

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

**PETITION OF INDIANAPOLIS POWER & LIGHT COMPANY)
("IPL") FOR AUTHORITY TO INCREASE RATES AND)
CHARGES FOR ELECTRIC UTILITY SERVICE AND FOR)
APPROVAL OF: (1) ACCOUNTING RELIEF, INCLUDING)
IMPLEMENTATION OF MAJOR STORM DAMAGE)
RESTORATION RESERVE ACCOUNT; (2) REVISED)
DEPRECIATION RATES; (3) THE INCLUSION IN BASIC RATES)
AND CHARGES OF THE COSTS OF CERTAIN PREVIOUSLY)
APPROVED QUALIFIED POLLUTION CONTROL PROPERTY;)
(4) IMPLEMENTATION OF NEW OR MODIFIED RATE)
ADJUSTMENT MECHANISMS TO TIMELY RECOGNIZE FOR)
RATEMAKING PURPOSES LOST REVENUES FROM DEMAND-)
SIDE MANAGEMENT PROGRAMS AND CHANGES IN (A))
CAPACITY PURCHASE COSTS; (B) REGIONAL)
TRANSMISSION ORGANIZATION COSTS; AND (C) OFF)
SYSTEM SALES MARGINS; AND (5) NEW SCHEDULES OF)
RATES, RULES AND REGULATIONS FOR SERVICE.)**

CAUSE NO. 44576

**IN THE MATTER OF THE INDIANA UTILITY REGULATORY)
COMMISSION'S INVESTIGATION INTO INDIANAPOLIS)
POWER & LIGHT COMPANY'S ONGOING INVESTMENT IN,)
AND OPERATION AND MAINTENANCE OF, ITS NETWORK)
FACILITIES)**

CAUSE NO. 44602

REDACTED TESTIMONY OF

EDWARD R. KAUFMAN – PUBLIC'S EXHIBIT NO. 13

ON BEHALF OF THE

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

JULY 27, 2015

TESTIMONY OF EDWARD R. KAUFMAN, CRRA
CAUSE NOS. 44576/44602
INDIANAPOLIS POWER & LIGHT COMPANY

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TESTIMONY OF EDWARD R. KAUFMAN, CRRA
CAUSE NOS. 44576 & 44602
INDIANAPOLIS POWER & LIGHT COMPANY

I. INTRODUCTION

1 **Q: Please state your name and business address.**

2 A: My name is Edward R. Kaufman, and my business address is 115 West
3 Washington Street, Suite 1500 South, Indianapolis, Indiana 46204.

4 **Q: By whom are you employed and in what capacity?**

5 A: I am employed by the Indiana Office of Utility Consumer Counselor (“OUCC”)
6 as a Chief Technical Advisor with the Water-Wastewater Division. My
7 qualifications, experience and case preparation work are set forth in Appendix A.

8 **Q: What is the purpose of your testimony?**

9 A: My testimony:

- 10 1) Dispels the notion that Indianapolis Power & Light Company (“Petitioner” or
11 “IPL”) is seeking a 7.75% authorized cost of equity; IPL is requesting 10.93%;
- 12 2) Recommends and supports the OUCC’s proposed 9.2% cost of equity;
- 13 3) Explains how IPL’s parent IPALCO’s excessive debt creates double leverage
14 and allows IPALCO and AES (IPALCO’s parent) to earn excessive returns on
15 their investment in IPL;
- 16 4) Responds to Dr. Avera’s cost of equity methodologies;
- 17 5) Responds to Petitioner’s proposed 3.32% fair rate of return and proposed
18 \$4,101,416,256 fair value rate base, including the OUCC’s concerns about
19 Messrs. Reed’s & Kelly’s fair value rate base methodologies, and;

1 6) Discusses if and how the Commission's investigation into IPL's ongoing
2 investment in and operation and maintenance of its network influences an
3 authorized cost of equity and the fair value of its rate base.

4 **Q: Do you have any schedules or attachments?**

5 A: Yes, a list of my schedules and attachments are located in Appendix B. The
6 schedules were prepared by me or under my supervision.

II. IPL'S PROPOSED RATE OF RETURN: 7.75%, 10.93% OR 10.98%?

7 **Q: What cost of equity is Petitioner proposing?**

8 A: Based on Petitioner's proposal:

9 3.32% cost of capital,

10 times

11 \$4,101,416,256 fair value rate base

12 equals

13 \$136,167,020 NOI,

14 then IPL's effective cost of equity would be approximately 10.98%. Said another
15 way, using Petitioner's proposed original cost rate base (\$1,964,991,786) and its
16 proposed capital structure, Petitioner requires a 10.98% cost of equity to produce
17 its proposed NOI.

18 **Q: Does this 10.98% figure appear in Petitioner's testimony or exhibits?**

19 A: No, it does not.

20 **Q: Are Dr. Avera's 7.75% "fair return on equity" and the 10.98% cost of equity**
21 **you discuss above the equivalent?**

22 A: Yes, but they are used in different formulae. The 7.75% "fair return on equity" is
23 proposed only if that return is applied to IPL's proposed fair value rate base,
24 which is overstated. As discussed above, the 10.98% figure is the imputed cost of

1 equity for Petitioner's original cost rate base to derive its proposed NOI,
2 Petitioner's proposed fair return on equity is not its proposed cost of equity.

3 **Q: Is Dr. Avera's 7.75% "fair return on equity" a product of his cost of equity**
4 **models?**

5 A: No. On page 81 of his testimony, Dr. Avera states "My recommendation is to use
6 the lowest COE estimate that meets the FERC benchmark adjusted for current
7 capital market conditions of 7.75%." His models produce a 10.93% cost of
8 equity.

9 **Q: What does that mean?**

10 A: Dr. Avera's 7.75% (10.98%) fair value cost of equity is simply a number he chose
11 that produces his desired NOI result, slightly above the NOI that would be
12 produced under original cost ratemaking (10.93%).

13 **Q: Does Petitioner intend to use 7.75% (10.98%) for AFUDC and trackers that**
14 **include an equity return component?**

15 A: No. Dr. Avera discusses a 10.93% cost of equity, but does not explicitly propose
16 a 10.93% cost of equity. Petitioner's response to OUCC DR 22-4 admits
17 requesting two separate rates of return (Attachment ERK-1):

18 The 7.75% is only applicable to a fair value rate base that fully
19 reflects the current value of IPL's rate base as discussed in Dr.
20 Avera's testimony on page 82...

21 And,

22 Any application of return on equity to original cost measures of
23 investment should use the 10.93% return on equity developed in
24 Dr. Avera's Direct Testimony.

25 **Q: Did Petitioner further clarify its requested cost of equity through discovery?**

26 A: Yes. In response to the IPL Industrial Group's ("IG") Data Request question 6-13
27 (Attachment ERK-1), IPL said:

28 IPL is not requesting that the Commission approve two costs of
29 equity. IPL is requesting that the Commission find a fair return to

1 fair value for use in determining an authorized NOI using a fair
2 return on equity of 7.75% only if [it] is applied to the current value
3 rate base of \$4,101,456.¹ Dr. Avera's testimony presents evidence
4 to support a cost of equity of 10.93% applicable to IPL that can be
5 applied to original cost for other regulatory purposes. Dr. Avera's
6 testimony does not present "two cost of equities" but instead
7 estimates a cost of equity specific to IPL (Avera Direct Testimony
8 pp. 43 – 80) of 10.93%. His testimony also recommends a fair
9 return on equity to be included in the fair return to fair value
10 (before adjusted for inflation) to be applied to a fair value rate base
11 (Avera Direct Testimony pp. 80 – 82) of 7.75%. The 7.75% is not
12 a cost of equity estimate for IPL but is a fair return on equity
13 (based on the minimum cost of equity estimate for a utility that
14 FERC would find logical adjusted for current capital market
15 conditions for any utility with IPL's BBB bond rating (as
16 calculated on p. 58 of Dr. Avera's Direct Testimony).

17 (Emphasis in original).

18 Petitioner further clarified its position in response to OUCC DR 53-02 (also
19 included in Attachment ERK-1).

20 Petitioner's responses confirm Petitioner's proposed fair value cost of
21 equity has no meaning outside of his proposed fair value analysis. Because Dr.
22 Avera's models are intended to support a 10.93% cost of equity, I will review his
23 models in that context.

24 **Q: Typically an investor owned utility uses its cost of equity to determine its**
25 **NOI. How does Petitioner determine its proposed NOI?**

26 A: As explained earlier, Dr. Avera's recommended 7.75% fair return on equity is
27 only related to his fair value calculation. This produces a weighted cost of capital
28 (based on Petitioner's proposed capital structure) of 5.72%. Dr. Avera then
29 subtracts historical inflation of 2.4% from the weighted cost of capital to produce
30 a fair rate of return of 3.32%. Based on studies completed by Mr. Kelly and Mr.

¹ This number is a typographic error. IPL's proposed fair value rate base is \$4.1B not \$4.1M (OUCC DR 53-1).

1 Reed, Dr. Avera multiplies his estimated 3.32% fair rate of return by fair value
2 rate base of \$4,101,416,256 to produce Petitioner's requested NOI of
3 \$136,167,020.

III. THE OUCC'S RECOMMENDED COE: 9.2%

4 **Q: Please summarize your cost of equity testimony.**

5 A: My estimate of Petitioner's cost of equity is 9.2%. I use both a Discounted Cash
6 Flow ("DCF") analysis and a Capital Asset Pricing Model ("CAPM") analysis.
7 My DCF model produces a range of estimates from 8.66% to 9.04% and my
8 CAPM analysis produces a range of estimates from 7.89% to 8.49%. My
9 recommended 9.2% is 16 basis points above the high point of my models' range
10 and 73.5 basis points above their midpoint. My models incorporate processes,
11 methods and guidelines historically approved by the Commission. My 9.2%
12 recommendation is greater than that produced by my models because a) the cost
13 of equity for the electric industry at this time is at or near the high end of my
14 overall range, and b) due to the scope of its pending construction projects,
15 Petitioner's risk is somewhat above the risk to the overall electric industry. My
16 9.2% cost of common equity results in a weighted cost of capital of 6.26%
17 (Schedule LKM-18, provided by OUCC witness Lafayette K. Morgan, Jr.).

18 **Q: How does your 9.2% differ from Petitioner's proposed cost of equity?**

19 A: My estimate of IPL's cost of equity is 173 basis points less than Dr. Avera's
20 10.93%. His use of midpoints, size adjustments, projected bond yields and the
21 Empirical CAPM ("ECAPM") explain most of the difference. I detail these
22 differences later in my testimony.

1 **Q: How does your 9.2% differ from Petitioner's current authorized cost of**
2 **equity?**

3 A: IPL's current authorized cost of cost of equity is significantly higher, since 20
4 years ago both inflation and interest rates were much higher. My proposed 9.2%
5 COE properly reflects the dramatic reduction in those two factors.

6 **Q: How do inflation and interest rates influence the estimated cost of equity?**

7 A: Lower inflation rates translate into lower capital costs for both debt and equity.
8 As part of their required return, both bond and equity investors seek compensation
9 for anticipated inflation. Current inflation rates, at about 2%, are at historically
10 low levels, whether compared to short, intermediate or long-term periods.² For
11 example, inflation averaged 2.3% from 2002-2014, 4.2% from 1966-2014, and
12 2.9% from 1926-2014. Forecasted inflation is also expected to remain low,
13 between 1.6% - 2.1% over the next decade.³

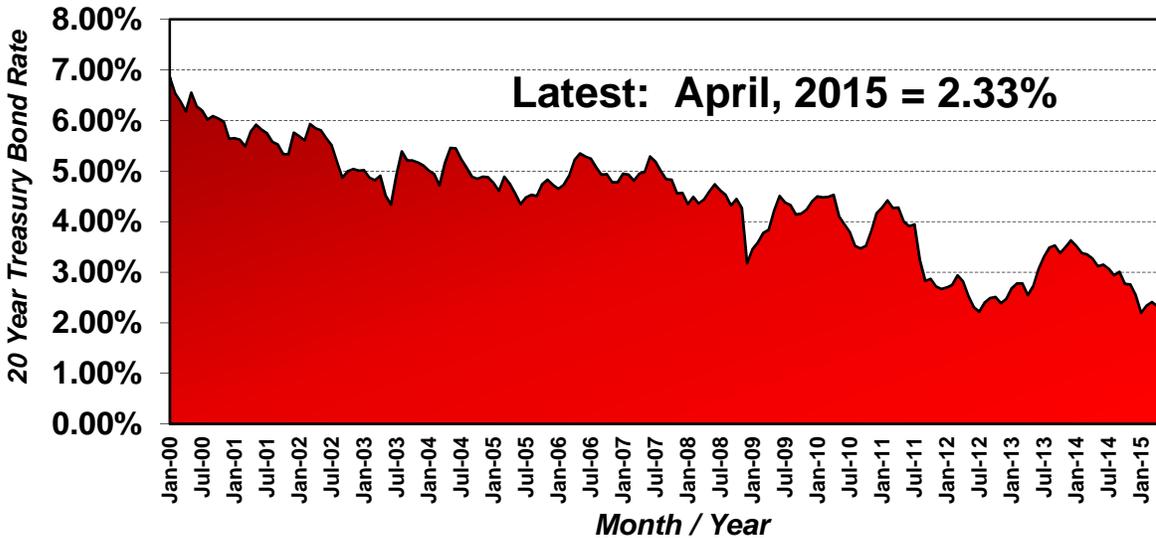
14 Interest rates reflect these historically low inflation rates. Current interest
15 rates in the high 2% - low 3% range are not just lower than they have been over
16 the last 30 years; they are also at historically low levels. The two charts below
17 show the yields on 20-Year Constant Maturity U.S. Treasury bonds for January
18 2000 – January 2015 and January 1980 – January 2015. These charts illustrate
19 the dramatic decline in interest rates.

² Attachment ERK-6 provides historical inflation rates from January 1926 - December 2014 from Morningstar's SBBi 2015 Yearbook, Classic Edition.

³ Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters (February 13, 2015), 2015-2024 average 2.1%. See also the Congressional Budget Office's (CBO) The Budget and Economic Outlook: 2015 – 2025, which forecasts increases in the GDP price index of 1.6% for 2015 - 2016, 1.9% for 2017 and 2.0% for 2018-2025 (Attachments ERK-2 and ERK-3).

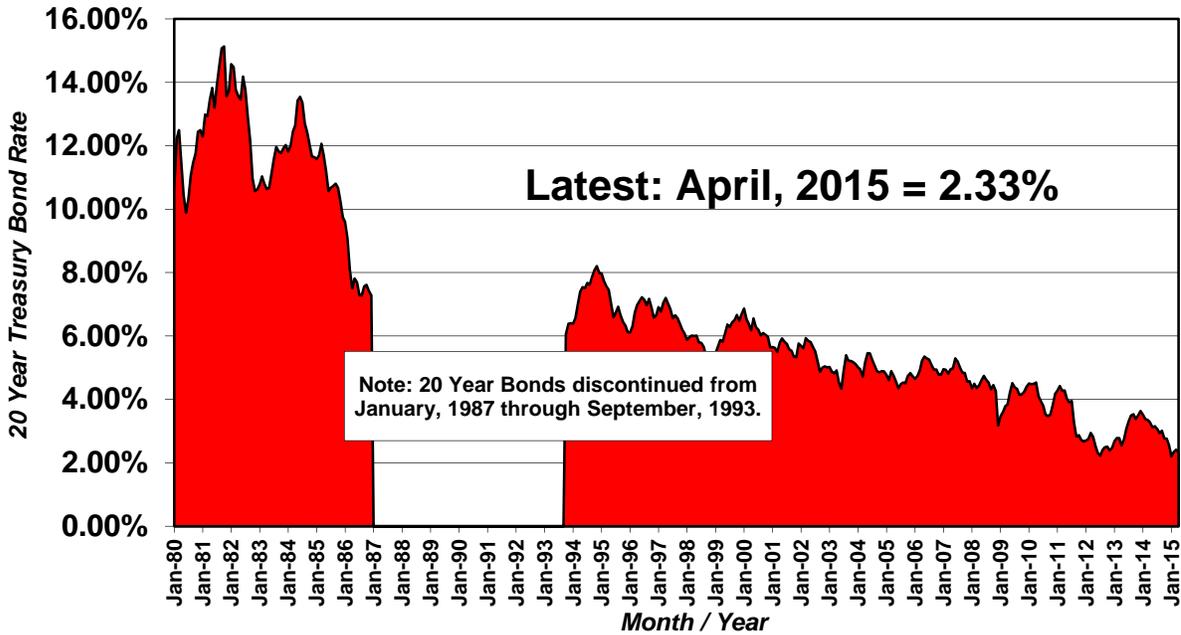
20 Year Treasury Bond Rate, 2000-2015

Source: Federal Reserve, http://www.federalreserve.gov/releases/h15/data/Monthly/H15_TCMNOM_Y20.txt



20 Year Treasury Bond Yields, 1980-2015

Source: <http://www.federalreserve.gov/releases/h15/data.htm>



1 As can be seen in the two charts above, current interest rates are well below the
2 levels experienced during most of the past 10 years. And despite some concern
3 about interest rates increasing, according to the June 12, 2015 edition of Value
4 Line's Selections & Opinions, 30-year U.S. Treasury bonds yielded 3.10%, and
5 10-year U.S. Treasury bonds yielded 2.37% (Attachment ERK-4).

6 **Q: Are utility bond yields correspondingly low?**

7 A: Yes. According to the June 12, 2015 edition of Value Line, the yield on 25/30
8 year "BBB" utility bonds was 4.78%, and the yield on 25/30 year "A" utility
9 bonds was 4.39%. Lower interest rates should translate directly into a lower cost
10 of equity. Long-term capital costs, like interest rates, are as low or are lower
11 today than they have been during most of the last 50 years. Petitioner's
12 authorized cost of equity should reflect these historically low interest rates.

13 **Q: Have interest rates in general decreased since Dr. Avera filed his direct**
14 **testimony in this Cause?**

15 A: Yes. Dr. Avera's workpapers include a copy of the December 1, 2013 Blue Chip
16 Financial Forecasts (BCFF) (cited on page 32 of Dr. Avera's testimony). In
17 Attachment ERK-7, I include a copy of the December 1, 2013 BCFF alongside
18 the June 1, 2015 edition of BCFF. A review of these two documents
19 demonstrates the decrease in interest rates.

20 **Q: Does Dr. Avera testify that current capital costs represent what is likely to**
21 **prevail over the near term future?**

22 A: No. On page 35 of his direct testimony, Dr. Avera asserts that the current capital
23 costs are not representative of what is likely to prevail over the near-term future.
24 Moreover on page 36 he states as follows:

1 Given investors' expectations for rising interest rates and capital
2 costs, the Commission should consider near-term forecasts for
3 public utility bond yields in assessing the reasonableness of
4 individual cost of equity estimates and in evaluating a fair return
5 on fair value for IPL from within the range of reasonableness.

6 Dr. Avera is attempting to persuade the Commission to authorize a higher cost of
7 equity and fair rate of return based on consistently inaccurate expectations of
8 rising interest rates.

9 **Q: Does Dr. Avera cite to any sources to support his opinion that interest rates**
10 **will rise over the near term?**

11 A: Yes. Dr. Avera cites to several publications that forecast rising interest rates.
12 More specifically, on page 32 of his testimony, Dr. Avera states, "As evidenced
13 above, there is a clear consensus in the investment community that the cost of
14 long-term capital will be significantly higher over 2015-2018 than it is currently."

15 **Q: Did Dr. Avera make almost the identical claim in his testimony in Cause No.**
16 **44075 (Indiana and Michigan Power Company [I&M] – filed 9/23/2011)?**

17 A: Yes. From page 19 of his direct testimony in that case:

18 As evidenced above, there is clear consensus that the cost of
19 permanent capital will be higher in the 2012-2015 timeframe than
20 it is currently. As a result, current cost of capital estimates are
21 conservative, because they are likely to understate investors'
22 requirements at the time the rates set in this proceeding become
23 effective.

24 Dr. Avera argued then that due to a consensus forecast of rising interest rates the
25 Commission should authorize a higher cost of equity. Dr. Avera now makes
26 virtually the same argument in this cause.

27 **Q: Did interest rates increase as they were forecasted to do so in 2011?**

28 A: No. Despite a so-called "clear consensus" that interest rates would increase, they
29 instead have generally declined since 2011. Value Line was part of Dr. Avera's
30 consensus group in 2011.

<u>INTEREST RATE COMPARISON</u>			
Value Line forecasted interest rates I&M (44075)			
versus actual - 30 Yr US Treasury Bonds			
	<u>Value Line Forecast</u>	<u>Value Line Actual</u>	<u>Difference</u>
2011	4.4% *	4.4% *	
2012	5.20%	2.90%	-2.30%
2013	5.50%	3.12%	-2.38%
2014	5.70%	3.77%	-1.93%
2015	6.00%	3.09% *	-2.91%

1 The 3.09% yield as of May 22⁴, 2015 is almost 300 basis points lower than
2 forecasted. Attachment ERK-27 further compares the 2011 interest rate forecasts
3 Dr. Avera used in Cause No. 44075 vs. interest forecasts in Cause No. 44576.⁵

4 Interest rate forecasts by companies like Value Line and Blue Chip's
5 Financial Forecasts have (especially since the end of the 2008 / 2009 recession)
6 constantly forecasted higher or increasing interest rates and have been
7 consistently wrong. The economic recovery following that recession has not been
8 as strong as prior economic recoveries and current economic forecasts are for
9 more sluggish growth (2.3% - 2.5%⁶ over the next ten years).

⁴ Value Line Selection & Opinion, May 22, 2015 (Attachment ERK 11).

⁵ This attachment provides the cover page along with pages 18-19 of Dr. Avera's testimony in Cause No. 44075, alongside comparable data he uses in this cause (IPL Workpaper 10-IPL Witness WEA Attachment 2, IPL Basic Rates Case, Pages 3 of 4 and 4 of 4 from this case).

⁶ Blue Chip Financial Forecasts, June 1, 2015 (Attachment ERK-7).

1 **Q: Should the Commission authorize a higher cost of equity to address Dr.**
2 **Avera's concerns regarding rising interest rates?**

3 A: No. The estimated range derived from my cost of equity models, using
4 Commissioned-approved methodologies, does not understate investors' required
5 return and reasonably incorporates expectations of rising interest rates.

