michigan; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Peter Hooper**, Deutsche Bank

Securities, Inc.; **IHS Global Insight**; **Fred Joutz**, Benchmark Forecasts and Research Program on Forecasting, George Washington University; **Sam Kahan**, Kahan Consulting Ltd. (ACT Research LLC); **N. Karp**, BBVA Compass; **Walter Kemmsies**, Moffatt & Nichol; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Thomas Lam**, OSK-DMG/RHB; **L. Douglas Lee**, Economics from Washington; **Allan R. Leslie**, Economic Consultant; **John Lonski**, Moody's Capital Markets Group; **Macroeconomic Advisers, LLC**; **Dean Maki**, Barclays Capital; **Jim Meil** and **Arun Raha**, Eaton Corporation; **Anthony Metz**, Pareto Optimal Economics; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Michael P. Niemira**, International Council of Shopping Centers; **Luca Noto**, Anima Sgr; **Brendon Ogmundson**, BC Real Estate Association; **Martin A. Regalia**, U.S. Chamber of Commerce; **Philip Rothman**, East Carolina University; **Chris Rupkey**, Bank of Tokyo-Mitsubishi UFJ; **John Silvia**, Wells Fargo; **Allen Sinai**, Decision Economics, Inc.; **Tara M. Sinclair**, Research Program on Forecasting, George Washington University; **Sean M. Snaith, Ph.D.**, University of Central Florida; **Neal Soss**, Credit Suisse; **Stephen Stanley**, Pierpont Securities; **Charles Steindel**, New Jersey Department of the Treasury; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **Thomas Kevin Swift**, American Chemistry Council; **Richard Yamarone**, Bloomberg, LP; **Mark Zandi**, Moody's Analytics.

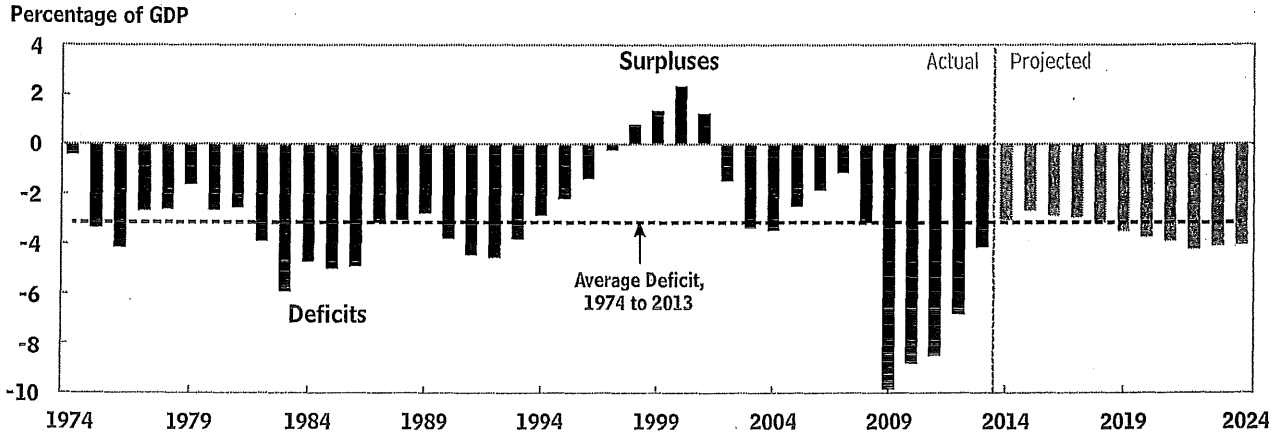
This is a partial list of participants. We also thank those who wish to remain anonymous.

Return to the main page for the Survey of Professional Forecasters.

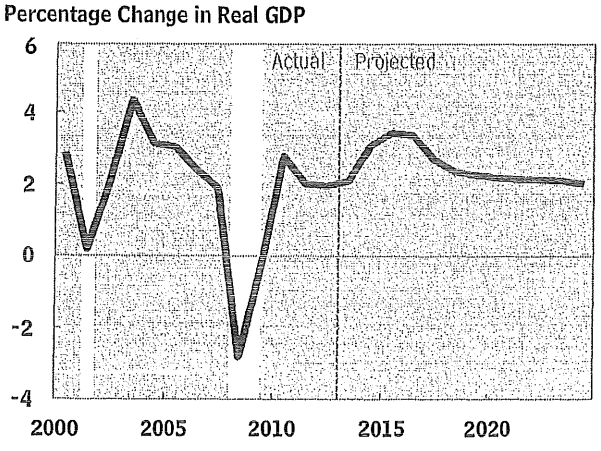
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

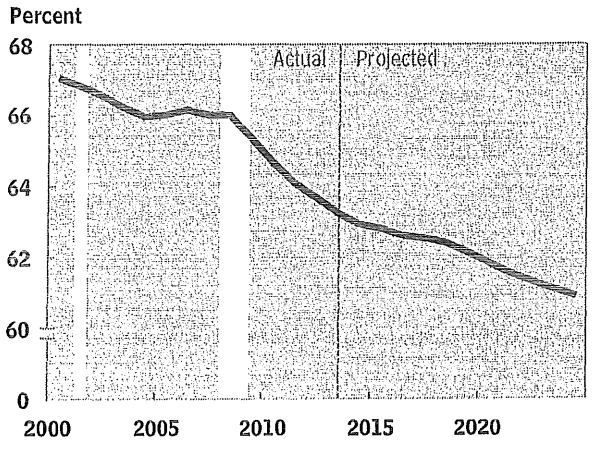
The Budget and Economic Outlook: 2014 to 2024



Total Deficits or Surpluses



Economic Growth



Labor Force Participation Rate

FEBRUARY 2014

APPENDIX

G

CBO's Economic Projections for 2014 to 2024

The tables in this appendix expand on the information in Chapter 2 by showing the Congressional Budget Office's (CBO's) economic projections for each year from 2014 to 2024 (by calendar year in Table G-1 and by fiscal year in Table G-2). For years after 2017, CBO did not attempt to forecast the frequency or size of fluctuations in the business cycle. Instead, the values shown in these tables for 2018 to 2024 reflect CBO's assessment of the effects in the medium term of economic and demographic trends, federal tax and spending policies under current law, the 2007–2009 recession, and the slow economic recovery since then.

Table G-1.

CBO's Economic Projections, by Calendar Year

	Estimated, 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Year to Year (Percentage change)											
Gross Domestic Product												
Real	1.7	2.7	3.3	3.4	3.0	2.4	2.3	2.2	2.2	2.1	2.1	2.0
Nominal	3.2	4.2	5.1	5.3	4.9	4.4	4.3	4.2	4.2	4.2	4.1	4.1
Inflation												
PCE price index	1.1	1.3	1.7	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index[a]	1.2	1.4	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index[b]	1.5 [c]	1.7	2.0	2.1	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Core consumer price index[a]	1.8 [c]	1.8	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	1.4	1.5	1.7	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Employment Cost Index[d]	1.9	2.3	3.0	3.5	3.8	3.9	3.8	3.8	3.7	3.7	3.6	3.6
	Calendar Year Average											
Unemployment Rate (Percent)	7.4 [c]	6.8	6.5	6.1	5.9	5.8	5.7	5.7	5.6	5.6	5.5	5.5
Payroll Employment (Monthly change, in thousands)[e]	190 [c]	164	160	141	124	85	58	56	61	71	68	67
Interest Rates (Percent)												
Three-month Treasury bills	0.1 [c]	0.2	0.4	1.8	3.3	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Ten-year Treasury notes	2.4 [c]	3.1	3.7	4.3	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Tax Bases (Percentage of GDP)												
Wages and salaries	42.6	42.6	42.5	42.5	42.6	42.8	42.9	43.0	43.1	43.2	43.3	43.5
Domestic economic profits	9.9	9.5	9.5	9.5	9.0	8.5	8.1	7.8	7.5	7.3	7.2	7.0
Tax Bases (Billions of dollars)												
Wages and salaries	7,141	7,438	7,807	8,220	8,648	9,072	9,479	9,899	10,336	10,801	11,280	11,777
Domestic economic profits	1,657	1,667	1,740	1,837	1,829	1,791	1,782	1,788	1,809	1,833	1,874	1,905
Nominal GDP (Billions of dollars)	16,769	17,472	18,357	19,329	20,281	21,180	22,097	23,035	23,998	25,000	26,036	27,095

Source: Congressional Budget Office.

Notes: Estimated values for 2013 do not reflect the values for GDP and related series released by the Bureau of Economic Analysis since early December 2013.

PCE = personal consumption expenditures; GDP = gross domestic product.

a. Excludes prices for food and energy.

b. The consumer price index for all urban consumers.

c. Actual value for 2013. (Actual values come from the Bureau of Labor Statistics and the Federal Reserve.)

d. The employment cost index for wages and salaries of workers in private industry.

e. Calculated as the monthly average of the fourth-quarter-to-fourth-quarter change in the quarterly average level of payroll employment.

Table G-2.

CBO's Economic Projections, by Fiscal Year

	Actual, 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
						Year to Year (Percentage change)						
Gross Domestic Product												
Real	1.7	2.4	3.3	3.4	3.1	2.5	2.3	2.2	2.2	2.1	2.1	2.1
Nominal	3.3	3.9	4.9	5.3	5.1	4.5	4.4	4.3	4.2	4.2	4.2	4.1
Inflation												
PCE price index	1.3	1.2	1.6	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index[a]	1.4	1.3	1.7	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index[b]	1.6	1.5	1.9	2.1	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Core consumer price index[a]	1.8	1.8	2.0	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	1.5	1.5	1.6	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Employment Cost Index[c]	1.8	2.2	2.9	3.4	3.8	3.9	3.8	3.8	3.8	3.7	3.6	3.6
						Fiscal Year Average						
Unemployment Rate (Percent)	7.6	6.9	6.6	6.2	5.9	5.8	5.7	5.7	5.6	5.6	5.5	5.5
Payroll Employment (Monthly change, in thousands)[d]	187	172	160	147	126	101	58	57	58	70	69	68
Interest Rates (Percent)												
Three-month Treasury bills	0.1	0.1	0.2	1.4	3.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Ten-year Treasury notes	2.1	3.0	3.6	4.2	4.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Tax Bases (Percentage of GDP)												
Wages and salaries	42.7	42.6	42.5	42.5	42.6	42.8	42.9	43.0	43.0	43.2	43.3	43.4
Domestic economic profits	10.0	9.5	9.5	9.5	9.2	8.6	8.1	7.8	7.6	7.4	7.2	7.1
Tax Bases (Billions of dollars)												
Wages and salaries	7,102	7,359	7,708	8,115	8,540	8,967	9,378	9,792	10,225	10,683	11,159	11,651
Domestic economic profits	1,661	1,642	1,724	1,819	1,842	1,797	1,781	1,785	1,804	1,826	1,864	1,899
Nominal GDP (Billions of dollars)	16,632	17,273	18,126	19,083	20,052	20,954	21,867	22,799	23,755	24,746	25,774	26,830

Sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve.

Note: PCE = personal consumption expenditures; GDP = gross domestic product.

a. Excludes prices for food and energy.

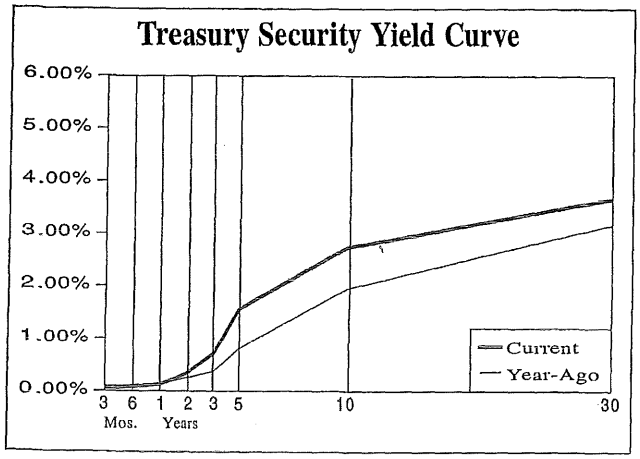
b. The consumer price index for all urban consumers.

c. The employment cost index for wages and salaries of workers in private industry.

d. Calculated as the monthly average of the fourth-quarter-to-fourth-quarter change in the quarterly average level of payroll employment.

Selected Yields

	Recent (3/05/14)	3 Months Ago (12/04/13)	Year Ago (3/06/13)
TAXABLE			
Market Rates			
Discount Rate	0.75	0.75	0.75
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25
Prime Rate	3.25	3.25	3.25
30-day CP (A1/P1)	0.09	0.10	0.20
3-month LIBOR	0.23	0.24	0.28
Bank CDs			
6-month	0.07	0.07	0.10
1-year	0.09	0.09	0.13
5-year	0.53	0.53	0.70
U.S. Treasury Securities			
3-month	0.05	0.05	0.09
6-month	0.08	0.09	0.11
1-year	0.12	0.12	0.15
5-year	1.57	1.48	0.81
10-year	2.73	2.86	1.95
10-year (inflation-protected)	0.41	0.69	-0.64
30-year	3.67	3.91	3.16
30-year Zero	3.89	4.20	3.42
Mortgage-Backed Securities			
GNMA 5.5%	1.88	2.44	1.77
FHLMC 5.5% (Gold)	2.05	2.35	2.25
FNMA 5.5%	1.83	2.13	1.88
FNMA ARM	1.93	2.19	2.12
Corporate Bonds			
Financial (10-year) A	3.80	4.23	3.03
Industrial (25/30-year) A	4.53	4.88	4.08
Utility (25/30-year) A	4.61	4.76	4.07
Utility (25/30-year) Baa/BBB	4.79	5.25	4.42
Foreign Bonds (10-Year)			
Canada	2.48	2.65	1.85
Germany	1.61	1.81	1.46
Japan	0.61	0.63	0.65
United Kingdom	2.72	2.90	1.96
Preferred Stocks			
Utility A	6.02	6.17	5.40
Financial BBB	6.53	6.55	5.93
Financial Adjustable A	5.53	5.53	5.53



	Recent (3/05/14)	3 Months Ago (12/04/13)	Year Ago (3/06/13)
TAX-EXEMPT			
Bond Buyer Indexes			
20-Bond Index (GOs)	4.38	4.61	3.74
25-Bond Index (Revs)	5.22	5.23	4.29
General Obligation Bonds (GOs)			
1-year Aaa	0.10	0.17	0.19
1-year A	0.73	0.80	0.78
5-year Aaa	1.15	1.28	0.80
5-year A	2.11	2.13	1.78
10-year Aaa	2.83	2.87	2.01
10-year A	3.68	3.68	2.89
25/30-year Aaa	4.20	4.34	3.13
25/30-year A	5.77	5.89	4.82
Revenue Bonds (Revs) (25/30-Year)			
Education AA	4.94	5.18	4.21
Electric AA	5.01	5.26	4.34
Housing AA	5.47	5.64	4.64
Hospital AA	5.30	5.29	4.45
Toll Road Aaa	4.70	4.84	4.37

Source: Bloomberg Finance L.P.

Federal Reserve Data

BANK RESERVES
(Two-Week Period; in Millions, Not Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	2/19/14	2/5/14	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	2532547	2450925	81622	2434257	2341371	2103755
Borrowed Reserves	102	120	-18	145	203	292
Net Free/Borrowed Reserves	2532445	2450805	81640	2434112	2341168	2103462

MONEY SUPPLY
(One-Week Period; in Billions, Seasonally Adjusted)

	Recent Levels			Ann'l Growth Rates Over the Last...		
	2/17/14	2/10/14	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2723.6	2718.7	4.9	18.1%	13.5%	10.1%
M2 (M1+savings+small time deposits)	11135.4	11099.5	35.9	9.2%	7.5%	6.6%

Source: United States Federal Reserve Bank

9% Forever?

That's economist Roger Ibbotson's forecast for stock market returns. HE'S BEEN RIGHT--very right--in the past. So how come some people think we shouldn't believe him anymore?

By JUSTIN FOX
December 26, 2005

(FORTUNE Magazine) – In May 1974, in the depths of the worst bear market since the 1930s, two young men at a University of Chicago conference made a brash prediction: The Dow Jones industrial average, floundering in the 800s at the time, would hit 9,218 at the end of 1998 and get to 10,000 by November 1999.

You probably have a good idea how things turned out: At the end of 1998, the Dow was at 9,181, just 37 points off the forecast. It hit 10,000 in March 1999, seven months early. Those two young men in Chicago in 1974 had made one of the most spectacular market calls in history.

What became of them after that? One, Rex Sinquefield, went on to found a mutual fund company that now manages more than $80 billion. The other, Roger Ibbotson, kept making market forecasts, forecasts of long-run stock and bond returns that have become deeply woven into the fabric of American life. Simply put, if you believe that stocks are fated to return 10% on average over the long haul, Ibbotson is probably the reason why.

It's hard to overestimate the influence of those numbers. The forecasts and historical return data churned out by Ibbotson Associates transformed the pension fund business in the late 1970s and 1980s, leading managers to make an epic shift out of bonds and into stocks. They formed the inescapable backdrop to the 1990s personal investing boom, as brokers, financial planners, and journalists endlessly repeated the Ibbotson mantra of double-digit stock market returns as far as the eye could see. Lately the Ibbotson forecasts have been finding their way into 401(k)s, as Ibbotson and other firms using similar methods build portfolios for those who opt not to build their own. Ibbotson even sells hundreds of thousands of charts each year showing how stocks build wealth over time--and beat the crap out of bonds.

All this means it's of more than academic interest that an academic debate has been raging for years now over the theories upon which Ibbotson and Sinquefield based their forecast in 1974, and which Ibbotson has followed since. Ibbotson, now 62, has taken some of the criticism to heart, and in the process ratcheted down his long-run forecast for stock returns from more than 10% a year to 9.27%. That alone was something of a shock for many of his clients, Ibbotson says. But a few critics think the real number may turn out to be just 5% or 6%. In that case stocks would barely outperform government bonds--an eventuality that would entirely rearrange the investing world yet again.

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The most important thing to understand about the forecast that Roger Ibbotson and Rex Sinquefield churned out in 1974 is that it wasn't an attempt to outsmart or outguess the market as Wall Street seers had traditionally done. Instead, Ibbotson and Sinquefield were simply trying to use the information already embedded in stock prices to, as they put it, "uncover the market's 'consensus' forecast." Their tools were a half-century of historical data

and the bold new philosophy of stock market behavior that they had internalized as students at the University of Chicago's Graduate School of Business.

They did it at a time when theories batted about in Chicago classrooms really were changing the world, or were about to. In the early 1970s, Ibbotson says, "everything was going on at the University of Chicago." The professors on his Ph.D. dissertation committee included two future Nobel Prize winners (Merton Miller and Myron Scholes), another who would have won if he hadn't died before the Nobel committee got to him (Fischer Black), yet another whom many colleagues think should win the Nobel (Eugene Fama), and a father of Reagan-era supply-side economics (Arthur Laffer).

Not counting the Black-Scholes options-pricing formula and the Laffer curve, which don't have major roles in this drama, the biggest ideas at the Chicago Business School in the early 1970s were the efficient-market hypothesis and the capital asset pricing model. The gist of the efficient-market idea, as articulated in the 1960s by Eugene Fama, is that today's price is the best possible measure of a stock's value, and that nobody can reliably predict which way prices will be headed tomorrow. The capital asset model says that you nonetheless can predict long-run stock returns because they are a reward for taking risks, and those risks can be measured. While CAPM, as it is known, was devised elsewhere, Chicago's Fischer Black was among its most fervent adherents.

Ibbotson arrived on campus in 1968. He was a kid from the Chicago suburbs who studied math and physics at Purdue and got an MBA at Indiana University. After struggling in the workforce, he went to Chicago to earn a Ph.D. in finance and hit his stride. While still a student, he got a job managing the university's bond portfolio. Meanwhile his friend Sinquefield, a 1972 MBA working at a Chicago bank, was launching one of the first S&P 500 index funds for institutional investors (this when Vanguard was still but a gleam in Jack Bogle's eye). Chicago really was a heady place for young finance geeks in those days.

Ibbotson and Sinquefield both needed up-to-date historical data on security prices for their work, and both knew that the professors who ran the Chicago business school's Center for Research in Security Prices (CRSP) were in no hurry to repeat the epic number-crunching exercise they had undertaken in the early 1960s to build a database of stock prices going back to 1925. So the two men took on the job of updating the CRSP (pronounced "crisp") stock database and assembling a similar price history for bonds and Treasury bills.

They presented their preliminary findings in May 1974 at one of the twice-yearly seminars that CRSP hosted to share the latest academic research with bankers, mutual fund managers, and the like. "Just getting the data was a coup," Ibbotson says. Then there was the forecast, suggested to them by Fischer Black. Black thought of using the data to calculate the additional return that investors had historically received for investing in risky stocks rather than in relatively safe government bonds. According to CAPM theory, this "risk premium" reflects something real and durable about the rewards investors demand for taking the chance of losing money. Real and durable enough, it seemed in 1974, to build a stock market prediction on.

Once Ibbotson and Sinquefield figured out the historical risk premium, all they had to do was add it to the prevailing risk-free interest rate (Treasury bonds or bills, depending on one's planning horizon) to get the "consensus" forecast of market returns. Actually they made it a little more complicated than that: When they finally published their work in 1976, they presented their forecast as the middle point of a wide range of different possible results. The mean forecast for the 25 years through 2000 was for 13% annual stock market returns, with

95% confidence that the return would be between 5.2% and 21.5%. (The actual return was 15%.)

"In some ways it was the first scientific forecast of the market," Ibbotson says proudly. Not everyone saw it that way at the time; some skeptics complained it was just a gussied-up extrapolation of the past into the future. But there turned out to be a ravenous hunger for such data. Both researchers were swamped with requests for more information and advice. For a while Ibbotson, by this time a very junior professor of finance at Chicago, just let the letters pile up unopened in a drawer in his office. In 1977 he decided to make a business out of his research project and started Ibbotson Associates. He also kept teaching at Chicago--until 1984, when his wife, health economist Jody Sindelar, got a job at Yale and he wangled an appointment there as a finance professor. Since then he's left the day-to-day management of the company, still based in Chicago, in the hands of others, while he remains its public face and chief researcher. Sinquefield, meanwhile, launched small-cap index fund manager Dimensional Fund Advisors with another Chicago finance graduate, David Booth, in 1981.

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While Ibbotson Associates grew and prospered in the 1980s and 1990s, however, the theories upon which its forecasts are based began to crumble in the face of contradictory evidence. The initial onslaught came from skeptics of the efficient-market hypothesis like Ibbotson's Yale colleague Robert Shiller, who argued that investor mood swings drove stock prices too high or too low for years on end. The experience of the late 1990s confirmed to many that there was something to this. But Ibbotson says he can't base his forecasts on such arguments. "It's not that I believe markets are so efficient," Ibbotson says. "It's just that I don't want to use a mispricing to make predictions." He's trying to divine a middle-of-the-road consensus, not trot out a CNBC-style market call. Fair enough.

A harder-to-dismiss critique came from Mr. Efficient Markets himself, Ibbotson's dissertation advisor Eugene Fama. In a series of papers written with Dartmouth's Kenneth French, Fama has argued that the capital asset pricing model, or at least its 1970s corollary that the risk premium is constant, doesn't match the facts. "My own view is that the risk premium has gone down over time basically because we've convinced people that it's there," Fama says. Ibbotson's stock market forecasting model is thus a victim of its own success.

Ibbotson agrees that Fama has a point, and that he can no longer bank on the historical equity premium to predict future returns. The alternative he has come up with is an estimate based on fundamentals. He takes the 10.31% annual return on stocks from 1925 through the present and strips out the tripling of the market's price/earnings ratio that's occurred since then. "We think of that as a windfall that you shouldn't get again," he says. The drivers of stock returns that remain are dividends, earnings growth, and inflation. Make a forecast of future inflation using current bond yields, assume that dividend and earnings growth history will repeat themselves, and you get a long-run equity-return forecast of 9.27%. When Ibbotson and his company's director of research, Peng Chen, first ran the numbers in 2001, the gap between the new forecast and the one using the equity premium method was more than a percentage point. Because P/Es have dropped since then, the gap has shrunk. But Ibbotson's revised forecasting method doesn't insulate him from criticism any more than the old way. In fact, it invites new criticism.

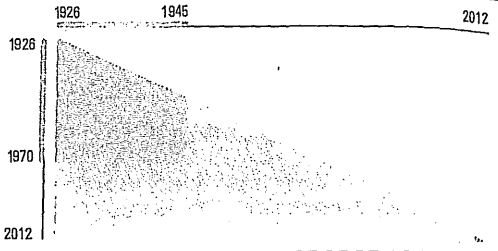
The most persistent challenger has been Rob Arnott, a Pasadena money manager and editor of the Financial Analysts Journal, who thinks future equity returns could be below 6%.

(See "Dueling Market Forecasts" chart.) The big difference between his forecast and Ibbotson's is that Arnott uses the current dividend yield (1.76%) as a starting point, while Ibbotson goes with the much higher long-term average yield (4.23%). Ibbotson believes the historical number provides a better picture of what investors think is ahead. He still relies on the assumption that markets are efficient, so current dividend yields must be low for a reason--his guess is that investors are expecting big growth in earnings (and dividends) in the future. Arnott, whose research has shown that low yields in the past were followed by slow earnings growth, thinks that's balderdash. "One of my biggest beefs with the academic community is the notion that theory is fact," he complains. "When they find evidence that contradicts the theory, instead of saying, 'Wonderful, let's improve the theory,' they throw it out because it conflicts with theory."

But the theoretical assumption that the market knows best is central to Ibbotson's whole forecasting endeavor, something even Arnott acknowledges. "In a sense Ibbotson is trying to infer what the consensus view is," Arnott says. "I'm trying to profit from that consensus." What Ibbotson is telling us is that the market still believes stocks will handily outperform bonds over the long haul. And if the market turns out to be wrong about that, it won't just be Roger Ibbotson who feels the pain.

FEEDBACK jfox@fortunemail.com

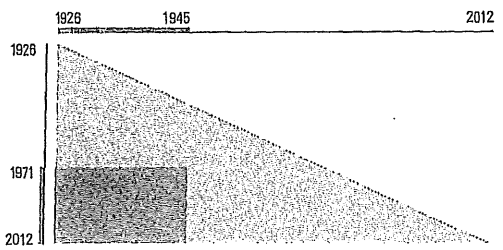
Table C-7 (page 1 of 6)
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually



from 1926 to 2012

To the end of	From the beginning of 1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
1926	-1.5																			
1927	-1.8	-2.1																		
1928	-1.5	-1.5	-1.0																	
1929	-1.1	-1.0	-0.4	0.2																
1930	-2.1	-2.2	-2.3	-3.0	-6.0															
1931	-3.4	-3.7	-4.2	-5.2	-7.8	-9.5														
1932	-4.4	-4.9	-5.4	-6.5	-8.6	-9.9	-10.3													
1933	-3.8	-4.1	-4.5	-5.1	-6.4	-6.6	-5.0	0.5												
1934	-3.2	-3.4	-3.6	-4.0	-4.8	-4.5	-2.7	1.3	2.0											
1935	-2.6	-2.7	-2.8	-3.0	-3.5	-3.0	-1.3	1.8	2.5	3.0										
1936	-2.2	-2.3	-2.3	-2.5	-2.9	-2.3	-0.8	1.7	2.1	2.1	1.2									
1937	-1.8	-1.8	-1.8	-1.9	-2.1	-1.6	-0.2	2.0	2.3	2.4	2.2	3.1								
1938	-1.9	-1.9	-1.9	-2.0	-2.2	-1.7	-0.6	1.2	1.3	1.1	0.5	0.1	-2.8							
1939	-1.8	-1.8	-1.8	-1.8	-2.0	-1.6	-0.6	0.9	1.0	0.8	0.2	-0.1	-1.6	-0.5						
1940	-1.6	-1.6	-1.6	-1.6	-1.8	-1.3	-0.4	0.9	1.0	0.8	0.4	0.2	-0.8	0.2	1.0					
1941	-0.9	-0.9	-0.8	-0.8	-0.9	-0.4	0.6	1.9	2.0	2.0	1.9	2.0	1.7	3.3	5.2	9.7				
1942	-0.3	-0.3	-0.2	-0.1	-0.1	0.4	1.3	2.6	2.8	2.9	2.9	3.2	3.2	4.8	6.6	9.5	9.3			
1943	-0.2	-0.1	0.0	0.1	0.1	0.6	1.5	2.6	2.9	2.9	2.9	3.2	3.2	4.4	5.7	7.3	6.2	3.2		
1944	0.0	0.0	0.2	0.2	0.2	0.7	1.5	2.6	2.8	2.9	2.8	3.1	3.0	4.1	5.0	6.0	4.8	2.6	2.1	
1945	0.1	0.2	0.3	0.4	0.4	0.8	1.6	2.6	2.7	2.8	2.8	3.0	2.9	3.8	4.5	5.2	4.2	2.5	2.2	2.3
1946	0.9	1.0	1.2	1.3	1.3	1.8	2.6	3.6	3.9	4.0	4.1	4.4	4.5	5.5	6.4	7.3	6.8	6.2	7.3	9.9
1947	1.2	1.4	1.5	1.7	1.7	2.2	3.0	4.0	4.2	4.4	4.5	4.8	5.0	5.9	6.7	7.5	7.2	6.8	7.7	9.6
1948	1.3	1.4	1.6	1.7	1.8	2.3	3.0	3.9	4.1	4.3	4.4	4.6	4.8	5.6	6.2	6.9	6.5	6.1	6.7	7.8
1949	1.2	1.3	1.4	1.5	1.6	2.0	2.7	3.5	3.7	3.8	3.9	4.1	4.2	4.9	5.4	5.9	5.5	4.9	5.2	5.8
1950	1.3	1.5	1.6	1.7	1.8	2.2	2.9	3.7	3.9	4.0	4.0	4.2	4.3	4.9	5.4	5.9	5.5	5.0	5.3	5.8
1951	1.5	1.6	1.8	1.9	2.0	2.4	3.0	3.8	4.0	4.1	4.1	4.3	4.4	5.0	5.5	5.9	5.5	5.1	5.4	5.8
1952	1.5	1.6	1.8	1.9	1.9	2.3	2.9	3.6	3.8	3.9	4.0	4.1	4.2	4.7	5.1	5.5	5.1	4.7	4.9	5.2
1953	1.5	1.6	1.7	1.8	1.9	2.2	2.8	3.5	3.6	3.7	3.8	3.9	4.0	4.4	4.8	5.1	4.7	4.3	4.4	4.7
1954	1.4	1.5	1.6	1.7	1.8	2.1	2.7	3.3	3.4	3.5	3.5	3.7	3.7	4.1	4.4	4.7	4.3	3.9	4.0	4.2
1955	1.4	1.5	1.6	1.7	1.7	2.1	2.6	3.2	3.3	3.4	3.4	3.5	3.5	3.9	4.2	4.4	4.0	3.6	3.7	3.8
1956	1.4	1.5	1.6	1.7	1.8	2.1	2.6	3.2	3.3	3.3	3.3	3.5	3.5	3.8	4.1	4.3	3.9	3.6	3.6	3.7
1957	1.5	1.5	1.7	1.8	1.8	2.1	2.6	3.2	3.3	3.3	3.3	3.4	3.5	3.8	4.0	4.2	3.9	3.5	3.6	3.7
1958	1.5	1.6	1.7	1.8	1.8	2.1	2.6	3.1	3.2	3.3	3.3	3.4	3.4	3.7	3.9	4.1	3.8	3.4	3.4	3.5
1959	1.5	1.6	1.7	1.8	1.8	2.1	2.5	3.0	3.1	3.2	3.2	3.3	3.3	3.6	3.8	3.9	3.6	3.3	3.3	3.4
1960	1.5	1.6	1.7	1.7	1.8	2.1	2.5	3.0	3.1	3.1	3.1	3.2	3.2	3.5	3.7	3.8	3.5	3.2	3.2	3.3
1961	1.4	1.5	1.6	1.7	1.8	2.0	2.4	2.9	3.0	3.0	3.0	3.1	3.1	3.4	3.5	3.7	3.4	3.1	3.1	3.1
1962	1.4	1.5	1.6	1.7	1.7	2.0	2.4	2.8	2.9	3.0	3.0	3.0	3.0	3.3	3.4	3.6	3.3	3.0	3.0	3.0
1963	1.4	1.5	1.6	1.7	1.7	2.0	2.4	2.8	2.9	2.9	2.9	3.0	3.0	3.2	3.4	3.5	3.2	2.9	2.9	2.9
1964	1.4	1.5	1.6	1.7	1.7	2.0	2.3	2.8	2.8	2.9	2.9	2.9	2.9	3.1	3.3	3.4	3.1	2.8	2.8	2.9
1965	1.4	1.5	1.6	1.7	1.7	2.0	2.3	2.7	2.8	2.8	2.8	2.9	2.9	3.1	3.2	3.3	3.1	2.8	2.8	2.8
1966	1.5	1.6	1.7	1.7	1.8	2.0	2.4	2.8	2.8	2.8	2.8	2.9	2.9	3.1	3.2	3.3	3.1	2.8	2.8	2.8
1967	1.5	1.6	1.7	1.8	1.8	2.0	2.4	2.8	2.8	2.8	2.8	2.9	2.9	3.1	3.2	3.3	3.1	2.8	2.8	2.8
1968	1.6	1.7	1.8	1.8	1.9	2.1	2.4	2.8	2.9	2.9	2.9	3.0	3.0	3.1	3.3	3.4	3.1	2.9	2.9	2.9
1969	1.7	1.8	1.9	1.9	2.0	2.2	2.5	2.9	3.0	3.0	3.0	3.0	3.0	3.2	3.4	3.5	3.2	3.0	3.0	3.0
1970	1.8	1.9	2.0	2.0	2.1	2.3	2.6	3.0	3.0	3.1	3.1	3.1	3.1	3.3	3.4	3.5	3.3	3.1	3.1	3.1

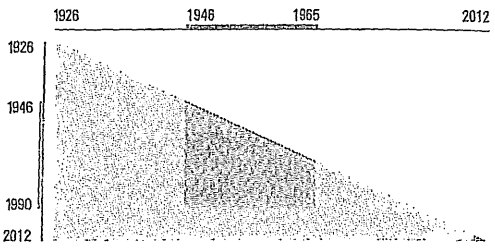
Table C-7 (page 2 of 6)
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually



from 1926 to 2012

To the end of	From the beginning of 1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
1971	1.8	1.9	2.0	2.1	2.1	2.3	2.6	3.0	3.0	3.1	3.1	3.1	3.1	3.3	3.4	3.5	3.3	3.1	3.1	3.1
1972	1.9	1.9	2.0	2.1	2.1	2.3	2.6	3.0	3.1	3.1	3.1	3.1	3.1	3.3	3.4	3.5	3.3	3.1	3.1	3.2
1973	2.0	2.1	2.2	2.2	2.3	2.5	2.8	3.1	3.2	3.2	3.2	3.3	3.3	3.5	3.6	3.7	3.5	3.3	3.3	3.3
1974	2.2	2.3	2.4	2.4	2.5	2.7	3.0	3.3	3.4	3.4	3.4	3.5	3.5	3.7	3.8	3.9	3.7	3.6	3.6	3.6
1975	2.3	2.4	2.5	2.5	2.6	2.8	3.1	3.4	3.5	3.5	3.5	3.6	3.6	3.8	3.9	4.0	3.8	3.7	3.7	3.7
1976	2.3	2.4	2.5	2.6	2.6	2.8	3.1	3.4	3.5	3.6	3.6	3.6	3.6	3.8	3.9	4.0	3.9	3.7	3.7	3.8
1977	2.4	2.5	2.6	2.7	2.7	2.9	3.2	3.5	3.6	3.6	3.6	3.7	3.7	3.9	4.0	4.1	3.9	3.8	3.8	3.9
1978	2.5	2.6	2.7	2.8	2.8	3.0	3.3	3.6	3.7	3.7	3.8	3.8	3.8	4.0	4.1	4.2	4.1	3.9	4.0	4.0
1979	2.7	2.8	2.9	3.0	3.0	3.2	3.5	3.8	3.9	4.0	4.0	4.0	4.1	4.2	4.4	4.4	4.3	4.2	4.2	4.3
1980	2.9	3.0	3.1	3.2	3.2	3.4	3.7	4.0	4.1	4.1	4.2	4.2	4.2	4.4	4.5	4.6	4.5	4.4	4.4	4.5
1981	3.0	3.1	3.2	3.3	3.3	3.5	3.8	4.1	4.2	4.2	4.3	4.3	4.4	4.5	4.6	4.7	4.6	4.5	4.5	4.6
1982	3.0	3.1	3.2	3.3	3.3	3.5	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.5	4.6	4.7	4.6	4.5	4.5	4.6
1983	3.0	3.1	3.2	3.3	3.3	3.5	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.5	4.6	4.7	4.6	4.5	4.5	4.6
1984	3.0	3.1	3.2	3.3	3.4	3.5	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.5	4.6	4.7	4.6	4.5	4.5	4.5
1985	3.1	3.1	3.2	3.3	3.4	3.5	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.5	4.6	4.7	4.5	4.4	4.5	4.5
1986	3.0	3.1	3.2	3.3	3.3	3.5	3.8	4.0	4.1	4.1	4.2	4.2	4.2	4.4	4.5	4.6	4.5	4.4	4.4	4.4
1987	3.0	3.1	3.2	3.3	3.3	3.5	3.8	4.0	4.1	4.1	4.2	4.2	4.2	4.4	4.5	4.6	4.5	4.4	4.4	4.4
1988	3.1	3.1	3.2	3.3	3.4	3.5	3.8	4.0	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.6	4.5	4.4	4.4	4.4
1989	3.1	3.2	3.3	3.3	3.4	3.5	3.8	4.1	4.1	4.2	4.2	4.2	4.3	4.4	4.5	4.6	4.5	4.4	4.4	4.4
1990	3.1	3.2	3.3	3.4	3.4	3.6	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.4	4.5	4.6	4.5	4.4	4.4	4.5
1991	3.1	3.2	3.3	3.4	3.4	3.6	3.8	4.1	4.1	4.2	4.2	4.2	4.3	4.4	4.5	4.6	4.5	4.4	4.4	4.5
1992	3.1	3.2	3.3	3.4	3.4	3.6	3.8	4.1	4.1	4.2	4.2	4.2	4.2	4.4	4.5	4.5	4.4	4.3	4.4	4.4
1993	3.1	3.2	3.3	3.3	3.4	3.6	3.8	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.4	4.3	4.3	4.4
1994	3.1	3.2	3.3	3.3	3.4	3.5	3.8	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.4	4.3	4.3	4.4
1995	3.1	3.2	3.3	3.3	3.4	3.5	3.7	4.0	4.0	4.1	4.1	4.1	4.2	4.3	4.4	4.4	4.3	4.3	4.3	4.3
1996	3.1	3.2	3.3	3.3	3.4	3.5	3.7	4.0	4.0	4.1	4.1	4.1	4.1	4.3	4.4	4.4	4.3	4.2	4.3	4.3
1997	3.1	3.2	3.2	3.3	3.4	3.5	3.7	3.9	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.4	4.3	4.2	4.2	4.2
1998	3.1	3.1	3.2	3.3	3.3	3.5	3.7	3.9	4.0	4.0	4.0	4.0	4.1	4.2	4.3	4.3	4.2	4.1	4.2	4.2
1999	3.1	3.1	3.2	3.3	3.3	3.5	3.7	3.9	3.9	4.0	4.0	4.0	4.0	4.2	4.2	4.3	4.2	4.1	4.1	4.2
2000	3.1	3.1	3.2	3.3	3.3	3.5	3.7	3.9	3.9	4.0	4.0	4.0	4.0	4.1	4.2	4.3	4.2	4.1	4.1	4.2
2001	3.1	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.9	3.9	3.9	4.0	4.0	4.1	4.2	4.2	4.1	4.1	4.1	4.1
2002	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.9	3.9	3.9	4.0	4.0	4.1	4.2	4.2	4.1	4.0	4.0	4.1
2003	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.1	4.2	4.1	4.0	4.0	4.0
2004	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.1	4.2	4.1	4.0	4.0	4.0
2005	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.1	4.1	4.1	4.0	4.0	4.0
2006	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.8	3.8	3.8	3.9	3.9	4.0	4.1	4.1	4.0	4.0	4.0	4.0
2007	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.8	3.8	3.9	3.9	3.9	4.0	4.1	4.1	4.0	4.0	4.0	4.0
2008	3.0	3.1	3.1	3.2	3.2	3.3	3.5	3.7	3.8	3.8	3.8	3.8	3.8	3.9	4.0	4.1	4.0	3.9	3.9	3.9
2009	3.0	3.1	3.1	3.2	3.2	3.3	3.5	3.7	3.8	3.8	3.8	3.8	3.8	3.9	4.0	4.0	4.0	3.9	3.9	3.9
2010	3.0	3.0	3.1	3.2	3.2	3.3	3.5	3.7	3.7	3.7	3.8	3.8	3.8	3.9	4.0	4.0	3.9	3.8	3.8	3.9
2011	3.0	3.0	3.1	3.2	3.2	3.3	3.5	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9	4.0	3.9	3.8	3.8	3.9
2012	3.0	3.0	3.1	3.1	3.2	3.3	3.5	3.6	3.7	3.7	3.7	3.8	3.8	3.9	3.9	4.0	3.9	3.8	3.8	3.8

Table C-7 (page 3 of 6)
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually

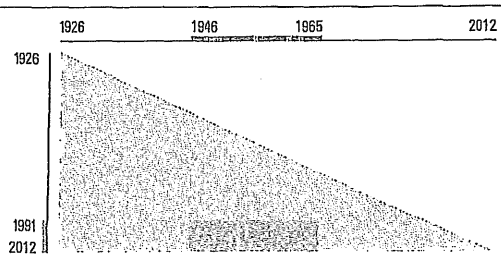


from 1926 to 2012

To the end of	From the beginning of 1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1946	18.2																			
1947	13.5	9.0																		
1948	9.8	5.8	2.7																	
1949	6.8	3.2	0.4	-1.8																
1950	6.6	3.8	2.2	1.9	5.8															
1951	6.5	4.3	3.1	3.2	5.8	5.9														
1952	5.6	3.7	2.6	2.6	4.2	3.3	0.9													
1953	5.0	3.2	2.3	2.2	3.3	2.4	0.8	0.6												
1954	4.4	2.8	1.9	1.8	2.5	1.7	0.3	0.1	-0.5											
1955	4.0	2.5	1.7	1.6	2.1	1.4	0.3	0.2	-0.1	0.4										
1956	3.9	2.5	1.8	1.7	2.2	1.7	0.8	0.8	0.9	1.6	2.9									
1957	3.8	2.6	2.0	1.9	2.3	1.9	1.2	1.3	1.4	2.1	2.9	3.0								
1958	3.6	2.5	1.9	1.9	2.3	1.8	1.3	1.3	1.5	2.0	2.5	2.4	1.8							
1959	3.5	2.4	1.9	1.8	2.2	1.8	1.3	1.4	1.5	1.9	2.3	2.1	1.6	1.5						
1960	3.3	2.4	1.9	1.8	2.1	1.8	1.3	1.4	1.5	1.8	2.1	1.9	1.6	1.5	1.5					
1961	3.2	2.2	1.8	1.7	2.0	1.7	1.3	1.3	1.4	1.7	1.9	1.7	1.4	1.2	1.1	0.7				
1962	3.1	2.2	1.7	1.7	1.9	1.6	1.3	1.3	1.4	1.6	1.8	1.6	1.3	1.2	1.1	0.9	1.2			
1963	3.0	2.2	1.7	1.7	1.9	1.6	1.3	1.3	1.4	1.6	1.8	1.6	1.4	1.3	1.3	1.2	1.4	1.6		
1964	2.9	2.1	1.7	1.6	1.9	1.6	1.3	1.3	1.4	1.6	1.7	1.6	1.4	1.3	1.2	1.2	1.4	1.4	1.2	
1965	2.8	2.1	1.7	1.7	1.9	1.6	1.3	1.4	1.4	1.6	1.7	1.6	1.4	1.4	1.4	1.3	1.5	1.6	1.6	1.9
1966	2.9	2.2	1.8	1.8	2.0	1.7	1.5	1.5	1.6	1.7	1.9	1.8	1.6	1.6	1.6	1.7	1.9	2.0	2.2	2.6
1967	2.9	2.2	1.9	1.8	2.0	1.8	1.6	1.6	1.7	1.8	2.0	1.9	1.8	1.8	1.8	1.9	2.1	2.2	2.4	2.8
1968	3.0	2.3	2.0	2.0	2.2	2.0	1.7	1.8	1.9	2.0	2.2	2.1	2.0	2.1	2.1	2.2	2.4	2.6	2.8	3.3
1969	3.1	2.5	2.2	2.2	2.4	2.2	2.0	2.0	2.1	2.3	2.5	2.4	2.4	2.4	2.5	2.6	2.9	3.1	3.4	3.8
1970	3.2	2.6	2.3	2.3	2.5	2.3	2.2	2.2	2.3	2.5	2.7	2.6	2.6	2.7	2.8	2.9	3.2	3.4	3.7	4.1
1971	3.2	2.6	2.4	2.4	2.5	2.4	2.2	2.3	2.4	2.6	2.7	2.7	2.7	2.7	2.8	3.0	3.2	3.4	3.6	4.0
1972	3.2	2.7	2.4	2.4	2.6	2.4	2.3	2.3	2.4	2.6	2.7	2.7	2.7	2.8	2.9	3.0	3.2	3.4	3.6	3.9
1973	3.4	2.9	2.6	2.6	2.8	2.7	2.6	2.6	2.8	2.9	3.1	3.1	3.1	3.2	3.3	3.4	3.7	3.9	4.1	4.4
1974	3.7	3.2	3.0	3.0	3.2	3.1	3.0	3.1	3.2	3.4	3.5	3.6	3.6	3.7	3.9	4.0	4.3	4.6	4.8	5.2
1975	3.8	3.3	3.1	3.1	3.3	3.2	3.1	3.2	3.4	3.5	3.7	3.7	3.8	3.9	4.1	4.2	4.5	4.7	5.0	5.4
1976	3.8	3.4	3.2	3.2	3.4	3.3	3.2	3.3	3.4	3.6	3.8	3.8	3.8	4.0	4.1	4.3	4.5	4.8	5.0	5.3
1977	3.9	3.5	3.3	3.3	3.5	3.4	3.3	3.4	3.6	3.7	3.9	3.9	4.0	4.1	4.2	4.4	4.7	4.9	5.1	5.4
1978	4.1	3.7	3.5	3.5	3.7	3.6	3.5	3.6	3.8	3.9	4.1	4.2	4.2	4.3	4.5	4.7	4.9	5.1	5.4	5.7
1979	4.3	3.9	3.8	3.8	4.0	3.9	3.9	4.0	4.1	4.3	4.5	4.5	4.6	4.8	4.9	5.1	5.4	5.6	5.9	6.2
1980	4.5	4.2	4.0	4.1	4.3	4.2	4.2	4.3	4.4	4.6	4.8	4.9	4.9	5.1	5.3	5.5	5.7	6.0	6.2	6.6
1981	4.7	4.3	4.2	4.2	4.4	4.4	4.3	4.4	4.6	4.8	4.9	5.0	5.1	5.3	5.4	5.6	5.9	6.1	6.4	6.7
1982	4.6	4.3	4.2	4.2	4.4	4.3	4.3	4.4	4.5	4.7	4.9	5.0	5.1	5.2	5.4	5.5	5.8	6.0	6.2	6.5
1983	4.6	4.3	4.2	4.2	4.4	4.3	4.3	4.4	4.5	4.7	4.9	4.9	5.0	5.1	5.3	5.5	5.7	5.9	6.1	6.4
1984	4.6	4.3	4.1	4.2	4.4	4.3	4.3	4.4	4.5	4.7	4.8	4.9	5.0	5.1	5.2	5.4	5.6	5.8	6.0	6.3
1985	4.6	4.3	4.1	4.2	4.3	4.3	4.3	4.4	4.5	4.6	4.8	4.9	4.9	5.0	5.2	5.3	5.5	5.7	5.9	6.1
1986	4.5	4.2	4.1	4.1	4.3	4.2	4.2	4.3	4.4	4.5	4.7	4.7	4.8	4.9	5.0	5.2	5.4	5.5	5.7	5.9
1987	4.5	4.2	4.1	4.1	4.3	4.2	4.2	4.3	4.4	4.5	4.7	4.7	4.8	4.9	5.0	5.1	5.3	5.5	5.6	5.8
1988	4.5	4.2	4.1	4.1	4.3	4.2	4.2	4.3	4.4	4.5	4.7	4.7	4.8	4.9	5.0	5.1	5.3	5.4	5.6	5.8
1989	4.5	4.2	4.1	4.1	4.3	4.2	4.2	4.3	4.4	4.5	4.7	4.7	4.8	4.9	5.0	5.1	5.3	5.4	5.6	5.7
1990	4.5	4.2	4.1	4.2	4.3	4.3	4.2	4.3	4.4	4.6	4.7	4.8	4.8	4.9	5.0	5.1	5.3	5.4	5.6	5.8