6 **Q: In today's market, why is the OUCC's recommended 9.20% cost of equity**
7 **reasonable?**

8 A: Lower inflation rates generally translate into lower capital costs. This holds true
9 for both the cost of debt and the cost of equity. Over the last 20 years, inflation
10 has not been greater than 4.1% and has averaged 2.3% (Ibbotson's 2015 SBBI
11 Yearbook, pages 292-297, Attachment ERK-6).

12 This trend is expected to continue for some time. In addition to the 1.6% -
13 2.4% estimates by the Federal Reserve Bank of Philadelphia and the
14 Congressional Budget Office forecast cited in Footnote 3 on page 8, the June 1,
15 2015 Blue Chip Financial Forecasts estimates the CPI will average 2.3% for
16 2017-2026 (Attachment ERK-7). These predictions bear directly on this
17 proceeding. A low inflation rate has a significant influence on current capital
18 costs and such effects must be recognized and included in any determination of
19 Petitioner's authorized cost of equity. For any investment, the investor's required
20 return includes compensation for anticipated inflation. When anticipated inflation
21 is lower, so is the required cost of equity.

22 **Q: What additional support do you have that inflation will remain low?**

23 A: The Federal Reserve is committed to maintaining a low inflationary environment.
24 In a press release dated January 28, 2015 the Federal Reserve Board of Governors
25 stated as follows (Attachment ERK-8):

1 Consistent with its statutory mandate, the Committee seeks to
2 foster maximum employment and price stability. The Committee
3 expects that, with appropriate policy accommodation, economic
4 activity will expand at a moderate pace, with labor market
5 indicators continuing to move toward levels the Committee judges
6 consistent with its dual mandate. The Committee continues to see
7 the risks to the outlook for economic activity and the labor market
8 as nearly balanced. Inflation is anticipated to decline further in the
9 near term, but the Committee expects inflation to rise gradually
10 toward 2 percent over the medium term as the labor market
11 improves further and the transitory effects of lower energy prices
12 and other factors dissipate. The Committee continues to monitor
13 inflation developments closely.

14 To support continued progress toward maximum employment and
15 price stability, the Committee today reaffirmed its view that the
16 current 0 to 1/4 percent target range for the federal funds rate
17 remains appropriate. In determining how long to maintain this
18 target range, the Committee will assess progress--both realized and
19 expected--toward its objectives of maximum employment and 2
20 percent inflation...

21 (Emphases Added)

22 The Federal Reserve's target of a 2% inflation rate can be viewed as both a floor
23 and ceiling. Thus, despite improvements in the economy, so long as the Federal
24 Reserve maintains its statutory mandate of price stability, it is reasonable to
25 anticipate that inflation should remain around 2.0%.

26 **Q: Do you have additional support that your proposed cost of equity is**
27 **reasonable?**

28 A: Yes. I have reviewed studies from a variety of sources (including KPMG, Duff &
29 Phelps, and J.P. Morgan) that forecast a long term market return. The results of
30 these studies are illustrated in Appendix J. Moreover, the studies produce a range
31 of forecasted market returns of 5.45% to 9.0%. The return figures discussed in
32 Appendix J are for the overall market. The electric industry (average beta of
33 0.746) is less risky than the overall market and should have a lower expected rate

1 of return than the market. The OUCC's proposed cost of equity of 9.2% is
2 consistent with the forecasts made by the sources described above.

3 **Q: Are you aware of any electric industry studies that support the**
4 **reasonableness of your proposed cost of equity?**

5 A: Yes. In a report prepared by UBS titled: Consolidated Edison – ROE Risk
6 Remains in Focus, published on February 24, 2015 (Attachment ERK-9), UBS
7 estimated required return on equity for its peer group of electric companies⁷ using
8 both a DCF (8.54%) and CAPM analysis (8.10%). UBS then estimates a
9 combined required return on equity of 8.39% (page 4).

10 Additionally, on May 9, 2015, Barron's published an article, "Time to
11 Give Utility Stocks Another Look" citing Dan Eggers, a Credit Suisse utility
12 analyst. Mr. Eggers noted a 10% pullback in utility stocks in general, and
13 concluded, with total return potential of 8% to 9% a year. "Utilities and the
14 overall market may provide the same total return, but one offers a lower-risk
15 package." A copy of the article is included as Attachment ERK-32. The UBS and
16 Barron's articles both both provide an estimated return in the 8%-9% range and
17 are consistent with my recommended cost of equity.

18 **Q: Do you have any company-specific information that supports the**
19 **reasonableness of your proposed cost of equity?**

20 A: Yes. The OUCC requested the following information from Petitioner.

21 For the portion of Petitioner's pension fund(s) that are invested in
22 equities, what rate of return does IPL assume the pension fund(s)
23 will earn. Please explain why that rate of return was used.⁸

⁷ Page 7 of the UBS report shows UBS's peer group of electric companies. It contains many of the same companies that Dr. Avera and I use in our proxy groups to estimate Petitioner's cost of equity (page 7).

⁸ OUCC data request 1-6.

1 Petitioner's response provided a long term rate of return that took into account
2 investments in fixed income securities as well as equities. The OUCC sought
3 further clarification of Petitioner's response in OUCC DR 10-1 and 10-2. In
4 response to OUCC DR 10-2, Petitioner provided a confidential report by SEI.
5 The report included a chart on page 7 titled: SEI Capital Market Assumptions –
6 Equilibrium - October 2014. According to the chart on page 7, SEI assumes a
7 projected return for the S&P 500 is █████% (Attachment ERK-37
8 CONFIDENTIAL), meaning IPL's pension plan also assumes the S&P 500 will
9 earn that return. While Petitioner asserts in its response to OUCC DR 1-6 that it
10 uses a slightly conservative approach in selecting an Expected Return On Assets,
11 its market return assumptions are an independent projection of future market
12 returns and are being used to estimate Petitioner's pension expense.

13 **Q: How does Dr. Avera's forecasted return for the S&P 500 compare to the**
14 **forecasted return for the large capitalization equities used by Petitioner's**
15 **actuary to estimate future pension?**

16 A: As mentioned above, a report by SEI for IPL's pension plan assumes a "long
17 term" return on large capitalization of █████%. Dr. Avera estimates a return for the
18 S&P 500 of 12.3% (█████ basis points above the SEI report). It is inconsistent to
19 rely on █████% forecasted return (large company stocks) to estimate pension
20 expense while relying on a 12.30% forecasted return to estimate cost of equity.

21 **Q: Is it possible that SEI is taking an overly conservative estimate of future**
22 **returns for IPL's pension?**

23 A: Yes. However, Petitioner's estimated return for large company stocks in its
24 pension is consistent with other estimated returns of the large company stocks
25 discussed earlier in my testimony. But, if Petitioner's actuary used a slightly

1 conservatively low estimated return for large company stocks in its pension funds,
2 then ratepayers will pay higher annual pension costs to accommodate this
3 conservatively low estimated rate of return. Petitioner acknowledges that its
4 conservative market return increases its pension expense (IPL response to OUCC
5 DR 10.3(d), Attachment ERK-38).

6 **Q: Are authorized costs of equity for regulated electric utilities declining?**

7 A: Yes. The January 15, 2015 article by Regulatory Research Associates (“RRA”)
8 titled Regulatory Focus “Major Rate Case Decisions – Calendar 2014” discusses
9 the trend in Commission authorized costs of equity.

10 The average return on equity (ROE) authorized electric utilities
11 was 9.92% in 2014, compared to 10.02% in 2013. There were 37
12 electric ROE determinations in 2014, versus 50 in 2013. We note
13 that the data includes several surcharge/rider generation cases in
14 Virginia that incorporate plant-specific ROE premiums. Virginia
15 statutes authorize the State Corporation Commission to approve
16 ROE premiums of up to 200 basis points for certain generation
17 projects (see the Virginia Commission Profile). Excluding these
18 Virginia surcharge/rider generation cases from the data, the
19 average authorized electric ROE was 9.76% in 2014 compared to
20 9.8% in 2013. The average ROE authorized gas utilities was 9.78%
21 in 2014 compared to 9.68% in 2013. There were 26 gas cases that
22 included an ROE determination in 2014, versus 21 in 2013...

23 (Emphasis added)

24 The RRA report shows the average authorized return on equity in 2014
25 (excluding these Virginia surcharge/rider generation cases from the data) was
26 9.76%. The RRA report also shows a trend of consistently declining costs of
27 equity since 1990 (Attachment ERK-24). Moreover the chart on page 3 of the
28 article shows the average authorized return for regulated electric utilities has not
29 been at or above Petitioner’s proposed 10.93% cost of equity since 2003. Note
30 this is the same data source Dr. Avera relies on in WEA Attachment 7 for his

1 Electric Utility Risk Premium analysis. The more current RRA report (April 13,
2 2015) provides the average authorized returns for the first quarter of 2015, stating;
3 “Excluding these Virginia surcharge/rider generation cases from the data, the
4 average authorized electric ROE was 9.67% in the first quarter of 2015 versus
5 9.76% in 2014.”

IV. DISCOUNTED CASH FLOW (“DCF”) SUMMARY ANALYSIS

6 **Q: What is a DCF analysis and why did you perform one?**

7 A: The DCF analysis is used by investors to determine the appropriate price to pay
8 for a security. The model assumes that the price should be determined by
9 expected cash flows, discounted by the company’s cost of equity. I ran multiple
10 DCF models to produce a range of results to assist in determining an appropriate
11 cost of equity. The Commission has regularly considered the DCF model a
12 beneficial tool to determine an appropriate authorized cost of equity.

13 **Q: What do you conclude from your DCF analysis?**

14 A: The results of my DCF analysis range from 8.66% to 9.04%. Details are depicted
15 on Schedule ERK-2.

16 **Q: How do your DCF model results compare with Dr. Avera’s DCF results?**

17 A: Dr. Avera’s DCF analyses produce higher average results (9.4% to 9.9%) and
18 much higher midpoint results (10.2% to 11.1%).

19 **Q: What factors drive the differences between your respective DCF analyses?**

20 A: As explained in greater detail below, Dr. Avera’s analysis includes non-
21 comparable companies within his proxy group (which I exclude). Dr. Avera
22 removes 25 data points from his DCF analysis that he considers outliers – 23 he
23 considers too low, but only two he considers too high. All of these differences

1 inflate Dr. Avera's results. However, the largest difference by far is Dr. Avera's
2 use of midpoint estimates, which are 80 to 120 basis points higher than his
3 average estimates.

4 **Q: What is wrong with using midpoints to estimate cost of equity?**

5 A: Dr. Avera's use of midpoint estimates in his DCF analysis gives undue weight to
6 the high end results of his DCF analysis and overstates his estimated cost of
7 equity. A midpoint estimate simply averages (two points) the highest and lowest
8 results. Schedule ERK-4, page 4 of 4 shows how just one company's results can
9 skew the midpoint and disproportionately impact the resulting cost of equity
10 estimate. In Dr. Avera's DCF analysis based on Zacks' growth rates, ITC
11 Holdings has the highest estimated cost of equity at 14.3% and Ameren
12 Corporation has the second highest estimated cost of equity at 12.40%. Thus,
13 simply removing ITC Holdings from Dr. Avera's DCF analysis (Zacks Growth
14 rates) reduces the midpoint by 95 basis points. Dr. Avera's DCF analysis using
15 IBES growth rates has an 11.1% midpoint based on the CenterPoint Energy
16 (7.9%) and Portland General Electric (14.4%) growth rates. By comparison, a
17 midpoint calculation based on the second highest and second lowest companies in
18 that same group, Ameren Corp (13.0%) and Pinnacle West Capital (8.0%),
19 produces a midpoint of 10.5% (60 basis points lower).

20 **Q: Did Dr. Avera use midpoint estimates in his 2011 testimony in Cause No.**
21 **44075 Indiana and Michigan Power Company?**

22 A: He did not.

1 **Q: Does your testimony include a detailed explanation of how the DCF model**
2 **works and how you developed your DCF model?**

3 A: Yes. For a detailed explanation of proxy groups, how the DCF model works, my
4 DCF data inputs, results, criticisms of Dr. Avera's DCF analyses and other DCF
5 related information, see APPENDIX C – The DCF Analysis and Detail.

V. **CAPITAL ASSET PRICING MODEL (“CAPM”) SUMMARY**

6 **Q: What is the CAPM and why did you perform a CAPM analysis?**

7 A: The CAPM is another method investors, financial experts and Commissions use
8 to estimate cost of equity. It works very differently from the DCF. The CAPM is
9 a form of risk premium analysis based on the premise that investors require a
10 higher return for assuming additional risk. The Commission has regularly
11 considered the CAPM a beneficial tool to determine an appropriate authorized
12 cost of equity.

13 **Q: What do you conclude from your CAPM?**

14 A: The results of my CAPM are depicted on Schedule ERK-3. The cost of equity
15 based on my CAPM analysis using an historical risk premium is 7.89%. The
16 result of my CAPM analysis using a forecasted risk premium is 8.49%.

17 **Q: How do your results compare with Dr. Avera's CAPM results?**

18 A: Dr. Avera provides sixteen CAPM analyses for his utility proxy group. His
19 CAPM analyses can be divided into several sub groups. Dr. Avera estimates both
20 a Traditional and an Empirical CAPM (or ECAPM); he provides both unadjusted
21 and size adjusted results; he estimates cost of equity using both current bond
22 yields and forecasted bond yields; and finally, for each sub group he estimates
23 both an average and a midpoint result. The results of his analyses can be seen on
24 WEA Attachment 3 and range from 9.9% (Average, Traditional CAPM,

1 unadjusted for size, with a historical bond yield) to 12.0% (Midpoint, ECAPM,
2 adjusted for size with a projected bond yield).

3 **Q: What factors drive the differences between your respective CAPM analyses?**

4 A: Dr. Avera's inappropriate use of a size adjustment explains the largest portion of
5 the differences in our respective CAPM analyses. Dr. Avera's use of the
6 ECAPM, his market risk premium, his use of projected (forecasted) bond yields,
7 and his use of midpoints explains additional differences in our CAPM estimated
8 costs of equity.

9 Dr. Avera inflates the results of his CAPM analyses by 90-110 basis
10 points because companies in his utility proxy group are "small." Dr. Avera makes
11 positive size adjustments for companies in the proxy group that have market
12 capitalizations between \$1 billion and \$19 billion. While many of the companies
13 in Dr. Avera's proxy group may be classified as small, when broken into deciles,
14 according to Ibbotson's analysis, these are not "small" companies. A small size
15 adjustment is unwarranted.

16 The Empirical CAPM ("ECAPM") is designed to address a theoretical
17 downward bias in risk by increasing the risk factor, called "beta." However, the
18 betas Dr. Avera uses have already been adjusted upward. His ECAPM makes a
19 secondary upward adjustment, which produces an artificially inflated cost of
20 equity.

21 To estimate his market risk premium, Dr. Avera's CAPM analysis
22 assumes a total market return 20 basis points higher than the arithmetic average
23 market return earned since 1926, and 210 basis points above the compound

1 (geometric) annual return of 10.10% over the same time period. This also
2 improperly inflates his CAPM results.

3 As I discussed in the DCF summary, using midpoints can easily skew the
4 results of otherwise reasonable data samples. Also addressed in the DCF
5 summary (and Appendix C) are the effects of Dr. Avera's including proxy group
6 companies that are not comparable to IPL.

7 Dr. Avera's use of projected bond yields further inflates the results of his
8 CAPM analyses. Dr. Avera cites to sources that forecast bond yields to increase
9 and he incorporates those forecasts into his analyses. Yet a forecast of increasing
10 interest rates requires a parallel assumption that bond prices will decrease. This is
11 not a reasonable assumption to build into CAPM analyses when estimating
12 Petitioner's cost of equity.

13 **Q: Do you provide a detailed explanation how the CAPM works and how you**
14 **developed your CAPM analysis later in your testimony?**

15 A: Yes. For a discussion of how the CAPM works, the theory behind the model, the
16 appropriate inputs, criticisms of Dr. Avera's models and other related CAPM
17 information please see APPENDIX E – The CAPM Analysis and Detail.

VI. OVERVIEW OF DR. AVERA'S ESTIMATED COST OF EQUITY

18 **Q: Please provide an overview of Dr. Avera's cost of equity models.**

19 A: Dr. Avera uses a 32-company utility proxy group throughout his analyses. He
20 presents multiple DCF and CAPM analyses. Dr. Avera also presents an Electric
21 Utility Risk Premium model and an Expected Earnings model (for his utility
22 proxy group). The results of his analyses can be seen on WEA Attachment 3,
23 page 1 of 1 and range from 9.4% (Value Line DCF) to 12.0% (Empirical CAPM –

1 Projected Bond Yield – Size Adjustment). Dr. Avera then adds an adjustment for
2 flotation costs of 0.13% to the range. On an original cost basis Dr. Avera models
3 support a 10.93% cost of equity.

4 **Q: Do you discuss your criticisms of Dr. Avera's Electric Utility Risk Premium**
5 **model and an Expected Earnings model?**

6 A: Yes. For a discussion of my criticisms of Dr. Avera's Electric Utility Risk
7 Premium model and an Expected Earnings model please see Appendix K.

VII. FLOTATION COSTS

8 **Q: Dr. Avera adds 13 basis points to the results of his estimated cost of equity**
9 **for flotation costs. Is this adjustment appropriate?**

10 A: No. IPL has not incurred or been allocated any flotation costs from its parent (or
11 any affiliate) during the last ten years.⁹ There is no evidence IPL projects a near-
12 term need to issue new stock.

13 Although this Commission has recognized the need to adjust the
14 cost of equity to reflect the costs associated with equity issuances,
15 it has heretofore authorized such adjustments only when there was
16 a projected near-term need to issue new stock.¹⁰

17 (Emphasis added)

18 Thus the Commission has previously denied request for an adjustment to cost of
19 equity for flotation costs and absent a need to issue new stock should deny
20 Petitioner's request in this proceeding.

⁹ Petitioner's responses to IG-DR 2-3 and 2-4 (Attachment ERK-25).

¹⁰ Cause No 40003 (PSI; September 27, 1996) at page 30.

VIII. COST OF EQUITY CONCLUSIONS

1 **Q: Do you have any final comments about Dr. Avera's analysis?**

2 A: Yes. To the extent that I have not commented on Dr. Avera's testimony, my
3 silence should not be viewed as an acceptance of his position.

4 **Q: Please review the most significant differences between your estimated cost of**
5 **equity and Dr. Avera's cost of equity.**

6 A: Our respective cost equity estimates differ by 173 basis points (9.2% vs. 10.93%).
7 Most of our differences can be explained by the following factors:

8 1. Dr. Avera's midpoint estimates inflate the results of his DCF models by
9 80 - 120 basis points and his Comparable Earnings model by 90 basis
10 points.

11 2. Dr. Avera's size-adjustments increase the results of his CAPM analyses by
12 approximately 100 basis points.

13 3. Dr. Avera's use of projected bond yields increases the results of his
14 CAPM analyses by 30-40 basis points and his Utility Risk Premium
15 analysis by 110 basis points.

16 4. Dr. Avera's flotation cost adder and differences in proxy groups explains
17 most of our remaining differences.

18 **Q: Please re-cap key elements illustrating the reasonableness of your proposed**
19 **9.2% cost of equity.**

20 A: My models incorporate inputs and methodologies explicitly approved by this
21 Commission in countless previous cases. Moreover, my models produce a
22 relatively narrow range of results (7.89% to 9.04%). Outside sources further
23 support the reasonableness of my proposed cost of equity. In a report prepared by
24 UBS titled: Consolidated Edison – ROE Risk Remains in Focus, published on
25 February 24, 2015 UBS estimated cost of equity for its peer group of electric
26 companies of 8.39% (Attachment ERK-9). KPMG's Equity Market Risk
27 Premium – Research Summary (15 April, 2015) estimates an "Implied Equity

1 Return” for the S&P 500 of approximately 9.25% (See graph on page 4
2 Attachment ERK-18). In its Second Quarter 2015 Survey, Duke University
3 surveyed the CFOs with each company in the S&P 500 for their estimated
4 average annual return for the S&P 500 over the next ten years. The average result
5 from this survey was 6.81% (Attachment ERK-19). The average earned return of
6 the S&P Public Utility Index from 1928 – 2012 was 8.39%. This diverse group of
7 sources provides a range of equity returns from 6.81% to 9.25% and supports my
8 proposed cost of equity of 9.2%.

IX. IPL / IPALCO DIVIDENDS

9 **Q: During the last five years how much has IPL paid in dividends to IPALCO?**

10 A: IPL has paid \$507,000,000 or an average of \$101,400,000 per year (2010-2014).¹¹

11 **Q: How much has IPL forecasted over the next three years to pay its parent
12 company in dividends?**

13 A: According to IPL estimates it will pay IPALCO \$ [REDACTED] over the next three
14 years or an average of \$ [REDACTED] per year¹².

15 **Q: Does IPL have a targeted (forecasted) ratio of dividends to earnings for IPL
16 to pay to its parent company for each of the next three years?**

17 A: Yes. IPL targets to pay [REDACTED] % of its net income to IPALCO.¹³

18 **Q: What does IPALCO do with the dividends it receives from IPL?**

19 A: With no material assets other than IPL's common stock, IPALCO is a holding
20 company, dependent on dividends from IPL to meet its debt service obligations.¹⁴

21 After paying interest on its (IPALCO's) debt, IPALCO uses remaining funds to

¹¹ Petitioner's response to OUCC DR 1-2 (Attachment ERK 34).

¹² Petitioner's CONFIDENTIAL response to OUCC DR 1-04, (Attachment ERK 35 CONFIDENTIAL).

¹³ Petitioner's CONFIDENTIAL response to OUCC DR 1-05, (Attachment ERK 36 CONFIDENTIAL).

¹⁴ Page 20 of IPALCO's 2014 10K report.

1 pay dividends to its parent company AES. According to the cash flow statement
2 for IPALCO on SNL, IPALCO paid \$78,400,000 in common dividends in 2014.

3 **Q: How does IPL's payout ratio compare to the industry average payout ratio?**

4 A: According to the June 2015 issue of AUS Utility Reports (AUS), the average
5 payout ratio for Electric Companies covered by AUS was 70.0%. AUS also
6 reported that the average payout ratio for combination Electric & Gas Companies
7 was similarly 70.0%.

8 **Q: Why is IPL's dividend policy an issue?**

9 A: If IPL had maintained a 70% payout ratio during the last five years, it would have
10 retained approximately \$152,100,000 over that time and would retain an
11 additional \$ [REDACTED] over the next three years. These funds would have been
12 or would be available to invest in existing and / or planned infrastructure for the
13 benefit of IPL customers.

X. INVESTIGATION ORDER BY THE COMMISSION

14 **Q: On March 20, 2015 the Commission expressed its concern over the**
15 **persistence of network events involving IPL's underground facilities in**
16 **downtown Indianapolis and commenced an investigation in Cause No. 44602**
17 **to "allow the Commission to consider and review IPL's ongoing investment**
18 **in, and operation and maintenance of, its network facilities." Did you**
19 **adjust/reduce your estimated cost of equity based on these service concerns?**

20 A: No. This investigation is not complete and all the facts are not known.

21 **Q: If the Commission investigation found IPL's management practices were a**
22 **contributing factor to its recurring underground network failures, would it**
23 **be appropriate for the Commission to consider this finding in its**
24 **determination of Petitioner's authorized return?**

25 A: Yes. IPL's customers deserve safe, adequate and reliable service. Petitioner's
26 authorized rates included funds to adequately maintain its system. If Petitioner is

1 not properly maintaining its system, then the Commission can recognize
2 management inadequacies through its authorized rate of return.

3 **Q: Has the Commission taken this step in other cases?**

4 A: Yes. In a Final Order issued in Cause No. 43874, Utility Center, Inc. d/b/a Aqua
5 Indiana, Inc., on April 13, 2011 the Commission stated as follows:

6 We have recognized a utility's obligation to provide adequate service
7 in exchange for recovery of investments through rates. *See Twin*
8 *Lakes Utilities, Inc.*, Cause No. 43128 S1, at 12 (Nov. 12, 2009)
9 ("Commission would suggest that Petitioner reconsider its duty as a
10 public utility to provide adequate service in exchange for receiving
11 appropriate rate relief—Petitioner appears to be too focused on the
12 second half of that equation.") If Utility Center cannot provide water
13 to its customers adequate for the purposes reasonably expected by its
14 customers, it is this Commission's responsibility to speak directly to
15 the utility's management, through our orders, to send a message that
16 service must improve.

17 Having considered the evidence at issue, we find that Utility Center's
18 cost of equity shall be 9.60%. The Commission recognizes that a
19 9.60% return reflects a lower end of the range appropriate for Utility
20 Center and that a higher return may be appropriate if Utility Center is
21 able to demonstrate improved performance in its next rate case.
22 (Final Order, Cause No. 43874, at 23.)

23 The Commission made a similar finding on page 17 in its final order in Twin
24 Lakes Utilities Inc., in Cause No. 43957, order dated February 22, 2012.

25 **Q: Should the recent network issues covered by the investigation be considered**
26 **when determining the fair value of Petitioner's plant?**

27 A: Yes. On page three of his testimony, Mr. Kelly asserts that he prepared the
28 estimated value of IPL's facilities based upon its general operating characteristics.

29 This investigation is intended to complete a formal and thorough review of IPL's
30 operating characteristics. The Commission may arrive at a different conclusion
31 regarding IPL's operating characteristics.

1 More specifically, according to Mr. Kelly's JPK attachment 2, page 4 of 1,
2 the fair value of IPL's distribution plant is \$1,979,707,875. This figure is based
3 on his RCNLD study. One of the key components in an RCNLD study is an
4 estimated useful life of the plant. Mr. Kelly's analysis determined the average
5 remaining "percent condition" of IPL's distribution plant was 61.0%. This
6 investigation and its output may call into question the percent condition of
7 Petitioner's plant and ultimately its estimated fair value.

XI. DOUBLE LEVERAGE

A. Introduction

8 **Q: What is financial leverage?**

9 A: Financial leverage is just another name for debt.

10 **Q: What is double-leverage?**

11 A: Double leverage is:

12 a financial strategy whereby the parent raises debt but down
13 streams the proceeds to its operating subsidiary, likely in the form
14 of an equity investment. Therefore, the subsidiary's operations are
15 financed by debt raised at the subsidiary level and by debt financed
16 at the holding-company level. In this way, the subsidiary's equity
17 is leveraged twice, once with the subsidiary debt and once with the
18 holding-company debt. In a simple operating-company / holding-
19 company structure, this practice results in a consolidated debt-to-
20 capitalization ratio that is higher at the parent than at the subsidiary
21 because of the additional debt at the parent.¹⁵

22 **Q: Why is double leverage a problem for IPL?**

23 A: When IPALCO uses debt at multiple levels, it earns an equity return from IPL on
24 funds that IPALCO borrowed at a lower interest rate. Ratepayers pay higher rates

¹⁵ "High Leverage at the Parent Company Often Hurts the Whole Family," Moody's, May 11, 2015 page 5.

1 due to a weighted cost of capital that treats money borrowed by IPALCO as if it
2 were an equity investment made by IPL.

3 Because debt typically carries a lower cost than equity, it generally
4 reduces the overall cost of capital. In IPL's case, IPALCO debt does not reduce
5 IPL's cost of capital. The benefits are retained by IPALCO. Worse yet, to the
6 extent IPALCO uses excessive debt, the negative influences can flow down to
7 IPL, potentially impairing utility operations if capital improvements are deferred
8 to meet debt obligations.

B. Illustrative example of double leverage

9 **Q: Please describe a parent/subsidiary relationship that illustrates double**
10 **leverage.**

11 A: Assume a holding company (with no other investments) invests \$10.0 million into
12 a newly formed subsidiary where the \$10.0 million consists of \$4.0 million in
13 equity and \$6.0 million in debt. The parent company has a capital structure that is
14 60% debt and 40% equity, but the subsidiary treats the entire \$10.0 million
15 investment by its parent as equity. Next, the subsidiary also borrows \$10.0
16 million, producing a capital structure that is 50% equity and 50% debt. However,
17 60% of the subsidiary's equity is funded by the parent company's debt. In this
18 example the parent company is employing double leverage, because it has \$6.0
19 million in debt and the subsidiary has \$10 million in debt.

20 **Q: How does does double leverage allow the parent company to earn an inflated**
21 **return?**

22 A: Assume the subsidiary above has a rate base of \$20.0 million with a cost of equity
23 of 10% and a cost of debt of 5.0%, producing a cost of capital of 7.5%. If the
24 subsidiary earns its authorized return, that produces an NOI of \$1.5 million (0.075

1 * \$20.0 million). After paying 5.0% interest on its \$10.0 million of debt
2 (\$500,000), the subsidiary earns a return on equity of 10% (\$1.0 million on \$10.0
3 million of equity). But the parent company earns a higher rate of return. The
4 parent earns \$1.0 million, and, assuming the same interest rate, it pays \$300,000
5 in interest on its \$6.0 million of debt. The parent company then earns an equity
6 return of \$700,000 on its equity investment of \$4.0 million, or an effective return
7 on equity of 17.5% ($\$700,000 / \$4,000,000 = 17.5\%$). While this example is
8 oversimplified, it clarifies how a parent holding company can employ debt at both
9 the parent and subsidiary levels to produce a return on equity that far exceeds the
10 authorized return on equity of the utility subsidiary.

11 **Q: Why should ratepayers be concerned about how a parent company finances**
12 **its equity investment in a regulated subsidiary?**

13 A: As discussed above, IPALCO depends on dividends from IPL to meet its debt
14 service obligations. IPALCO's debt service obligations impose/create a fixed
15 cost on IPL. IPL's lenders will not ignore IPALCO's debt service obligations,
16 when assessing IPL's risks. Moreover, IPALCO's debt service obligations have
17 the potential to impair IPL's operations, if IPALCO struggles to meet these
18 obligations. Just as a home mortgage lender who is making a \$100,000 loan (80%
19 home loan with 20% down payment), would be concerned (consider the loan
20 riskier) if his potential customer planned to borrow \$15,000 of his \$20,000 down
21 payment from a third party, lenders will be concerned about holding companies
22 who use double leverage.

C. IPALCO debt

1 **Q: Is double leverage an issue for IPL and its parent company, IPALCO?**

2 A: Yes, it is. IPALCO is a straight forward example of a company that employs
3 double leverage and is earning well above its cost of equity. According to SNL,
4 IPALCO had a 2014 year-end common equity balance of \$151,271,000 and total
5 debt of \$800,000,000 (IPALCO debt only). Thus, IPALCO's capital structure is
6 only 15.88% equity and 84.12% debt. The primary asset IPALCO holds is its
7 investment in IPL. Moreover, IPL has approximately \$1,148,400,000 of debt.
8 Thus, there is debt at both the IPALCO (parent company) and IPL (subsidiary)
9 levels. Because IPALCO has almost no operations other than IPL, double
10 leverage occurs. By employing a high proportion of debt at the parent company
11 level, the benefits of leverage inure to IPALCO, without passing any benefits onto
12 IPL's ratepayers. OUCC witness Bradley Lorton's testimony details how
13 IPALCO's highly leveraged structure has impaired IPL's credit rating.

D. Adjusting for double leverage

14 **Q: Can regulators adjust for the effect of double-leverage when a utility incurs**
15 **debt at both the parent-company and subsidiary-company level?**

16 Yes. One way to account for the effect of double-leverage is to adjust the cost of
17 equity.

18 Proponents of double-leverage adjustments maintain that without
19 such adjustments, holding companies will extract unreasonably
20 high equity returns from ratepayers...Higher ROE's than those
21 actually authorized by state regulators.¹⁶

¹⁶ "Ratemaking Capital Structure: Holding Company vs. Operating Company," a presentation by Vincent Rea, Assistant Treasurer, NiSource, at SURFA's 45th Financial Forum, April 18, 2013.

1 Adjusting the cost of equity through a double-leverage adjustment can prevent a
2 parent company from earning an equity return on debt that it has infused into its
3 subsidiary.

4 **Q: Are you aware of any presentations that illustrate a double-leverage**
5 **adjustment?**

6 A: Yes. Steven Hill¹⁷ spoke at the 2013 SURFA financial forum. While he did not
7 provide a full presentation, he provided a double leverage calculation. I have
8 used his calculation to explain how double leverage influences earned returns for
9 companies that employ double leverage (Schedule ERK-5). Mr. Hill explained
10 that he prefers to use a hypothetical capital structure in lieu of making a specific
11 adjustment to the cost of equity. I have attached a copy of two presentations from
12 SURFA's Financial Forum (Mr. Rea's and Mr. Bacalao's) and Mr. Hill's
13 calculation to my testimony as Attachments ERK-28, 29 and 30.

14 **Q: Why should the Commission recognize double leverage when it determines**
15 **rates?**

16 A: Without the double leverage adjustment, a parent company can manipulate its
17 debt and equity at both the parent and subsidiary levels to earn an equity return on
18 long-term debt that is actually invested in its utility subsidiary.¹⁸ By recognizing
19 double leverage, the Commission can properly reflect the parent-subsidiary
20 relationship when the parent company leverages that relationship by employing

¹⁷ Mr. Hill is a Certified Rate of Return Analyst, doing business as Hill Associates. He has testified in more than 300 regulatory proceedings over the past thirty years on cost of capital, financial, economic, and corporate governance issues related to regulated industries. Mr. Hill is currently SURFA's Vice President.

¹⁸ State of Iowa Department of Commerce Utilities Board in its Final Order and Order Approving Settlement (Issued February 23, 2012 in Iowa American Water Company (Docket No. RPU-2011-0001) at page 14. http://nasuca.org.s80874.gridserver.com/nwp/wp-content/uploads/2013/11/Iowa-American-Water-Order_2011.pdf While most of the issues in this case were settled, "Double Leverage" was contested.

1 debt at both the parent and subsidiary level. IPALCO's primary asset is its
2 ownership in IPL, and it is entitled to an opportunity earn a fair return on its
3 investment in IPL. But IPALCO should not be entitled to earn above its cost of
4 capital by employing debt at both the parent and subsidiary level.

5 **Q: Why else should the Commission recognize double leverage when**
6 **determining an appropriate WACC?**

7 A: By recognizing double leverage in the WACC, the Commission will discourage
8 parent companies from using risky capital structures that only serve to enhance
9 the parent company's rate of return at the expense of ratepayers. This is
10 especially true when the parent company is so highly leveraged that it deteriorates
11 the subsidiary's credit rating and increases its cost of debt. Double leverage is
12 also especially concerning when the parent company is so highly leveraged that it
13 influences the subsidiary's dividend policy.

14 **Q: Are double leverage adjustments a new practice?**

15 A: No. The Iowa Department of Commerce Utilities Board ("IUB") has recognized
16 double leverage adjustments for Iowa-American Water Company since 1977.¹⁹
17 The Iowa Supreme Court has also recognized this adjustment, "The Iowa
18 Supreme Court has affirmed the Board's use of double leverage on two occasions,
19 although it is important to note the Court did not mandate that double leverage be
20 applied in all situations."²⁰

¹⁹ Id. at 18.

²⁰ Id. at 15.

1 **Q: Has the IUB applied double leverage in electric utility cases as well as water**
2 **cases?**

3 A: Yes. The IUB has rendered opinions in several electric cases explaining whether
4 or not it was appropriate to apply a double leverage adjustment.²¹

5 **Q: Do you know of any other state jurisdictions that apply a double leverage**
6 **adjustment?**

7 A: Yes. The Tennessee Regulatory Authority approved a double leverage
8 adjustment in Tennessee American Water Company's order issued on January 13,
9 2009 (Docket No. 08-00039). On page 49 the Tennessee order states as follows:
10 "The panel determined that the Company's rate of return should be set using a
11 double leveraged capital structure."

E. How Double Leverage affects IPL

12 **Q: How is double leverage an issue for IPL and its Parent Company IPALCO?**

13 A: As explained above, IPL's parent company IPALCO is very highly leveraged.
14 Using Mr. Hill's spreadsheet "How parent company leverage causes the realized
15 return to exceed the cost of capital," there are two ways to illustrate how
16 IPALCOs/IPLs use of double leverage distorts the actual return a utility can earn.
17 (Attachment ERK-30).

1. IPALCO's achieved return

18 Mr. Hill's spreadsheet can be used to calculate IPALCO's achieved return.
19 To simplify my review of the effects of double leverage, my analysis ignores
20 IPL's preferred stock (only 2.8% of investor supplied capital). Under IPL's
21 capital structure (44.69% common equity and 55.31% debt) assuming a 10% cost
22 of equity, a 5.67% cost of debt and a tax rate of 35%, IPL would have a weighted

²¹ Id. at 15-17.

1 cost of capital of 7.61% and pre-tax weighted cost of capital of 10.01% (See ERK
2 Schedule 5, page 1). The next step is to calculate what cost of equity IPALCO
3 would effectively earn (under its capital structure), if IPL earned a pre-tax return
4 on capital of 10.01%. Using IPALCO's capital structure of 15.88% equity and
5 84.12% debt with a 6.125% cost of debt, IPALCO's effective return on equity is
6 19.89%. This figure is probably understated, because this analysis only includes
7 Federal income taxes and would be greater if state income taxes are recognized.

2. IPL's required return under IPALCO ownership

8 Alternatively, this analysis can be reversed to calculate what cost of equity
9 would IPL need to earn if IPALCO's effective cost of equity is 12.5%.²² Under
10 IPALCO's capital structure (15.88% equity and 84.12% debt), IPALCO's
11 weighted cost of capital would be 7.14% and its pre-tax weighted cost of capital is
12 8.21%. The next step is to calculate what cost of equity IPL would need to earn
13 on a pre-tax weighted cost of capital of 8.21%. Based on IPL's capital structure
14 of 44.68% equity and 55.32% debt, IPL would need to earn only a 7.51% cost of
15 equity. So if IPL earned a 7.51% return on equity, IPALCO's effective return on
16 equity would be 12.5%. Amazing as it may sound, the 7.51% cost of equity
17 figure is probably overstated, because this analysis only includes Federal income
18 taxes. If state income taxes were recognized, an even lower return on equity
19 would be needed to produce a 12.5% effective return for IPALCO.

²² Because of IPALCO's greater proportion of debt, they should have a higher cost of equity and it would be inappropriate to use IPL's cost of equity. I used an intentionally high cost of equity (12.5%) for illustrative purposes. Given the small proportion of equity in IPALCO's capital structure, IPALCO's weighted cost of capital does not materially change due to changes in the cost of equity.

1 **Q: A double leverage adjustment can produce an apparently low cost of equity.**
2 **Doesn't such a low cost of equity invalidate the double leverage adjustment?**

3 A: Quite the contrary; an apparently low cost of equity is only produced when the
4 parent company employs a very high proportion of debt. Thus, when a double
5 leverage adjustment produces a cost of equity that appears to be outside the
6 reasonable range at the subsidiary level, it is not the cost of equity that is
7 unreasonable, but the parent company's capital structure. An apparently low cost
8 of equity merely reflects that the parent company's capital structure is
9 unreasonable. Moreover, a double leverage adjustment would pay the cost of
10 equity for equity capital invested in the subsidiary. It does not compensate for
11 debt capital investment reflected in the subsidiary capital structure.

3. IPALCO / AES

12 **Q: Is double leverage an issue for IPALCO and its Parent Company AES?**

13 A: Yes. AES (IPALCO's parent company) has issued approximately \$4.8 billion of
14 its own debt. Thus IPALCO's equity is itself funded by mixture of debt and
15 equity from AES. The same analysis that increases IPALCO's earned return,
16 further increases AES' earned return. IPL is not merely double leveraged by
17 IPALCO's use of debt to fund its investment in IPL, IPL is actually triple
18 leveraged, because of AES' use of debt to fund its investment in IPALCO.

19 **Q: Does AES have direct control of both IPALCO's and IPL's capital**
20 **structures?**

21 A: Yes. AES has the discretion to determine not only its capital structure, but
22 IPALCO's and IPL's capital structure as well. IPALCO's highly aggressive
23 capital structure is a business decision made by AES. It was made to leverage its
24 return. While AES is free to make that decision, Petitioner also has an obligation

1 to cost effectively manage its cost of capital. Ratepayers should not be burdened
2 by higher rates due to a utility (or its parent company) employing a capital
3 structure that burdens ratepayers with excessive rates. This principle holds true
4 for using either too little or too much debt.

F. Taxes

5 **Q: How do income taxes exacerbate the inequities caused by IPALCO's double**
6 **leverage?**

7 A: The returns on equity capital are subject to corporate income taxes. In contrast,
8 interest payments on debt are tax deductible. In rate cases, equity returns must be
9 "grossed-up" for taxes with a revenue conversion factor that reflects corporate tax
10 rates. For example, with a gross revenue conversion factor of 1.68 times, every
11 \$1.00 of return on equity costs the ratepayers \$1.68 in revenue requirements,
12 while the interest on debt reduces taxable income and income taxes. Parent
13 company debt infused as equity at the subsidiary creates taxable income for the
14 subsidiary and a tax shield for the parent company. In summary, the different tax
15 treatments of equity versus debt capital exacerbate the inequities caused by
16 double leverage.

G. IPALCO – debt influence

17 **Q: Does IPALCO's excessive use of debt influence IPL's cost of debt and**
18 **subsequently IPL's revenue requirements?**

19 A: Yes. This topic is more thoroughly discussed in OUCC witness Brad Lorton's
20 testimony. It is important to remind the Commission that AES/IPALCO/IPL are
21 not only leveraging their earned return through the use of debt at multiple layers
22 throughout its holding company structure, but increasing the cost to Indiana

1 ratepayers. As discussed by Mr. Lorton, IPL is paying a higher cost of debt
2 because of the financial strain caused by IPALCO's excessive use of debt.

H. Criticisms of Double Leverage

3 **Q: Do some analysts dispute the need to make a double leverage adjustment?**

4 A: Yes. At the SURFA conference discussed above, Enrique Bacalao presented a
5 paper titled: "Double Leverage: A Seductively Dangerous Notion." Mr. Bacalao
6 argues that the cost of equity is not a function of how the investment is funded
7 and that equity is equity, regardless of its funding source.

8 **Q: Do you agree with Mr. Bacalao's concerns regarding double leverage?**

9 A: No. Mr. Bacalao assumes that the subsidiary is seeking to minimize its weighted
10 cost of capital. In reality, the parent company controls its subsidiary's capital
11 structure. While AES (or IPALCO) is incented to minimize *its* cost of capital, it
12 does not follow that AES (or IPALCO) is necessarily also incented to minimize
13 IPL's costs of capital. That is because the parent company has a natural incentive
14 to maximize its profits. By borrowing funds at the parent company level
15 (employing double leverage) and treating that debt as equity at its subsidiary
16 level, the parent company can earn a higher equity return on the money it borrows
17 while its weighted cost of capital includes a greater proportion of lower cost of
18 debt. Finally, when the parent company chooses to use a capital structure for a
19 subsidiary that does not seek to minimize the subsidiary's weighted cost of
20 capital, the subsidiary's cost of capital will not reflect its risks or its true cost of
21 capital.

1 **Q: Please conclude your response to Mr. Bacalao's comments on double-**
2 **leverage.**

3 A: Despite his opposition to double-leverage adjustments, Mr. Bacalao recognizes
4 concerns raised by advocates of a double-leverage adjustment. On page 2 of his
5 presentation Mr. Bacalao suggests that a hypothetical capital structure can be used
6 where the actual capital structure is not an accurate reflection of the utility's
7 marginal cost of capital and that double-leverage can be viewed as a sub-set on
8 the use of a hypothetical capital structure. Based on his two statements, I believe
9 Mr. Bacalao agrees it is reasonable to make an adjustment if the subsidiary's
10 capital structure does not reflect the subsidiary's marginal cost of capital, but he
11 prefers to use a hypothetical capital structure rather than a double-leverage
12 adjustment to address that circumstance. However, using a hypothetical capital
13 structure is typically not permitted in Indiana.