Table C-7 (page 4 of 6)
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually

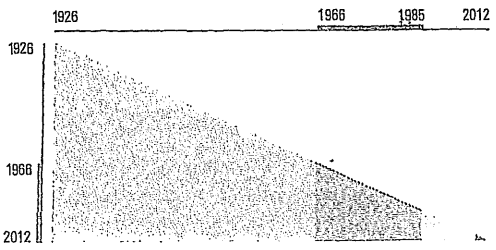
from 1926 to 2012



To the end of	From the beginning of 1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1991	4.5	4.2	4.1	4.1	4.3	4.3	4.2	4.3	4.4	4.5	4.7	4.7	4.8	4.8	5.0	5.1	5.2	5.4	5.5	5.7
1992	4.5	4.2	4.1	4.1	4.3	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.7	4.8	4.9	5.0	5.1	5.3	5.4	5.6
1993	4.4	4.2	4.1	4.1	4.2	4.2	4.1	4.2	4.3	4.4	4.6	4.6	4.6	4.7	4.8	4.9	5.1	5.2	5.3	5.5
1994	4.4	4.1	4.0	4.1	4.2	4.2	4.1	4.2	4.3	4.4	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.4
1995	4.4	4.1	4.0	4.0	4.2	4.1	4.1	4.2	4.2	4.4	4.5	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.3
1996	4.3	4.1	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.3	4.4	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2
1997	4.3	4.0	3.9	4.0	4.1	4.0	4.0	4.1	4.2	4.3	4.4	4.4	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1
1998	4.2	4.0	3.9	3.9	4.0	4.0	4.0	4.0	4.1	4.2	4.3	4.3	4.4	4.4	4.5	4.6	4.7	4.8	4.9	5.0
1999	4.2	4.0	3.9	3.9	4.0	4.0	3.9	4.0	4.1	4.2	4.3	4.3	4.3	4.4	4.5	4.5	4.6	4.7	4.8	4.9
2000	4.2	3.9	3.9	3.9	4.0	4.0	3.9	4.0	4.1	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.6	4.7	4.8	4.9
2001	4.1	3.9	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.1	4.2	4.2	4.2	4.3	4.4	4.4	4.5	4.6	4.7	4.8
2002	4.1	3.9	3.8	3.8	3.9	3.9	3.8	3.9	4.0	4.1	4.1	4.2	4.2	4.3	4.3	4.4	4.5	4.6	4.6	4.7
2003	4.1	3.8	3.8	3.8	3.9	3.8	3.8	3.9	3.9	4.0	4.1	4.1	4.1	4.2	4.3	4.3	4.4	4.5	4.6	4.7
2004	4.1	3.8	3.7	3.8	3.9	3.8	3.8	3.8	3.9	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.5	4.6
2005	4.0	3.8	3.7	3.8	3.9	3.8	3.8	3.8	3.9	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.4	4.5	4.6
2006	4.0	3.8	3.7	3.7	3.8	3.8	3.8	3.8	3.9	4.0	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.5
2007	4.0	3.8	3.7	3.7	3.8	3.8	3.8	3.8	3.9	4.0	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.5
2008	4.0	3.7	3.7	3.7	3.8	3.7	3.7	3.8	3.8	3.9	4.0	4.0	4.0	4.0	4.1	4.2	4.2	4.3	4.4	4.4
2009	3.9	3.7	3.6	3.7	3.8	3.7	3.7	3.7	3.8	3.9	3.9	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.3	4.4
2010	3.9	3.7	3.6	3.6	3.7	3.7	3.6	3.7	3.7	3.8	3.9	3.9	3.9	4.0	4.0	4.1	4.1	4.2	4.3	4.3
2011	3.9	3.7	3.6	3.6	3.7	3.7	3.6	3.7	3.7	3.8	3.9	3.9	3.9	4.0	4.0	4.0	4.1	4.2	4.2	4.3
2012	3.9	3.7	3.6	3.6	3.7	3.6	3.6	3.7	3.7	3.8	3.8	3.9	3.9	3.9	4.0	4.0	4.1	4.1	4.2	4.2

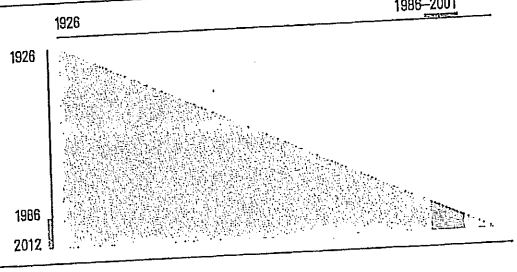
Table C-7 (page 5 of 6)
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually

from 1926 to 2012



To the end of	From the beginning of 1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1966	3.4																			
1967	3.2	3.0																		
1968	3.7	3.9	4.7																	
1969	4.3	4.6	5.4	6.1																
1970	4.5	4.8	5.4	5.8	5.5															
1971	4.3	4.5	4.9	5.0	4.4	3.4														
1972	4.2	4.3	4.6	4.6	4.1	3.4	3.4													
1973	4.8	5.0	5.3	5.4	5.2	5.2	6.1	8.8												
1974	5.6	5.9	6.3	6.5	6.6	6.9	8.1	10.5	12.2											
1975	5.7	6.0	6.4	6.6	6.7	6.9	7.8	9.3	9.6	7.0										
1976	5.6	5.9	6.2	6.4	6.4	6.6	7.2	8.2	8.0	5.9	4.8									
1977	5.7	5.9	6.2	6.4	6.4	6.6	7.1	7.9	7.7	6.2	5.8	6.8								
1978	6.0	6.2	6.5	6.7	6.7	6.9	7.4	8.1	7.9	6.9	6.9	7.9	9.0							
1979	6.5	6.7	7.0	7.3	7.4	7.6	8.1	8.8	8.8	8.1	8.4	9.7	11.1	13.3						
1980	6.9	7.1	7.4	7.7	7.8	8.1	8.6	9.3	9.3	8.8	9.2	10.3	11.6	12.9	12.4					
1981	7.0	7.2	7.6	7.8	7.9	8.1	8.6	9.2	9.3	8.9	9.2	10.1	10.9	11.5	10.7	8.9				
1982	6.8	7.0	7.3	7.5	7.6	7.8	8.2	8.7	8.7	8.2	8.4	9.0	9.5	9.6	8.3	6.4	3.9			
1983	6.6	6.8	7.1	7.2	7.3	7.5	7.8	8.2	8.2	7.7	7.8	8.2	8.5	8.4	7.2	5.5	3.8	3.8		
1984	6.5	6.7	6.9	7.0	7.1	7.2	7.5	7.9	7.8	7.3	7.4	7.7	7.8	7.6	6.5	5.1	3.9	3.9	4.0	
1985	6.4	6.5	6.7	6.8	6.9	7.0	7.2	7.5	7.4	7.0	7.0	7.3	7.3	7.1	6.1	4.8	3.8	3.8	3.9	3.8
1986	6.1	6.2	6.4	6.5	6.5	6.6	6.8	7.1	6.9	6.5	6.5	6.6	6.6	6.3	5.3	4.2	3.3	3.2	2.9	2.4
1987	6.0	6.2	6.3	6.4	6.4	6.5	6.7	6.9	6.8	6.3	6.3	6.4	6.4	6.1	5.2	4.2	3.5	3.4	3.3	3.1
1988	6.0	6.1	6.2	6.3	6.3	6.4	6.5	6.7	6.6	6.2	6.1	6.3	6.2	5.9	5.1	4.3	3.6	3.6	3.5	3.4
1989	5.9	6.0	6.2	6.2	6.2	6.3	6.4	6.6	6.5	6.1	6.0	6.1	6.1	5.8	5.1	4.3	3.7	3.7	3.7	3.7
1990	5.9	6.0	6.1	6.2	6.2	6.3	6.4	6.6	6.5	6.1	6.0	6.1	6.1	5.8	5.2	4.5	4.0	4.0	4.1	4.1
1991	5.8	5.9	6.0	6.1	6.1	6.1	6.2	6.4	6.3	5.9	5.9	5.9	5.9	5.6	5.0	4.4	3.9	3.9	3.9	3.9
1992	5.7	5.8	5.9	5.9	5.9	6.0	6.1	6.2	6.1	5.7	5.7	5.7	5.7	5.4	4.8	4.2	3.8	3.8	3.8	3.8
1993	5.6	5.7	5.8	5.8	5.8	5.8	5.9	6.0	5.9	5.6	5.5	5.6	5.5	5.2	4.7	4.1	3.7	3.7	3.7	3.7
1994	5.5	5.6	5.7	5.7	5.7	5.7	5.8	5.9	5.8	5.4	5.4	5.4	5.3	5.1	4.6	4.0	3.6	3.6	3.6	3.6
1995	5.4	5.5	5.5	5.6	5.5	5.6	5.6	5.7	5.6	5.3	5.2	5.2	5.2	4.9	4.4	3.9	3.6	3.5	3.5	3.5
1996	5.3	5.4	5.5	5.5	5.5	5.5	5.6	5.6	5.5	5.2	5.1	5.1	5.1	4.8	4.4	3.9	3.6	3.5	3.5	3.5
1997	5.2	5.3	5.3	5.4	5.3	5.3	5.4	5.5	5.3	5.1	5.0	5.0	4.9	4.7	4.2	3.8	3.4	3.4	3.4	3.3
1998	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3	5.2	4.9	4.8	4.8	4.7	4.5	4.1	3.6	3.3	3.3	3.3	3.2
1999	5.0	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.1	4.8	4.7	4.7	4.6	4.4	4.0	3.6	3.3	3.3	3.2	3.2
2000	5.0	5.0	5.1	5.1	5.1	5.0	5.1	5.2	5.0	4.8	4.7	4.7	4.6	4.4	4.0	3.6	3.3	3.3	3.2	3.2
2001	4.9	4.9	5.0	5.0	4.9	4.9	5.0	5.0	4.9	4.6	4.6	4.5	4.5	4.3	3.9	3.5	3.2	3.2	3.1	3.1
2002	4.8	4.8	4.9	4.9	4.9	4.8	4.9	4.9	4.8	4.6	4.5	4.5	4.4	4.2	3.8	3.4	3.2	3.1	3.1	3.1
2003	4.7	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.7	4.5	4.4	4.4	4.3	4.1	3.7	3.4	3.1	3.1	3.0	3.0
2004	4.7	4.7	4.8	4.8	4.7	4.7	4.8	4.8	4.7	4.4	4.3	4.3	4.2	4.1	3.7	3.4	3.1	3.1	3.0	3.0
2005	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.8	4.6	4.4	4.3	4.3	4.2	4.0	3.7	3.4	3.1	3.1	3.1	3.0
2006	4.6	4.6	4.7	4.7	4.6	4.6	4.7	4.7	4.6	4.3	4.3	4.2	4.1	4.0	3.6	3.3	3.1	3.1	3.0	3.0
2007	4.6	4.6	4.7	4.7	4.6	4.6	4.6	4.7	4.6	4.3	4.2	4.2	4.1	4.0	3.7	3.4	3.1	3.1	3.1	3.0
2008	4.5	4.5	4.6	4.5	4.5	4.5	4.5	4.5	4.4	4.2	4.1	4.1	4.0	3.8	3.5	3.2	3.0	3.0	3.0	2.9
2009	4.4	4.5	4.5	4.5	4.5	4.4	4.5	4.5	4.4	4.2	4.1	4.1	4.0	3.8	3.5	3.2	3.0	3.0	3.0	2.9
2010	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.3	4.1	4.0	4.0	3.9	3.7	3.4	3.2	3.0	2.9	2.9	2.9
2011	4.3	4.4	4.4	4.4	4.4	4.3	4.4	4.4	4.3	4.1	4.0	3.9	3.9	3.7	3.4	3.2	3.0	2.9	2.9	2.9
2012	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.2	4.0	3.9	3.9	3.8	3.7	3.4	3.1	2.9	2.9	2.9	2.8

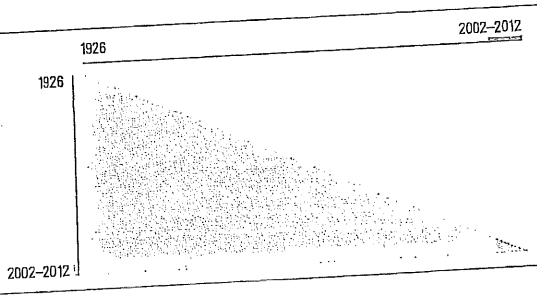
Table C-7 (page 6 of 6)-a
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually



from 1926 to 2012

To the end of	From the beginning of 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1986	1.1															
1987	2.8	4.4														
1988	3.3	4.4	4.4													
1989	3.6	4.5	4.5	4.6												
1990	4.1	4.9	5.1	5.4	6.1											
1991	4.0	4.5	4.6	4.6	4.6	3.1										
1992	3.8	4.3	4.2	4.2	4.0	3.0	2.9									
1993	3.7	4.0	4.0	3.9	3.7	2.9	2.8	2.7								
1994	3.6	3.9	3.8	3.7	3.5	2.8	2.8	2.7	2.7							
1995	3.5	3.7	3.6	3.5	3.3	2.8	2.7	2.7	2.6	2.5						
1996	3.4	3.7	3.6	3.5	3.3	2.9	2.8	2.8	2.8	2.9	3.3					
1997	3.3	3.5	3.4	3.3	3.1	2.7	2.6	2.6	2.6	2.5	2.5	1.7				
1998	3.2	3.3	3.2	3.1	3.0	2.6	2.5	2.4	2.4	2.3	2.2	1.7	1.6			
1999	3.1	3.3	3.2	3.1	2.9	2.6	2.5	2.5	2.4	2.4	2.3	2.0	2.1	2.7		
2000	3.1	3.3	3.2	3.1	3.0	2.7	2.6	2.6	2.6	2.5	2.5	2.3	2.6	3.0	3.4	
2001	3.0	3.2	3.1	3.0	2.9	2.6	2.5	2.5	2.4	2.4	2.4	2.2	2.3	2.5	2.5	1.6
2002	3.0	3.1	3.0	2.9	2.8	2.5	2.5	2.5	2.4	2.4	2.4	2.2	2.3	2.5	2.4	2.0
2003	2.9	3.1	3.0	2.9	2.7	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.4	2.3	1.9
2004	3.0	3.1	3.0	2.9	2.8	2.5	2.5	2.5	2.5	2.4	2.4	2.3	2.4	2.5	2.5	2.3
2005	3.0	3.1	3.0	2.9	2.8	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.5	2.6	2.6	2.5
2006	3.0	3.1	3.0	2.9	2.8	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.5	2.6	2.6	2.5
2007	3.0	3.1	3.0	3.0	2.9	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.7	2.8	2.8	2.7
2008	2.9	3.0	2.9	2.8	2.7	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.5	2.5	2.4
2009	2.9	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.4
2010	2.8	2.9	2.8	2.8	2.7	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3
2011	2.8	2.9	2.8	2.8	2.7	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.5	2.4
2012	2.8	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3

Table C-7 (page 6 of 6)-b
Inflation
Rates of Return for all holding periods
Percent per annum compounded annually



from 1926 to 2012

To the end of	From the beginning of 2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
2002	2.4										
2003	2.1	1.9									
2004	2.5	2.6	3.3								
2005	2.7	2.8	3.3	3.4							
2006	2.7	2.8	3.1	3.0	2.5						
2007	2.9	3.0	3.3	3.3	3.3	4.1					
2008	2.5	2.5	2.7	2.5	2.2	2.1	0.1				
2009	2.5	2.6	2.7	2.6	2.3	2.3	1.4	2.7			
2010	2.4	2.4	2.5	2.4	2.2	2.1	1.4	2.1	1.4		
2011	2.5	2.5	2.6	2.5	2.3	2.3	1.8	2.4	2.2	3.0	
2012	2.4	2.4	2.5	2.4	2.2	2.2	1.8	2.2	2.1	2.3	1.7

THE VALUE LINE Investment Survey®

Part 3 Ratings & Reports

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★★ Rank 1 (Highest) for Timeliness.
★ Rank 2 (Above Average).

ESPECIALLY NOTEWORTHY:

*With this Issue, we welcome **Seattle Genetics** (page 841) into The Value Line Investment Survey. The company develops antibody-based therapies for cancer, including Hodgkin lymphoma, and will reside in our Biotechnology Industry.*

*The biotech space has been fairly active on the acquisition front, with **Jazz Pharmaceuticals** (page 835) and **Myriad Genetics** (page 836) each completing sizable purchases of late to bolster their product portfolios.*

*Elsewhere, with healthcare reform under way, medical services providers **Community Health** (page 801) and **Tenet Healthcare** (page 814) have enhanced their prospects by making substantial additions to their hospital networks.*

***Elbit Systems** (page 711), a manufacturer of advanced defense electronics, should appeal to investors with either a near- or a long-term view.*

In three parts: Part 1 is the Summary & Index. Part 2 is Selection & Opinion. This is Part 3, Ratings & Reports. Volume LXIX, No. 30

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Value Line's estimates of sales and earnings growth for individual companies are derived by correlating sales, earnings, and dividends to appropriate components or subcomponents of the Gross Domestic Product, presented below. A more detailed forecast appears periodically in *Selection & Opinion.*

HYPOTHESIZED ECONOMIC ENVIRONMENT 3 TO 5 YEARS HENCE

The hypothesized 2017-2019 economic environment into which earnings are forecast is as follows: Unemployment will average about 5% of the national labor force. There will be no major war in progress at that time. Industrial production will be expanding by about 3% per year. Inflation will continue to be muted. Prices as measured by the broad-based GDP deflator will advance by just 1.5%-2.0% per year on average. The corporate income tax rate will be around 35%. Long-term interest rates on AAA corporate bonds are projected to average about 6% in the years 2017-2019. We expect the Federal Reserve to pursue neutral-to-fairly expansionary monetary policies except in years in which the economy is overheating. Based on these assumptions, the Gross Domestic Product will average about $21,280 billion in the years 2017-2019, a level that is some 27% above the 2013 total of $16,787 billion.

Things may turn out differently. But in the absence of knowledge of the future, we use the above assumptions, which appear to be most plausible. Thus we are able to apply a common economic environment to all stocks for the purpose of measuring relative growth potential.

THESE ARE THE NATIONAL INCOME SERIES TO WHICH VALUE LINE SALES, EARNINGS, AND DIVIDEND ESTIMATES ARE CORRELATED

ANNUAL STATISTICS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*	2014*	2015*	2017-19*
Gross Domestic Product ($Bill.)	11512	12277	13095	13858	14480	14720	14418	14958	15534	16245	*16787*	*17533*	*18408*	*21281*
Real GDP (2009 Chained $Bill.)	13270	13774	14236	14615	14877	14834	14418	14779	15052	15471	*15765*	*16216*	*16739*	*18398*
Total Consumption ($Bill.)	8866	9206	9528	9815	10036	9999	9843	10036	10291	10518	*10729*	*11049*	*11423*	*12519*
Nonresidential Fixed Investment ($Bill.)	1526	1605	1717	1840	1948	1934	1633	1674	1801	1932	*1982*	*2089*	*2237*	*2639*
Industrial Prod. (% Change, Annualized)	1.3	2.3	3.2	2.2	2.5	-3.4	-11.3	0.6	3.4	3.6	*2.6*	*2.6*	*3.7*	*3.0*
Housing Starts (Mill. Units)	1.85	1.95	2.07	1.81	1.34	0.90	0.55	0.59	0.61	0.78	*0.93*	*1.14*	*1.46*	*1.60*
Total Light Vehicle Sales (Mill. Units)	16.6	16.9	17.0	16.5	16.1	13.2	10.4	11.6	12.7	14.4	*15.5*	*15.9*	*16.4*	*16.5*
Personal Savings Rate (%)	3.5	4.6	2.6	3.4	3.0	5.0	6.1	5.6	5.7	5.6	*4.5*	*4.6*	*5.0*	*5.5*
National Unemployment Rate (%)	6.0	5.5	5.1	4.6	4.6	5.8	9.3	9.6	8.9	8.1	*7.4*	*6.5*	*5.8*	*5.0*
AAA Corp Bond Rate (%)	5.7	5.6	5.2	5.6	5.6	5.6	5.3	4.9	4.6	3.7	*4.2*	*4.7*	*4.9*	*6.0*
10-Year Treasury Note Rate (%)	4.0	4.3	4.3	4.8	4.6	3.7	3.3	3.2	2.8	1.8	*2.4*	*3.0*	*3.3*	*4.3*
3-Month Treasury Bill Rate (%)	1.0	1.4	3.2	4.7	4.4	1.4	0.2	0.1	0.1	0.1	*0.1*	*0.1*	*0.3*	*3.5*
ANNUAL RATES OF CHANGE														
Real GDP	2.8	3.8	3.4	2.7	1.8	-0.3	-2.8	2.5	1.8	2.8	*1.9*	*2.9*	*3.2*	*3.0*
GDP Deflator	2.2	2.7	3.2	3.1	2.7	1.9	0.8	1.2	2.0	1.7	*1.4*	*1.7*	*1.6*	*1.8*
Consumer Price Index	2.3	2.7	3.4	3.2	2.9	3.8	0.0	1.6	3.1	2.1	*1.5*	*1.3*	*1.7*	*2.0*

QUARTERLY ANNUALIZED RATES	2013				2014				2015			
	1st	2nd	3rd	4th*	1st*	2nd*	3rd*	4th*	1st*	2nd*	3rd*	4th*
Gross Domestic Product ($Bill.)	16518	16645	16897	17086	17247	17423	*17622*	*17841*	*18066*	*18291*	*18522*	*18752*
Real GDP (2009 Chained $Bill.)	15583	15679	15837	15963	16054	16153	*16265*	*16393*	*16527*	*16666*	*16810*	*16955*
Total Consumption ($Bill.)	10645	10693	10746	10834	10917	11003	*11093*	*11186*	*11280*	*11374*	*11470*	*11569*
Nonresidential Fixed Investment ($Bill.)	1949	1971	1995	2013	2038	2070	*2106*	*2142*	*2178*	*2215*	*2256*	*2299*
Industrial Production (% Change, Annualized)	4.1	1.2	2.4	6.8	2.0	2.0	*3.0*	*3.5*	*4.0*	*4.0*	*3.7*	*3.2*
Housing Starts (Mill. Units)	0.96	0.87	0.88	1.00	1.00	1.10	*1.20*	*1.25*	*1.35*	*1.45*	*1.50*	*1.52*
Total Light Vehicle Sales (Mill. Units)	15.3	15.5	15.7	15.6	15.7	16.0	*16.0*	*16.0*	*16.2*	*16.4*	*16.5*	*16.5*

*Estimated

Duke CFO magazine Global Business Outlook survey - U.S. - First Quarter, 2014

14. On February 17, 2014 the annual yield on 10-yr treasury bonds was 2.7%. Please complete the following:

	Mean	SD	95% CI	Median	Minimum	Maximum	Total
Over the next 10 years, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be less than:	1.8	4.8	1.3 - 2.4	2	-20	20	323
Over the next 10 years, I expect the average annual S&P 500 return will be: Expected return:	6.5	4.8	6.0 - 7.0	6	-5	60	339
Over the next 10 years, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be greater than:	10.2	7.9	9.3 - 11.0	10	1	80	322
Over the next year, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be less than:	-2.1	9.0	-3.0 - -1.1	0	-50	30	322
Over the next year, I expect the average annual S&P 500 return will be: Expected return:	5.6	5.0	5.1 - 6.1	5	-20	40	335
Over the next year, I expect the average annual S&P 500 return will be: There is a 1-in-10 chance it will be greater than:	11.0	7.4	10.2 - 11.8	10	-5	80	318
For predicting the S&P 500 return during the next year, among all respondents to this survey, what do you think will be the average of all of their 'best guesses' ?	0.0	0.0	0.0 - 0.0	0	0	0	0

On Portfolio Planning

Share:

Q and A: Estimating Long-Term Market Returns

April 11, 2013

Michael E. Lind
CFA, Senior Quantitative Analyst, Charles Schwab Investment Advisory, Inc.