I. Conclusion

14 **Q: Can you estimate the dollar impact of treating \$800 million of IPALCO debt**
15 **as equity at IPL's level?**

16 A: If a utility borrowed \$800,000,000 in debt at an average cost of 6.125% the
17 annual interest payment would be \$49,000,000. If the entire \$800,000,000 was
18 invested in new plant and included as rate base, a utility's revenue requirements
19 would need to include \$49,000,000 to pay for the plant additions if they were
20 funded by debt as described above. However, if the same plant was funded by
21 equity the utility's revenue requirements would need to include \$73,600,000
22 (assuming a 9.2% cost of equity) before grossing up for income taxes (and
23 \$121,440,000 after taxes assuming a gross-up factor of 1.65). Thus holding all
24 other factors constant, converting \$800,000,000 of debt to equity increases a

1 utility's revenue requirements (and the costs to ratepayers) by approximately
2 \$72,440,000 per year.

3 **Q: What can regulators do to account for the effects of double leverage?**

4 A: In contrast to IPALCO and AES, IPL is employing a reasonably balanced mix of
5 equity and debt in its capital structure that is consistent with electric utility capital
6 structures. I have not adjusted the capital structure or my estimated cost of equity
7 for IPL to account for the influence of double leverage. Furthermore, authorizing
8 IPL a 9.2% cost of equity will provide IPALCO the opportunity to earn a return
9 above 9.2%. An illustrative example is provided on ERK Schedule 5, page 3. The
10 Commission should be assured that authorizing IPL a 9.2% cost of equity
11 provides Petitioner an adequate return that meets the Hope and Bluefield
12 standards.

XII. FAIR VALUE AND FAIR RATE OF RETURN

A. Introduction to Petitioner's Fair Value Request

13 **Q: Please give a brief overview of Petitioner's request.**

14 A: IPL presents testimony from witnesses John Reed, John Kelly and William Avera
15 to discuss the fair value and/or fair rate of return as part of its proposed rate
16 increase. Based on a DCF model, Mr. Reed performs a market valuation on IPL's
17 generating plant and estimates a market value of \$1.077 billion. Mr. Kelly
18 completes a Reproduction Cost New Less Depreciation (RCNLD) study for
19 Petitioner's transmission, distribution and general plant and estimates a value of
20 \$2.795 billion. Mr. Kelly then compiles his analysis with Mr. Reed's and
21 estimates a fair value of Petitioner's rate base is \$4.101 billion.

1 Dr. Avera's testimony provides a lengthy discussion of fair value
2 ratemaking principles. He then recommends a fair return on equity (to be applied
3 to a fair value rate base) of 7.75%. This produces a weighted cost of capital of
4 5.72%. Dr. Avera then subtracts the average rate of inflation during the last 14
5 years (2.40%) to estimate a fair rate of return of 3.32%. Finally, Dr. Avera
6 multiples his proposed fair rate of return of 3.32% by Petitioner's proposed fair
7 value rate base of \$4,101,416,256 to determine Petitioner's proposed NOI of
8 \$136,167,220.

9 **Q: How does Petitioner's proposed NOI compare to what would otherwise be**
10 **generated if Petitioner determined its proposed NOI by multiplying its**
11 **original cost rate base by its weighted cost of equity?**

12 A: In WEA Attachment 10, Dr. Avera completes a "reasonableness test" titled
13 "Original Cost Rate Base." This test is based on an original cost rate base of
14 \$1,964,991,786 and a cost of equity of 10.93%. This methodology produces an
15 NOI of \$135,763,786. Thus, Petitioner's fair value methodology only produces
16 \$403,153 more than what would otherwise be generated by multiplying
17 Petitioner's original cost rate base by its weighted cost of capital.

18 **Q: Does Dr. Avera propose a fair value premium return above original cost in**
19 **other jurisdictions?**

20 A: No. In OUCC data request 1-15, the OUCC asked Dr. Avera to list the cases
21 during the last three years where he recommended a fair rate of return on fair
22 value. The only case he listed was Indiana & Michigan Power Company, Cause
23 No. 44075. Petitioner was provided a second opportunity (OUCC DR 8-2) to list
24 cases during the last three years where Dr. Avera estimated a fair rate of return.

1 Petitioner's response explained that Dr. Avera did not maintain a record of his
2 recommendations (Attachment ERK-12).

3 **Q: Can the Commission provide Petitioner a reasonable return without**
4 **including a fair value increment in its authorized rates?**

5 A: Yes. By multiplying the Company's weighted cost of capital by its original cost
6 rate base, the Commission can meet the Hope and Bluefield standards²³ for
7 providing a reasonable return (i.e. net operating income). The minimal difference
8 between Petitioner's proposed NOI and the NOI in its original cost rate base
9 example supports the conclusion that the Commission can provide a reasonable
10 return by employing original cost ratemaking.

11 **Q: Can you cite to any Commission orders that support your opinion that**
12 **original cost ratemaking can meet the Hope and Bluefield standards?**

13 A: Yes. In Gary-Hobart Water Corporation, Cause No. 38126, (August 12, 1987) the
14 Commission stated as follows:

15 We find merit in the argument propounded by Mr. Thomas. This
16 Commission has not witnessed a utility petitioning for rate relief which
17 could not have been granted the necessary and appropriate rate relief
18 based upon a reasonable cost of capital applied to its original cost rate
19 base. This has been true even in times of great inflation and high capital
20 costs. Even under the most extreme financial conditions, the use of the
21 value of original cost rate base has been sufficient to satisfy the financial
22 needs of public utilities because the cost of capital has reflected the
23 economic conditions of the time. Testimony in this Cause and in
24 numerous other Causes has indicated that an offset to inflation is a part
25 of the cost of capital calculation. We consider and include the need to
26 counteract inflation and the provision of a reasonable return when we
27 establish each petitioning utility's cost of capital, i.e. the return it must
28 offer to attract capital from the financial market. There is no need to
29 increase both the cost of capital and the rate base for the effects of
30 inflation. We cannot embrace the proposition that in order to protect the
31 investments made by utility stockholders and to insure the provision of
32 safe, adequate and reliable utility services at reasonable cost it is always

²³ Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944); Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n., 262 U.S. 679 (1923)

1 *necessary to rely on the fair value of utility property.* Further, attempting
2 to rely on fair value often creates burdens and adds expense to the
3 ratemaking process. Nonetheless, we are a creature of statute and until
4 the law is changed, we must adhere to the current legislation and the case
5 law interpreting such. Based upon the decision of the Court of Appeals
6 in Indianapolis Water Company v. Public Service Commission of
7 Indiana, SUPRA, we must reject the methodology, meritorious as it may
8 be, proposed by Mr. Thomas of equating Petitioner s fair value rate base
9 to its original cost rate base.

10 *(Emphasis added)*

11 **Q: How do you reconcile the last two sentences of Gary-Hobart quoted above**
12 **with your position that the Commission can use original cost ratemaking to**
13 **meet the Hope and Bluefield standards?**

14 A: The Gary-Hobart language only says the Commission cannot simply equate the
15 original cost rate base to fair value rate base. It does not invalidate the
16 Commission's guiding premise that:

17 This Commission has not witnessed a utility petitioning for rate
18 relief which could not have been granted the necessary and
19 appropriate rate relief based upon a reasonable cost of capital
20 applied to its original cost rate base. This has been true even in
21 times of great inflation and high capital costs.

22 In Gary-Hobart, the Commission found a fair rate of return of 7.02% and stated
23 on page 13:

24 Applying this fair rate of return to the fair value of Petitioner's
25 water utility property means Petitioner is entitled to net operating
26 income of approximately \$3,440,000 from its utility. We find that
27 this return satisfies the legal criteria and is fair, reasonable and just
28 to Petitioner and its ratepayers for purposes of this proceeding.

29 A further review of the Final Order shows that the authorized dollar return of
30 \$3,440,000 is similar to the dollar return that would have otherwise been
31 authorized under strict original cost ratemaking ($9.45\% * \$36,408,500 =$
32 $\$3,440,603$). Moreover, the difference between the NOI proposed by Petitioner in
33 this cause and the NOI generated under its original cost reasonableness test is less

1 than \$500,000. A slightly higher authorized cost of equity (roughly 5 basis
2 points) provides Petitioner the same NOI under original cost ratemaking as it
3 proposes under fair value ratemaking. Finally, Dr. Avera's estimated cost of
4 equity is able to provide utilities outside Indiana a reasonable rate of return by
5 using original cost ratemaking.

6 **Q: On page 29 of his testimony Dr. Avera provides three reasons why he**
7 **believes the Commission should use the flexibility afforded to it by fair value**
8 **ratemaking. Please respond to each of Dr. Avera's arguments**

9 A: First Dr. Avera argues current capital markets have been distorted by the Great
10 Recession and aggressive Federal Reserve action. Dr. Avera further argues that
11 this has caused capital market methods used to estimate cost of equity to be less
12 reliable. The US economy is recovering from the Great Recession and the
13 Federal Reserve is reducing its aggressive actions. When appropriate inputs are
14 used, market models produce reliable results and Dr. Avera's first argument
15 should not be given any weight.

16 Next, Dr. Avera argues the development of wholesale electric markets
17 provides a market-based estimate to value utility assets. As explained in greater
18 detail below, it is not appropriate to base revenue requirements that will be
19 charged to captive ratepayers on the value of plant in an unregulated wholesale
20 market. Thus, Dr. Avera's second argument should not be given any weight.

21 Finally, Dr. Avera asserts the announced Federal Reserve target of 2% or
22 more inflation bolsters the relevance of fair value as a way to offset the harm done
23 to regulated utilities by original cost regulation under inflation. This argument
24 has several flaws. First, to the extent investors are concerned about inflation, that
25 inflation is reflected in the estimated cost of equity. Fair value ratemaking treats

1 inflation differently, but not necessarily more effectively than original cost
2 ratemaking at reflecting inflation in the authorized NOI. Next, in OUCC data
3 request 1-14 (Attachment ERK-26) the OUCC asked Dr. Avera for the article that
4 he relied on to support his statement regarding an announced target by the Federal
5 Reserve of 2% or more. The article provided by Dr. Avera discusses a target of
6 2%, not a target of 2% or more.

7 To ensure there was no confusion regarding Dr. Avera's quote, the OUCC
8 asked additional follow-up questions on two occasions. Neither of Dr. Avera's
9 responses supports his assertion that the Federal Reserve has an announced target
10 that exceeds 2%. A statement the Fed has a target inflation of 2% **or more**
11 strikes a decidedly different tone than a target of 2%. This is especially true in the
12 context of Dr. Avera's testimony where he is expressing concerns about inflation.
13 The "or more" portion of his statement infers a floor of 2% with no ceiling, while
14 a simple 2% implies both a floor and ceiling. A target that includes a ceiling
15 announces an entirely different posture than having no ceiling. As discussed
16 earlier in my testimony the Federal Reserve has a statutory mandate to foster
17 maximum employment and price stability. Consequently, I believe Dr. Avera's
18 concerns about inflation are overstated.

B. Fair Value Rate Base

19 **Q: Please discuss the standard used to determine Petitioner's fair value rate**
20 **base.**

21 A: Quoting from Indiana American Water Company, Cause No. 43680, the
22 Commission stated as follows on page 20 of its final order:

23 As the Indiana Supreme Court has said:

1 [T]he courts will not limit the Commission to any one or more
2 methods of valuation, be it prudent investment, original cost,
3 present value, or cost of reproduction. This court has held that the
4 cost of reproduction depreciated is a proper item to be considered
5 under the statute in arriving at a fair value figure.

6 Pub. Serv. Comm'n v. City of Indianapolis, 131 N.E.2d 308, 318 (Ind. 1956).

7 Quoting from South Haven Sewer Works, Inc. in Cause No. 41903 the
8 Commission states as follows on page 2 of its final order:

9 More recently the Indiana Court of Appeals in Indianapolis Water Company
10 v. Public Service Commission, 484 N.E. 2d 635 (1985) indicated the
11 following:

12 In our determination of fair value, this is not an either/or situation
13 regarding the use of original cost or reproduction costs new less
14 depreciation. But rather fair value is a conclusion or final figure
15 drawn from all the various factors offered in evidence. While
16 original cost is one of the factors the Commission may consider
17 while arriving at the fair value, it is not in of itself an accurate
18 reflection of the fair value of the utility's property.

19 **Q: Is fair value the same as reproduction costs new less depreciation?**

20 A: No. Reproduction cost new less depreciation is one of the inputs the Commission
21 may use to determine the fair value of Petitioner's plant.

22 **Q: Is fair value the same as market value?**

23 A: No. As quoted above: "...fair value is a conclusion or final figure drawn from all
24 the various factors offered in evidence." Moreover, there are components
25 included in market value that are expressly excluded from fair value. Indiana
26 Code 8-1-2-6 includes the following statement: "No account shall be taken of
27 good will or presumptive values growing out of the operation of any utility as a
28 going concern, all such values to rest with the municipality by reason of the
29 special and exclusive grants given such utility enterprise." To the extent these

1 items are included in market value; market value will necessarily exceed fair
2 value as used in regulation.

3 **Q: Do you agree with Petitioner's estimated fair value rate base?**

4 A: No. Both Mr. Reed and Mr. Kelly have deficiencies in their analyses that call into
5 question the reasonableness of Petitioner's estimated fair value rate base or cause
6 their estimated valuations to overstate fair value.

C. Mr. Reed's Market Valuation analysis

7 **Q: In addition to concerns discussed by OUCG witnesses Edward Rutter and**
8 **Cynthia Armstrong, please discuss some of the areas that make Mr. Reed's**
9 **analysis unusable for a fair value analysis.**

10 A: Mr. Reed's income approach (DCF model) estimates the appraised (market) value
11 of Petitioner's generating assets, which is not the same as fair value. Market
12 value is simply one factor the Commission may consider when they determine fair
13 value. Next, if Mr. Reed's market value includes any items that are expressly
14 excluded from fair value, his market value exceeds fair value. For example, if a
15 market value is based on a DCF (cash flow) analysis and that DCF analysis
16 assumes electricity prices that exceed cost, then the model will produce excess
17 profits and an inflated market value. It is inappropriate to set rates on a fair value
18 rate base, if that fair value rate base is based on a market value that assumes
19 excess profits.

20 Mr. Reed explained on page 17 of his testimony his valuation of IPL's
21 generating plant is based on an estimated value as stand-alone plants selling
22 electricity as though it were a non-regulated merchant plant. Thus, Mr. Reed
23 estimates the value of IPL's generating plant under a hypothetical scenario that

1 does not exist. I do not believe that IPL or its parent company is free to sell its
2 plant to a third party, who could then operate as a non-regulated merchant plant.

3 One of the reasons why it is inappropriate to value the plant as though it
4 will operate as a non-regulated merchant plant is the merchant plant's potential to
5 earn a profit above cost. The merchant plant will sell electricity at the market
6 price (or in this scenario – the forecasted market price). During a meeting at
7 IPL's office, Petitioner acknowledged that future capacity will be constrained.
8 Petitioner confirmed its opinion in response to OUCC DR 36-1(g) (Attachment
9 ERK-31). Constrained capacity may lead to higher market prices for capacity
10 revenue. The higher capacity revenue increases total estimated revenues and
11 projected operating cash flow of Mr. Reed's DCF analysis and his estimated
12 market value of Petitioner's generation plant.

D. Mr. Kelly's RCNLD study

13 **Q: Please discuss some of your general concerns with RCNLD studies.**

14 A: Petitioner's plant was not constructed in one massive construction project but
15 rather was constructed in a piecemeal fashion over several decades. If IPL's plant
16 was reconstructed today it would be designed and constructed more efficiently
17 and therefore would not be identical to the current system. RCNLD studies
18 estimate a cost that assumes the plant would be reconstructed as it currently
19 exists. For plant designed and constructed over several decades, under different
20 management teams and different demand growth assumptions, it is unlikely that a
21 new plant would be designed and constructed in an identical fashion. Many
22 technical advances have occurred throughout IPL's existence. These

1 technological advances are not only in the type of plant being constructed, but in
2 the equipment and personnel associated with constructing the plant. Even if
3 efficiently designed at the time of construction, Petitioner's plant could be
4 designed and constructed today in a more efficient manner than its current
5 structure. Thus, to the extent there are shortcomings or inefficiencies
6 incorporated into an unadjusted RCNLD study, the results of that study will
7 overstate the fair value of the utility.

8 **Q: Dr. Avera cites to and quotes from James Bonbright (referring to his text**
9 **Principles of Public Utility Rates as "venerable") on pages 16-17 of his**
10 **testimony. In his text, did Dr. Bonbright express concerns about RCNLD**
11 **studies to measure utility value?**

12 A: Yes. On pages 200-201 Dr. Bonbright stated as follows:

13 We have already indicated that while *Smyth vs. Ames* (1898)
14 opened the floodgates for long, tortured, empty, and meaningless
15 fruitcake discussions surrounding original versus reproduction
16 costs, the *Hope* case (1944) laid these to rest. (See Shepherd,
17 1985, pp. 365-366). Original cost is the only workable standard
18 despite the fact the reproduction is specious as it reflects the
19 "present worth" of assets. But the differing estimates of a utility's
20 installed and highly specialized assets can be made in at least four
21 different ways. Present fair value states use an admixture of
22 original and replacement (or reproduction) costs. Shepherd (1985,
23 p. 366) concludes: "That the Supreme court was willing even to
24 entertain the sophistry of reproduction cost during 1920-40 was
25 inexcusably bad economics." We agree that on all of the
26 pragmatic tests, the reproduction costs approach is "industrial
27 strength" poor.

28 (Underlined emphases added)

29 **Q: Please discuss some of your concerns regarding Mr. Kelly's analysis.**

30 A: Mr. Kelly does not adjust the results of his analysis or otherwise recognize
31 improvements in productivity that have occurred over the life of the assets.

1 Petitioner's response to OUCC DR 23-01 (Attachment ERK-13) confirms that
2 Mr. Kelly does not make an explicit adjustment for improvements in productivity.

3 **Q: Is this a problem?**

4 A: Yes. As it relates to physical assets, the impact of technological change is to
5 require a successively smaller dollar investment over time to produce a given
6 volume of product or service output. Put differently, improvements in technology
7 show up in improvements in the productivity of assets over time. This may
8 include improvements in labor, design, construction and management of
9 resources.

10 The need to make an adjustment for improvements in technology is well
11 accepted by utility witnesses. I recall several cases where a utility's witness
12 recommended accounting for improvements in productivity and adjusted the
13 results of their RCNLD study. Dr. Wilbur Lewellen did so in Cause No. 41746
14 Northern Indiana Public Service Company, Dr. Jon Boquist made a similar
15 recommendation in both Indiana American Water Company, Cause Nos. 40103
16 and 42520 and Daniel Haddock did so in Indiana American Water Company,
17 Cause No. 43187. All four testimonies relied on productivity indexes from the
18 Bureau of Labor Statistics and recommended using a productivity indexes from
19 1.2% to 2.5%.

20 **Q: When the Commission has considered a RCNLD study to determine fair**
21 **value, has it accepted RCNLD as the fair value?**

22 A: No. See the chart below, representing eight Indiana American Water cases²⁴:

²⁴ Indiana American Water, Cause No. 42520 (11/18/04) at page 42.

Cause No.	Final Order Date	Commission's Determination of Original Cost Rate Base	Petitioner's Proposed RCNLD or "Replacement Cost Rate Base"	Commission's Fair Value Rate Base Determination
42029	11/6/02	\$403,085,800	*\$756,281,105	\$562,680,669
41320	7/1/99	\$293,003,938	*\$492,108,096	No Determination
40703	12/11/97	\$221,628,031	*\$398,701,046	\$311,804,823
40103	5/30/96	\$186,279,406	*\$303,571,716	\$261,571,000
39595	2/2/94	\$114,762,256	\$299,336,080	\$166,500,000
39215	5/27/92	\$107,435,891	\$289,367,162	\$155,800,000
38880	9/26/90	\$90,964,050	\$273,239,652	\$127,000,000
38347	7/6/88	\$80,721,738	\$209,196,578	\$107,415,200

1 *RCNLD value adjusted downward for technological change by Dr. Boquist to determine
2 "Replacement Cost Rate Base."

3 While the Commission regularly recognizes RCNLD as one of the measures to
4 determine a utility's fair value, in none of the eight examples above did it find
5 RCNLD equal to Fair Value Rate Base. The Commission should continue to heed
6 Dr. Bonbright's concerns as well as recognize Mr. Kelly's failure to include an
7 offset or reduction for increases in productivity. Mr. Kelly's estimated fair value
8 rate base is overstated and it should not be used by itself to determine Petitioner's
9 fair value.

E. Fair Rate of Return

10 **Q: What role should inflation play in determining a single fair rate of return to**
11 **be applied to a utility's fair value rate base?**

12 **A:** The Commission should not include inflation in both the rate base and the fair rate
13 of return. Because the fair value rate base includes historical inflation, the fair
14 rate of return should be reduced by historical inflation. My testimony includes
15 historical inflation rates compiled by Ibbotson and Associates (Attachment ERK-
16 6). Petitioner's weighted cost of capital should be reduced to recognize the
17 influence of inflation.

1 It is inappropriate to apply the fair value of Petitioner's used and
2 useful property [sic] [to] its weighted cost of capital because the
3 weighted cost of capital contains both historic and prospective
4 inflationary factors. We have accounted for the historic
5 inflationary factors in determining the fair value of Petitioner's
6 property. Therefore, to arrive at a fair return to be applied to the
7 fair value of Petitioner's property the historic inflationary
8 considerations must be removed, lest they be double counted.

9 Ind. Mich. Power Co., Cause No. 38728 (1990), p. 28.

10 **Q: To determine his estimated fair rate of return, does Dr. Avera remove**
11 **prospective inflation or historical inflation?**

12 A: Dr. Avera removes historical inflation, which is appropriate. But, the inflation
13 removed from the cost of capital must relate to the inflation that is included in the
14 fair value rate base. For example if the average age of IPL's plant is 25 years, the
15 average inflation of 2.7% over the last 25 years (Jan 1989 – Dec 2013) should be
16 removed from the cost of capital.

17 According to his response to OUCC data request 1-16 (Attachment ERK-
18 15), Dr. Avera appears to infer that the Commission removed 14 - 17 years worth
19 of inflation from the cost of capital in the most recent I&M case (44075) and uses
20 a 14 year time from to calculate average historical inflation in this case. 18.8
21 years is a more correct figure, as I explain below.

F. Fair value and fair return findings

22 **Q: If the Commission feels compelled to make a fair value rate base finding that**
23 **is other than original cost, what do you believe is a reasonable fair value rate**
24 **base?**

25 A: The OUCC believes that the Commission can determine an NOI for Petitioner
26 that meets the Hope and Bluefield standards by multiplying its weighted cost of
27 capital by its original cost rate base. Moreover, as explained above Petitioner

1 could generate the same NOI as it has proposed under fair value ratemaking by
2 increasing its proposed cost of equity to 10.98%.

3 However, the Commission could use the following process to determine a
4 fair value rate base and fair rate of return that produces an NOI that meets the
5 Hope and Bluefield standards.

6 **Q: Describe the process that the Commission could employ to calculate a fair**
7 **rate of return to be applied to a fair value rate base.**

8 A: Historical inflation needs to be removed from the cost of capital to insure that
9 inflation is not double counted. Moreover, the historical inflation removed from
10 the weighted cost of capital should equate to the historical inflation embedded in
11 the fair value of Petitioner's plant (to avoid double counting). While, I disagree
12 with Dr. Avera's rationale for removing 14 years of inflation from the cost of
13 capital to estimate a fair rate of return, a 2.4% historical rate of inflation can be
14 used to estimate fair rate of return. Petitioner's response to IG Data Request 6-12
15 states the average age of its depreciable plant as of December 31, 2013, is 18.8
16 years. The average inflation over the 19 years (January 1995 – December 2013)
17 was also 2.4%. See Attachment ERK-6. Based on a 9.2% cost of equity and the
18 OUCC's proposed capital structure, Petitioner's weighted cost of capital is 6.26%.
19 Removing 2.4% historical inflation from the cost of capital produces a fair rate of
20 return of 3.86%.

21 **Q: How would the Commission then determine a fair value rate base to which**
22 **the fair rate of return would be applied?**

23 A: Petitioner's proposed fair value rate base is approximately \$4.1 billion. As
24 explained above and in the testimonies of other OUCC witnesses, Petitioner's
25 estimated fair value contains deficiencies that cause it to be overstated. Based on

1 these deficiencies, including Mr. Kelly's failure to recognize improvements in
2 productivity that occurred over the life of IPL's assets, and that the Commission
3 does not equate RCNLD (even after being reduced for productivity) as
4 Petitioner's fair value, Petitioner's proposed fair value rate base is significantly
5 less than their proposed \$4.1 billion. Petitioner's original cost rate base is
6 approximately \$1.96 billion or less than half its proposed fair value. Because fair
7 value is a conclusion or final figure drawn from all the various factors offered in
8 evidence, Petitioner's fair value rate base will be between \$1.96 billion and \$4.1
9 billion. When applied to a fair rate of return of 3.86% Petitioner's Indiana
10 jurisdictional fair value rate base should be no more than \$2.967 billion.

11 **Q: Does the fair value rate base determination consider potential deficiencies**
12 **that the Commission may learn as a result of its pending investigation in**
13 **Cause No. 44602?**

14 A: No. This fair value rate base does not include any deficiencies that the
15 Commission may discover as a result of its pending investigation in Cause No.
16 44602.

17 **Q: Would this alternative fair value rate base and fair rate of return produce a**
18 **result that meets the Hope and Bluefield standards of capital attraction and**
19 **comparable returns?**

20 A: Yes. A fair value rate base of \$2.967 billion multiplied by a fair rate of return of
21 3.86% would produce an NOI of approximately \$114.5 million. Petitioner's
22 ability to meet the Hope and Bluefield standards and attract capital under the
23 OUCC's proposed NOI is further discussed by OUCC witness Bradley Lorton.

24 **Q: Is the methodology described above more consistent with past Commission**
25 **practices?**

26 A: Yes. The methodology described above requires the Commission to make one
27 cost of equity finding, not one cost of equity finding and a second fair return on

1 equity finding. A single finding on return is more consistent with past
2 Commission practices.

3 **Q: Are there other factors the Commission should consider when deciding on an**
4 **appropriate authorized NOI for Petitioner?**

5 A: Yes. The Commission has found:

6 While capital attraction criteria enumerated in Hope are a major
7 consideration in determining just and reasonable rates, the Hope
8 Criteria scarcely exhausts the relevant considerations for balancing
9 the investor and consumer interests. The end result of this
10 Commission's Orders must be measured as much by the success
11 with which they protect the broad public interests entrusted to our
12 protection as by the effectiveness with which they maintain credit
13 and attract capital.

14 Indianapolis Water Co., Cause No. 37612 (March 20, 1985).

XIII. RECOMMENDATIONS

15 **Q: Please summarize your recommendations.**

16 A: I recommend a cost of equity for Petitioner of 9.2%. A 9.2% cost of equity will
17 produce a weighted cost of capital of 6.26%.

18 **Q: Does this conclude your testimony?**

19 A: Yes.

XIV. APPENDIX A

QUALIFICATIONS

1
2 **Q: Please describe your educational background and experience.**

3 A: I graduated from Bentley College in Waltham, Massachusetts with a Bachelors
4 degree in Economics/Finance and an Associates degree in Accounting. Before
5 attending graduate school, I worked as an escheatable property accountant at State
6 Street Bank and Trust Company in Boston, Massachusetts. I was awarded a
7 graduate fellowship to attend Purdue University where I earned a Masters of
8 Science degree in Management with a concentration in finance.

9 I was hired as a Utility Analyst in the Economics and Finance Division of
10 the OUCC in October 1990. My primary areas of responsibility have been in
11 utility finance, utility cost of capital, and regulatory policy. I was promoted to
12 Principal Utility Analyst in August 1993 and to Assistant Chief of Economics and
13 Finance in July 1994. As part of an agency wide reorganization in July 1999, my
14 position was reclassified as Lead Financial Analyst within the Rates/Water/Sewer
15 Division. In October, 2005 I was promoted to Assistant Director of the
16 Water/Wastewater Division. In October 2012, I was promoted to Chief Technical
17 Advisor. I have participated in numerous conferences and seminars regarding
18 utility regulation and financial issues. I was awarded the professional designation
19 of Certified Rate of Return Analyst (CRRA) by the Society of Utility and
20 Regulatory Financial Analysts (SURFA). This designation is awarded based
21 upon experience and the successful completion of a written examination. In April
22 2012, I was elected to SURFA's Board of Directors.

1 **Q: Have you previously testified before the Indiana Utility Regulatory**
2 **Commission (Commission)?**

3 A: Yes. I have testified before the Commission in a number of different cases and
4 issues. I have testified in water, wastewater, natural gas, telecommunication and
5 electric utility cases. While my primary areas of responsibility have been in cost
6 of equity, utility financing, fair value, utility valuation and regulatory policy, I
7 have also provided testimony on trackers, guaranteed performance contracts,
8 declining consumption adjustments, and other issues.

9 **Q: Please describe the review and analysis you conducted in order to prepare**
10 **your testimony.**

11 A: I reviewed the Petition, testimony, and exhibits filed by Petitioner in this Cause. I
12 participated in producing discovery and reviewed Petitioner's responses. I
13 reviewed numerous financial articles that discuss anticipated market returns and
14 both Dr. Avera's most recent testimony before the Indiana Utility Regulatory
15 Commission's ("Commission") and its Final Order in I&M's last rate case, Cause
16 No. 44075. I met with IPL staff and spoke (via tele-conference) with employees
17 of Concentric Energy Advisors, Inc. to discuss IPL's fair value rate base models.
18 I attended the March 16, 2015 public field hearing and numerous meetings with
19 OUCC staff to discuss and evaluate issues in this Cause.

XV. APPENDIX B

LIST OF SCHEDULES & ATTACHMENTS

- 1 Schedule ERK-1 summarizes the results of my cost of equity models.
- 2 Schedule ERK-2 contains my DCF analysis.
- 3 Schedule ERK-3 contains my CAPM analysis.
- 4 Schedule ERK-4 explains on how a change in interest rates influence bond prices,
5 illustrates a defect in Dr. Avera's CAPM analyses, updates Dr. Avera's
6 Comparable Earnings Approach and illustrates how midpoints inflates the results
7 of DR. Avera's analysis.
- 8 Schedule ERK-5 explains how Parent Company Leverage causes the realized
9 return earned by the parent to exceed cost of capital.
- 10 Attachment ERK-1 is Petitioner's response to OUCC data requests 22-04, 53-02
11 and IG data request 06-13.
- 12 Attachment ERK-2 is a copy of the First Quarter Survey of Professional
13 Forecasters, Federal Reserve Bank of Philadelphia Release (February 13, 2015).
- 14 Attachment ERK-3 provides the Congressional Budget Office ("CBOs") January
15 2015 The Budget and Economic Outlook: 2015 to 2025.
- 16 Attachment ERK-4 shows Selected Yields on bonds as reported by Value Line -
17 Selection & Opinion (June 12, 2015).
- 18 Attachment ERK-5 is an article titled 9% Forever? by Justin Fox published by
19 CNNMoney.com on December 26, 2005.
- 20 Attachment ERK-6 is a copy of Table C-7 from Morningstar's SBBI 2015
21 Yearbook, Classic Edition. Table C-7 contains historical inflation rates.
- 22 Attachment ERK-7 is a copy of the cover page and selected pages from the
23 December 2013 and June 1, 2015 editions of Blue Chip Financial Forecasts.
- 24 Attachment ERK-8 is a copy of a press release from the Board of Governors of
25 the Federal Reserve system from January 28, 2015.
- 26 Attachment ERK-9 is a copy of an article published by UBS titled: Consolidated
27 Edison – ROE Risk Remains in Focus, dated February 24, 2015.
- 28 Attachment ERK-10 is Petitioner's response to OUCC data request 22-02

1 Attachment ERK-11 contains pages from Value Line's Selection & Opinion on
2 forecasted, current and historical interest rates from 1999 – 2015.

3 Attachment ERK-12 is Petitioner's response to OUCC data requests 01-15 and
4 08-02

5 Attachment ERK-13 is Petitioner's response to OUCC data request 23-01

6 Attachment ERK-14 contains two articles: Roger Ibbotson's Building the Future
7 From the Past and John Campbell's Stock Returns for New Century.

8 Attachment ERK-15 is Petitioner's response to OUCC data request 01-16

9 Attachment ERK-16 is a copy of the Home Page for Aswath Damodaran, dated
10 June 9, 2015.

11 Attachment ERK-17 is a copy of Equity Risk Premium Quarterly by American
12 Appraisal, dated January 2015.

13 Attachment ERK-18 is a copy of KPMG Equity Market Risk Premium – Research
14 Summary, dated April 2, 2015.

15 Attachment ERK-19 is page 66 from Duke CFO Magazine Global Business
16 Outlook Survey U.S – Second Quarter 2015.

17 Attachment ERK-20 is an article from Schwab Center for Financial Research
18 titled: Q&A: Estimating Long-Term Market Returns (April 24, 2015).

19 Attachment ERK-21 is a copy of an article by J.P. Morgan Asset Management
20 titled: Long-term Capital Market Return Assumptions. (2015 Edition).

21 Attachment ERK-22 is a copy of an article by Voya (formerly ING) Investment
22 Management titled: 2015 Long-Term Capital Market Forecasts (February, 2015).

23 Attachment ERK-23 is a copy of an Article by Edward Jones titled: Expectations
24 for Capital Market Returns.

25 Attachment ERK-24 is a copy of articles by Regulatory Research Associates
26 titled: Regulatory Focus (January 15, 2015 and April 15, 2015).

27 Attachment ERK-25 is a copy of Petitioner's responses to Industrial Groups data
28 request questions 2-03 and 2-04.

29 Attachment ERK-26 is a copy of Petitioner's to OUCC data requests 1-14, 8-1
30 and 22-1.

- 1 Attachment ERK-27 provides the cover page along with pages 18-19 of Dr.
2 Avera's testimony in Cause No. 44075, alongside IPL Workpaper 10-IPL Witness
3 WEA Attachment 2, IPL Basic Rates Case, Pages 3 of 4 and 4 of 4 from this case.
- 4 Attachment ERK-28 is a copy of a presentation from SURFA's 45th Financial
5 Forum titled: Ratemaking Capital Structure: Holding Company vs. Operating
6 Company.
- 7 Attachment ERK-29 is a copy of a presentation from SURFA's 45th Financial
8 Forum titled: Double Leverage Leverage: A Seductively Dangerous Notion.
- 9 Attachment ERK-30 is a copy of an analysis from SURFA's 45th Financial
10 Forum titled: How Parent Company Leverage Causes the Realized Return to
11 exceed the Cost of Capital.
- 12 Attachment ERK-31 is a copy of Petitioner's to OUCC data request 36-1
- 13 Attachment ERK-32 is a copy of an article published by Barron's on May 9, 2015
14 titled: Time to Give Utility Stocks Another Look, After a 10% pullback, utility
15 stocks are looking attractive again, with total return potential of 8% to 9% a year.
- 16 Attachment ERK-33 is a copy of an article by Value Line, titled Equity Risk
17 Premiums and Stocks Today, published on March 11, 2014.
- 18 Attachment ERK-34 is a copy of Petitioner's response to OUCC data request 1-02
- 19 Attachment ERK-35 is a copy of Petitioner's CONFIDENTIAL response to
20 OUCC data request 1-04
- 21 Attachment ERK-36 is a copy of Petitioner's CONFIDENTIAL response to
22 OUCC data request 1-05
- 23 Attachment ERK-37 is a CONFIDENTIAL attachment provided in response to
24 OUCC data request 10-2.
- 25 Attachment ERK-38 is a copy of Petitioner's response to OUCC data request 10-
26 03.

XVI. APPENDIX C

THE DCF ANALYSIS AND DETAIL

A. Proxy Groups

1 **Q: Can you apply the DCF model directly to IPL?**

2 A: No. The DCF model can only be applied to companies whose stock is publicly
3 traded. Because Petitioner's stock is not publicly traded, its cost of equity must
4 be estimated through the use of a proxy group. The results generated from a
5 proxy group may need to be adjusted to account for risk differences between the
6 proxy group and the company.

7 **Q: Have you used the same proxy group of electric utility companies that Dr.
8 Avera uses in his testimony?**

9 A: No. While no proxy group will be ideal, Dr. Avera's utility proxy group includes
10 several companies that are not reasonably comparable to Petitioner. I excluded
11 them from my proxy group.

12 We are setting rates for Petitioner's electric operations. The vast majority
13 of IPL's revenues are derived from regulated utility sales. Reasonable
14 comparability ought to require proxy group members to derive at least a majority
15 of its revenues from regulated electric utility operations. How a company makes
16 its money is central to any decision on comparability. Even if other risk metrics
17 are similar, regulated electric utility operations have their own risk characteristics
18 (such as trackers). Therefore, I removed the following companies from Dr.

1 Avera's electric utility proxy group, (Regulated Electric revenue %s from
2 February, 2015 AUS Utility Reports):²⁵

3 CenterPoint Energy (32%) DTE Energy Company (45%)

4 Integrys Energy Group (27%) Otter Tail Corp. (43%)

5 Public Service Enterprise Group (46%) Sempre Energy (32%)

6 I also eliminated CMS Energy and ITC Holdings Corp. because they have equity
7 ratios that are much lower than Petitioner's equity ratio, which indicates a
8 measurably higher level of financial risk. Petitioner has a 43.33% common equity
9 ratio (WEA Attachment 9, page 1 of 1). Yet, a review of Dr. Avera's WEA
10 Attachment 4 shows that only CMS Energy (31.3%) and ITC Holdings (30.9%)
11 have a equity ratios less than 35.0%. If I had not eliminated ITC Holdings Corp.
12 due to its low equity ratio, I would eliminate it because it is a pure transmission
13 company and does not derive revenues from regulated operations. Despite being
14 listed as an electric company by Value Line, ITC Holdings does not derive
15 revenues from regulated electric operations. Moreover, AUS Utility Reports does
16 not list ITC Holdings Corp as either an electric utility or a combination
17 electric/gas utility.

B. The DCF Model

18 **Q: Please describe the Discounted Cash Flow model.**

19 A: The DCF model is typically used by investors to determine the appropriate price
20 to pay for a security. This model assumes that the price of a security should be

²⁵ Black Hills Corporation is borderline (derives 49% of its revenues from regulated electric operations), but I choose not to remove them in my proxy group. According to Value Line, Black Hills Corporation has a beta of 0.95 (well above the proxy group average of 0.748).

1 determined by its expected cash flows discounted by the company's cost of
2 equity. On a one year horizon, the price of a stock (P_0) is equal to the anticipated
3 dividends paid during the year (D_1) plus the anticipated price of the stock at the
4 end of the year (P_1) divided by one plus the company's cost of equity (k). In turn,
5 this year's year-end price (P_1) is determined by next year's anticipated dividends
6 (D_2) and next year's anticipated year-end price (P_2) divided by one plus the
7 company's cost of equity (k).

$$8 \quad P_0 = \frac{(D_1 + P_1)}{(1 + k)} \quad \text{and} \quad P_1 = \frac{(D_2 + P_2)}{(1 + k)}$$

9

10 Because investors may plan to hold securities for many periods, the DCF equation
11 can be restated for an infinite or unknown number of periods as follows:

$$12 \quad P_0 = D_1 / (k - g)$$

13 (Where the price of a security (P_0) equals the anticipated dividends paid over the
14 current period (D_1) divided by the company's cost of equity (k) minus the
15 expected growth rate of dividends (g)).

16 The company's cost of equity must be greater than its expected dividend
17 growth rate for this model to be valid. By rearranging the model, the familiar
18 DCF formula used in regulatory proceedings can be obtained:

$$19 \quad k = (D_1 / P_0) + g$$

20 (Where the cost of equity (k) equals the forward dividend yield (D_1 / P_0) plus the
21 expected growth rate in dividends per share (g). To estimate the cost of
22 equity (k), the forward yield (D_1 / P_0) and the expected growth rate in dividends (g)
23 must be estimated).

1. Dividend yield

1 **Q: How did you calculate the forward yields (D_1/P_0) in your analysis?**

2 A: To calculate a forward yield (D_1/P_0), the current yield (D_0/P_0) must be calculated
3 first. AUS Utility Reports calculates current yields for large publicly held utilities
4 each month. A company's current yield equals its current annual dividends (D_0)
5 divided by its current stock price (P_0). The current annual dividend is calculated
6 by multiplying the company's most recent quarterly dividend by four. In my
7 testimony, I used three and six month average current yields.

8 **Q: How do you convert current yields (D_0/P_0) into forward yields (D_1/P_0)?**

9 A: I use the following equation to convert a current yield to a forward yield: (D_1/P_0)
10 = (D_0/P_0) * (1 + .5g). For example, if Company X had a current dividend yield
11 of 6.0% and an expected growth rate of 4.0%, I would multiply the 6.0% current
12 dividend yield by 1 plus 2.0% or 1.02, (2.0% is one half of the 4.0% expected
13 growth rate). This results in a forward dividend yield of 6.12% or an increase of
14 12 basis points over the current dividend yield.

15 **Q: Has the Commission supported the use of the one-half-year's growth
16 methodology to convert current yields to forward yields?**

17 A: Yes. Although there is no universally accepted methodology, the one-half-times
18 growth methodology to convert current yields to forward yields has been
19 regularly accepted by this Commission and was affirmed in its order in Cause No.
20 40103, Indiana-American Water Company, Inc. order dated May 30, 1996. On
21 page 40 of its order, this Commission stated as follows:

22 We are well aware of the advantages and limitations of the various
23 approaches used by each of the witnesses. For example, the half-
24 year method used by the OUCC for calculating the forward
25 dividend yield is the most frequently used approach in this

1 jurisdiction, and it is rarely a point of contention in DCF analysis.
2 We believe that it fairly represents the dividend payments expected
3 and received by investors, while the full year method employed by
4 Petitioner overstates the dividend yield.

5 **Q: What dividend yields do you use in your DCF analyses?**

6 A: I use both a three-month average dividend yield of 3.63% and a six-month
7 average dividend yield of 3.51% (both before adjusting to a forward yield).
8 Schedule ERK 2, page 3 contains the average dividend yields for my proxy group.
9 Because Dr. Avera uses Value Line's dividend yields, I also provide Value Line's
10 average estimated dividend yield (3.77%). Note, Value Line's estimated dividend
11 yields are already forward looking and do not need to be adjusted (See Dr. Avera
12 pages 49-50).

2. Dividend growth rate

13 **Q: How did you estimate the long run dividend growth component (g) of the**
14 **DCF model?**

15 A: The DCF model assumes investors expect earnings per share (EPS), dividends per
16 share (DPS), and book value per share (BVPS) to all grow at the constant long run
17 growth rate (g). When the data is available, to estimate (g), I use both historical
18 and forecasted growth rates of EPS, DPS, and BVPS. I use Value Line as my
19 primary source of growth rates. I also completed a secondary DCF model which
20 relies only on forecasted growth in EPS from Yahoo (Thomson Financial
21 Network), Zacks, and Value Line.

22 **Q: What is your estimated long run dividend growth component (g) of the DCF**
23 **model using Value Line growth rates in EPS, BVPS and DPS?**

24 A: My estimate of growth is 5.28%. To estimate growth for the Value Line data, I
25 average the forecasted and historical growth rates of EPS, DPS, and BVPS.

1 Because Value Line publishes two historical growth rates (both 5 and 10 year)
2 and only one forecasted growth rate (5 years), giving equal weight to all three
3 estimates of growth affords 67% weight to historical growth and only 33% to
4 forecasted growth. Averaging the two historical growth rates and then averaging
5 that result with the forecasted growth rate gives both historical growth and
6 forecasted growth the same weight.

7 **Q: What is your estimated growth rate (g) for the DCF focusing on forecasted**
8 **growth in earnings per share?**

9 A: To estimate growth (g) I averaged Value Line, Yahoo.com (Thomas Financial
10 network) and Zacks forecasted growth in EPS. This results in an estimated
11 growth rate of 5.07%.

12 **Q: To estimate the dividend growth (g) for your DCF analysis did you include**
13 **negative growth rates, zero growth rates or growth rates of less than 2.0%?**

14 A: No. I excluded very low, zero and negative growth figures to estimate (g) in my
15 DCF analysis. In Cause No. 40103, an Indiana-American case, the Commission
16 stated as follows:

17 In all cases, however, the Commission expects the parties to
18 exercise sound judgment when deciding which inputs to include as
19 part of their analysis. In this case, the inclusion of negative growth
20 rates for certain earnings and book value per share data by the
21 OUCC biased the derivation of its growth rates downward. On the
22 other hand, the Petitioner's sole reliance on Value Line's 10-year
23 dividend growth rate data had the opposite effect.