Each year, Charles Schwab Investment Advisory, Inc. (CSIA) calculates long-term return estimates for stock, bond and cash investments. Here, we'll answer common client questions concerning this research, including an explanation of the methodology behind our estimates.

Why are long-term return estimates important?
How do you define "long term"?
How do short- and long-term forecasts differ? Is one better than the other?
What are your long-term return estimates for stocks, bonds and cash investments?
How do you calculate your estimates?

Why are long-term return estimates important?

Severe market fluctuations make it hard for investors to reliably plan their financial futures. Having a sound financial plan serves as a road map to help investors reach long-term financial goals, but to get there, you need reasonable estimates of what long-term stock- and bond-market returns might be.

For example, if your return estimates are too optimistic, you run the risk of not being able to retire on time or pay for a child's education. If they're too pessimistic, you may needlessly sacrifice some of your current lifestyle by over-saving for retirement.

Similar to the axiom "garbage in, garbage out," you can't use unrealistic assumptions to determine realistic outcomes, and this is especially true when developing your long-term financial plan.

How do you define "long term"?

When it comes to return forecasts, there's no specific definition of "long term," though a widely accepted rule of thumb is a time period of more than 10 years. A balance is struck when you consider both shorter-term market fluctuations (think 2008) and extremely long periods of time when your confidence in making predictions greatly diminishes. Accordingly, CSIA used a 20-year time horizon for the estimates provided here, though calculations using a time horizon between 15 and 30 years should produce similar results.

How do short- and long-term forecasts differ? Is one better than the other?

For some investors, the strategic asset allocation can serve as a starting point to make shorter-term tactical changes to their asset allocation. For example, an investor may target a long-term, strategic allocation of 50% stocks and 50% bonds. Depending on the market environment, the investor may want to temporarily favor stocks over bonds, or vice versa.

Continuing with the example, suppose the investor thinks that the stock market is currently undervalued. The investor may choose to act on this belief by temporarily adjusting her current allocation, possibly to 60% stocks and 40% bonds.

The process of making these shorter-term changes is called **tactical asset allocation**. These temporary shifts generally occur when estimates of short-term returns deviate from long-term estimates. Short-term return estimates are typically based on current economic and market conditions, whereas current conditions are not as relevant for estimating long-term returns.

When it comes to meeting your long-term goals, however, choosing an appropriate long-term, strategic asset allocation is more important than making short-term, tactical bets.

Some people argue that investors should focus exclusively on short-term returns and short-term asset allocation because it's difficult to accurately estimate long-term returns. The problem is that it's equally difficult to accurately estimate short-term returns!

And because most investors have at least one long-term goal—retirement—they need reasonable long-term return estimates to help determine how much money they'll need to fund their retirement lifestyle, and in turn, how much they'll need to save to get there.

For this reason, the focus of this study is on long-term returns.

What are your long-term return estimates for stocks, bonds and cash investments?

Asset class	CSIA estimate of expected returns for 2013
Large-cap stocks	6.3% compounded annually
Mid-/small-cap stocks	7.8% compounded annually
International stocks	6.2% compounded annually
Bonds	2.9% compounded annually
Cash investments	2.5% compounded annually

These estimates are significantly below the historical annual compound returns on large-cap stocks and bonds of 9.9% and 8.2%, respectively, during the 1970-2012 time period. Of course, these are estimates of average returns—in any one year, stocks and bonds may return far more or far less and may even be negative.

Why are the estimates below historical averages? There are two reasons:

Our estimate of long-run inflation is 2.5%, just shy of two percentage points below the actual inflation rate during the 1970-2012 time period.
Current and expected interest rates are much lower than what has transpired historically, especially compared to the high-interest-rate environment of the 1980s.

What you can do now

So, what can you do in a single-digit-return environment? Thanks to the power of compound returns, what you do (or don't do) today can have big implications for your ability to meet your long-term goals.

When faced with expected returns that are lower than you may have anticipated, try to resist the temptation to simply wait in the hope that the market will provide higher returns in the future that will allow you to "catch up" on your financial plan. If it does, that will be a great bonus. But it's far better to plan for a more realistic scenario.

Here are a couple things you can do. First, try to avoid unnecessary fees and taxes, particularly in a lower-return environment. Second, if you don't have a long-term financial plan, it's a good time to put one together.

How do you calculate your estimates?

Our return estimates contain two parts: a **current risk-free rate** component that's the same for all asset classes and an **asset-class premium** that varies by each asset class because of differences in expected risk.

Estimating current risk-free rates

The current risk-free rate is estimated by directly observing Treasury yields in the marketplace. Because we're estimating returns for a 20-year time horizon, the risk-free rate is measured as the yield of a 20-year US Treasury bond, which was 2.7% as of January 7, 2013. Keep in mind that no investment is entirely free of risk, but because US Treasuries are generally considered to be the asset class with the least risk (aside from cash), Treasury rates are typically used as a "risk-free" benchmark.

Estimating asset-class premiums

The asset-class premium measures the incremental return (generally higher for stock asset classes and lower for fixed-income asset classes) demanded by investors for investing in that asset class as opposed to a risk-free bond.

Stocks: The asset-class premium for large-cap stocks is called the **equity risk premium (ERP)**, which measures the relative attractiveness of large-capitalization stocks versus a risk-free bond. It also serves as the foundation for estimating asset-class premiums for mid/small-cap stocks and international stocks.

There are two primary ways of estimating the ERP:

The **historical long-term approach** takes the historical difference in returns between stocks and risk-free bonds and assumes that the future will look like the past.
The **valuation approach** relies on fundamental data, such as dividends, earnings, gross domestic product (GDP) growth and valuation levels and then uses well-established financial theory to estimate an ERP.

Valuation approach vs. historical long-term approach

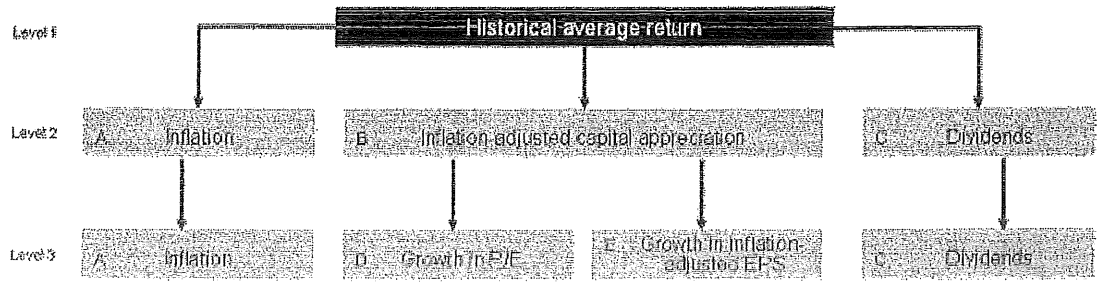
The primary criticism of the valuation approach is that it's very difficult to forecast variables such as dividends, earnings or GDP growth over the short-run, let alone over long horizons. As such, we view long-term return estimates that use this approach to be highly suspect.

The historical-return approach is based on the realization that it's difficult, if not impossible, to forecast long-run stock-market returns using current market or economic conditions. Since current market information is generally not a useful predictor of long-run ERP, the basis of the historical-return approach is that the best estimate of the future ERP is the historical average ERP calculated over a long history.

The primary criticism of the historical-return approach is that realized returns over a particular time period can differ, sometimes dramatically, from what's expected. As such, blindly extrapolating these returns into the future can result in unreasonable estimates.

The approach adopted in this study addresses this criticism.[1] To better understand it, we first break down the sources of average returns for large-cap stocks. In doing so, we look "under the hood" to help determine which components of average returns may be expected to repeat in the future and, more importantly, which ones may not.

Looking Under the Hood: Decomposition of Average Returns for Large-Cap Stocks



As you can see, there are three levels of decomposition:

Level 1 starts with the return on large-cap stocks, which was about 9.5% compounded annually over the 1926-2012 time period.

Level 2 breaks down the return on large-cap stocks into three primary components: inflation (A), returns derived from capital appreciation after inflation (B) and returns derived from dividends (C).

Level 3 breaks down the inflation-adjusted capital appreciation component (B) into two additional pieces: growth in the historical price to earnings (P/E) ratio (D) and growth in inflation-adjusted EPS (E).

This results in a final equation of A + D + E + C = historical average return.

Source: Charles Schwab Investment Advisory, Inc. as of January 7, 2013.

In researching the sources of historical returns, we don't expect the growth in the P/E ratio—amounting to a roughly 0.5% per year average return—to repeat in the future, as this return did not come from earnings growth. Instead, it represents what the market was willing to pay for every dollar in earnings during the 1926-2012 time period.

There are a number of possible reasons why the P/E ratio expanded during this time, including higher expectations for future earnings and less return demanded by investors for holding stocks. Regardless, it's not realistic to think that such an expansion will occur again.

As a result, we do not include the 0.5% attributed to P/E growth when estimating future returns, which results in an adjusted historical return on large-cap stocks equal to the following components:

Inflation + growth in inflation-adjusted EPS + dividends

3% + 1.8% + 3.9% ≈ **8.7%**[2]

The adjusted historical return of 8.7% is not our estimate of future returns because it reflects historical interest rates and inflation. It's used to estimate the ERP. Specifically, we take the adjusted historical return on large-cap stocks and subtract from it the historical income return provided by the risk-free asset (proxied by the Ibbotson Long-term Government Bond Index)[3]:

ERP ≈ 8.7% - 5.1% ≈ **3.6%** (compounded annually)

Therefore, our current risk-free rate of 2.7% + our asset-class premium (ERP) of 3.6% = a long-term return estimate of **6.3%** for large-cap stocks.

Mid-/small-cap stocks: When estimating the asset-class premium for mid-/small-cap stocks, we use the ERP of 3.6% as the starting point, and then make adjustments based on the unique risk level for the mid-/small-cap asset class relative to the overall stock market.

To do this, we first adjust the ERP to reflect the premium for the overall stock market. We accomplish this by estimating the historical sensitivity, or **beta**, of overall stock market returns to large-cap stock returns. This beta of 1.01 is then multiplied by the ERP of 3.6% to obtain the asset-class premium for the overall stock market. The result is an asset-class premium for the overall market of just about 3.6%.

We then use this overall market premium to assist with estimating the mid-/small-cap premium. Specifically, we multiply it by the historical sensitivity between mid-/small-cap stock returns to overall stock market returns of 1.4[4].

This results in a mid/small-cap asset premium of about 5.1%. Add that to our current risk-free rate of 2.7% and we get a long-term return estimate of **7.8%**.

International stocks: Data limitations prevent us from analyzing the sources of historical returns for international stocks. As such, we explore two alternate approaches for estimating the international asset-class premium. The first uses the domestic stock market asset-class premium as an anchor in developing the international equity premium.

This approach has two steps, the first of which is to estimate the world ERP as measured by the return demanded by investors holding a world-stock portfolio that is more than the US risk-free rate. This is estimated by dividing the domestic stock market asset-class premium of 3.6% by the historical sensitivity of domestic stock returns to world stock market returns of 0.93, the quotient of which is a world ERP estimate of 3.9%.

In the second step, the world ERP is multiplied by the historical sensitivity of international market returns (excluding US stocks) to world market returns (including US stocks) of 1.04. This results in an asset premium estimate for the international asset class of roughly 4.0%.

This approach assumes that domestic and international stock markets are integrated, meaning there are no barriers to financial flows and that assets with the same levels of risk command the same return no matter the country. In addition, the approach relies heavily on sensitivities between domestic and international returns that prove to be relatively unstable over time.

As an alternative approach, the international asset-class premium is estimated by taking the historical difference in returns between international and domestic stocks, which results in an estimate of about 2.9%.

The historical asset-class premium is substantially less than the estimate that uses the domestic ERP as an anchor. Which approach is better? Unfortunately, at the present time we have no overwhelming theoretical or empirical basis to choose one or the other method, as both appear to be reasonable.

Having said that, our estimate of the international asset-class premium is the equal-weighted average of the two estimates, or about **3.5%**.

Bonds and cash investments: The asset-class premium for bonds consists of a **default premium**, while the asset-class premium for cash investments consists of a **horizon premium**.

Since we assume a 20-year forecast horizon, and our risk-free rate is derived from a 20-year Treasury, we only need to adjust our bond estimate to reflect the additional amount of compensation an investor requires for holding credit risk. To do this, we estimate a default premium or an additional return demanded for investing in corporate and mortgaged-backed securities. It is measured as the historical difference in monthly total returns between the Barclays US Aggregate Bond Index and a government bond maturity-matched to the Barclays US Aggregate Bond Index.

For the bond asset class, the default premium is approximately 0.2%. Add that to our current risk-free rate of 2.7% and we get a long-term return estimate of **2.9%**.

To approximate a cash estimate, we must first adjust for a horizon premium. The horizon premium estimates the return differential derived from holding bonds with a maturity other than a 20-year time horizon. It's positive for bonds with a time horizon of more than 20 years and negative for bonds with a time horizon of fewer than 20 years. It's measured as the historical difference in monthly income returns between two government bonds, with the maturity of the first bond matching that of our asset-class benchmark and the maturity of a second matching the assumed time horizon of 20 years.

For cash investments, we take the greater of the long-term inflation rate or the sum of the asset-class premium and the current risk-free rate. In this instance, the sum of the asset-class premium (which equals the cash horizon premium, -1.9%) and current risk-free rate (2.7%) is 0.8%, whereas the long-term inflation rate is 2.5%. Therefore, our long-term return estimate for cash investments is **2.5%**.

How we estimate long-term inflation

The 20-year inflation estimate is derived by comparing the yield of 20-year Treasury Inflation Protected Securities (TIPS) to the yield of US Treasury bonds of the same maturity. The yield on a conventional Treasury bond must compensate the investor for the expected decrease in purchasing power associated with inflation. Buyers of inflation-protected securities require no such compensation because interest and principal payments are indexed to inflation. Treasury bonds and TIPS of the same maturity should offer the same inflation-adjusted return because the US Treasury backs both of them.

If this were not the case, savvy bond-market investors would buy the security with the higher inflation-adjusted yield, causing its price to adjust, and resulting in both securities offering the same inflation-adjusted yield. Therefore, the yield difference between conventional Treasuries and TIPS of the same maturity represents an estimate of the inflation rate expected by market participants. Using the spread as of January 7, 2013, this approach resulted in a long-term inflation estimate of roughly 2.5% per year for the next 20 years.[5]

Asset class benchmarks

The table below lists the benchmarks assigned to each asset class. In cases where the benchmark has a short history, it's extended by using a statistically similar longer-lived proxy.

Asset class	Benchmark	Inception date	Benchmark extension	Period used
Large-cap stocks	S&P 500 Index	1957	Wilson and Jones	1926 - 1956
Mid-/small-cap stocks	Russell 2000 Index	1979	CRSP 6-8 Deciles	1926 - 1978
International stocks	MSCI EAFE	1970	n/a	n/a
Bonds	Barclays US Aggregate Bond Index	1976	Portfolio of Ibbotson Government Bond Indexes with similar current maturity as the Barclays Aggregate	1970 - 1975
Cash investments	Citigroup U.S. Domestic 3 Month T-Bill Index	1978	Returns from Ibbotson 30 Day T-Bill Index adjusted to exhibit characteristics of Citigroup Domestic 3 Month T-Bill Index	1970 - 1977
Overall (domestic) stock market	Russell 3000 Index	1979	Portfolio of CRSP stock indexes with similar	1926 - 1978

			market capitalization as the Russell 3000 Index	
World stocks	MSCI World	1970	n/a	n/a

Note: Although Ibbotson S&P 500 return data are available, we use returns from Wilson and Jones for the 1926-1956 time period because they provide a return series that we believe represents a more diversified portfolio of large-cap stocks over this time period. The large-cap stock returns are obtained from Wilson and Jones, 2002, "An Analysis of the S&P 500 Index and Cowles's Extensions: Price Indexes and Stock Returns, 1870-1999," Journal of Business 75, 505-533. For bond and cash investments, we use returns that begin in 1970, even if we have access to a longer return history. This is because changes in the market structure and bond pricing in the fixed income markets make data prior to the 1970s not relevant when developing future prospects. These changes include the Federal Reserve changing its operating procedures from targeting interest rates to managing money-supply growth, the change from fixed—to floating—rate regimes, and the abolishment of the gold standard.

1. It is consistent with the approach developed in Ibbotson & Chen, 2003, "Long-Run Stock Returns: Participating in the Real Economy," Financial Analysts Journal, Volume 59, Number 1, 88-98.

2. The symbol ≈ means approximately equals. The decomposition does not exactly equal the total return due to an approximation used to simplify the illustration.

3. When measuring the historical performance of our risk-free proxy, we use income returns instead of total returns. Income returns are derived from the cash coupon received from holding a fixed-income instrument. We use income returns for the risk-free asset because it provides a better estimate of what investors expected to receive for holding these bonds to maturity.

4. Another approach is to directly estimate the sensitivity of the asset class to large-cap stocks. We don't do this, however, due to data limitations. Specifically, historical benchmark returns for large-cap stocks prior to 1957 are from Wilson and Jones (2002). They provide returns on an annual basis. But we prefer to follow common practice and use monthly data, whenever possible, to estimate betas because doing so increases the accuracy of the estimate.

5. An alternative to this approach is to use statistical models and historical data to develop inflation estimates. These estimates, however, are often highly variable and rely heavily on numerous assumptions, making them highly suspect. Our approach prefers the use of directly-observable market yield spreads instead.

Important Disclosures

The information provided here is for general informational purposes only and should not be considered an individualized recommendation or personalized investment advice. Any investments and strategies mentioned here may not be suitable for everyone. Each investor needs to review an investment strategy for his or her own particular situation before making any investment decision.

Examples and estimates provided are for informational purposes only and not intended to be reflective of results you should expect to achieve. Actual results year-to-year and overall will vary and may be worth more or less than estimated value. **Past performance is no guarantee of future results.**

Fixed income investments are subject to various risks, including changes in interest rates, credit quality, market valuations, liquidity, prepayments, corporate events, tax ramifications and other factors.

International investing may involve greater risk than US investments due to currency fluctuations, unforeseen political and economic events, and legal and regulatory structure in foreign countries. Small-cap investing is subject to greater volatility than other asset categories.

The S&P 500® Index is a market-capitalization weighted index that consists of 500 widely traded stocks chosen for market size, liquidity and industry group representation.

Russell Indexes are subsets of the Russell 3000® Index, which contains the largest 3,000 companies incorporated in the United States and represents approximately 98% of the investable U.S. equity markets. Russell 2000® Index is a market-capitalization weighted index composed of the 2,000 smallest companies in the Russell 3000.

CRSP Cap-Based Portfolios data tracks micro, small, mid and large-cap stocks on monthly and quarterly frequencies. CRSP ranks all NYSE companies by market capitalization and divides them into 10 equally populated portfolios. AMEX and NASDAQ stocks are then placed into the deciles determined by the NYSE breakpoints, based on their market capitalization. CRSP portfolios 1-2 represent large-cap stocks, portfolios 3-5 are mid caps, and portfolios 6-8 represent small caps. Portfolio Assignments are available as a CRSP Access stock module. The stock and indices types must match (monthly).

MSCI EAFE® Index (Europe, Australasia, Far East) is a free float-adjusted market capitalization index that is designed to measure developed market equity performance, excluding the U.S. and Canada. The MSCI EAFE Index consists of the following 22 country indices: Australia, Austria, Belgium, Denmark, France, Finland, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland and the United Kingdom.

The MSCI World Index℠ is a free float-adjusted market capitalization index that is designed to measure global developed-market equity performance. The MSCI World Index consists of the following 24 developed market country indices: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Barclays US Aggregate Bond Index includes fixed-rate debt issues rated investment grade or higher by Moody's Investors Service, Standard & Poor's®, or Fitch Investor's Service, in that order. (It also includes commercial mortgage-backed securities.) Bonds or securities included must be fixed rate, must be dollar denominated and non-convertible, and must be publicly issued. Bonds included span the maturity horizon, although all issues must have at least one year to maturity. All returns are market-value weighted inclusive of accrued interest.

Ibbotson U.S. Intermediate-Term Government Bond Index is constructed from monthly returns of non-callable bonds with maturities of not less than five years, held for the calendar year.

Ibbotson U.S. Long-Term Government Bond Index is measured using a one-bond portfolio with a maturity near 20 years.

Ibbotson 30-Day T-Bill Index is measured by rolling over each month a one-bill portfolio containing at the beginning of each month, the bill having the shortest maturity not less than one month.

Citigroup U.S. 3-month Treasury Bill Index is an index that measures monthly total return equivalents of yield averages that are not marked to market. The Three-Month Treasury Bill Index consists of the last three three-month Treasury bill issues.

Indexes are unmanaged, do not incur management fees, costs, or expenses and cannot be invested in directly.

Charles Schwab Investment Advisory, Inc. ("CSIA") is an affiliate of Charles Schwab & Co., Inc. ("Schwab").

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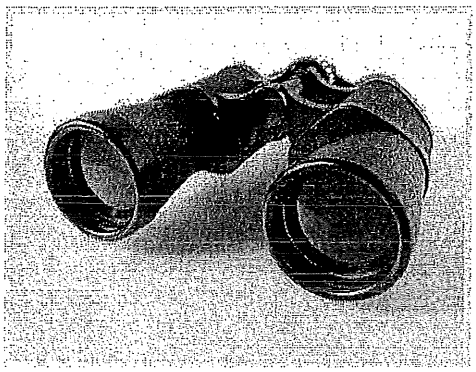
Forbes

Rick Ferri, Contributor
I cover low-cost index fund and ETF investing.

PERSONAL FINANCE | 1/09/2014 @ 10:00AM | 7,806 views

30-Year Market Forecast For Investment Planning, 2014 Edition

Each year, Portfolio Solutions® publishes a 30-year forecast for stock and bond market returns. There are two sets of return expectations in this report. One is the return expectation based on a real return. This is the pre-inflation estimate. The second is a nominal return. It includes an inflation expectation. The risk stated for each asset class is the estimated annual standard deviation of return.



Binoculars. (Photo credit: Wikipedia)

This forecast is intended for making long-term asset allocation decisions rather than short-term tactical decisions. It's not possible to predict short-term asset class returns. It is possible and even desired to forecast long-term *expected* returns. These numbers can be used to construct an asset allocation to fit your needs. They're not perfect, but they are a starting point.

This 30-year expected real return forecast relies on five primary drivers:

1. Market risk as measured by comparative price volatility does contain information about expected return;
2. The Federal Reserve's long-term target for US GDP growth forecasts corporate earnings growth that can be used to forecast stock market growth;
3. Market-implied inflation based on Federal Reserve inflation target and the yield difference between long-term Treasury Bonds and long-term Treasury Inflation Protected Securities (TIPS);
4. Current cash payouts from interest, dividends, and Real Estate Investment Trusts (REITs); and
5. A subjective reading of market valuation using standard ratios, fiscal and monetary policy actions, tax policy, and global competitiveness.