24 *In re Indiana-American Water Company, Inc.*, Cause No. 40103 (Ind. Util.
25 Regulatory Comm'n May 30, 1996), p. 40 - 41 (emphasis in original).

26 **Q: Why haven't you eliminated arguably low (positive) growth rates from your**
27 **DCF analysis?**

28 A: Low growth rates are not ignored by investors. While investors may not expect
29 low growth rates to occur (especially in perpetuity), if a company has experienced

1 low historical growth rates or is forecasted to experience low growth rates, those
2 low growth rates will be considered by investors and are relevant to investors
3 when they estimate a company's future growth rate. The purpose of estimating a
4 growth rate in the DCF model is to infer the investor's long-term (perpetual)
5 forecast in growth of the company/industry. Moreover, one should consistently
6 use or reject, both high positive growth rates and low positive growth rates. My
7 analysis uses several double digit growth rates and it is consistent to also consider
8 low positive growth rates. While growth rates as high as 13.5% or as low as 2.0%
9 by themselves may not reflect investor expectations, neither should be ignored (or
10 alternatively both should be disregarded).

11 **Q: Dr. Avera's DCF models rely exclusively on forecasted growth in EPS. Do**
12 **you agree with Dr. Avera's sole reliance on forecasted growth rates for those**
13 **DCF analyses?**

14 A: No. However, Dr. Avera's sole reliance on forecasted growth rates does not
15 explain the differences in the results of our DCF models. My DCF analysis based
16 on both historical and forecasted growth rates (EPS, DPS and BVPS) produces an
17 estimated growth rate of 5.28%. While my DCF analysis based solely on Value
18 Line forecasted growth rates in EPS produces an estimated growth rate of 5.24%.
19 The results of my DCF analysis would not be materially different if I had relied
20 solely on analyst forecasts of EPS to estimate cost of equity in my DCF analysis.

21 **Q: Are you concerned about Dr. Avera's exclusive reliance on analyst EPS**
22 **forecasts to estimate growth (g) in a DCF analysis?**

23 A: While I typically disagree with the sole reliance on analyst growth forecasts to
24 estimate growth (g) in a DCF analysis (and still use historical data in my analysis)
25 at this time the two methodologies produce similar DCF results, thus any

1 methodological concerns are relatively negligible at this time. However, Dr.
2 Avera also uses analyst EPS forecasts to estimate a market return in his CAPM
3 analysis, and my concerns about analyst forecasts being overstated are still
4 present and significant in the estimated market return for his CAPM analyses.

5 **Q: Explain why the DCF model requires a long term growth rate.**

6 A: Dr. Avera's analysis effectively assumes that intermediate term (five year)
7 forecasts are applicable in perpetuity. Even though investors may not necessarily
8 intend to hold an investment beyond five years, the model requires a long term
9 estimate and that requirement cannot be assumed away. The equation used in the
10 DCF model assumes an infinite time frame. Though some investors may have a
11 short term perspective on their investments, this does not change the mathematics
12 of the DCF model.

13 **Q: Can you cite to any texts that support your opinion that five-year growth**
14 **estimates in EPS (by themselves) may not be appropriate to use as a long**
15 **term estimate of growth in a DCF analysis?**

16 A: Yes. Please see Appendix F.

17 **Q: Do you have additional support that intermediate term growth estimates**
18 **from analysts may not reflect long term investor expectations in a DCF type**
19 **model?**

20 A: Yes. The Abstract of an Article titled, Do Analyst Conflicts Matter? Evidence
21 from Stock Recommendations by Anup Agrawal and Mark Chen (Journal of Law
22 and Economics, 2008, V 51), includes the following statement:

23 However, evidence from the response of stock prices and trading
24 volumes to upgrades and downgrades suggests that the market
25 recognizes analyst conflicts and properly discounts analyst options.

26 In her rebuttal testimony in Cause No. 43874, Petitioner's witness, Pauline Ahern
27 quoted from this article. On page 21 of its Final Order in Cause No. 43874, this

1 Commission responded to Ms. Ahern reliance on this quote:

2 The parties also disagreed over the potential upward bias in analysts'
3 forecasts. In support of her position, Ms. Ahern's rebuttal refers to
4 language from an article by Anup Agrawal and Mark Chen titled: Do
5 Analyst Conflicts Matter?

6 Overall, our empirical findings suggest that while analysts do
7 respond to IN [investment bank] and brokerage conflicts by
8 inflating their stock recommendations, the markets discount these
9 recommendations after taking analysts' conflicts into account.

10 Ahern Rebuttal at 52. While the Agrawal and Chen article states that
11 investors discount analyst recommendations, our review of Ms. Ahern's
12 testimony and exhibits reveals no comparable discount when she includes
13 analysts' recommendations in her cost of equity estimate. Using unadjusted
14 analyst recommendations would increase the probability that Ms. Ahern's
15 DCF results are overstated.

16 Emphasis added

17 Likewise, a review of Dr. Avera's testimony and exhibits reveals that he
18 does not have a comparable discount when he includes analyst recommendations
19 in his cost of equity estimate. In my opinion, Dr. Avera's unadjusted use of
20 analyst recommendations similarly increases the probability that his DCF results
21 are overstated. This is especially true for his DCF driven market return that he
22 uses in his CAPM analysis.

23 **Q: So what data should the Commission use to estimate growth (g) in a DCF**
24 **analysis?**

25 A: Just as this Commission has done in past cases such as Indiana-American, Cause
26 No. 43860, it should review and give weight to both historical and forecasted data
27 of growth rates in EPS, DPS and BVPS. If the Commission decides that a 2-stage
28 DCF analysis provided meaning insight, they could also give weight to the long
29 term sustainable economic growth rate of the US economy for the second stage in
30 a 2-stage DCF analysis.

1 **Q: Has the Commission supported the use of dividend per share data and book**
2 **value per share data in addition to earnings per share data in estimating the**
3 **growth (g) component of the DCF calculation?**

4 A: In Cause No. 42029 Indiana-American Water Company, Order dated November
5 6, 2002 the Commission stated on page 32 as follows:

6 In the past this Commission has consistently sanctioned the use of
7 both historical and forecasted per share data. We continue to
8 believe that both historical and forecasted earnings, dividends and
9 book value per share data are useful when employing the DCF
10 model.

11 More recently in Cause No. 43680 Indiana-American Water Company, Order
12 dated April 30, 2010 the Commission stated on page 47 as follows:

13 The Commission expects the parties to exercise sound judgment
14 when deciding which inputs to include as part of their analysis.
15 We have concerns regarding Mr. Moul's sole reliance on analysts'
16 intermediate-term forecasts in his DCF model. The Commission
17 believes that both historical and forecasted earnings and dividends
18 and book value per share data are useful when employing the DCF
19 Model. Although Mr. Gorman agreed with Mr. Moul's forecasted
20 growth rates, Mr. Gorman recommended adjustments that modify
21 Mr. Moul's outcomes to be much more in line with Mr. Kaufman's
22 and Mr. Gorman's results. We agree with Mr. Kaufman that Mr.
23 Moul's reliance on intermediate-term forecasts result in a growth
24 rate that is unrealistically high.

25 We also agree with Mr. Gorman that the constant growth DCF
26 return used by Mr. Moul for the Water Proxy Group is not
27 reasonable and represents an inflated return for Indiana American
28 at this time. The constant growth DCF results for the Water Proxy
29 Group are based on growth rates of 7.29% (Mr. Gorman) and 7.5%
30 (Mr. Moul). The Commission finds these growth rates to be
31 unsustainable for the long-term, which is required by the constant
32 growth model.

33 **Q: Are arguments that analyst forecasts are optimistic outdated?**

34 A: No. I do not believe that is the case. See Appendix G for a further discussion on
35 potential bias in analyst forecasts.

3. 2-Stage DCF Model

1 **Q: Can short to intermediate-term forecasts lead to unreasonably high**
2 **estimated growth rates (g) in a DCF analysis?**

3 A: Yes. First, intermediate term forecasts are not long-term forecasts and should not
4 mechanically be incorporated into a DCF analysis. The growth rate used in a
5 DCF analysis must be one that is sustainable for many years. Thus, even if
6 intermediate term forecasts are accurate, they may not be a reliable forecast of a
7 company's long-term sustainable growth. Second, there are well documented
8 findings that intermediate-term forecasted growth rates in EPS (forecasted by
9 analysts) tend to be optimistic.

10 **Q: Does a 2-Stage DCF model resolve your concerns regarding the intermediate**
11 **term nature of EPS forecasts to estimate cost of equity?**

12 A: Yes. A 2-stage DCF model can use current forecasted growth rates in the near
13 term (over the forecasted period), while still using a sustainable growth rate over
14 the long-term. A National Regulatory Research Institute (NRRI) article
15 (Discussed in Appendix G), explains long-term sustainable growth for the utility
16 industry cannot exceed the long-term sustainable growth rate in the US economy.
17 It is reasonable to use a forecasted growth rate of the U.S. economy (as measured
18 by growth in GDP) as a long-term sustainable growth rate.

19 **Q: Explain the mechanics of how you employed a two-stage DCF model.**

20 A: A 2-stage DCF model is similar to the more traditional single stage DCF model
21 except that it uses two growth rates (g) instead of a single growth rate. Because
22 two growth rates are used, the equation is more complex than the traditional
23 single stage DCF model $P_0 = D_1 / (k - g)$. Instead the equation for the 2-stage DCF
24 model is stated as follows:

$$P_0 = \frac{DPS_0(1+g_1)\left(1 - \frac{(1+g_1)^n}{(1+k)^n}\right)}{k-g_1} + \frac{DPS_0(1+g_1)^n(1+g_2)}{(k-g_2)(1+k)^n}$$

- 1 Where: DPS_0 = expected dividends per share in year 0
2 k = required rate of return (cost of equity) during forecast period
3 P_0 = price of stock at year 0
4 g_1 = growth rate during the first stage
5 g_2 = growth rate during the second stage
6 n = length of the first stage (in years)

7 Unlike the single stage DCF model, due to its complexity the 2-stage DCF
8 model, this equation cannot simply be re-arranged to solve for (k) the cost of
9 equity [$k = (D_1/P_0) + g$]. Instead, one must assume or pick a “target” price (P_0)
10 and, through “successive iterations,” determine (with given growth rates and a
11 dividend yield) what cost of equity (k) produces your assumed “target” price. In
12 layman’s terms, successive iterations means plugging different costs of equity
13 into the equation until it produces the assumed “target” price.

14 Hypothetically, assuming a price of \$10.00 per share, annual dividends of
15 \$0.40 per share (a dividend yield of 4.0%), a growth rate of 6.0% during the first
16 stage, the first stage of growth lasts 5 years, and a long run (second stage) growth
17 rate of 5.0%, the rate of return necessary to produce a price of \$10.00 per share is
18 9.39%. Mechanically, this is done by plugging in different rates of return (costs
19 of equity or “k”) into the above equation until you find the cost of equity (k) that
20 produces a price of \$10.00 per share. Alternatively, the “goal-seek” function in
21 Excel can be used to determine what cost of equity produces a price of \$10.00 per
22 share.

1 **Q: What inputs did you use to complete your 2-stage DCF analysis?**

2 A: First I used an intermediate growth rate of 5.24% (Average of Value Line, Yahoo
3 and forecasted growth in EPS) and a dividend yield of 3.77%. I assumed the first
4 stage of my 2-stage DCF analysis would last 5 years and I used a long-term
5 growth rate of 4.75%. These inputs produce an 8.79% cost of equity.

6 **Q: Why did you use a long-term growth rate of 4.75%?**

7 A: I believe that 4.75% is reasonable estimate of the long-term growth rate of GDP.

8 **Q: Do you have data to support your proposed long-term growth rate of GDP of**
9 **4.75%?**

10 A: Yes. I have reviewed long term growth forecasts from the Social Security
11 Administration, the U.S. Congressional Budget Office, the Survey of Professional
12 Forecasters, Federal Reserve Bank of Philadelphia Release and Blue Chip
13 Financial Forecasts. These forecasts range from 4.45% to 4.75%. Appendix D
14 describes these forecasts in greater detail.

15 **Q: Isn't it unnecessary to complete a 2-Stage DCF analysis in a mature industry**
16 **such as the electric industry?**

17 A: Dealing with a mature industry does not by itself negate the benefits of
18 completing a 2-Stage DCF model. A 2-Stage DCF can still provide meaningful
19 insight to estimate Petitioner's cost of equity, especially when the overall U.S.
20 economy is in a recovery period or experiencing intermediate term expectations
21 different from long-term expectations. Even mature industries can include
22 companies where it is appropriate to use a 2-Stage DCF model.

23 Moreover, Dr. Avera uses a DCF model with intermediate term earnings
24 forecasts to derive a total market return in his CAPM analysis. His proposed
25 forecasted growth rate in EPS of 10.0% is materially higher than the forecasted

1 growth rate of the US economy. Thus, even if a 2-stage DCF model is
2 unnecessary for the electric industry, it still provides insight when used to
3 estimate a total market return in Dr. Avera's CAPM analyses.

C. Other concerns with Dr. Avera's DCF analysis

4 **Q: Does Dr. Avera remove results that he considers to be outliers from the**
5 **results of his DCF analysis?**

6 A: Yes. But, Dr. Avera is unbalanced in his approach to remove outliers. Dr. Avera
7 eliminates 23 results that he believes are unreasonably low and eliminates only
8 two results that he believes are unreasonably high.

D. DCF Summary

9 **Q: Please provide a brief summary of how you developed your DCF results.**

10 A: To estimate cost of equity with the DCF model a forward dividend yield is added
11 to an estimated growth rate. The average dividend yields for my proxy group
12 ranges from 3.51% to 3.63%. The average growth rates for my proxy group
13 ranges from 5.24% to 5.28%. My single stage DCF model produces a range of
14 estimated costs of equity from 8.66% to 9.04%. My 2-stage DCF model produces
15 an estimated cost of equity of 8.79%.

XVII. APPENDIX D

LONG TERM GROWTH FORECASTS OF THE US ECONOMY

1
2 The classic Gordon DCF Model requires a long term growth rate as a critical
3 input. Forecasted long term growth rate of the U.S. Economy provides an
4 excellent data point. Multiple publicly available sources are available, such as:

5 The Social Security Administration (Table VI.G6 Selected Economic Variables
6 Calendar Years 2013 - 2090) forecasts annual Gross Domestic Product. Based on
7 data from that report, the average annual increase in GDP for the next 36 years
8 (2014 – 2050) is 4.61%.²⁶

9 The January 2015 publication of the U.S. Congressional Budget Office forecasts
10 nominal GDP growth rates between 4.1% - 4.5% (2015-2019) and 4.2% - 4.3%
11 (2020-2025).

12 The First Quarter Survey of Professional Forecasters, Federal Reserve Bank of
13 Philadelphia Release (February 13, 2015) forecasts long-term real GDP growth of
14 2.60% and long-term inflation of 2.10%. These inputs produce a forecasted
15 growth rate in nominal GDP of approximately 4.75%.

16 The long-range forecasts from the Blue-Chip Financial Forecasts, dated June 1,
17 2015, forecasts an average growth rate in real GDP of 2.3% for 2022-2026, and a
18 GDP Chained Price Index of 2.1% for 2022-2026. These figures produce an
19 annual growth rate in nominal GDP of approximately 4.4%.

²⁶ Table VI.G6 forecasts GDP annually through 2023 and then every five years from 2025 – 2090.

XVIII. APPENDIX E

1

THE CAPM ANALYSIS & DETAIL

A. Proxy Groups

2 **Q: Can the CAPM be applied directly to IPL?**

3 **A:** No. As with the DCF, the CAPM can only be applied to publicly traded
4 companies. Therefore a proxy group is required. I use the same proxy group for
5 both my CAPM and DCF analyses.

B. The CAPM

6 **Q: Does the CAPM give a better indication of required returns than the DCF**
7 **model?**

8 **A:** No. If the DCF is used with a reasonable estimated growth rate of dividends (g)
9 it produces results as reasonable, if not more so, than the CAPM. The CAPM is
10 typically more controversial and less reliable than the DCF model. Eugene
11 Brigham and Louis Gapenski comment on the use of CAPM on page 64 of their
12 text Intermediate Financial Management:

13 Although the CAPM appears to provide neat precise answers to
14 important questions about risk and required rates of return, the
15 answers are really quite fuzzy. **The simple truth is that we do**
16 **not know precisely how to measure any of the inputs required**
17 **to implement the CAPM.** These inputs should all be ex ante, yet
18 we have available only ex-post data. Further as we shall see in
19 chapter 4, historical data such as k_M and k_{RF} and beta vary greatly
20 depending on the time period studied and the methods used to
21 estimate them. **Thus, although the CAPM may appear precise,**
22 **its inputs cannot be estimated with any precision at all,** and
23 hence the estimate of k_i found through the use of CAPM are
24 subject to large errors.

25 **Emphasis added**

1 **Q: Please describe your CAPM analysis.**

2 A: The Capital Asset Pricing Model, or CAPM, is a form of risk premium analysis
3 used to estimate cost of capital. The CAPM is based on the premise that investors
4 require a higher return for assuming additional risk. Total risk is divisible into two
5 categories: systematic risk and unsystematic risk. Systematic risk is risk that
6 affects the entire market, including inflation, monetary policy, fiscal policy, or
7 politics. Unsystematic risk is risk unique to the company, and may include
8 strikes, management errors, merger activity, or individual financing policy.

9 Investors can eliminate unsystematic risk through diversification. Because
10 returns of individual securities of a portfolio do not usually move in the same
11 direction at the same time, the total risk of a portfolio is less than the risk of the
12 individual securities that make up the portfolio. Because investors can eliminate
13 unsystematic risk through diversification, the market does not compensate
14 investors for assuming unsystematic risk. Conversely, systematic risk, sometimes
15 referred to as market risk, cannot be eliminated through diversification. However,
16 because investments will move with different relationships to the market,
17 investors can form a portfolio to assume the amount of market risk they wish. An
18 investor's required return depends on the market risk that the investor assumes.

19 **Q: How is systematic (market) risk measured?**

20 A: Beta is the measurement of an investment's relationship to the market. More
21 specifically, beta measures an asset's price volatility compared to the market. By
22 definition, the market has a beta of one. The market refers to the returns on all
23 assets. Because it is very difficult to measure the return on all assets, analysts
24 typically rely on a market index, such as the Standard & Poor's 500 Index, as a

1 proxy for the market. Assets more volatile than the market have a beta greater
2 than one and, thus, they are considered riskier than the market. Similarly, assets
3 less volatile have a beta less than one, and thus, are considered less risky than the
4 market.

5 The CAPM formula can be stated as follows:

6	K	=	$Rf_c + B*(Rm-Rf)$	where,
7	K	=	Cost of Equity	
8	Rf_c	=	Current Risk Free Rate of Return	
9	B	=	Beta	
10	$Rm-Rf$	=	Expected Market Equity Risk Premium	
11	Rm	=	Market Equity Return	
12	Rf	=	Risk Free Rate of Return	

13 The return on an asset (K) equals the risk-free rate of return (Rf_c) plus its beta (B)
14 multiplied by the market equity risk premium ($Rm - Rf$). The market equity risk
15 premium equals the market equity return minus the risk-free rate of return.

16 **Q: What is your opinion of the CAPM?**

17 A: The CAPM is typically more controversial and less reliable than the DCF model.
18 Different applications of CAPM may result in vastly different cost of equity
19 estimates. For example, the source of beta can influence the results of a CAPM
20 analysis. If a market risk premium of 5.0% is used, a difference in beta of only
21 0.10 changes the results of a CAPM analysis by 50 basis points. (Dr. Avera uses
22 a market risk premium of 8.9% (WEA Attachment 6, page 1 of 4); a difference in
23 beta of 0.10 would change the results of his CAPM analysis by 89 basis points.

24 The method used to estimate the market risk premium can also be
25 particularly controversial. An historical risk premium can be calculated, but a

1 decision has to be made between using a geometric mean or an arithmetic mean
2 calculation. This decision is important because the use of the arithmetic mean can
3 produce results that are approximately 160 basis points higher than the geometric
4 mean. I believe the geometric mean calculation is preferable over the arithmetic
5 mean calculation because the geometric mean calculation more accurately
6 measures the change in wealth over multiple periods. Selecting the appropriate
7 time period to calculate a historical risk premium is not only controversial, it also
8 dramatically affects the results. When relying on a historical risk premium, the
9 longest historical period for which accurate historical data exists should be used to
10 estimate a risk premium. In addition to a historical risk premium, analysts can
11 also use a forecasted risk premium. Similar to the historical risk premium, there
12 is no set methodology to estimate a forecasted risk premium and different
13 methodologies can produce very different results.

C. Elements of the CAPM

1. Geometric vs. Arithmetic mean

14 **Q: In your CAPM analysis did you use a geometric mean risk premium or an**
15 **arithmetic mean risk premium?**

16 **A:** When relying on historical returns, I consider the geometric mean a better
17 representation of expected returns than the arithmetic mean. However, both
18 calculations can provide meaningful insight to estimate a market risk premium for
19 a CAPM analysis. My CAPM analysis considers both geometric and arithmetic
20 mean risk premiums.

21

1 **Q: Utility analysts often cite Roger Ibbotson's SBBI year book(s) to support**
2 **their view that the arithmetic mean calculation should be used exclusively to**
3 **estimate cost of equity. But as noted by Dr. Avera on page 64 of his**
4 **testimony, in the past, has Roger Ibbotson's SBBI year book supported the**
5 **use of both the geometric and arithmetic mean risk premium to employ a**
6 **CAPM analysis.**

7 A: On page 59 of the 1982 Edition of Stocks, Bonds, Bills and Inflation: The Past
8 and the Future Ibbotson supported the use of a geometric mean as well as an
9 arithmetic mean:

10 The arithmetic mean historical return on a component is used in
11 making one-year forecasts, since the arithmetic mean accurately
12 represents the average performance over a one-year period. Over a
13 long forecast period, however, the geometric mean historical return
14 represents average performance over the whole period (stated on
15 an annual basis). Therefore, we input the arithmetic mean for a
16 one year forecast, the geometric mean for the twenty year forecast
17 and intermediate values for two, three, four, five and ten year
18 forecasts.