One problem assessing the returns of free markets is that they are never truly free. Artificial forces are at play from government fiscal policy (tax and spend)

as well as monetary policy from the Central Banks (inflation and employment control through interest rate manipulation). These artificial forces distort return expectations on a regular basis. For decades, the US economy has benefited from government deficit spending. In addition, artificially low interest rates created by Federal Reserve policy pushed investors into riskier assets and thus drive up valuations. Only in the long-term do all these factors play out.

Today, any credible assessment of future risks and returns has to take into consideration the unprecedented size of the US fiscal deficit and burgeoning Federal Reserve balance sheet. The 10-year Treasury is at a 3.0% yield despite continued bond buying from the Fed, which is double the yield from a low of 1.5% set in July 2012.

The long-term inflation expectations are 1.75%, according to The Federal Reserve Bank of Cleveland. That's slightly below the Fed's target of 2.0% inflation and leaves room for more monetary easing.

With lower inflation and higher rates during 2013, the real return on the 10-year Treasury is closing in on its historical average of about 2.0%. My forecast of a regression that real yield means it's likely that the total real return on 10-year US Treasury will be slightly lower than 2.0% over our 30-year forecast.

The US equity market had the best year since 1997 by gaining over 30 percent in total return. According to S&P Dow Jones Indices, corporate earnings increase by 11.38% since 2012, which is faster growth than in the previous year. The price-to-earnings ratio (PE) of the S&P 500 increased from 16.49 to 19.11 due to the surge in prices. It's a high valuation for stocks, but reasonable given an environment of financial repression created by the current monetary policy.

Stock prices will likely continue to trade at higher than historic average valuations for as long as the Federal Reserve remains accommodative. The most recent economic projections from the Federal Reserve show long-term inflation-adjusted economic growth between 2.2 and 2.4%. This is 0.1 percent lower than the Fed's 2013 forecast.

Given the backdrop of higher stock valuation and lower expected GDP growth in the long-term, I have reduced my long-term real return outlook for large cap US stocks from the 5.4% estimate last year to 5.0% going forward. I've also lowered expectations for small-cap and value stocks. The popularity of these styles has attracted large cash flows in recent years and that tells me future expected returns may be lower.

There is always a caveat, and the fly in the ointment this time is corporate taxes. If the top corporate tax rate is lowered to 30 percent or less, the long-term expected return from US stocks will be higher than those stated above.

International equities are beginning to become interesting again. Developed markets underperformed the US equity market in 2013 and emerging market stocks had very difficult year. This may make foreign stock ownership more attractive that US stock ownership on a valuation basis. My expected long-term return for developed countries remains at 5.4 percent. Emerging markets remain high at a 7.0 percent real return expectation, although that's lower than prevision forecasts due to slower growth in emerging market countries.

The following table is provided for informational purposes only and not intended to be used for short-term market timing. This forecast always

attempts to err on the conservative side. It is wise to expect and plan for lower returns and then be pleasantly surprised if the forecast is too low.

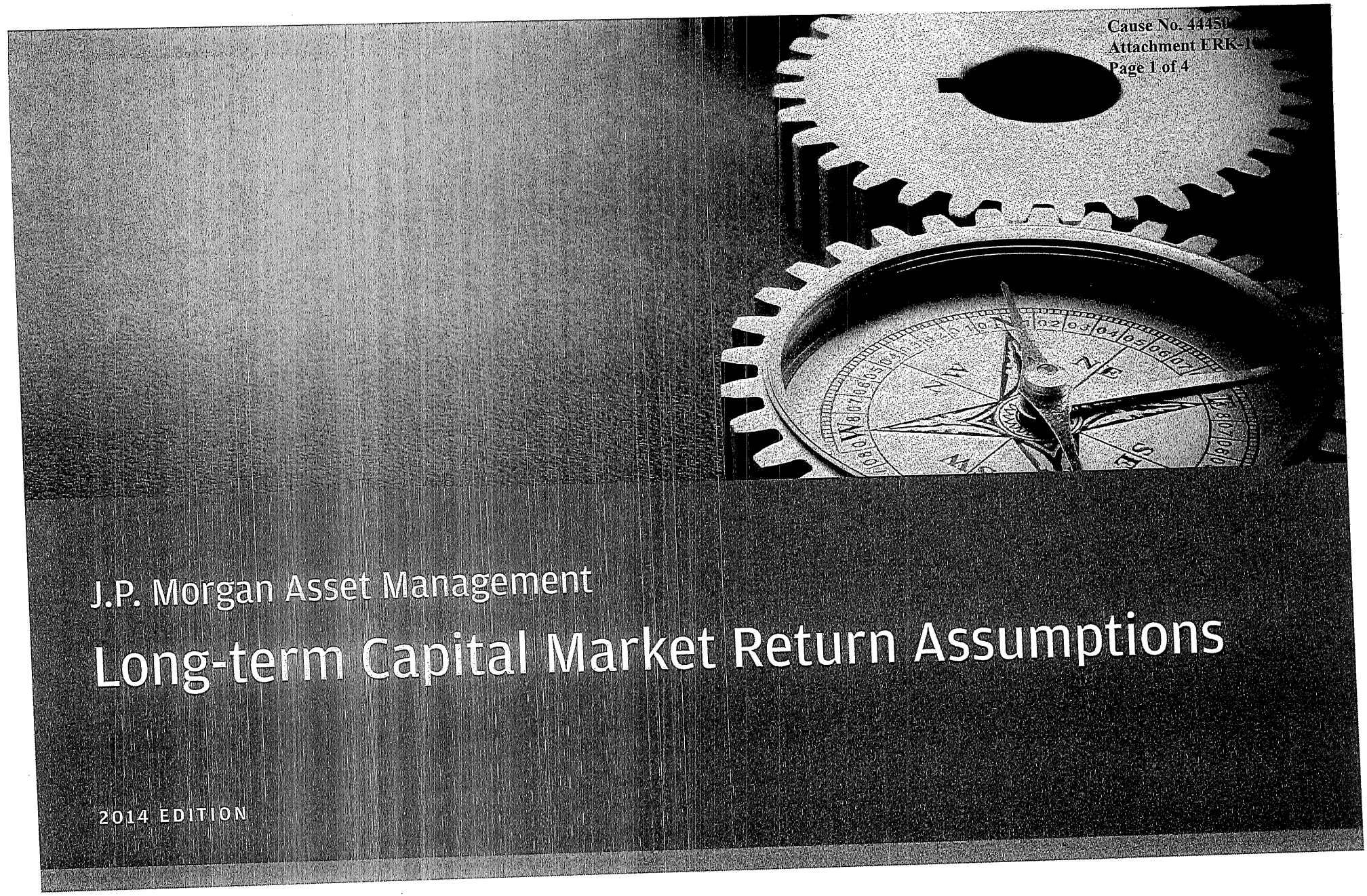
Thirty-Year Estimates of Bonds, Stocks and REITs Assuming a 2.0% Inflation Rate

Asset Classes	Real Return	With 2.0% Inflation	Risk* Estimate
Government-Backed Fixed Income			
U.S. Treasury bills (1-month maturity)	0.1	2.1	2.0
10-year U.S. Treasury notes	1.9	3.9	7.0
20-year U.S. Treasury bonds	2.5	4.5	8.0
30-year inflation protected Treasury (TIPS)	2.9	4.9	9.0
GNMA mortgages	2.4	4.4	8.0
10-year tax-free municipal (A rated)	2.0	4.0	7.0
Corporate and Emerging Market Fixed Income			
10-year investment-grade corporate (AAA-BBB)	2.6	4.6	9.0
20-year investment-grade corporate (AAA-BBB)	3.3	5.3	10.0
10-year high-yield corporate (BB-B)	4.5	6.5	15.0
Foreign government bonds (unhedged)	2.6	4.6	9.0
U.S. Common Equity and REITs			
U.S. large-cap stocks	5.0	7.0	19.0
U.S. small-cap stocks	5.3	7.3	22.0
U.S. small-value stocks	6.0	8.0	26.0
REITs (real estate investment trusts)	5.0	7.0	19.0
International Equity (unhedged)			
Developed countries	5.4	7.4	19.0
Developed countries small company	5.7	7.7	22.0
Developed countries small value companies	6.4	8.4	26.0
All emerging markets including frontier countries	7.0	9.0	29.0

Source: Rick Ferri

*The estimate of risk is the estimated standard deviation of annual returns, according to Morningstar.

This article is available online at:
http://www.forbes.com/sites/rickferri/2014/01/09/portfolio-solutions-30-year-market-forecast/



J.P. Morgan Asset Management

Long-term Capital Market Return Assumptions

2014 EDITION

J.P.Morgan
Asset Management

J.P. Morgan Asset Management Long-term Capital Market Return Assumptions

As of September 30, 2013*

	Expected 10–15 year annualized compound returns (%)[1,2]		Rationale
U.S. ECONOMIC INDICATORS	Inflation	2.25	Significant slack in the economy overall, elevated levels of unemployment, ongoing deleveraging, and firmly anchored market expectations will keep inflation low overall. Reflationary central bank policies create the risk for higher inflation for the outer years of the projection horizon.
	Core Inflation	2.25	
	Real GDP	2.50	The cyclical picture continues to improve and economic momentum is improving, as secular challenges from an ageing population and rising entitlement costs become more pressing.
FIXED INCOME	U.S. Cash	2.00	The Federal Reserve to keep policy rates on hold for an extended period and raise them only gradually thereafter. Real rates to remain low by historical standards.
	U.S. Intermediate Treasury[3]	4.25	Yield levels to stay contained in the near term before rising towards their higher equilibrium levels as monetary policy is eventually normalized. Dampened total returns due to both low income from the low level of yield and negative mark-to-market returns from rising rates.
	U.S. Long Treasury[4]	3.25	
	U.S. TIPS	4.75	TIPS to outperform nominal Treasuries as longer-term expected inflation rises only moderately from current levels.
	U.S. Aggregate	4.25	Spreads are expected to narrow somewhat, but total returns should remain exposed to rising overall yields broadly in line with Treasury rates; intermediate maturity securities benefit most from the curve roll-down.
	U.S. Short Duration Gov't/Credit	2.50	
	U.S. Long Duration Gov't/Credit	4.75	
	U.S. Investment Grade Corporate	5.00	
	U.S. Long Corporate	5.00	
	U.S. High Yield	6.00	Any further reduction in default rates and spread narrowing will provide only limited protection to offset the mark-to-market pressure from rising Treasury rates. Income is expected to be the driver of returns. Haircut applied to total returns for expected loss from defaults.
	U.S. Leveraged Loan (BB or better)	4.50	
	World Government Bond (local)	2.75	Government bond yields to rise globally from current levels, leading to negative mark-to-market returns during the period where rates converge to equilibrium. Outside the U.S., countries are likely to experience a prolonged period of lower rates and normalization due to slower economic growth.
	World ex-U.S. Government Bond (local)	2.50	
	World ex-U.S. Government Bond (hedged)	3.25	Higher U.S. cash yields compared to weighted average WGBI cash yields are expected to boost returns to U.S. investors.
	Emerging Markets Sovereign Debt (hedged)	6.75	Spreads have room to narrow, but total returns are at risk from rising U.S. Treasury yields given the long index duration.
	Emerging Markets Local Currency Sovereign Debt (unhedged)	7.00	Spreads are expected to narrow further, but total returns are expected to be constrained as overall yields rise with U.S. Treasury rates.
	Emerging Markets Corporate Debt (hedged)	6.25	Yields are expected to rise as inflation and real rates in emerging economies increase to their higher equilibrium levels over time. Total returns to be largely driven by income.
	U.S. Municipal (1–15 Blend)	3.75	Spreads are expected to narrow further, but total returns are expected to be constrained as overall yields rise with U.S. Treasury rates.
EQUITY	U.S. Large Cap	7.50	Sum of below building blocks (nominal earnings per share growth + dividend yield + price-to-earnings return impact). Total returns are expected to recover over the long term as the corporate sector outperforms the domestic economy.
	U.S. Large Cap EPS Growth	4.50	Real corporate earnings growth remains robust as companies maintain cost discipline, while margins to drift gradually lower.
	U.S. Large Cap Dividend Yield	3.00	Dividend yield is expected to rise as companies favor payouts over new investment.
	U.S. Large Cap P/E Return Impact	zero	Valuation multiples approach more recent historical averages, but upside is limited due to secular pressures and limited headline growth.
	U.S. Mid Cap	7.75	Mid cap companies in particular are likely to benefit from acquisition activity by larger firms, especially given the significant cash build-up on large cap corporate balance sheets.
	U.S. Small Cap	7.50	
	U.S. Large Cap Value	7.75	Value is expected to outperform growth given starting valuations and more favorable sector concentrations.
	U.S. Large Cap Growth	7.25	
	Europe ex-U.K. Large Cap (local)	8.00	An earnings premium to nominal GDP is expected due to the large share of globally sourced revenues. Valuations to improve from depressed levels and dividend yields to rise moderately.
	Japan Large Cap (local)	4.75	Earnings to outperform the domestic economy given exposure to fast-growing overseas markets. Japan to remain a global underperformer given demographic challenges and the ongoing battle with deflation.
	U.K. Large Cap (local)	8.25	An earnings premium to nominal GDP is expected given support from foreign-sourced revenues. Tolerance for higher inflation to keep valuations in check, but dividend yields are expected to rise moderately.
	EAFE Equity (local)	7.50	Market capitalization weighted average of expectations for regional equity returns.
	EAFE Equity (unhedged)	7.75	Slight dollar depreciation against the weighted average of EAFE currencies is expected to boost returns to U.S. investors.
	Emerging Markets Equity (unhedged)	9.00	Overall more favorable demographics, policy flexibility and improved corporate governance should support long-run growth even with weaker economic fundamentals.
	Asia ex-Japan Equity (unhedged)	9.25	
	Global Equity (unhedged)	7.75	Market capitalization weighted average of expectations for regional equity returns.
ALTERNATIVE/OTHER	U.S. Private Equity[5,6]	8.00	Median manager returns assumed to be in line with mid cap equity. Sizeable divergence expected across private investments.
	U.S. Direct Real Estate (unlevered)[5,6]	6.00	Appreciation of real estate assets, lower intial property yields and low nominal GDP expectations reduce return expectation by 0.50% per annum from 2013 estimates.
	U.S. Value Added Real Estate (unlevered)[5,6]	7.75	A real estate risk assumption between core and opportunistic, seeking to enhance cash flows, occupancy, and building renovation; historically has given a higher yield compared to core.
	European Real Estate (unlevered, local)[5,6]	6.00	European real estate, with low nominal GDP growth, to produce muted return expectations.
	U.S. REITs	6.75	Solid REIT performance and a slight NAV premium to direct unlevered real estate results in REIT returns that are broadly in line with the real asset return.
	Global Infrastructure[5,6]	7.25	Expectations for returns are based on continued interest in infrastructure cash flows with good visibility and the benefit of leverage for low risk "bondable" assets.
	Hedge Fund—Diversified[5,6]	5.25	Expected hedge fund returns are based on multi-variate regressions to public markets. A blend of emerging market, commodities, small cap and U.S. aggregate bond betas to be the main driver of median manager expected returns. Sizeable divergences are expected among managers.
	Hedge Fund—Event Driven[5,6]	6.00	Blend of emerging market, commodities, mid cap, small cap, U.S. high yield and cash betas to be the main driver of median manager expected returns. Sizeable divergences are expected among managers.
	Hedge Fund—Long Bias[5,6]	6.25	Blend of commodities, emerging market equity, and large and small cap betas to be the main driver of median manager expected returns. Sizeable divergences are expected among managers.
	Hedge Fund—Relative Value[5,6]	4.75	Blend of emerging market credit, commodities, U.S. high yield and investment grade bond betas to be the main driver of median manager expected returns. Sizeable divergences are expected among managers.
	Hedge Fund—Macro[5,6]	5.25	Blend of commodities, emerging market equity and cash betas to be the main driver of median manager expected returns. Sizeable divergences are expected among managers.
	Commodities (spot)[5]	3.75	Return expectation is based on the growth of nominal global GDP. Returns to be less robust, reflecting large supply/demand challenges.
	Gold (spot)	4.25	Expected return is based on the historical relationship with inflation expectations, the U.S. dollar and emerging markets.

* Data as of September 30, 2013, except hedge funds (diversified, event driven, long bias, and relative value) as of June 30, 2013 and hedge fund (macro) as of May 31, 2013.

[1] Return estimates are on a compound or internal rate of return (IRR) basis. Equivalent arithmetic averages, as well as further information, are shown on the following page.

[2] All asset class assumptions are in total return terms, including equity return assumptions. All returns are in U.S. dollar terms unless otherwise indicated.

[3] U.S. Intermediate Treasury returns based on Barclays Capital U.S. Treasury: 7-10 Year Index.

[4] U.S. Long Treasury returns based on Barclays Capital U.S. Treasury: 20+ Year Index.

[5] Private equity, hedge funds, real estate, infrastructure and commodities are unlike other asset categories shown above in that there is no underlying investible index. Hedge fund returns are shown net of manager fees.

[6] The return estimates shown for these asset classes and strategies are our estimates of industry medians—the dispersion of returns among managers in these asset classes and strategies is typically far wider than for traditional asset classes.

See additional notes on the following page.

Correlation Matrix

	Expected annualized volatility (%)[2]	Expected compound return (%)[2]	Expected arithmetic return (%)[2]	U.S. Inflation	U.S. Cash	U.S. Intermediate Treasury[3]	U.S. Long Treasury[4]	U.S. TIPS	U.S. Aggregate	U.S. Short Duration Gov't/Credit	U.S. Long Duration Gov't/Credit	U.S. Investment Grade Corporate	U.S. Long Corporate	U.S. High Yield	U.S. Leveraged Loan	World Government Bond (hedged)	World Government Bond (unhedged)	World ex-U.S. Government Bond (hedged)	World ex-U.S. Government Bond (unhedged)	Emerging Markets Sovereign Debt (unhedged)	Emerging Markets Local Currency Sovereign Debt (unhedged)	Emerging Markets Corporate Debt (unhedged)	U.S. Municipal (1-15 Blend)	U.S. Municipal High Yield	U.S. Large Cap	U.S. Mid Cap	U.S. Small Cap	U.S. Large Cap Value	U.S. Large Cap Growth	Europe ex-U.K. Large Cap (unhedged)	Japan Large Cap (unhedged)	U.K. Large Cap (unhedged)	EAFE Equity (hedged)	EAFE Equity (unhedged)	Emerging Markets Equity (unhedged)	Asia ex-Japan Equity (unhedged)	Global Equity (unhedged)	U.S. Private Equity[5,6]	U.S. Direct Real Estate (unlevered)[5,6]	U.S. Value Added Real Estate (unlevered)[5,6]	European Direct Real Estate (unlevered)[5,6]	U.S. REITs	Global Infrastructure[5,6]	Hedge Fund—Diversified[5,6]	Hedge Fund—Event Driven[5,6]	Hedge Fund—Long Bias[5,6]	Hedge Fund—Relative Value[5,6]	Hedge Fund—Macro[5,6]	Commodities (spot)[5]	Gold (spot)
FIXED INCOME	U.S. Inflation	2.26	2.25	1.50	1.00																																																	
	U.S. Cash	2.00	2.00	0.50	0.09	1.00																																																
	U.S. Intermediate Treasury[3]	4.45	4.25	6.50	-0.30	0.03	1.00																																														
	U.S. Long Treasury[4]	4.11	3.25	13.50	-0.33	0.01	0.89	1.00																																													
	U.S. TIPS	4.97	4.75	6.75	0.05	-0.02	0.62	0.47	1.00																																												
	U.S. Aggregate	4.35	4.25	4.50	-0.26	0.00	0.87	0.77	0.77	1.00																																										
	U.S. Short Duration Gov't/Credit	2.52	2.50	2.00	-0.20	0.27	0.67	0.44	0.61	0.76	1.00																																									
	U.S. Long Duration Gov't/Credit	5.18	4.75	9.50	-0.31	-0.05	0.84	0.87	0.66	0.92	0.56	1.00																																								
	U.S. Investment Grade Corporate	5.23	5.00	7.00	-0.24	-0.09	0.53	0.47	0.64	0.82	0.61	0.79	1.00																																							
	U.S. Long Corporate	5.67	5.00	12.00	-0.28	-0.10	0.58	0.61	0.60	0.83	0.50	0.87	0.93	1.00																																						
	U.S. High Yield	6.75	6.00	12.75	-0.04	-0.10	-0.06	-0.12	0.39	0.33	0.18	0.28	0.62	0.58	1.00																																					
	U.S. Leveraged Loan (BB or better)	5.00	4.50	10.25	0.13	-0.07	-0.19	-0.22	0.27	0.13	-0.02	0.12	0.41	0.37	0.75	1.00																																				
	World Government Bond (hedged)	3.29	3.25	3.00	-0.35	0.06	0.88	0.83	0.49	0.80	0.63	0.78	0.51	0.56	-0.07	-0.24	1.00																																				
	World Government Bond (unhedged)	3.49	3.25	7.00	-0.12	0.05	0.59	0.46	0.62	0.67	0.64	0.56	0.54	0.52	0.27	-0.06	0.56	1.00																																				
	World ex-U.S. Government Bond (hedged)	3.29	3.25	3.00	-0.33	0.05	0.77	0.73	0.39	0.71	0.54	0.71	0.47	0.52	-0.04	-0.22	0.95	0.51	1.00																																				
	World ex-U.S. Government Bond (unhedged)	3.58	3.25	8.25	-0.08	0.04	0.48	0.35	0.57	0.59	0.58	0.48	0.51	0.48	0.31	-0.02	0.47	0.96	0.43	1.00																																			
	Emerging Markets Sovereign Debt (hedged)	7.41	6.75	12.00	-0.12	-0.04	0.37	0.24	0.65	0.67	0.44	0.58	0.76	0.73	0.75	0.50	0.32	0.52	0.30	0.52	1.00																																		
	Emerging Markets Local Currency Sovereign Debt (unhedged)	7.69	7.00	12.25	0.03	0.05	0.12	0.01	0.47	0.40	0.31	0.31	0.54	0.49	0.67	0.32	0.11	0.56	0.12	0.60	0.80	1.00																																	
	Emerging Markets Corporate Debt (hedged)	6.86	6.25	11.50	-0.06	-0.08	0.27	0.14	0.61	0.59	0.39	0.51	0.77	0.70	0.74	0.63	0.19	0.40	0.17	0.40	0.90	0.69	1.00																																
	U.S. Municipal (1-15 Blend)	3.83	3.75	4.00	-0.13	-0.04	0.49	0.38	0.50	0.63	0.48	0.54	0.58	0.51	0.30	0.24	0.49	0.36	0.47	0.32	0.48	0.24	0.40	1.00																														
	U.S. Municipal High Yield	5.77	5.25	10.50	0.17	-0.07	-0.04	-0.11	0.33	0.19	0.06	0.12	0.29	0.21	0.36	0.48	-0.04	0.04	-0.01	0.06	0.40	0.24	0.46	0.61	1.00																												
EQUITY	U.S. Large Cap	8.49	7.50	14.75	0.08	-0.06	-0.26	-0.31	0.18	0.04	-0.05	-0.02	0.30	0.24	0.71	0.44	-0.27	0.19	-0.23	0.26	0.55	0.67	0.55	0.04	0.27	1.00																										
	U.S. Mid Cap	9.17	7.75	17.75	0.11	-0.07	-0.29	-0.33	0.20	0.03	-0.07	-0.02	0.31	0.26	0.74	0.50	-0.29	0.14	-0.25	0.21	0.56	0.66	0.57	0.06	0.29	0.96	1.00																									
	U.S. Small Cap	9.24	7.50	19.75	0.08	-0.08	-0.31	-0.34	0.10	-0.04	-0.13	-0.08	0.21	0.18	0.69	0.41	-0.31	0.10	-0.26	0.18	0.48	0.63	0.47	-0.02	0.20	0.92	0.94	1.00																							
	U.S. Large Cap Value	8.84	7.75	15.50	0.07	-0.05	-0.24	-0.28	0.16	0.05	-0.04	0.00	0.30	0.25	0.69	0.40	-0.23	0.21	-0.19	0.27	0.55	0.67	0.55	0.03	0.25	0.96	0.94	0.92	1.00																						
	U.S. Large Cap Growth	8.27	7.25	15.00	0.09	-0.07	-0.28	-0.34	0.20	0.02	-0.07	-0.04	0.29	0.23	0.71	0.48	-0.30	0.15	-0.26	0.22	0.53	0.64	0.54	0.05	0.28	0.96	0.95	0.91	0.93	1.00																					
	Europe ex-U.K. Large Cap (unhedged)	9.20	7.75	18.00	0.06	0.03	-0.23	-0.28	0.21	0.09	0.05	0.03	0.36	0.30	0.72	0.42	-0.21	0.36	-0.17	0.44	0.61	0.77	0.57	0.04	0.24	0.89	0.87	0.81	0.89	0.87	1.00																			
	Japan Large Cap (unhedged)	7.99	6.75	16.50	0.05	-0.03	-0.11	-0.12	0.22	0.16	0.08	0.13	0.40	0.35	0.57	0.39	-0.11	0.26	-0.09	0.30	0.52	0.61	0.49	0.03	0.18	0.65	0.66	0.61	0.65	0.62	0.69	1.00																	
	U.K. Large Cap (unhedged)	9.45	8.00	18.00	0.12	0.00	-0.29	-0.35	0.20	0.05	0.00	-0.01	0.37	0.29	0.68	0.48	-0.28	0.28	-0.24	0.36	0.58	0.72	0.60	0.06	0.35	0.87	0.85	0.76	0.86	0.85	0.93	0.67	1.00															
	EAFE Equity (hedged)	8.70	7.75	14.50	0.04	0.01	-0.35	-0.34	0.05	-0.02	-0.12	-0.03	0.31	0.27	0.69	0.52	-0.30	0.02	-0.23	0.09	0.53	0.62	0.53	0.01	0.29	0.88	0.88	0.82	0.87	0.87	0.88	0.75	0.87	1.00													
	EAFE Equity (unhedged)	9.24	7.75	18.25	0.07	0.01	-0.22	-0.27	0.24	0.12	0.05	0.06	0.41	0.35	0.73	0.46	-0.21	0.35	-0.17	0.42	0.64	0.79	0.62	0.06	0.28	0.89	0.88	0.81	0.88	0.87	0.96	0.77	0.94	0.90	1.00											
	Emerging Markets Equity (unhedged)	11.50	9.00	24.00	0.07	0.07	-0.18	-0.24	0.31	0.15	0.08	0.08	0.39	0.34	0.70	0.45	-0.19	0.30	-0.16	0.36	0.66	0.81	0.63	0.07	0.29	0.80	0.82	0.76	0.77	0.81	0.86	0.67	0.85	0.82	0.89	1.00										
	Asia ex-Japan Equity (unhedged)	11.50	9.25	22.75	0.01	0.06	-0.16	-0.22	0.28	0.17	0.09	0.11	0.43	0.38	0.72	0.46	-0.15	0.28	-0.11	0.34	0.64	0.78	0.62	0.09	0.28	0.78	0.79	0.73	0.75	0.79	0.84	0.63	0.82	0.81	0.87	0.95	1.00								
	Global Equity (unhedged)	9.01	7.75	16.75	0.08	0.00	-0.25	-0.30	0.24	0.09	0.01	0.03	0.38	0.32	0.75	0.48	-0.25	0.28	-0.21	0.35	0.63	0.77	0.62	0.05	0.29	0.94	0.93	0.88	0.93	0.93	0.95	0.73	0.93	0.91	0.96	0.90	0.88	1.00							
ALTERNATIVE ASSETS	U.S. Private Equity[5,6]	10.13	8.00	22.00	0.12	-0.12	-0.37	-0.39	0.10	-0.07	-0.13	-0.11	0.22	0.17	0.67	0.44	-0.35	0.08	-0.30	0.16	0.44	0.61	0.47	-0.02	0.30	0.90	0.93	0.95	0.89	0.89	0.80	0.64	0.77	0.82	0.81	0.76	0.74	0.87	1.00						
	U.S. Direct Real Estate (unlevered)[5,6]	6.67	6.00	12.00	0.06	-0.02	0.00	-0.01	0.16	0.15	0.05	0.12	0.20	0.21	0.38	0.20	0.02	0.16	0.03	0.17	0.31	0.33	0.24	0.11	0.13	0.35	0.39	0.39	0.38	0.32	0.31	0.27	0.28	0.29	0.32	0.27	0.26	0.33	0.35	1.00				
	U.S. Value Added Real Estate (unlevered)[5,6]	8.84	7.75	15.50	0.06	-0.01	-0.05	-0.07	0.13	0.10	0.04	0.07	0.17	0.17	0.35	0.19	-0.03	0.15	-0.02	0.18	0.29	0.33	0.24	0.07	0.13	0.35	0.37	0.37	0.37	0.33	0.35	0.27	0.33	0.32	0.35	0.30	0.29	0.36	0.34	0.70	1.00			
	European Direct Real Estate (unlevered)[5,6]	6.89	5.75	15.75	0.07	-0.02	-0.06	-0.10	0.14	0.09	0.08	0.04	0.14	0.12	0.27	0.15	-0.03	0.20	0.00	0.23	0.29	0.32	0.25	0.02	0.16	0.28	0.28	0.27	0.31	0.24	0.35	0.22	0.34	0.27	0.34	0.26	0.23	0.31	0.27	0.50	0.50	1.00		
	U.S. REITs	8.55	6.75	20.00	0.09	-0.04	-0.06	-0.09	0.28	0.22	0.07	0.17	0.36	0.36	0.72	0.39	-0.05	0.27	-0.02	0.31	0.58	0.64	0.49	0.17	0.25	0.77	0.79	0.79	0.80	0.72	0.69	0.56	0.64	0.66	0.69	0.61	0.59	0.74	0.73	0.60	0.48	0.34	1.00	
	Global Infrastructure[5,6]	7.97	7.25	12.50	0.10	0.00	0.19	0.15	0.30	0.29	0.18	0.25	0.27	0.27	0.30	0.15	0.16	0.26	0.14	0.25	0.34	0.32	0.29	0.18	0.13	0.29	0.30	0.29	0.31	0.27	0.26	0.23	0.23	0.21	0.27	0.24	0.23	0.28	0.25	0.28	0.21	0.15	0.45	1.00
	Hedge Fund—Diversified[5,6]	5.45	5.25	6.50	0.22	0.11	-0.33	-0.36	0.19	-0.03	-0.06	-0.06	0.26	0.19	0.50	0.46	-0.34	0.06	-0.29	0.13	0.41	0.55	0.47	0.03	0.42	0.67	0.71	0.62	0.63	0.71	0.71	0.62	0.77	0.76	0.76	0.80	0.75	0.77	0.69	0.14	0.20	0.23	0.39	0.12	1.00
	Hedge Fund—Event Driven[5,6]	6.30	6.00	8.00	0.21	0.00	-0.38	-0.43	0.18	-0.04	-0.09	-0.09	0.29	0.21	0.64	0.51	-0.38	0.09	-0.32	0.17	0.48	0.62	0.56	0.02	0.46	0.82	0.85	0.79	0.79	0.83	0.81	0.64	0.85	0.83	0.85	0.83	0.79	0.87	0.85	0.26	0.30	0.31	0.59	0.20	0.91	1.00
	Hedge Fund—Long Bias[5,6]	6.72	6.25	10.00	0.15	0.02	-0.36	-0.42	0.19	-0.02	-0.03	-0.09	0.31	0.23	0.67	0.49	-0.37	0.14	-0.33	0.22	0.53	0.69	0.57	0.00	0.35	0.86	0.88	0.83	0.84	0.88	0.87	0.70	0.89	0.88	0.90	0.91	0.87	0.93	0.86	0.25	0.29	0.26	0.60	0.20	0.89	0.93	1.00
	Hedge Fund—Relative Value[5,6]	4.92	4.75	6.00	0.25	-0.02	-0.28	-0.34	0.32	0.11	0.03	0.05	0.43	0.35	0.70	0.66	-0.31	0.06	-0.27	0.12	0.58	0.60	0.66	0.17	0.54	0.70	0.75	0.64	0.67	0.73	0.71	0.60	0.78	0.76	0.76	0.78	0.75	0.78	0.71	0.24	0.27	0.28	0.53	0.20	0.86	0.90	0.85	1.00
	Hedge Fund—Macro[5,6]	5.74	5.25	10.25	-0.02	0.19	-0.02	-0.04	0.19	0.08	0.20	0.05	0.16	0.13	0.12	-0.03	0.00	0.38	0.01	0.41	0.18	0.39	0.12	0.02	0.09	0.25	0.25	0.21	0.24	0.26	0.37	0.38	0.39	0.28	0.42	0.50	0.45	0.38	0.25	0.02	0.07	0.07	0.11	0.04	0.59	0.41	0.49	0.30	1.00
	Commodities (spot)[5]	5.34	3.75	18.50	0.24	0.07	-0.13	-0.22	0.33	0.08	0.13	0.01	0.25	0.20	0.38	0.25	-0.20	0.31	-0.21	0.37	0.41	0.54	0.45	-0.08	0.15	0.49	0.52	0.42	0.47	0.50	0.56	0.39	0.65	0.45	0.60	0.64	0.57	0.60	0.43	0.13	0.18	0.20	0.33	0.15	0.63	0.59	0.66	0.59	0.55	1.00
	Gold (spot)	5.91	4.25	19.00	0.03	0.09	0.25	0.11	0.45	0.32	0.34	0.22	0.25	0.22	0.15	0.07	0.13	0.48	0.08	0.48	0.39	0.44	0.38	0.15	0.12	0.11	0.13	0.10	0.11	0.12	0.18	0.16	0.21	0.01	0.22	0.34	0.28	0.21	0.09	0.07	0.07	0.09	0.13	0.13	0.26	0.19	0.27	0.23	0.49	0.52	1.00

Note: All estimates on this page are in U.S. dollar terms. Given the complex risk-reward trade-offs involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations to all the above asset classes and strategies. Please note that all information shown is based on qualitative analysis. Exclusive reliance on the above is not advised. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. Note that these asset class and strategy assumptions are passive only–they do not consider the impact of active management. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for, accounting, legal or tax advice. See footnotes on the prior page.

"For markets, the path back to normality will be long and winding, but we expect the process to complete well within our 10- to 15-year time frame."

J.P. MORGAN ASSET MANAGEMENT | 270 Park Avenue, New York, NY 10017

J.P. Morgan Asset Management Long-term Capital Market Return Assumptions are developed each year by our Assumptions Committee, a multi-asset class team of senior investors from across the firm. The Committee relies on the input and expertise of a range of portfolio managers and product specialists, striving to ensure that the analysis is consistent across asset classes. The final step in the process is a rigorous review of the proposed assumptions and their underlying rationale with the senior management of J.P. Morgan Asset Management.

Our capital market assumptions are used widely by institutional investors—including pension plans, insurance companies, endowments and foundations—to ensure that investment policies and decisions are based on real-world, consistent views and can be tested under a variety of market scenarios.

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The projections in the charts above are based on J.P. Morgan Asset Management's (JPMAM) proprietary long term capital markets assumptions (10-15 years) for risk, return and correlations between major asset classes. **The resulting projections include only the benchmark return associated with the portfolio and does not include alpha from the underlying product strategies within each asset class.** The assumptions are presented for illustrative purposes only. They must not be used, or relied upon, to make investment decisions. The assumptions are not meant to be a representation of, nor should they be interpreted as JPMAM investment recommendations. Allocations, assumptions, and expected returns are not meant to represent JPMAM performance. Please note all information shown is based on assumptions, therefore, exclusive reliance on these assumptions is incomplete and not advised. The individual asset class assumptions are not a promise of future performance. Note that these asset class assumptions are passive-only; they do not consider the impact of active management.

J.P.Morgan
Asset Management

March 4, 2014

Market Insight

ING PERSPECTIVES

MARKET SERIES

2014 Long-Term Capital Market Forecasts

Prepared by the ING U.S. Investment Management Multi-Asset Strategies and Solutions Team

Introduction

ING U.S. Investment Management's long-term capital market forecasts provide our estimates of expected returns and volatilities for major U.S. and global asset classes, as well as the correlations between them, over a ten-year horizon. These estimates guide strategic asset allocations for our multi-asset portfolios and provide a context for shorter-term economic and financial forecasting.

As has been the case for the past five years, our forecast models an explicit process of convergence to a steady-state equilibrium for global economies and financial markets over a ten-year horizon, in this case through 2023. We make this explicit forecast in recognition of the ongoing effects of the 2007–09 financial crisis and recession, the European debt crisis, and the fiscal and monetary policy response to these events. Although the world economy is several years past its most acute point of crisis in 2008, and while the U.S. economy has been recovering from the Great Recession for more than four years, many economic and financial variables remain far from levels consistent with a steady state. In particular, short-term interest rates remain near zero in most developed economies and government debt-to-GDP ratios remain elevated in many countries. Figure 1 shows the 2023 values from this forecast and our estimates of longer-term steady-state values for key U.S. economic variables.

Figure 1. U.S. Economic and Financial Variables

	2023 Forecast (%)	Steady State Value (%)
GDP Growth	2.20	2.50
Inflation (PCE Price Index)	2.00	2.00
Fed Funds Rate	4.00	3.25
Ten-Year Treasury Bond Yield	4.95	4.25
S&P 500 Earnings Growth	4.40	5.00

Source: ING U.S. Investment Management, Macroeconomic Advisers

In this modeling effort, we have worked with Macroeconomic Advisers for the United States and relied upon input from Oxford Economic Forecasting for non-U.S. economies. While we believe that cyclical fluctuations are an inevitable aspect of market economies, and therefore recognize that the steady-state equilibrium envisaged as the terminal point of our forecast is unlikely ever to be fully attained under real-world conditions, we nonetheless believe that it is a useful theoretical construct for anchoring the forecast. As a result, the forecast does not assume any further recession or contraction over its ten-year horizon.

We once again find that equities, commodities and other cyclically sensitive assets are likely to provide risk-adjusted returns superior to those of fixed income assets, particularly government bonds, over the ten-year horizon. Nevertheless, as shown in Figure 2, the relative attractiveness of risky versus less risky assets, as measured by Sharpe ratios, is more balanced in 2014 than it was a year ago. This results from the strong performance of equities in most developed markets last year — the S&P 500 Index, for example, provided a total return of more than 30%, and the

MSCI EAFE Index a return of nearly 25% — and from the increase in ten-year U.S. Treasury yields from a July 2012 low of 1.4% to 3.0% at year-end 2013. It thus reflects the recognition that the world economy and markets have already moved significantly toward more normal conditions and that they are one year closer to reaching steady-state equilibrium.

Figure 2. Average Sharpe Ratios for Major Asset Classes

	2014	2013	Change
S&P 500 Index	0.26	0.32	-0.06
MSCI EAFE Index	0.15	0.28	-0.13
Ten-Year U.S. Treasury Bond	0.03	-0.17	0.20
Barclays U.S. Aggregate Index	0.06	-0.06	0.12
Barclays Global Aggregate Index	-0.07	-0.13	0.06
Barclays U.S. High Yield Index	0.26	0.25	0.01
S&P/LSTA Leveraged Loan Index	0.35	0.40	-0.05
Dow Jones/UBS Commodity Index	0.03	0.15	-0.12

Source: ING U.S. Investment Management

The ten-year forecast includes one additional year in which both short- and long-term interest rates are close to constant at materially higher levels than those prevailing today.

Risk-adjusted returns for other developed market assets are in most cases below those for comparable U.S. assets. For example, we forecast an arithmetic mean return of 6.9% for the S&P 500 Index but 5.4% for the EAFE Index, and we expect an arithmetic mean return of 2.9% for the Barclays U.S. Aggregate Bond Index but 1.2% for the Barclays Global Aggregate excluding U.S. fixed income assets. This partially reflects our expectation that the U.S. dollar will appreciate over the ten-year horizon versus other developed market currencies as the U.S. current account deficit shrinks as a share of GDP. However, it also reflects lower expected domestic currency returns for these markets. Returns from large-capitalization European equities are likely to be somewhat lower than U.S. returns over the period because slower secular economic growth should translate into slower earnings growth. Other developed country bond returns are expected to be lower than U.S. fixed income returns because the process of interest rate normalization should prove slower in Europe and Japan than in the U.S., and because Japanese government bond yields are starting from lower levels than U.S. Treasury yields.

Returns for emerging market equities and debt, by contrast, are in line with or higher than those for comparable U.S. assets, even after adjusting for their greater volatility. This return forecast assumes that political reform in the emerging world remains on balance successful, so that GDP growth in these countries remains higher than in the developed world over the forecast horizon and that one or more emerging markets is able to transition successfully into a middle-income country. It also assumes that emerging market currencies appreciate on average over the interval as a result of faster productivity growth.

Base Case and Alternative Scenario

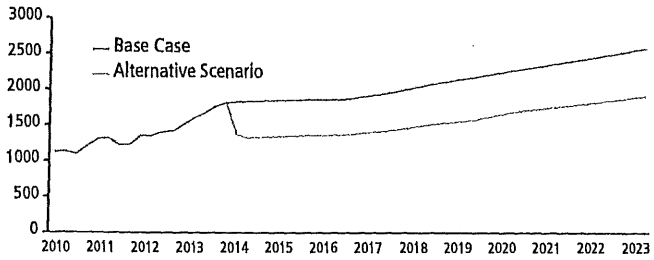
As in the past, we believe the final return forecasts that result from combining a base case forecast with an alternative scenario capture the most important risks facing the world economy and markets over the ten-year interval. The base case forecast thus once again assumes a process of convergence to steady-state values for variables such as GDP and its components, inflation and interest rates. In this state, real GDP grows broadly in line with the potential growth rate shaped by productivity and labor force growth, inflation is consistent with central bank targets, and real long-term interest rates are consistent with GDP growth at or near its potential growth rate. As Figure 1 shows, we do not believe that the process of convergence to this equilibrium will be fully complete by 2023, primarily because Federal Reserve policy at that time should still be somewhat tighter than historic relationships suggest is fully compatible with a long-run equilibrium. Short- and long-term U.S. interest rates should thus be about 75 basis points above steady-state values at that time.

The alternative scenario in this year's forecast assumes that a financial accident occurs early in the ten-year period. We envisage this event as about half as severe as that seen in the fall of 2008. In our view, it results from speculative excesses stemming from the "chase for yield" in the current environment of near-zero short-term interest rates. This drives prices for risky assets above levels warranted by economic fundamentals. The bursting of the resulting asset pricing bubble thus brings about a renewed financial crisis. In this scenario, the ability of governments and central banks to respond to the crisis is diminished because of the large-scale response to the 2007–09 events. The emergence of bubbles such as this is a risk that Federal Reserve governor Jeremy Stein has emphasized over the past two years and about which the Bank for International Settlements has also warned.[1]

The financial crisis assumed in the alternative scenario leads to an initial decline of about 25% in the S&P 500, followed by a gradual recovery. As Figure 3 indicates, the level of the S&P 500 at the end of the forecast period is about 25% lower in the alternative than in the base case, and only modestly above its year-end 2013 starting point.

[1] See, for example, the following speeches by Stein: "The Fire Sale Problem and Securities Financing Transactions", November 7, 2013; "Yield Oriented Investors and the Monetary Transmission Mechanism", September 26, 2013; and "Overheating in Credit Markets", February 7, 2013; as well as "Monetary Policy at the Crossroads", *83rd Annual Report*, Bank for International Settlements, June 23, 2013, pp. 66–76.

Figure 3. S&P 500 Index Under the Base Case and Alternative Scenario



Source: ING U.S. Investment Management, Macroeconomic Advisers

We assign a probability of 90% to the base case and 10% to the alternative scenario. This relatively low probability reflects the historical frequency of financial crises of comparable severity in the period since 1945 and the belief that tighter financial regulation, including stricter bank capital requirements, should reduce the likelihood of such a crisis over the next decade.[2]

Methodology

We derive return forecasts for specific asset classes from these economic forecasts in the following manner. For U.S. bonds, we use the interest rate expectations implied by these forecasts to calculate expected returns for bonds of various sectors and durations. Bond expected returns are modeled as the sum of current yield and a capital gain (or loss) based on duration and expected change in yields. For non-U.S. bonds, the process is similar and includes an adjustment for currency movements. Return expectations also reflect expected default and recovery experience when necessary.

For U.S. equities, we estimate earnings and dividends for the Wilshire 5000 Index using the above macroeconomic model. Earnings growth is constrained by the neoclassical assumption that profits as a share of GDP cannot increase without limit, but must rather converge to a long-run equilibrium determined by productivity. We then use a dividend discount model to determine fair value for the index each year during the forecast period. Returns for other U.S. equity indices, including REITs and natural resource equities, are derived from the Wilshire 5000 forecast. These other equity classes are modeled on the basis of a single index factor model in which beta sensitivities of each asset class with respect to the market portfolio are derived from our forward-looking covariance matrix estimation described below. Each equity asset class return is the sum of the risk-free interest rate and a specific risk premium determined from our estimate of beta sensitivity and market risk premium forecasts.

Expected returns for non-U.S. equities are produced from the same process but are also adjusted for expected currency movements. As noted above, we expect the U.S. dollar to appreciate modestly relative to other developed market currencies over the forecast horizon, but expect emerging market currencies on balance to appreciate modestly. Our return estimates for commodities assume a positive real spot return above the real risk-free rate, partially offset by a modest penalty for a negative expected roll yield on front-month futures contracts. For hedge funds we use a return replication methodology in which the forecasts for the asset class that are used in the replication model determine the hedge fund index return.

Covariance and Correlation Matrices

Our approach in estimating the covariance matrix is regime based. In developing a covariance matrix between asset classes, we start with the empirical fact that risk parameters are unstable because the underlying return distributions change depending on the underlying economic regime, and that correlation and volatility are positively related. Our long-term equilibrium risk forecasts take that instability into account and are based on a forward-looking covariance matrix model. We reduce parameter instability by imposing structure in the covariance matrix estimation.

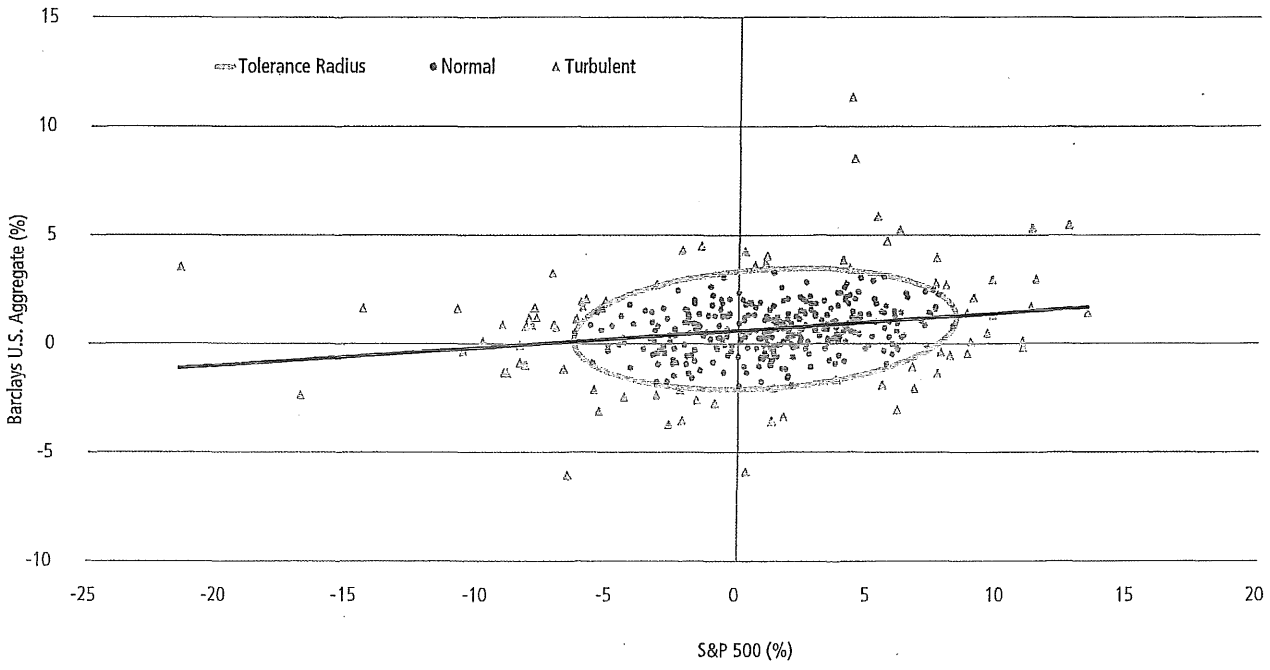
Our process starts by identifying turbulent market regimes (i.e., periods of market stress) and by estimating a covariance matrix covering those periods of market turbulence alone. The identification of turbulent market regimes makes use of the concept of the multivariate outliers in a return distribution, which takes into account not only the deviation of a particular asset class' return from the average, but also the asset class' own volatility and correlation with other asset classes.