19 (Emphasis added)

20 While current editions of Dr. Ibbotson's Stocks, Bonds, Bills and Inflation
21 yearbook supports the use of only the arithmetic mean, the reason for Ibbotson's
22 change is not transparent. It is my understanding that beginning in the 1986
23 Edition of its SBBI Yearbook, Ibbotson advocated the use of the arithmetic mean.
24 Note on page 64 of his direct testimony Dr. Avera asserts that the quote above is
25 consistent with later editions of Dr. Ibbotson's texts. Moreover, as I explain later
26 in my testimony, Dr. Ibbotson has expressed concern about using historical data
27 to estimate a market risk premium.

28 **Q: Are you aware of any financial texts that support the use of a geometric**
29 **mean calculation in a CAPM analysis?**

30 A: Yes. I include these sources in Appendix H attached to my testimony.

1 **Q: How has this Commission ruled on the issue of arithmetic mean premiums**
2 **versus geometric mean risk premiums?**

3 A: For more than 20 years this Commission has consistently given weight to both the
4 arithmetic mean risk premium and the geometric mean risk premium. See p. 12
5 of the Peoples Gas and Power Company Order in Cause No. 39315 Order dated
6 October 21, 1992:

7 As in the Indiana Cities case, [Cause No. 39166, July 8, 1992] we
8 find there is merit in using both the arithmetic and geometric
9 means and that neither result should be relied upon to the exclusion
10 of the other.

11 This Commission reaffirmed its position in Indiana-American Water Company,
12 Cause No. 40103, Order dated May 30, 1996, page 41:

The debate over the proposed use of the arithmetic and geometric means is one we consider resolved. As we stated in Indianapolis Water Company, Cause No. 39713-39843, each method has its strengths and weaknesses, and neither is so clearly appropriate as to exclude consideration of the other. (Emphasis added)

13 The Commission yet again reaffirmed its position in Indiana-American Water
14 Company, Cause No. 43860, Order dated April 30, 2010. On page 48 of that
15 Order this Commission stated as follows:

16 Neither the arithmetic risk premium nor the geometric mean risk
17 premium should be excluded in favor of the other, and nothing has
18 caused us to change our opinion regarding the appropriate
19 application of both arithmetic and geometric mean risk premiums.
20 Therefore, the Commission will continue to give both the
21 geometric and arithmetic mean risk premiums substantial weight.

2. Historical vs. Forecasted risk premium

22 **Q: Do you use a historical or forecasted risk premium?**

23 A: When appropriate inputs are used both a historical risk premium and a forecasted
24 risk premium can provide meaningful insight and should be used to estimate cost

1 of equity. While Dr. Avera relies strictly on a forecasted risk premium, I have
2 calculated Petitioner's cost of equity using both a historical and a forecasted risk
3 premium. At this time (with my inputs) a forecasted risk premium produces
4 somewhat higher results.

5 **Q: Can historical data overstate the estimated risk premium?**

6 A: Yes. Historical data may overstate expected returns when historical equity returns
7 are generated from increasing valuations, because it increases the historical
8 earned return but decreases the prospective return. On page 16 from Global
9 Economics Paper No. 120, Thoughts on Social Security Reform by Goldman
10 Sachs (January 18, 2005) the article notes this relationship:

11 Moreover, even abstracting from the issue of risk, the historical
12 returns on bonds and equities substantially overstate what investors
13 could expect on a forward looking basis. This is because the rise
14 in bond and equity prices in recent decades has boosted historical
15 returns, but it has also resulted in high bond and equity valuations
16 that imply lower prospective returns in the future.

17 And:

18 Why is the expected rate of return for equities so low relative to
19 historical returns? In evaluating the high rate of returns on equities
20 historically, it is important to distinguish between returns
21 generated by rising dividends and earnings versus the returns
22 generated by higher valuations (i.e. a rise in price/earnings
23 multiples). A good portion of the high rate of return earned by
24 equities over the past century has been due to a rise in equity
25 market valuation. When equity valuations are rising, equity
26 returns are usually high. However, the increase in equity valuation
27 reduces, rather than raises prospective equity return by reducing
28 the dividend return on equities.

29 (Emphasis added)

30 Although not a perfect apples-to-apples comparison, it might be easier to
31 explain how increasing historical returns can lead to declining forecasted returns

1 by looking at a hypothetical bond. Assume a hypothetical bond is a risk-free
2 bond issued at a hypothetical current market rate of 7.0% for 20 years. Now
3 assume that the bond is sold after five years, but the required return on a current
4 risk-free bond of 15 years (equal to the remaining life on our original bond) has
5 declined to 5.0%. Due to the decline in interest rates, when the bond is sold the
6 original bond holder will be able to sell her bond at a premium and will earn a
7 return well in excess of her original required return of 7.0%.

8 Yet because the current required return on a 15 year risk free bond is
9 5.0%, it is improper to use the original investor's actual earned return (which
10 exceeds 7.0%) to estimate future required returns for bondholders. Rather, due to
11 the decline in required return the historical earned return indicates a higher return
12 during a period of decreasing required returns. Because returns are stated for
13 bonds it is easier to visualize how changes in valuations can cause a divergence
14 between historical returns and prospective returns. However, the same concept
15 can apply to stocks as well as bonds. For example CNNMoney.com's article: 9%
16 Forever? (December 26, 2005) by Justin Fox discusses and quotes Eugene Fama
17 as follows (See Attachment ERK-5):

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

1 **Ibbotson agrees** that Fama has a point, and that he can no longer
2 bank on the historical equity premium to predict the future.
3 (Emphasis added)

4 Importantly, even Dr. Ibbotson has now expressed concerns about using historical
5 data to estimate the risk premium. At the time of this article Dr. Ibbotson had
6 forecasted a long-run equity-return forecast of 9.27% compared to an annual
7 return on stocks from 1925 to the [then] present day of 10.31%. Thus, Dr.
8 Ibbotson, one of the most respected providers of historical data typically used to
9 estimate an historical risk premium, no longer supports a risk premium that relies
10 exclusively on historical data. Dr. Ibbotson's opinion about the use of forecasted
11 risk premium is described in his article "Building the Future From the Past"
12 (Attachment ERK-14).

13 **Q: What sources have you relied on to estimate a forecasted risk premium?**

14 A: I have relied on several sources, including, the Survey of Professional Forecasters,
15 Dr. Aswath Damodaran's home page, KPMG and the American Appraisal. These
16 sources are listed in Appendix I and produce a range of forecasted risk premiums
17 from 1.47% to 6.02%.

18 **Q: What forecasted market risk premium have you used in your CAPM**
19 **analysis?**

20 A: Based on these sources and the historically low interest rates, my CAPM analysis
21 uses a forecasted risk premium of 6.00%.

3. Market risk premium

1 **Q: Please discuss how Dr. Avera estimated his 8.9% market risk premium**
2 **(WEA – 6, pages 1 of 4 and 3 of 4), for his utility proxy group current bond**
3 **yield model.**

4 A: Dr. Avera uses a DCF model to estimate a market return. In Exhibit WEA-6, he
5 averages both estimated intermediate term growth rates in EPS for dividend
6 paying stocks in the S&P 500 (10.0%) and dividend yields (2.3%) (WEA-6).
7 Adding the two produces a 12.3% estimated market return. From this he subtracts
8 his 3.4% risk free rate (Six month average ending August 2014 on 30-year US
9 Treasuries) to derive an estimated market risk premium of 8.9%.

10 **Q: Do you agree with Dr. Avera's methodology?**

11 A: No. First, Dr. Avera's estimated market return of 12.3% is unreasonably high.
12 Even if one uses only an arithmetic mean return, the average historical market
13 return for 1926 through 2014 is 12.10%. Thus, Dr. Avera's analysis assumes a
14 total market return 20 basis points higher than the arithmetic average return
15 earned over the last 87 years. Dr. Avera's estimated market return is also 220
16 basis points above the compound (geometric) annual return of 10.10% over the
17 same time period. My testimony cites to several credible sources that estimate
18 expected market returns at or around 9.0% [REDACTED]

19 [REDACTED]
20 [REDACTED]

21 Moreover, Dr. Avera's estimated market risk premium (historical bond
22 yields) of 8.9% is 270 above the arithmetic mean risk premium (1926-2014 -
23 12.1% - 609 = 6.1%) that this Commission has regularly rejected. Dr Avera's
24 forecasted market risk premium for his projected bonds yields of 7.6% is similarly

1 140 basis points above the arithmetic mean only risk premium that this
2 Commission has consistently rejected.

3 **Q: What are your criticisms of Dr. Avera's estimated market return?**

4 A: Dr. Avera uses a DCF methodology to estimate his market return and relies solely
5 on intermediate term forecasted growth in EPS to estimate (g) growth. His DCF
6 analysis here suffers from the same flaws that I explained in my critique his DCF
7 analysis earlier. First, intermediate term forecasted growth rates in EPS are not
8 long term estimates, they may not be sustainable (especially when they exceed the
9 long term estimate of the US economy), they may be optimistic or upwardly
10 biased and one should not rely on any single estimate of growth. Dr. Avera's use
11 of a 10.0% average forecasted growth in EPS suffers from all of these
12 deficiencies. Dr. Avera's 10.0% forecasted growth rate in EPS far exceeds the
13 estimated growth rate of the U.S. economy and is not sustainable (see Appendices
14 F & G). When evaluating a DCF analysis the Commission has consistently found
15 that the growth rate must be realistic and should rely on multiple estimates of (g).
16 The same principle applies when using a DCF model to estimate a total market
17 return in a CAPM analysis.

18 **Q: Please discuss your concerns with the interest rate Dr. Avera uses in his**
19 **current bond yield model.**

20 A: As of June 5, 2015 the 3 month average interest rate on 30 Year US Treasury
21 bonds was approximately 2.68% (Schedule ERK-3), approximately 70 basis
22 points lower than the 3.4% six month average interest rate as of August 2014 used
23 by Dr. Avera. My second concern is a bit more subtle.

1 **Q: Should one use current or forecasted interest rates at this time?**

2 A: At this time I have concerns about both current yields and forecasted yields and
3 their influence on estimated cost of equity. As of June 5th, 2015, the current yield
4 on 30 year US Treasury Securities was 2.87%. A CAPM analysis based on a
5 6.0% risk premium, a 0.748 beta and a 2.87% risk free rate produces a cost of
6 equity of approximately 7.36%. This is an unrealistically low cost of equity at
7 this time.

8 However, as I explain in greater detail, later in my testimony, using
9 forecasted interest rates (as Dr. Avera does) is also inappropriate and is not the
10 appropriate way resolve my concern that using current interest rates leads to an
11 unreasonably low result. Briefly, I oppose using forecasted interest rates because,
12 even as interest rates have continued to decline, forecasters (such as Value Line
13 and Blue Chip Financial Forecasts) consistently predicted increasing interest
14 rates. Moreover, investors cannot purchase a bond that will yield a forecasted
15 interest rate. Investors can only earn the current yield.

16 **Q: So what alternatives are available?**

17 A: Theoretically I still prefer using current interest rates because they are based on an
18 actual price and represent a return that investors can actually earn. However, in a
19 Client Alert published by Duff & Phelps (D&P) on March 20, 2013 D&P
20 explained that they use a "Normalized 20-year Treasury Yield" of 4.0% as a
21 proxy for a longer term sustainable risk free rate, when they determine that that
22 the risk free rate is abnormally low. In its March 20, 2013 publication, Duff &
23 Phelps used a Normalized Risk Free Rate of 4.0%. Page 15 of its article D&P
24 states as follows:

1 To be clear, in most circumstances one would prefer to use the
2 "spot" U.S. Treasury yield available in the market as a proxy for
3 the U.S. risk-free rate. However, during times of flight to quality
4 and/or high levels of central bank intervention, the use of lower
5 observed Treasury yields would imply a lower cost of capital (all
6 other factors held the same) that is likely inappropriately low vis-a-
7 vis the risks currently facing investors...

8 I agree with the quote in the D&P's article. It is generally preferable to use
9 current spot yields, but when they produce inappropriately low results spot rates
10 should not be used.

11 **Q: How did Duff and Phelps derive its 4.0% Normalized Risk Free Rate?**

12 A: D&P combines the long term real risk free rate with forecasted inflation. Based
13 on studies of inflation swap rates and/or yields on long-term US Treasury
14 Inflation-Protected Securities (TIPS), D&P concludes that the long term real risk
15 free rate is 1.3% to 2.0%. D&P then reviews several sources (page 20), including
16 the Survey of Professional Forecasters and Blue Chip Financial Forecasts to
17 develop an expected range of forecasted inflation rates of 1.8% - 3.0%. D&P
18 combines the two ranges to derive its estimated "Normalized Risk Free Rate" of
19 3.1% to 5.0% and concludes that a 4.0% Normalized Risk Free Rate is
20 reasonable.

21 **Q: Is a 4.0% Normalized Risk Free rate still reasonable?**

22 A: As explained above D&P's Normalized Risk Free rate combines a range of long
23 term real rate (1.3% to 2.0%) with forecasted inflation rates (1.8% - 3.0%). The
24 long term real rate should be relatively stable. The five sources that D&P relied
25 on for forecasted inflation currently forecast slightly lower inflation rates than at
26 the time D&P issued its Client Alert.

1	Livingston Survey	2.20%	vs.	2.50%
2	Survey of Professional Forecasters	2.10%	vs.	2.30%
3	Cleveland Federal Reserve	1.80%	vs.	1.80%
4	Blue Chips Financial Forecasts	2.30%	vs.	2.40%
5	University of Michigan	2.80%	vs.	3.00%.

6 Despite the slightly lower forecasted inflation rates, I believe it is still reasonable
7 to use a Normalized Risk Free Rate of 4.0% as a proxy for the the risk free rate at
8 this time.

9 **Q: Did you also review current yields to estimate a risk free rate of return?**

10 A: Yes. While I reviewed short, intermediate and long-term risk-free rates, my
11 estimated cost of equity relies on long term yields. I used one year Treasury
12 securities as an estimate of short-term yields, the average of five year and ten year
13 Treasury securities as an estimate of intermediate-term yields, and 30-year
14 Treasury securities as an estimate of long-term yields. More specially, my
15 analysis reviewed 3-month and 6-month average yields. I believe it is more
16 appropriate to use an average yield calculated over a reasonable period of time,
17 than to rely on spot data. This Commission's determination of Petitioner's
18 authorized cost of equity should not vary on every twist and turn in the market.
19 However, to reflect current market conditions old or stale data will provide
20 unrepresentative results. At this time, using 3-month and 6-month average yields
21 strikes a reasonable balance of using current data while not relying on data that
22 has become stale.

5. Forecasted interest rates

1 **Q: Dr. Avera completes a second set of CAPM analyses that uses a forecasted**
2 **interest rate of long term US Treasury bonds of 4.7% instead of 3.4%. Do**
3 **you agree with his use of forecasted interest rates?**

4 **A:** No. Forecasted interest rates should not be used as a direct input in a CAPM
5 analysis to estimate Petitioner's cost of equity.

6 Anytime long-term debt is purchased, the purchaser is making a forecast.
7 The purchaser anticipates factors such as inflation over the life of the debt and
8 uses those factors to determine the appropriate purchase price and subsequent
9 yield of his or her investment. The purchase price produces a yield that the
10 investor is willing to accept over the life of the debt. Thus, the current yield on
11 long term debt is already a forward looking yield over the investment horizon.

12 Next, forecasting an increase to bond yields includes an unstated, yet
13 crucial corollary – the bond's price will decrease. The only way for a bond's
14 yield to increase is for the bond price to decrease. For example, assume a 30-year
15 bond was purchased for \$1,000 with a 5.0% interest rate. If the yield on that bond
16 is forecasted to increase from 5% to 6% at the beginning of year 3, the forecaster
17 is simultaneously forecasting that the value of that bond will decrease by
18 approximately \$134 to \$864 (Schedule ERK-4, page 1). Potential bond purchasers
19 who accept that forecast will not pay \$1,000 today for a bond they forecast will be
20 worth \$864 two years from now. Buyers will decrease the current purchase price
21 and the spread between the forecasted yield and current yield will decrease. It is
22 reasonable to assume bond purchasers are aware of the the current forecasts of
23 increasing yields and make their purchase despite the forecast. When the bond is
24 actually bought, investors are affirming the current yield over the life of the bond.

1 Thus any current yield reflects a purchase price that incorporates any forecasted
2 increase in future yields.

3 There is a tendency amongst some analysts to take a “conservative”
4 approach and assume when interest rates are low the same interest rates are more
5 likely to increase in the future. One of the sources that Dr. Avera relies on is
6 Value Line’s Forecast of the US Economy from Selection & Opinion. Each
7 quarter Value Line publishes (amongst other items) forecasted 30-year Treasury
8 bond rates. The forecast includes the current year and the next four years. I
9 reviewed the forecast from the May edition of Value Line’s Selection & Opinion
10 for each year going back to 1999 (Attachment ERK-11). With the exception of
11 2000, each year forecasts that the yield on 30 year US Treasury bonds to increase.
12 This consistent tendency to estimate an increasing yield is another reason I
13 question the validity of using forecasted interest rates to estimate cost of equity.

14 A better indication of what investors think interest rates will do is how
15 they vote with current dollars. The current purchase price is a statement with real
16 dollars as to what the investor believes will happen over her or her investment
17 horizon. My concerns about using a forecasted interest rate also apply to Dr.
18 Avera’s risk premium models.

19 **Q: Why else do you believe the long term forecasted inflation rates used by Dr.**
20 **Avera are overstated?**

21 A: In theory the long term risk free rate of return should be a combination of the real
22 risk free rate of return plus compensation for anticipated inflation over the term of
23 the proposed bond. So hypothetically if the real risk free rate of return is 1.5%
24 and annual inflation is forecasted to be 2.5% over the next 20 years, investors

1 should anticipate the that 20 year bonds will yield approximately 4.0%.
2 Therefore, a forecasted interest rate that exceeds the real rate of return plus
3 anticipated inflation is likely overstated. Moreover, if a publication forecasts an
4 increase in interest rates without a parallel (increase) forecast in inflation rates
5 then the forecasted interest rate may be overstated. For example the June 1, 2015
6 edition of Blue Chip Financial Forecasts, simultaneously forecasts level inflation
7 (CPI is 2.4% for 2017, 2.3% for 2017-2021 and 2.3% for 2022 - 2026) and
8 increasing interest rates (4.3% in 2017, 4.8% for 2017-2021 and 5.0% for 2022 –
9 2026 for 30 Year US Treasury Bonds). A forecast of level inflation is
10 inconsistent with a forecast of increasing interest rates.

11 **Q: On August 5, 2011, Standard & Poor's downgraded US debt from AAA+ to**
12 **AA+. Is it still reasonable to use US Treasuries as a proxy for the risk-free**
13 **rate of return in a CAPM analysis?**

14 A: Yes. At this time, US Treasuries are the best proxy for the risk-free rate.
15 Moreover, the yield on US Treasury securities declined following the downgrade.

6. Beta

16 **Q: What source did you review to estimate beta?**

17 A: Like Dr. Avera, I relied on Value Line as my source of beta. While there are
18 other sources of beta and it would be reasonable to review other sources, Value
19 Line remains a popular and widely used source of beta. Based on Value Line my
20 electric company proxy group produces an average beta of 0.748.

D. Empirical Capital Asset Pricing Model (ECAPM)

21 **Q: Do you agree with Dr. Avera's use of the ECAPM?**

22 A: No. The ECAPM modification to the traditional CAPM is based on the premise
23 that the results of a CAPM analysis are biased downward for companies with a

1 beta of less than 1.0 and biased upward for companies with a beta that is greater
2 than 1.0. The use of adjusted beta increases the beta for companies with a beta
3 below 1.0 and decreases beta for companies with a beta that is above 1.0. Dr.
4 Avera's CAPM and ECAPM analyses use Value Line betas. Value Line adjusts
5 their raw beta to adjusted beta through the following formula: Adjusted beta =
6 $0.35 + 0.67 * \text{raw beta}$. Because Dr. Avera already uses adjusted beta, I believe
7 that his use of the ECAPM with an adjusted beta is a redundant adjustment
8 because it compounds the adjustment and skews the results.

9 **Q: Has Dr. Avera only recently included an ECAPM analysis in his testimony to**
10 **estimate cost of equity?**

11 A: Yes. While the ECAPM has been around for decades, according to Petitioner's
12 response to OUCC DR 22-02 (Attachment ERK-10), Dr. Avera first started using
13 the ECAPM in 2013 during his participation in Docket No. 9326 before the Public
14 Service Commission of Maryland (Filed on May 17, 2013). Thus his inclusion of
15 an ECAPM analysis to estimate cost of equity is a relatively new trend.

16 **Q: Did the Commission accept the results of an ECAPM analysis in Cause No.**
17 **42359 PSI Energy?**

18 A: No, it did not. In its final Order, the Commission stated as follows:

19 With respect to the ECAPM analysis performed by Dr. Morin we
20 note that the Commission rejected this model in Cause No. 40003,
21 and found that the Empirical CAPM is not sufficiently reliable for
22 ratemaking purposes. Cause No. 40003 at 32. We went on to
23 conclude that the ECAPM...would adjust, in essence, future
24 expectations with regard to investor perceptions of relative risks
25 for further change which may occur years hence. The Commission
26 concluded that...we do not believe exercises in approximating
27 future cost of capital are conducive to such precise estimation as
28 the Empirical CAPM would suggest. *Id.* We find that nothing
29 presented in this Cause has changed our prior determination that
30 ECAPM is not sufficiently reliable for ratemaking purposes and
31 hereby reject the model in this proceeding.

1 *In re PSI Energy*, Cause No. 42359, p. 48 (Ind. Util. Regulatory Comm'n May 18,
2 2004).

E. Small company size adjustments

3 **Q: Please discuss Dr. Avera's size adjustments.**

4 A: Dr. Avera refers to Ibbotson's SBBI Yearbook and asserts that a CAPM analysis
5 understates required returns for smaller companies. Dr. Avera inflates the results
6 of his CAPM analyses by 90-110 basis points to account for the smaller size of
7 the companies that make up his utility proxy group.