[2] See Joseph Haubrich and Michael Bordo, "Deep Recessions, Fast Recoveries and Financial Crises: Evidence from the American Record", Working Paper, Federal Reserve Bank of Cleveland, June 2012.

We give an example in Figure 4 below. The turbulence threshold is an ellipse centered in the average returns of the two asset classes. Return pairs that fall outside the ellipse are considered turbulent. There are points just outside the boundary but closer to the center than points inside the boundary but far from the center that are considered outliers and therefore turbulent[3] because, for example, the observed correlation between the two assets is of the opposite sign of what it normally is. The boundary that separates normal from turbulent states takes the form of an ellipse rather than a circle because it also takes into account the covariance of the assets involved. The threshold is not static in time but rather dynamic and is the outcome of a Markov model. We model the underlying state of the market, turbulent or normal, as a Markov process. Our Markov model performs better in classifying regimes (i.e., misclassifying regimes less frequently than arbitrary thresholds) because arbitrary thresholds fail to capture the persistence of regimes and shifts in volatility.

We subsequently estimate a covariance matrix based on periods of normal market performance, and finally we use a procedure to blend these two covariance matrices using weights that allow us to express both views about the likelihood of each regime and differential risk attitudes toward each. The weights we use are 60% "quiet" and 40% turbulent, different from the probabilities assigned to the base case and alternative scenario described above. We overweight the turbulent state from its empirical frequency of 30% to 40%. From this blended covariance matrix, we then extract the implied correlation matrix and volatilities for each asset class embedded in the covariance matrix.

Figure 4. Normal and Turbulent Regimes



Source: ING U.S. Investment Management

[3] Our measure of turbulence is based on the Mahalanobis distance measure defined as follows: $d_t = \sqrt{(y_t - \mu)\Sigma^{-1}(y_t - \mu)'}$
where y is the return vector at time t, μ is the mean vector and Σ is the covariance matrix.

A Note on the Time Dependency of Asset Returns and Its Impact on Risk Estimation

Recent research documents suggest that expected asset returns change over time in somewhat predictable ways and that these changes tend to persist over long periods of time. Thus changes in investment opportunities — all possible combinations of risk and return — are found to be persistent. This note will set out the economic reasons for return predictability, its consequences for strategic asset allocation and the adjustments we have made to control for it in our estimation process.

In our view, the common source of predictability in financial asset returns is the business cycle. The business cycle itself is persistent, and this makes real economic growth to some extent predictable. The fundamental reason for the business cycle's persistence is that its components are persistent. Consumers, for example, have a tendency to smooth consumption since they dislike large swings in consumption. The permanent income and the life cycle consumption theories provide the theoretical basis for consumers' desire for a stable consumption path. Thus when income is affected by transitory shocks, consumption should not change since consumers can use savings or borrowing to adjust consumption in well-functioning capital markets. Robert Hall[4] has formalized the above ideas by showing that consumers will optimally choose to keep a stable path of consumption equal to a fraction of their present discounted value of human and financial wealth. Investment, the second component of GDP, is sticky, as corporate investment in projects is usually long term in nature.

Finally, government expenditures have a low level of variability as well. At a longer but still medium-term horizon, negative serial correlation[5] sets in as the growth phase of the cycle is followed by a contraction and then as that contraction is followed by renewed growth.

How does this predictability of economic variables affect the predictability of asset returns? Consider equities as an example. The value of equities is determined as the present discounted value of future cash flows and thus depends on four factors: expected cash flows, the expected market risk premium, expected market risk exposure and the term structure of interest rates. Cash flows and corporate earnings tend to move with the business cycle. The market risk premium is high at business cycle troughs, when people trying to smooth consumption are less willing to take risks with their income (risk aversion is high) and low at business cycle peaks when people are more willing to take risks (risk aversion is low). The market risk premium is a component of the discount rate in the present value calculation of the dividend discount model. A firm's risk exposure (beta), another component of the discount rate, changes through time and is a function of the firm's capital structure. Thus a firm's risk increases with leverage, and leverage is related to the business cycle. The last component of the discount rate is the risk-free rate, determined by the term structure of interest rates. The term structure reflects expectations of real interest rates, real economic activity and inflation all connected to the business cycle. Thus equity returns, and financial asset returns in general, are to a certain extent predictable. Expected returns of all assets tend to be high in bad macroeconomic times and low in good macroeconomic times.

This predictability of returns manifests itself statistically through autocorrelation. Autocorrelation (serial correlation) in time series of returns describes the correlation between values of a return process at different points in time. Autocorrelation can be positive when high (low) returns tend to be followed by high (low) returns implying momentum in the market or negative when high (low) returns tend to be followed by low (high) returns implying mean reversion. In either case autocorrelation induces dependence in returns over time.

Traditional mean-variance analysis focusing on short-term expected return and risk assumes returns do not exhibit time dependence and instead follow a random walk. Expected returns in the random walk model are constant, so that realized returns are not predictable as they exhibit zero autocorrelation. Under this assumption volatilities and cross correlations among assets are independent of the investment horizon. Thus, the annualized volatility estimated from monthly return data and scaled by the square root of 12 should be equal to the volatility estimated from quarterly return data scaled by the square root of four. In the presence of autocorrelation the above square root of time scaling rule is not valid since the sample standard deviation estimator is biased and the sign of serial correlation matters for its impact on volatility and correlations. Positive (negative) autocorrelation leads to an underestimation (overestimation) of true volatility. A similar result holds for the cross-correlation matrix bias when returns exhibit autocorrelation. Thus, for long investment horizons, the risk/return tradeoff can be very different than that for short investment horizons.

[4] Hall, R. (1978), "Stochastic Implications of the Life-Cycle-Permanent Income Hypothesis: Theory and Evidence", *Journal of Political Economy*, vol. 86, pp. 971–988.

[5] Poterba, J. and Summers, L. (1988), "Mean Reversion in Stock Prices: Evidence and Implications", *Journal of Financial Economics*, 22, pp. 27–60.

In a multi-asset portfolio, when different asset classes display varying degrees of autocorrelation, failure to correct for the bias on volatilities and correlations will lead to suboptimal mean variance optimized portfolios in which asset classes that appear to have low volatilities receive excessive allocations. Such asset classes include hedge funds, emerging market equities and private market assets such as private equity or private real estate, among others.

There are at least two ways to correct for serial correlation: 1) a direct method that adjusts the sample estimators of volatility, correlation and all higher moments; and 2) an indirect method that cleans the data first, allowing us to subsequently estimate the moments of the distribution using standard estimators. Given that the direct methods become quite complex beyond the first two moments, our choice is to follow the second method and clean the return data of serial correlation. Before we do that we estimate and test the statistical significance of serial correlation in our data series.

We estimate first-order serial correlation as the regression slope of a first-order autoregressive process. We use monthly return data for the period 1979–2013. We subsequently test the statistical significance of the estimated parameter using the Ljung-Box Q-statistic.[6] The Q-statistic is a statistical test for serial correlation at any number of lags. It is distributed as a chi-square with k degrees of freedom, where k is the number of lags. Here we test for first order serial correlation, thus k = 1. About 80% of our return series exhibit positive and statistically significant first-order serial correlation based on associated p-values at the 10% level of significance.[7] A. Khandani and A. Lo[8] provide empirical evidence that positive return autocorrelation is a measure of illiquidity exhibited among a broad set of financial assets including small-cap stocks, corporate bonds, mortgage-backed securities and emerging markets investments. The theoretical basis for this is that in a frictionless market any predictability in asset return can be immediately exploited, thus eliminating such predictability. While other measures of illiquidity exist, autocorrelation is the only measure that applies to both publicly traded and private securities and requires only returns to compute.

Since the vast majority of the return series we estimate exhibit serial correlation, we subsequently apply the Geltner[9] unsmoothing process to all the return series. This process corrects the return series for first-order serial correlation by subtracting the product of the autocorrelation coefficient (rho) and last period's return from the current period's return and dividing by 1-rho. This transformation has no impact on the arithmetic return. Even though the arithmetic mean is not impacted by autocorrelation, the geometric mean, which depends on volatility, is impacted by autocorrelation, making this type of correction important for long-horizon asset allocation problems.

Figure 5 shows the impact autocorrelation can have on estimated asset returns: When adjusted for autocorrelation and after applying the two-state covariance process described above, the geometric mean return for the S&P 400 Index falls from 8.0% to 7.4%.

Figure 5. Adjusting Expected Returns for Autocorrelation — An Example Using the S&P 400 Index

	No Correction for Autocorrelation	Correcting for Autocorrelation Only	Correcting for Autocorrelation and Applying the Two-State Covariance Process
Arithmetic Mean Return	9.23%	9.23%	9.23%
Standard Deviation	17.22%	19.00%	20.09%
Skewness	-0.77	-0.63	-0.53
Kurtosis	2.55	2.28	1.22
Geometric Mean Return	7.98%	7.63%	7.40%

Source: ING U.S. Investment Management

[6] Ljung, G.M. and Box, G.E.P. (1978), "On a Measure of Lack of Fit in Time Series Models", *Biometrika*, 65, pp. 297–303.

[7] The p-value is the probability of rejecting the null hypothesis of no serial correlation when it is true (i.e., concluding that there is serial correlation in the data when in fact serial correlation does not exist). We set critical values at 10% and thus reject the null hypothesis of no serial correlation for p-values less than 10%.

[8] Khandani, A.E. and Lo, A. (2011), "Illiquidity Premia in Asset Returns: An Empirical Analysis of Hedge Funds, Mutual Funds, and U.S. Equity Portfolios", *The Quarterly Journal of Finance*, vol. 1.2011,2, pp. 205–264.

[9] Geltner, D.M. (1993), "Estimating Market Values from Appraised Values Without Assuming an Efficient Market", *Journal of Real Estate Research*, vol. 8, pp. 325–345. Illiquidity and difficulty in pricing certain assets are other reasons for serial correlation.

Return Estimates

Figure 6 shows estimated arithmetic and geometric mean returns, volatilities and the resulting Sharpe ratios for major U.S. and global asset classes. Returns shown are in U.S. dollar terms. Figure 7 provides a correlation matrix for the time period.

Figure 6. ING U.S. Investment Management Ten-Year Returns Forecast

	Expected Returns					
Equity Index	Geometric Mean Return (%)	Arithmetic Mean Return (%)	Volatility (%)	Skewness	Kurtosis	Sharpe Ratio
Russell Top 200	5.2	6.5	16.6	-0.47	1.05	0.24
S&P 500	5.6	6.9	16.8	-0.51	1.17	0.26
S&P 500 Growth	5.5	6.9	17.5	-0.44	0.72	0.25
S&P 500 Value	5.5	6.9	17.3	-0.54	1.37	0.25
Russell 1000	5.8	7.1	17.0	-0.53	1.24	0.27
Russell 1000 Growth	4.6	6.4	19.3	-0.46	0.80	0.20
Russell 1000 Value	6.8	7.9	16.3	-0.57	1.59	0.32
Russell 3000	5.7	7.1	17.3	-0.58	1.35	0.26
Wilshire 5000	5.7	7.1	17.3	-0.58	1.35	0.26
Russell Midcap	7.1	8.7	19.1	-0.56	1.29	0.32
Russell Midcap Growth	5.6	8.2	22.9	-0.40	0.83	0.25
Russell Midcap Value	7.9	9.3	18.0	-0.51	1.69	0.36
S&P 400	7.4	9.2	20.1	-0.53	1.22	0.33
Russell 2500	6.0	8.2	21.2	-0.61	1.42	0.26
S&P 600	4.3	7.0	23.1	-0.60	1.50	0.19
Russell 2000	3.9	6.7	23.6	-0.59	1.51	0.18
Russell 2000 Growth	1.3	5.1	27.3	-0.42	0.99	0.10
Russell 2000 Value	6.2	8.4	21.3	-0.77	2.34	0.27
MSCI EAFE	3.5	5.4	19.7	-0.32	0.30	0.15
MSCI EAFE Growth	2.1	4.1	20.2	-0.21	0.42	0.08
MSCI EAFE Value	4.8	6.7	19.9	-0.33	0.30	0.21
MSCI EAFE Small Cap	3.7	5.9	20.9	-0.39	0.67	0.16
MSCI World ex U.S.	3.5	5.4	19.7	-0.32	0.30	0.15
MSCI World ex U.S. Small Cap	3.7	5.9	20.9	-0.39	0.67	0.16
MSCI World	5.1	6.4	16.7	-0.61	1.06	0.23
MSCI EM 50	5.5	9.1	26.9	-0.56	0.97	0.24
MSCI EM	7.1	10.8	27.6	-0.55	0.93	0.29
MSCI EM Small Cap	5.8	10.2	29.7	-0.38	0.55	0.26
MSCI ACWI ex U.S.	4.5	6.5	20.2	-0.47	0.49	0.20
MSCI ACWI ex U.S. IMI	4.6	6.6	20.2	-0.48	0.55	0.20
MSCI ACWI ex U.S. Small Cap	4.5	6.8	21.6	-0.50	0.85	0.20
MSCI ACWI	5.4	6.8	17.3	-0.65	1.15	0.25
MSCI ACWI IMI	5.4	6.8	17.6	-0.68	1.27	0.24
MSCI ACWI Small Cap	4.7	6.7	20.6	-0.69	1.55	0.20

Alternative Assets Index	Expected Returns: Geometric Mean Return (%)	Arithmetic Mean Return (%)	Volatility (%)	Skewness	Kurtosis	Sharpe Ratio
CBOE Buy-Write	5.0	5.7	12.6	-0.95	3.20	0.25
S&P North American Natural Resources	6.1	8.0	20.2	-0.34	1.55	0.27
DJ-UBS Commodity	1.7	2.9	15.6	-0.46	1.86	0.03
MSCI U.S. REIT	4.4	7.0	22.9	-0.37	3.30	0.20
S&P Developed Ex-U.S. Property	4.4	7.0	23.1	-0.22	0.73	0.20
S&P Developed Property	4.6	7.0	22.2	-0.33	1.32	0.20
HFRX Global Hedge Fund	2.8	3.0	6.9	-0.46	2.99	0.08
U.S. Inflation (CPI)	1.8	1.8	2.4	-0.53	2.51	-0.24

Fixed Income Index	Expected Returns: Geometric Mean Return (%)	Arithmetic Mean Return (%)	Volatility (%)	Skewness	Kurtosis	Sharpe Ratio
Barclays U.S. Aggregate	2.7	2.9	7.2	0.55	4.73	0.06
Barclays U.S. Universal	3.0	3.2	7.0	0.52	4.57	0.12
Barclays U.S. Government Long	1.7	2.4	12.5	0.24	0.86	-0.00
Barclays U.S. Gov/MBS	2.4	2.6	6.6	0.63	4.33	0.03
Barclays U.S. MBS	2.5	2.8	8.2	1.06	10.15	0.05
Barclays U.S. Municipal	2.4	2.6	7.6	-0.19	5.10	0.03
Barclays U.S. Agg Corporate	3.2	3.6	9.5	0.25	3.66	0.12
Barclays U.S. Corporate Long	3.5	4.1	12.1	0.14	1.95	0.14
Barclays U.S. Liability Benchmark	2.9	3.5	11.9	0.15	2.02	0.09
Barclays U.S. High Yield	5.0	5.7	12.4	-0.28	3.90	0.26
Credit Suisse Leveraged Loan	6.0	6.2	8.8	-0.85	16.31	0.35
S&P/LSTA Leveraged Loan	5.9	6.2	9.3	-0.43	14.13	0.35
Barclays Global Aggregate ex U.S.	0.6	1.2	10.7	0.17	0.67	-0.12
Barclays Global Aggregate	1.4	1.8	8.8	0.34	1.86	-0.07
JPMorgan EMBI+	5.4	6.2	13.3	-1.80	12.04	0.25
JPMorgan CEMBI Diversified	5.1	5.9	13.3	-0.19	5.67	0.25
JPMorgan GBI-EM Global Diversified	7.0	7.4	10.5	-0.51	1.44	0.45
Barclays U.S. TIPS	2.1	2.5	9.4	0.30	3.62	0.01
Barclays 1-3 Yr Gov/Credit	2.5	2.6	4.1	1.42	12.30	0.04
U.S. Treasury Bill 3M	2.4	2.4	1.1	–	–	–
U.S. Treasury 2-Year	2.3	2.4	4.2	1.36	10.95	-0.01
U.S. Treasury 5-Year	2.2	2.4	7.2	0.48	3.19	-0.00
U.S. Treasury 10-Year	2.2	2.7	9.7	0.20	0.52	0.03
U.S. Treasury 30-Year	1.1	2.2	15.1	0.19	1.47	-0.01
U.S. Treasury 25-Year Zero	-1.8	1.4	25.5	0.36	1.46	-0.04
Barclays 2-Year Swap	2.6	2.6	4.4	1.33	10.72	0.05
Barclays 5-Year Swap	2.3	2.6	7.4	0.44	3.23	0.02
Barclays 10-Year Swap	2.1	2.7	10.2	0.20	1.07	0.02
Barclays 30-Year Swap	0.3	1.9	17.8	0.55	2.87	-0.03

Source: ING U.S. Investment Management

Figure 7. Correlation Matrix

	S&P 500	S&P 400	S&P 600	MSCI EAFE	MSCI EM	Barclays U.S. Aggregate	Barclays 1-3 Yr Gov/Credit	Barclays U.S. Government Long	Barclays U.S. TIPS	Barclays U.S. Municipal	Barclays U.S. Agg Corporate	Barclays U.S. Corporate Long	Barclays U.S. High Yield	S&P/LSTA Leveraged Loan	Barclays Global Aggregate	U.S. Treasury Bill 3M	DJ-UBS Commodity	S&P Developed Property	HFRX Global Hedge Fund
S&P 500	1.00																		
S&P 400	0.92	1.00																	
S&P 600	0.84	0.94	1.00																
MSCI EAFE	0.66	0.65	0.61	1.00															
MSCI EM	0.71	0.72	0.70	0.73	1.00														
Barclays U.S. Aggregate	0.21	0.21	0.15	0.18	0.14	1.00													
Barclays 1-3 Yr Gov/Credit	0.14	0.13	0.08	0.15	0.11	0.91	1.00												
Barclays U.S. Government Long	0.10	0.08	0.03	0.05	0.01	0.90	0.71	1.00											
Barclays U.S. TIPS	0.23	0.24	0.17	0.21	0.20	0.93	0.84	0.83	1.00										
Barclays U.S. Municipal	0.24	0.25	0.21	0.18	0.16	0.76	0.69	0.63	0.72	1.00									
Barclays U.S. Agg Corporate	0.31	0.31	0.25	0.27	0.26	0.95	0.83	0.81	0.89	0.75	1.00								
Barclays U.S. Corporate Long	0.31	0.31	0.26	0.28	0.27	0.89	0.72	0.83	0.84	0.68	0.97	1.00							
Barclays U.S. High Yield	0.62	0.64	0.64	0.50	0.58	0.30	0.19	0.15	0.33	0.31	0.47	0.51	1.00						
S&P/LSTA Leveraged Loan	0.45	0.49	0.46	0.34	0.38	0.19	0.13	0.02	0.26	0.29	0.36	0.35	0.76	1.00					
Barclays Global Aggregate	0.23	0.23	0.18	0.34	0.22	0.86	0.80	0.74	0.83	0.64	0.82	0.77	0.28	0.16	1.00				
U.S. Treasury Bill 3M	0.04	0.03	0.00	0.03	0.02	0.15	0.31	0.06	0.13	0.03	0.09	0.05	-0.01	-0.01	0.12	1.00			
DJ-UBS Commodity	0.25	0.31	0.29	0.31	0.36	-0.02	-0.03	-0.09	0.09	-0.01	0.06	0.06	0.24	0.21	0.11	-0.02	1.00		
S&P Developed Property	0.61	0.64	0.60	0.85	0.71	0.22	0.16	0.11	0.27	0.23	0.31	0.32	0.52	0.37	0.35	0.01	0.31	1.00	
HFRX Global Hedge Fund	0.51	0.55	0.54	0.74	0.61	0.18	0.16	0.06	0.22	0.20	0.29	0.28	0.43	0.39	0.25	0.06	0.42	0.63	1.00

Source: ING U.S. Investment Management

Expectations for Capital Market Returns

How much will my investments be worth in the future? That's the primary question most people ask when investing. Unfortunately, no one can tell you exactly what your investments will earn in the future. However, we can provide some good estimates about a likely range of future returns by reviewing historical performance and what's happening in the market today. To help you as you plan for retirement or other important financial goals, the Edward Jones Investment Policy Committee (IPC) has a systematic process in place to review these return expectations and update when necessary.

When you meet with your financial advisor to set and review your long-term financial goals, you can use our capital market assumptions to help:

- Select an appropriate portfolio objective and asset allocation
- Understand the trade-offs when selecting an appropriate withdrawal rate
- Understand the trade-offs when selecting an appropriate savings rate
- Make other decisions necessary to help you achieve your goals

Returns for Different Portfolio Objectives

Between 1926 and 2012, the S&P 500 returned an average of 9.8% per year. We expect U.S. equities to average a return in the range of 7% to 9% over the long term and an international equity average return of 9% to 11%. Our expectations for fixed-income returns are in the range of 3% to 4.5% per year. Therefore, if your portfolio objective is Balanced Growth and Income, for example, you can expect a long-term average return somewhere between 5% and 7%.

Each portfolio objective shown below is a mix of equity and fixed-income investments that should reflect your comfort level with risk and your investment time frame. Our expected returns stated above are for the overall market and don't consider fees and taxes that could reduce actual returns. To determine the range of returns for each portfolio objective, we've taken the appropriate percentage of each type of investment and estimated the overall return you can expect if you held the investments for at least 10 years. Remember, however, each year's actual returns will be quite different from the long-term averages suggested below.

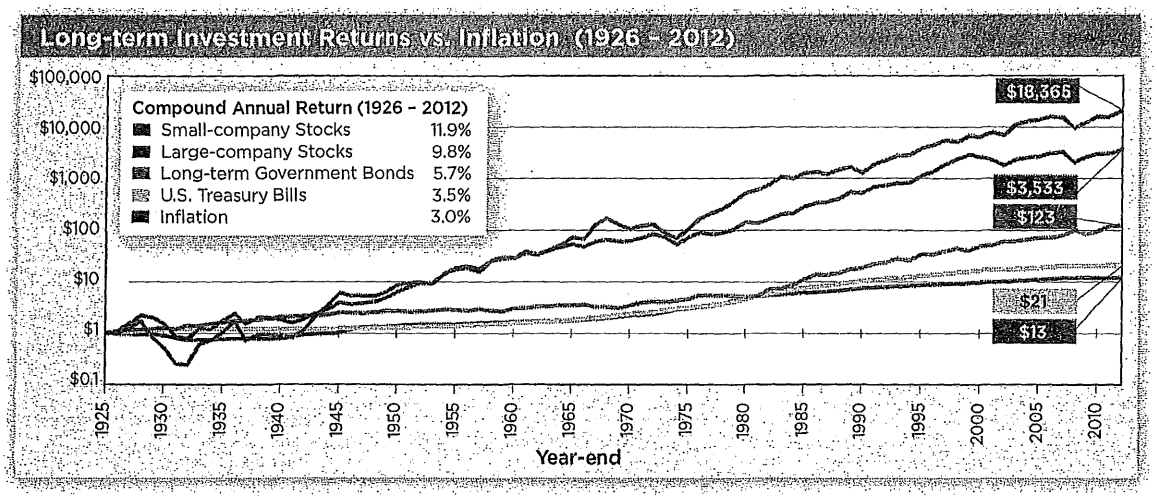
Portfolio Objective	Range of Expected Long-term Portfolio Returns	Standard Deviation
Income Focus	4.0% – 6.0%	5.1%
Balanced toward Income	4.5% – 6.5%	6.6%
Balanced Growth & Income	5.0% – 7.0%	8.8%
Balanced toward Growth	6.0% – 8.0%	10.9%
Growth Focus	6.5% – 8.5%	13.0%
All-equity Focus	7.0% – 10.0%	16.3%

Source: Edward Jones calculations, October 2013. Standard deviation is one way to measure risk. A higher number means that the value of your portfolio will fluctuate more. There are no guarantees that these expected returns can be met.

Even 10-year returns can vary widely compared to those for 30 years, so we calculate the range of possible returns so that they are also reasonable estimates for longer time periods.

Risk and Return

Looking at 10 years or longer, diversified equity investments have almost always provided higher returns than fixed-income investments (bonds), and fixed-income investments generally provide higher long-term returns than cash investments, such as Treasury bills. In exchange for these higher returns, investors have weathered a higher degree of price swings on equity investments. Most investors own portfolios that include three asset classes (equities, fixed income and cash), which can offer a combination of relatively stable returns and those that vary more greatly.



Small-company Stocks – Fifth capitalization quintile of stocks on the NYSE, 1926–1981. Performance of the DFA U.S. 9-10 Small Company Portfolio, January 1982–March 2001. Performance of the DFA U.S. Micro Cap Portfolio, April 2001–present.

Large-company Stocks – S&P 500 Composite with dividends reinvested (S&P 90, 1926–1956; S&P 500, 1957–present).

Long-term Government Bonds – A one-bond portfolio

U.S. Treasury Bills – A one-bill portfolio

Inflation – Consumer Price Index, All Urban Consumers, not seasonally adjusted (CPI-U-NSA)

Past performance is not a guarantee of future results. Hypothetical value of $1 invested at the beginning of 1926. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. 12/31/2012. Small-cap stocks carry greater risk and have greater market fluctuation than large-company stocks. Treasury bills and government bonds are guaranteed by the U.S. government and, if held to maturity, offer a fixed rate of return and fixed principal value. Fees, commissions and charges are not included and would have a negative impact on investment performance.

Our Investment Policy Committee reviews capital market assumptions at least once a year. These return expectations are designed for current investments, so they factor in what's happening today as well as the historical performance. Capital market assumptions for each portfolio objective are calculated using long-term annualized rates for:

- Inflation
- U.S. and international equities
- Fixed income
- Cash

We don't think the range of expectations about future investment returns should change very much over time. As you know, yearly returns can change drastically, but over time the good and bad years tend to average out, so long-term returns are more stable. We use several factors in determining expected return ranges for different investment types, including:

- Expected rate of inflation
- Dividend yields on U.S. and international equities
- Expected growth rates of earnings and dividends
- Price-to-earnings ratios (or price-to-dividend ratios)
- Current interest rates on fixed-income investments
- Historical relationship among various asset classes

These variables are used in a mathematical model that helps us provide what we believe are realistic long-term return expectations.

Expected Long-term Equity Return Assumptions

Inflation – One of the biggest risks for long-term investors is rising prices (or inflation). Since 1926, inflation has averaged 3% per year but has ranged from mild deflation to more than 18% inflation. The aftereffects of the 2008 recession are likely to keep price increases subdued over the next few years; therefore, we expect moderately low inflation. Our expectation is for inflation to average 3% per year over the long term. Investments that provide an opportunity for rising income help address the impact of inflation.

Expected U.S. equity returns – We use a range of 2% to 3% for the dividend yield, which is below its 4% long-term average since 1926. Our expected earnings growth rate is 5% to 6%, in line with its historical average.

Expected international equity returns – Long-term international equity returns are expected to be higher than U.S. equity returns. In addition to above-average foreign dividend yields of 3% to 4%, valuations are well below their long-term averages in many countries. Higher returns result as yields and valuations return to their long-term averages over time, but we limit their impact to keep the range of returns reasonable for longer-term periods as well.

Expected Long-term Equity Return Ranges

	U.S.	International
Dividend yield	2% – 3%	3% – 4%
Expected adjusted long-term earnings growth	5% – 6%	6% – 7%
Long-term equity returns	7% – 9%	9% – 11%

Source: Edward Jones calculations, October 2013.

Returns for Fixed Income and Cash

We don't expect today's low interest rates to last forever – we expect a return to normal interest rate cycles over time. And long-term fixed income returns are tied to expectations about inflation as well as other changes in economic and market conditions. As a result, expected long-term returns on long-term fixed income investments may be lower than today's rates because their prices drop when rates rise. In contrast, long-term expected returns on short-term investments like cash, CDs and short-term bonds may be higher because today's low rates are averaged with higher rates in the future.

Expected Returns for Fixed Income over the Long Term

	Expected Range
Long-term fixed income	4.0% - 4.5%
Short-term fixed income	3.5% - 4.0%
Cash	3.0%

Source: Edward Jones calculations, October 2013.

Recommendations

Using a combination of historical averages and current market conditions can provide reasonable estimates of future returns, but no one can know how accurate they'll be. However, many investors don't earn the returns available in the market because they trade frequently and switch strategies at the wrong times – usually selling investments that have declined and buying those that have already risen. Over time, prices rise and fall sharply, and annual returns can vary widely. The challenge for most investors is to continue to stick with the strategy they've chosen. Our advice is to:

- Build a well-diversified portfolio with the mix of quality investments tailored for your situation
- Review it periodically to help ensure it remains appropriately diversified
- Stay invested over time

This approach has helped investors on the path toward their financial goals in the past, and we think it can work for you as well. Talk with your financial advisor about how these strategies can help you work toward your long-term financial goals.

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Cause No. 44450

Information Requested:

For the portion of Petitioner's OPEBs fund(s) that are invested in equities, what rate of return does Indiana American assume its OPEBs fund(s) will earn? Please explain why that rate of return was used.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gary M. VerDouw

Original Information Provided:

Please refer to Minimum Standard Filing Requirement #24.

Supplemental Information Provided:

Indiana American Water Company is part of the total American Water Retiree Welfare Plan and does not have a separate and distinct Retiree Welfare Plan. The expected/assumed returns for equities for the Actuarial Valuation Report Postretirement Welfare Cost for Fiscal Year Ending December 31, 2013 under U.S. GAAP are listed below. The asset classes invested in equities are the S&P 500, Small Cap, International, and Emerging Market. The projected returns are based on capital market assumptions provided by the Plan's Investment Consultant (Callan Associates) to American Water Company in April 2013, are not necessarily indicative of current investor return requirements for these indices, nor for any particular company within any of the indices. Please refer to attachment OUCC 02-009-R1 Capital Market Expectations.pdf provided by the Company in response to OUCC 02-009 for Callan's Long-Term Capital Market Projections (2012-2021).

OUCC 02-010

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Supplemental Information Provided (Cont'd):

Asset Class	Callan Projected Return Assumptions
S&P 500	8.95%
Small Cap	10.25%
International	9.30%
Emerging Market	11.50%

2012 Capital Market Expectations
Return and Risk

Summary of Callan's Long-Term Capital Market Projections (2012 - 2021)

		PROJECTED RETURN			PROJECTED RISK		2011 - 2020	
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Projected Yield	10-Year Geometric*	Standard Deviation
Equities								
Broad Domestic Equity	Russell 3000	9.20%	7.75%	5.25%	18.70%	2.00%	8.00%	18.10%
Large Cap	S&P 500	8.95%	7.60%	5.10%	18.00%	2.20%	7.85%	17.25%
Small/Mid Cap	Russell 2500	10.25%	7.90%	5.40%	23.00%	1.20%	8.25%	23.00%
International Equity	MSCI EAFE	9.30%	7.60%	5.10%	20.00%	2.00%	7.85%	19.75%
Emerging Markets Equity	MSCI EMF	11.50%	8.00%	5.50%	27.75%	0.00%	8.35%	27.50%
Global ex-US Equity	MSCI ACWI ex-US	9.85%	7.90%	5.40%	21.15%	1.50%	8.20%	20.90%
Fixed Income								
Defensive	BC Govt 1-3	3.00%	3.00%	0.50%	2.50%	3.00%	3.25%	2.50%
Domestic Fixed	BC Aggregate	3.30%	3.25%	0.75%	4.25%	3.30%	3.75%	4.50%
TIPS	BC TIPS	3.10%	3.00%	0.50%	5.60%	3.10%	3.50%	5.90%
Long Duration	BC Long Govt/Credit	4.10%	3.45%	0.95%	11.80%	4.10%	4.00%	11.15%
High Yield	BC High Yield	6.00%	5.35%	2.85%	12.50%	6.00%	5.60%	11.55%
Non-US Fixed	Citi Non-US Govt	3.25%	2.85%	0.35%	9.50%	3.25%	3.35%	9.70%
Other								
Real Estate	Callan Real Estate	7.65%	6.40%	3.90%	16.95%	5.00%	6.75%	16.35%
Private Equity	VE Post Venture Cap	13.05%	8.80%	6.30%	30.60%	0.00%	9.00%	30.00%
Hedge Funds	Callan Hedge FoF	5.90%	5.55%	3.05%	10.00%	0.00%	5.90%	10.00%
Commodities	DJ-UBS Commodity	4.75%	3.25%	0.75%	17.90%	2.75%	3.75%	24.00%
Cash Equivalents	90-Day T-Bill	2.75%	2.75%	0.25%	0.90%	2.75%	3.00%	0.90%
Inflation	CPI-U	2.50%	2.50%		1.40%		2.50%	1.40%

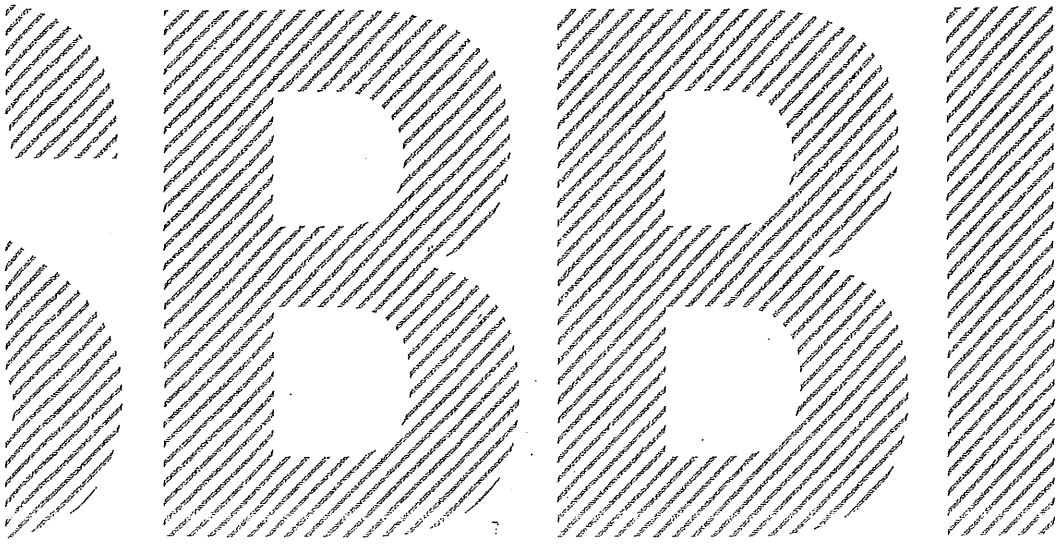
** Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).*

Source: Callan

Ibbotson® SBBI®

2013 Valuation Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2012



MORNINGSTAR®

Table 3-5: Industry Premia Estimates (Continued)

Through Year-end 2012

SIC Code	Short Descriptions	Number of Companies*	Industry Premia
	Transportation, Communications, Electric, Gas, and Sanitary Services (Continued)		
4724	Travel Agencies	5	-0.22
473	Arrangement of Transportation of Freight and Cargo	15	-0.04
478	Miscellaneous Services Incidental to Transportation	9	-3.52
4789	Transportation Services, Not Elsewhere Classified	8	-3.21
48	Communications	168	-0.27
481	Telephone Communications	72	-2.13
4812	Radiotelephone Communications	19	-0.31
4813	Telephone Communications, Except Radiotelephone	54	-2.20
483	Radio and Television Broadcasting Stations	31	7.00
4832	Radio Broadcasting	15	6.46
4833	Television Broadcasting Stations	20	6.61
484	Cable and Other Pay Television Services	27	1.15
489	Communications Services, Not Elsewhere Classified	47	-0.74
49	Electric, Gas, and Sanitary Services	182	-3.40
491	Electric Services	61	-3.64
492	Gas Production and Distribution	62	-2.65
4922	Natural Gas Transmission	31	-3.16
4923	Natural Gas Transmission and Distribution	14	-0.72
4924	Natural Gas Distribution	20	-2.44
493	Combination Electric and Gas, and Other Utility Services	39	-4.09
4931	Electric and Other Services Combined	31	-4.17
4932	Gas and Other Services Combined	9	-3.82
494	Water Supply	13	-4.92
495	Sanitary Services	26	-2.97
4953	Refuse Systems	22	-2.97
	Wholesale Trade		
50	Wholesale Trade-Durable Goods	113	0.71
501	Motor Vehicles and Motor Vehicle Parts and Supplies-Wholesale	10	-3.17
503	Lumber and Other Construction Materials	6	-0.35
504	Professional and Commercial Equipment and Supplies	29	-1.43
5045	Computers and Computer Peripheral Equipment and Software	11	1.01
5047	Medical, Dental, and Hospital Equipment Supplies	16	-2.50
505	Metals and Minerals, Except Petroleum	7	2.03
5051	Metals Service Centers and Offices	6	2.44
506	Electrical Goods	30	4.29
5063	Electrical Apparatus and Equipment, Writing Supplies, and Construction Materials	14	4.28
5065	Electronic Parts and Equipment, Not Elsewhere Classified	15	4.15
507	Hardware, and Plumbing and Heating Equipment and Supplies	8	-1.96
508	Machinery, Equipment, and Supplies	14	2.50
5084	Industrial Machinery and Equipment	9	2.01
509	Miscellaneous Durable Goods	12	0.28
51	Wholesale Trade-Nondurable Goods	95	-0.02
511	Paper and Paper Products	9	10.33
5112	Stationery and Office Supplies	5	7.23
512	Drugs, Drug Proprietaries, and Druggists' Sundries	14	-1.77
513	Apparel, Piece Goods, and Notions	9	4.91
5137	Women's, Children's, and Infants' Clothing and Accessories	6	6.09
514	Groceries and Related Products	19	-1.98
5141	Groceries, General Line	11	-2.36
515	Farm-product Raw Materials	6	2.32
516	Chemicals and Allied Products	10	1.92
517	Petroleum and Petroleum Products	24	0.67

OUCC 02-005

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

How is the amount of dividends paid by Indiana American to American Water Works determined?

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

The current practice is for Indiana-American to retain 25% of its earnings and dividend 75% of its earnings to American Water Works Company, Inc. The proposed dividend payment is authorized and approved by the Indiana-American's board on a quarterly basis.

OUCC 02-006

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

Is there an expected (forecasted) dollar amount of dividends for Indiana American to pay to American Water Works for each of the next five years? If yes, what is the expected (forecasted) level of dividends that Indiana American would pay to American Water Works? If not, please explain why.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

Indiana-American has not prepared a five-year forecast of dividend payments. As indicated in response to OUCC 02-005 the practice of Indiana-American has been to pay a dividend of 75% of its earnings to American Water Works Company Inc. The Company would expect this to continue into the forecast test period. For the test period in this Cause, the Company has forecasted dividend payments of:

2014	2015
$23,757,160	$22,399,297

OUCC 02-007

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

Is there a targeted (forecasted) ratio of dividends to earnings for Indiana-American to pay to American Water Works for each of the next five years? If yes, what is the targeted (forecasted) ratio of dividends to earnings that Indiana-American would pay to American Water Works?

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

Indiana-American's targeted dividend payout ratio is 75% of earnings based on a dividend year ending September 30 each year. All dividend payments made by Indiana-American to American Water Works are approved by Indiana-American's Board of Directors.

OUCC 07-014

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

On page 12 of her testimony, Ms Ahern asserts that Indiana American projects total net capital expenditures of $330.090 million for 2013 through 2018. Please provide the calculation or cite to the workpapers that support this assertion.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witnesses: Stacy S. Hoffman

Information Provided:

This number was corrected in Petitioner's First Set of Revisions to its Case-in-Chief. Please see the table below.

SUMMARY INDIANA - 2014 TO 2018 BUSINESS PLAN - PLUS 2013							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**
GROSS ADDITIONS	$ 58,984,090	$ 57,863,472	$ 47,362,273	$ 67,050,412	$ 64,609,538	$ 71,719,784	$ 367,589,569
ADVANCES	(5,339,000)	(4,635,000)	(4,835,000)	(5,035,000)	(5,235,000)	(5,635,000)	(30,714,000)
CONTRIBUTIONS	(16,500)	(1,299,931)	(2,103,171)	(2,105,225)	(2,105,725)	(2,244,691)	(9,875,243)
REFUNDS	1,236,000	1,335,344	1,369,003	1,055,061	722,789	371,261	6,089,458
NET TOTAL	**$ 54,864,590**	**$ 53,263,885**	**$ 41,793,105**	**$ 60,965,248**	**$ 57,991,602**	**$ 64,211,354**	**$ 333,089,784**

OUCC 07-015

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

On page 12 of her testimony, Ms Ahern asserts that Indiana American projects total net capital expenditures of $330.090 million for 2013 through 2018. What are the capital expenditures "net of"?

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witnesses: Stacy S. Hoffman

Information Provided:

This number was corrected in Petitioner's First Set of Revisions to its Case-in-Chief. The capital expenditures are net of contributions, advances, and refunds. Specifically, net capital expenditures are gross additions, minus contributions and advances, plus refunds. The calculation can be seen in the Company's response to OUCC 07-014.

OUCC 10-001

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

On line 5, page 36 of his Revised Testimony, Mr. Roach states as follows: "The Company expects that a meaningful portion of its capital structures will require external financing." Define "meaningful portion" as used by Mr. Roach in his revised testimony.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
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Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witnesses: Greg P. Roach

Information Provided:

The use of the phrase "a meaningful portion" is intended to denote the fact that Indiana-American must rely to a significant extent on external funding sources to meet its capital requirements since internally-generated funds are not adequate to meet the investment needed in utility plant. No particular percentage was implied or intended in this instance, though the Company has typically used proceeds from external sources, excluding deferred income taxes (e.g., long-term debt and common equity) to ultimately fund more than one-third of its capital expenditures. The reference in Mr. Roach's testimony to "meaningful portion" is simply noting that the Company fully expects this practice to continue. For example, the Company is projecting net capital expenditures of approximately $95 million during the 2014-2015 period, during which the Company plans to issue $48 million of new long-term debt, resulting in an external funding ratio of approximately 50%.

OUCC 10-002

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

For each of the following years: 2013, 2014, 2015, 2016, 2017, and 2018, how much of the Company's proposed capital expenditures (See table listed in Roach page 36 revised) will be funded with external financing? Please provide the calculation for each year.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witnesses: Greg P. Roach

Information Provided:

Please see the table below:

	2013	2014	2015
Net Capital Expenditures	$54,864,590	$53,263,885	$41,793,105
External Financing	6,702,401	15,000,000	33,000,000
Difference	$48,162,189	$38,263,885	$ 8,793,105

The external financing in the amount of $6,702,401 shown above is long-term debt that was issued in December 2013. The Company has not yet prepared its external financing plan for the years 2016-2018.

OUCC 10-003

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

For each of the following years: 2013, 2014, 2015, 2016, 2017, and 2018, how much of the Company's anticipated external financing will be debt and how much will be common equity? (See table listed in Roach page 36 revised) Please provide the calculation for each year.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
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Witnesses: Greg P. Roach

Information Provided:

The table below shows the Company's external financing plan for the years 2013-2015. All of the financing is projected to be in the form of long-term debt and is included in the Company's test year capital structure in this case. Please note that the 2013 financing has occurred and, thus, is not a projection. There are no equity infusions planned for the 2013-2015 period.

Capital Component	2013	2014	2015
Long-Term Debt	$ 6,702,401	$15,000,000	$33,000,000
Common Equity	-	-	-
Total	$ 6,702,401	$15,000,000	$33,000,000

The Company has not yet prepared its external financing plan for the years 2016-2018.

OUCC 20-004

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

In response to OUCC Data Request No. 10-3, Petitioner stated it plans to issue Long Term debt of $15,000,000 in 2014. How much of that debt (if any) will be used to refund existing debt? Please list the specific bonds (with their terms) that Petitioner intends to refinance.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

The $15 million debt issuance planned for November 2014 is not for the purpose of refunding existing long-term debt, or for replacing long-term debt that is maturing. This is an external financing need that the Company is choosing to meet with a new debt issuance.

OUCC 20-005

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

In response to OUCC Data Request No. 10-3, Petitioner stated it plans to issue Long-Term debt of $33,000,000 in 2015. How much of that debt (if any) will be used to refund existing debt? Please list the specific bonds (with their terms) that Petitioner intends to refinance.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

The $33 million debt issuance planned for November 2015 is not for the purpose of refunding existing long-term debt. The principal reason for the new debt issuance is to replace existing Indiana-American General Mortgage Bonds that will mature on September 1, 2015. The specifics of the two General Mortgage Bonds are as follows:

Coupon Rate	Date Issued	Maturity Date	Face Amount
7.380% Series	9/01/95	9/1/15	$12,000,000
7.450% Series	12/01/95	9/1/15	$28,000,000

OUCC 38-011

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

In response to OUCC Data Request No. 10-3, Petitioner stated it plans to issue Long Term debt of $15,000,000 in 2014. How much of that debt (if any) will be used to fund capital expenditures? Please list any such capital expenditures.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

In general, the Company issues long-term debt and common equity for the purpose of funding long-term assets, or capital expenditures. However, as noted in the Company's response to OUCC 15-004:

> "Proceeds from the Company's various sources of external financing, including debt issuances, are indistinguishable, and are also indistinguishable from proceeds generated internally. This is due to cash being a fungible commodity. For a company with multiple funding sources, such as Indiana-American, it is not possible in a financial sense to trace a specific use of funds to a particular source."

Proceeds from the long-term debt issuance will be used to pay down the Company's short-term debt which, though used to temporarily fund capital expenditures, is also used to fund working capital requirements, or day-to-day operations of the business. Thus, the Company is unable to identify how much of the $15,000,000 long-term debt issuance will be used to fund capital expenditures. And, as noted above, long-term debt is not the only source of cash for the Company, which makes the tracing of source to use even more problematic. It follows, then, that the Company is also unable to list specific capital expenditures that will be funded by that long-term debt.

OUCC 38-012

DATA INFORMATION REQUEST
Indiana-American Water Company
Cause No. 44450

Information Requested:

In response to OUCC Data Request No. 10-3, Petitioner stated it plans to issue Long- Term debt of $33,000,000 in 2015. How much of that debt (if any) will be used to fund capital expenditures? Please list any such capital expenditures.

Requested By: Daniel M. LeVay – dlevay@oucc.in.gov – 317-232-2494
Scott Franson – sfranson@oucc.in.gov – 317-232-2786
Tiffany Murray - timurray@oucc.in.gov – 317-232-2494
Office of Utility Consumer Counselor (OUCC)

Witness: Gregory P. Roach

Information Provided:

Please see the Company's response to OUCC 38-011.

AMERICAN WATER

NYSE: AWK

Institutional Investor Presentation

March 2014