8 **Q: Are the companies that Dr. Avera makes a size adjustment to, truly "small"**
9 **companies that merit a size adjustment?**

10 A: No. While many of the companies in Dr. Avera's proxy are classified as small
11 according to Ibbotson's decile ranking system, they are not "small companies".
12 According to WEA Attachment 6, page 1 of 4, Otter Tail Corp. is the smallest
13 company in Dr. Avera's proxy group. Despite having a market Capitalization of
14 \$1.0284 billion, Dr. Avera increases his estimated cost of equity for Otter Tail by
15 248 basis points to account for their "small" size. Dr. Avera even includes a size
16 adjustment (+80 basis points) for companies as large as \$19.2 billion (Edison
17 International).

18 **Q: Do you agree with Dr. Avera's size adjustment?**

19 A: No. Ibbotson's equity size premium adjustment is based on the theory that
20 smaller companies have earned returns above what would otherwise be predicted
21 by a CAPM analysis. But it is not appropriate to directly apply Ibbotson's equity
22 size premium adjustment to regulated utilities. Regulation decreases the risks
23 faced by Petitioner and the companies in Dr. Avera's electric utility proxy group.
24 The companies in Dr. Avera's proxy group do not face the same bankruptcy risks

1 that other similarly sized companies may face. The Commission has already
2 found that Ibbotson's small cap adjustment cannot be directly applied to utilities
3 in South Haven Sewer, Cause No. 40398, order dated May 28, 1997, pages 30 -
4 31:

5 We are familiar with the Ibbotson derived 400 basis point small
6 company premium used by Mr. Beatty. The rationale behind this
7 approach is that, all other things being equal the smaller the
8 company, the greater the risk. However, to blindly apply this risk
9 premium to Petitioner is to ignore the fact that Petitioner is a
10 regulated utility. The risks from small size for a regulated utility
11 are not as great as those small companies facing competition in the
12 open market.

13 The Commission again expressed its opinion about the applicability of a small
14 company risk adjustment in Indiana-American's rate case, Cause No. 43680. On
15 page 47 of its final order the Commission stated as follows:

16 The Commission rejects Petitioner's equity size premium
17 adjustment because it cannot be directly applied to regulated water
18 utilities. Regulated water utilities do not experience the same risks
19 as other small companies. Therefore a size adjustment is simply
20 inapplicable and inappropriate for Indiana American.

21 The Commission also expressed its opinion regarding small company
22 adjustments in Cause No. 44104 Water Service Company of Indiana (a company
23 with less than 1,000 customers).²⁷ The Commission's final order recognized a
24 small company adjustment of 40 basis points was too high and authorized a small
25 company adjustment of only 30 basis points (page 23). The Commission's small
26 company adjustment in Cause No. 44104 further clarifies that Dr. Avera's
27 proposed small company adjustment for billion dollar companies is not warranted.

²⁷ While Water Service Company of Indiana is owned by larger holding company (Utilities Inc.), Utilities Inc., is still smaller than any of the companies in Dr. Avera's proxy group.

1 **Q: Does the increased prevalence of trackers further mitigate the need to adjust**
2 **for small size?**

3 A: Yes. Trackers reduce volatility/risk. The increased use of trackers for regulated
4 electric utilities further reduces the need to adjust for small size risk.

5 **Q: Are you aware of any articles that support your opinion that a small**
6 **company risk premium does not automatically apply in every case?**

7 A: Yes. In an article titled: Do Smaller Companies Warrant a Higher Discount Rate
8 for Risk? by Business Valuation Alert (Volume 1, Issue No. 2, December 1999,
9 on page 3 the article states as follows:

10 The careful business appraiser should come away from the Jung
11 case with the lesson that courts want to see a specific analysis of
12 the risks of a company, not just a showing that the company is
13 smaller and therefore demands a size premium as a result.
14 Although, as a general proposition, smaller companies are riskier
15 than larger companies, it is safer to agree with the Jung court that a
16 specific analysis of the particular risk of a company must be
17 examined in each valuation situation. A size premium does not
18 automatically apply in every case. Each privately held company
19 should be analyzed to determine if a size premium is appropriate in
20 its particular case. There can be unusual circumstances where a
21 small company has risk characteristics that make it far less risky
22 than the average company, warranting the use of a very low equity
23 risk premium. One possible example of this is a private water
24 utility (monopoly situation, very low risk, near-guarantee of
25 payments). The use of a size premium without consideration of the
26 risk of the specific company may subject the appraisal to challenge
27 and rejection on down the road.

28 Emphasis added

29 The same theory applies to electric utilities. In an article titled: Utility Stocks and
30 the Size Effect: An Empirical Analysis by Annie Wong, she concluded:

31 The fact that the two samples show different, through weak results
32 indicates that utility and industrial stocks do not share the same
33 characteristics. First given firm size, utility stocks are consistently
34 less risky than industrial stocks. Second, industrial betas tend to
35 decrease with firm size, but utility betas do not. These findings
36 may be attributed to the fact that all public utilities operate in an
37 environment with regional monopolistic power and regulated

1 financial structure. As a result, the business and financial risks are
2 very similar among the utilities regardless of their size. Therefore,
3 utility betas would not necessarily be related to firm size.

4 The object of this study is to examine if the size effect exists in the
5 utility industry. After controlling for equity values, there is some
6 weak evidence that firm size is a missing factor from the CAPM
7 for industrial but not utility stocks. This implies that although the
8 size phenomenon has been strongly documented for industrials, the
9 findings suggest that there is no need to adjust for the firm size in
10 utility regulation.

11 Emphasis added

12 I agree with both the Commission and the articles above. Electric utilities are not
13 exposed to the same risks as unregulated companies and do not experience the
14 same increase in risk due to their smaller size. The wide spread use and
15 effectiveness of trackers is also salient in recognizing that a size adjustment for
16 risk is not applicable to utilities as it would be for non-regulated companies.

F. CAPM Summary

17 **Q: Please provide a brief summary of how you developed your CAPM results.**

18 **A:** As explained above I use D&P's normalized interest rate as a proxy for the risk
19 free rate. The use of normalized risk free rate of return provides a reasonable
20 compromise between using current long term interest rates that produce
21 anomalously low estimated costs of equity, yet avoid my concerns of using
22 forecasted interest rates.

23 To estimate cost of equity, using an electric industry beta of 0.748, an
24 historical risk premium, I calculated both a geometric mean risk premium and an
25 arithmetic mean risk premium. I then averaged the risk premiums and combined

1 the risk premiums with the risk-free interest rate of 4.0% as described above.

2 This produces an estimated cost of equity of 7.89%

3 To estimate cost of equity, using an electric industry beta of 0.748, with a
4 forecasted risk premium, I combined a risk premium of 6.0% (as described above)
5 with long-term risk free rate of 4.0%. This produces an estimated cost of equity
6 of 8.49%. Finally, given the degree of controversy surrounding the application of
7 the CAPM, I have more confidence in the results of my DCF analysis.

XIX. APPENDIX F

GENERAL PROBLEMS WITH ANALYST FORECASTS

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On page 106 of her book The Equity Risk Premium – The Long Run future of the Stock Market, Bradford Cornell states as follows:

The practical problem raised by relying on analysts' forecasts is that such forecasts typically have short horizons. Services that aggregate such forecasts, including those by IBES and Zack's Investment Research, do not provide forecasts beyond 5 years. From the standpoint of the DCF model, which extends into perpetuity, this horizon is too short.

Emphasis added

Mr. Cornell goes on to discuss the problems with assuming that the forecasted growth rate can be maintained in perpetuity.

In most cases, the IBES forecasts are greater than the long-run economic growth rates. Such growth rates clearly cannot be maintained forever. Although it is possible that a company's dividends can grow significantly faster than the general economy for 5 years, if such a growth rate were maintained indefinitely, the company would eventually engulf the entire economy.

Also the Cost of Capital – Estimation and Application 2nd edition by Shannon Pratt makes the following assertions about using analyst forecasts to estimate cost of equity:

It is theoretically impossible for the sustainable perpetual growth rate for a company to significantly exceed the growth rate in the economy. Anything over a 6-7% perpetual growth rate should be questioned carefully.

A common approach to deriving a perpetual growth rate is to obtain stock analysts' estimates of earnings growth rates. The advantage of using these growth estimates is that they are prepared by people who follow these companies on an ongoing basis. These professional stock analysts develop a great deal more insight on

1 these companies than a causal investor or valuation analyst not
2 specializing in the industry is likely to achieve.

3 There are however, three caveats when using this information:

4 1. These earnings growth estimates typically are for only the next
5 two to five years; they are not perpetual. Therefore, any use of
6 these forecasts in a single-stage DCF model must be tempered
7 with a longer-term forecast.

8 2. Most published analysts' estimates come from "sell-side" stock
9 analysts who work for firms that are in the business to sell
10 stocks. Thus, although their earnings forecasts fall within the
11 range of "reasonable" possibilities, they may be on the high
12 end of the range.

13 3. Usually these estimates are obtained from firms that provide
14 consensus earnings forecasts; that is, they aggregate forecasts
15 from a number of analysts and report certain summary statistics
16 (mean, median, etc.) on these forecasts. For a small publically
17 traded firm, there may be only one or even no analyst
18 following the company. The potential for forecasting errors is
19 greater when the forecasts are obtained from a very small
20 number of analysts. These services typically report the number
21 of analysts who have provided earnings estimates, which
22 should be considered in determining how much reliance to
23 place on forecasts of this type.

24 Many of the problems inherent in using a single-stage model to
25 estimate cost of capital are addressed by using a multistage
26 model.

XX. APPENDIX G

1 **POTENTIAL BIAS IN ANALYST FORECASTS**

2 An article published in the National Regulatory Research Institute (NRRI) Journal
3 of Applied Regulation supports both of my concerns about using unreasonably
4 high growth rates in a DCF analysis with the following:²⁸

5 Financial research has made it clear that no company, especially a
6 utility, can sustain a growth rate over the long run that exceeds the
7 growth rate of the economy.¹⁵ Since 1959 the long-term sustainable
8 real growth rate in the economy has been about 3.5%.¹⁶ If long-term
9 inflation is expected to be about 2.5%, the maximum long-term
10 sustainable nominal growth for any company today is about 6.0%.
11 Since utilities are amongst the slowest growing firms in the
12 economy, a utility today would be expected to have a long-term
13 sustainable growth rate that is significantly below 6%.

14 The article also noted a tendency toward upside bias in analyst forecasts:

15 The other problem with using analyst forecasts as the long-term
16 growth rate in the DCF model is such forecasts are biased to the
17 upside. The evidence on this issue is overwhelming.¹⁷ The forecast
18 bias persists year after year in large part due to the incentive
19 structures in place at many Wall Street firms that tend to reward
20 more optimistic projections and to discourage the incorporation of
21 potentially negative views in analysts' forecasts.¹⁸

22 Emphasis added, (Citations included at the end of my testimony).

23 The Wall Street Journal published an article on January 27, 2003 titled
24 Analysts: Still Coming up Rosy. The article discusses how despite a \$1.5 billion
25 settlement pending with regulators over stock research-conflicts, analysts are
26 unshaken in their optimism that most of the companies they cover will have above

28. How improper risk assessment leads to overstated required returns for utility stocks by Steven G. Kihm
NRRI Journal of Applied Regulation-Volume 1, June 2003, p. 98.

1 average double-digit growth rates during the next several years. The article
2 asserts that such growth is unlikely:

3 Historically, growth in corporate earnings has slightly lagged
4 nominal growth in gross domestic product. In other words, profits
5 can only grow as fast as the economy. Right now, optimistic Wall
6 Street analysts expect earnings to defy history and grow far faster
7 than that.

And:

8 Those overly optimistic growth estimates also show that, even with
9 all regulatory forces on too-bullish analysts allegedly influenced by
10 their firms' investment-banking relationships, a lot of things
11 haven't changed: Research remains rosy and many believe it
12 always will.

13 The concern regarding bias in intermediate term analyst forecasts (such as
14 those relied upon by Dr. Avera) is also mentioned in The real cost of equity by
15 Marc H. Goedhart, Timothy M. Koller and Zane D. Williams (McKinsey
16 Quarterly Autumn 2002):

17 Some theorists have attempted to meet this challenge by surveying
18 equity analysts, but since we know that analyst projections almost
19 always overstate the long-term growth of earnings,²
20 analyst objectivity is hardly beyond question.

21 (Citations included at the end of my testimony).

22
23 In a more recent article; Equity analysts: Still too bullish by Marc H.
24 Goedhart, Rishi Raj and Abhishek Saxena (McKinsey Quarterly – April 2010) the
25 authors reiterated the concern regarding analyst forecast bias:

26 No executive would dispute that analysts' forecasts serve as an
27 important benchmark of the current and future health of
28 companies. To better understand their accuracy, we undertook
29 research nearly a decade ago that produced sobering results.
30 Analysts, we found, were typical overoptimistic, slow to revise
31 their forecasts to reflect new economic conditions, and prone to
32 making increasingly inaccurate forecasts when economic growth
33 declined.¹

1 Alas, a recently completed update of our work only reinforces this
2 view - despite a series of rules and regulations, dating to the last
3 decade, that were intended to improve the quality of the analysts'
4 long-term earnings forecasts, restore investor confidence in them,
5 and prevent conflicts of interest.² For executives, many of whom
6 go to great lengths to satisfy Wall Street's expectations in their
7 financial reporting and long-term strategic moves, this is a
8 cautionary tale worth remembering.

9 (Citations included at the end of my testimony).

10 Also, the Abstract of an Article titled, Do Analyst Conflicts Matter? Evidence
11 from Stock Recommendations by Anup Agrawal and Mark Chen (Journal of Law
12 and Economics, 2008, V 51), includes the following statement:

13 However, evidence from the response of stock prices and trading
14 volumes to upgrades and downgrades suggests that the market
15 recognizes analyst conflicts and properly discounts analyst options.
16

17 While it predates the October 31, 2003, final judgment in the Global Research
18 Analyst Settlement ("GRAS"), the following article: Stock Analysts Still Put
19 Their Clients First, Financial Analysts Journal, Volume 59 Issue 3, May 1, 2003,
20 discusses the separation of research and investment banking services and its
21 influence on analyst estimates. The article concludes that the separation of
22 research and investment banking services has not resolved the concern that
23 analyst forecasts are still upwardly biased. Page 5 of the article states as follows:

24 The new requirements *imply* that independent research (brokerage
25 research without investment banking ties) is better for investors.
26 But why independent analysts will be less vulnerable than
27 brokerage firm analysts to the same pressures for optimism is
28 unclear. Analysts themselves have remarked that one source of
29 strong pressure for "optimism biases" in recommendations is the
30 need to keep access to the managers of the companies they cover;
31 in other words, issue positive research or expect to be cut off from
32 management guidance. Unfortunately, the Sarbanes-Oxley bill,
33 which mandated many improvements in corporate managers'

1 financial practices, did nothing to reduce the unethical practice by
2 many managers of communicating only with those analysts who
3 “cooperate” with management’s implicit (and usually positive)
4 forecasts of the future.⁶ Finding a way to fix this blind spot may be
5 more important than all the other “sticks” regulating analysts
6 combined.

7 Interestingly, the *Wall Street Journal* reported in April 2003 that
8 after reviewing disclosure reports issued as a result of the new
9 requirements, they concluded that the brokerage firms of the top
10 investment banks are still more likely to give optimistic research
11 recommendations to their own banking clients. Of course, the new
12 disclosure requirements attempt to protect investor clients by
13 making them aware of investment research’s potential as an
14 advertising medium, but the attempt works only if investors read
15 and understand the disclosures. Institutional investors are probably
16 more likely than retail investors to read, put into context, and fully
17 appreciate these new disclosures.

18 Emphases added

19 (See Table of Citations at end of my testimony).

20 While the GRAS may have reduced some of the causes of analyst bias, I
21 do not believe the problem of optimistic analyst forecasts has been eliminated.
22 Moreover, the Equity analysts: Still too bullish article by Goedhart, Raj and
23 Saxena and Do Analyst Conflicts Matter? Evidence from Stock
24 Recommendations by Agrawal and Chen were both published several years after
25 the GRAS. Both article support the opinion that concerns about analyst optimism
26 still exist. When using analyst forecasts of EPS to estimate growth (g) in a DCF
27 analysis, both the potential for analyst bias and the intermediate term nature of the
28 forecasts may make these estimates unreliable. Even assuming no analyst bias,
29 unsustainable growth rates should be adjusted or given reduced weight.

XXI. APPENDIX H

1 **SOURCES SUPPORTING THE USE OF THE GEOMETRIC MEAN**

2 In VALUATION Measuring and Managing the Value of Companies (Second
3 Edition) by Tom Copeland, Tim Koller and Jack Murrin on pages 260 – 261 the
4 text specifically advocates the use of the geometric mean over the arithmetic
5 mean to estimate cost of equity in a CAPM analysis:

6 We recommend using a 5 to 6 percent market risk premium
7 for U.S. companies. This is based on the long-run geometric
8 average risk premium for the return on the S&P 500 versus the
9 return in long term government bonds from 1926-1992.⁴ Since this
10 is a contentious area that can have a significant impact on
11 valuations, we elaborate our reasoning in detail here.

12 We use a very long time frame to measure the premium
13 rather than a short time frame to eliminate the effects of short-term
14 anomalies in the measurement. The 1926-1992 time frame reflects
15 wars, depressions and booms. Shorter time periods do not reflect
16 as diverse a set of economic circumstances.

17 We use a geometric average of rates of return because
18 arithmetic averages are biased by the measurement period. An
19 arithmetic average estimates the rates of return by taking a simple
20 average of the single period rates of return. Suppose you buy a
21 share of nondividend-paying stock for \$50.00. After one year the
22 stock is worth \$100. After two years the stock falls to \$50 once
23 again. The first period return is 100 percent; the second period
24 return is -50 percent. The arithmetic average return is 25 percent
25 [(100 percent – 50 percent) / 2]. The geometric average is zero.
26 (The geometric average is the compound rate of return that equates
27 the beginning and ending value.) (sic) We believe the geometric
28 average represents a better estimate of investors' expected return
29 over long periods of time.

30 Finally, we calculate the premium over *long-term*
31 government bond returns to be consistent with the risk free rate we
32 use to calculate the cost of equity.

1 (See Table of Citations at end of my testimony). Italics emphasis in original,
2 underlined emphases added.

3 At page 263, the text notes other weaknesses of relying on an arithmetic
4 return:

5 Note that the arithmetic return is always higher than the geometric
6 return and that the difference between them becomes greater as a
7 function of the variance of returns. Also the arithmetic average
8 depends upon the interval chosen. For example, an average of
9 monthly returns will be higher than an average of annual returns.
10 The geometric average, being a single estimate for the entire time
11 interval, is invariant to the choice of interval. Finally, empirical
12 research by Fama-French (1988), Lo and MacKinlay (1988), and
13 Poterba and Summers (1988) indicates that a significant long-term
14 negative autocorrelation exists in stock returns.⁵ Hence, historical
15 observations are not independent draws from a stationary
16 distribution.

(See Table of Citations at end of my testimony)

17 On pages 259-260 of the text, the authors recommend using the 10-year Treasury
18 bond rate.²⁹

19 The text Analysis of Equity Investments: Valuation also supports the use
20 of the geometric mean to estimate the market risk premium. On page 50, the
21 authors state that geometric means produce estimates of the equity risk premium
22 that are more consistent with economic theory:

29. Note, in the chart displayed on page 261, the text shows risk premiums based on the arithmetic average and the geometric average. Although not explicitly stated in the text, both calculations are based on total bond returns and not income returns. This is relevant because some equity analysts argue that one should use income returns vs. total returns to estimate the risk premium.

1 Although the debate is inconclusive, this book uses the geometric
2 means, not only for the previously given reasons but also because
3 geometric means produce estimates of the equity risk premium that
4 are more consistent with the predictions of economic theory.¹⁴

5 (See Table of Citations at end of my testimony)

6 Analysis of Equity Investments: Valuation was written by the Association for
7 Investment Management and Research and is produced as a study guide for the
8 Chartered Financial Analyst (CFA) program.

9 In an article titled Equity Risk Premiums (ERP): Determinants,
10 Estimations and Implications – The 2015 Edition (p. 27) by Dr. Aswath
11 Damodaran, Dr. Damodaran supports the use of a geometric mean risk premium:

12 The final sticking point when it comes to estimating historical
13 premiums relates to how the average returns on stocks, treasury
14 bonds and bills are computed. The arithmetic average return
15 measures the simple mean of the series of annual returns, whereas
16 the geometric average looks at the compounded return.⁵⁸ Many
17 estimation services and academics argue for the arithmetic average
18 as the best estimate of the equity risk premium. In fact, if annual
19 returns are uncorrelated over time, and our objective was to
20 estimate the risk premium for the next year, the arithmetic average
21 is the best and most unbiased estimate of the premium. There are,
22 however, strong arguments that can be made for the use of
23 geometric averages. First, empirical studies seem to indicate that
24 returns on stocks are negatively correlated⁵⁹ over time.
25 Consequently, the arithmetic average return is likely to over state
26 the premium.

27 Emphases added

28 (See Table of Citations at end of my testimony)

XXII. APPENDIX I

FORECASTED MARKET RISK PREMIUMS

- 1 Thoughts on Social Security Reform by Goldman Sachs (January 18, 2005)
2 discusses the assumptions used by the US Government to discuss Social Security
3 reform. Page 22 of the article states as follows: “The Commission assumed that
4 personal accounts would earn real returns of 6.5% on equities, 3.5% on corporate
5 bonds and 3% on Treasury Bonds.” This implies a risk premium of **3.5%**. Note
6 the Goldman Sachs article asserts that the “Return Assumptions are Too High.”
- 7 Survey of Profession Forecasted by Federal Reserve Bank of Philadelphia
8 (February 13, 2015) estimates the return on stocks, over the next ten years to be
9 5.45% and the return on 10 year US Treasury bonds to be 3.98%. These estimates
10 imply a risk premium 1.47%. (Attachment ERK-2)
- 11 Dr. Aswath Damodaran, a Professor at the Stern School of Business at New York
12 University maintains a web page (<http://pages.stern.nyu.edu/~adamodar/>). Each
13 month he calculates an “Implied Equity Risk Premium” and presents his findings
14 on his web page. Dr. Damodaran’s estimated risk premium as of June, 2015 was
15 5.74% (Attachment ERK-16).
- 16 A Client Alert published by Duff & Phelps (March 20, 2013) recommends a US
17 Equity Risk Premium of 5.0%.
- 18 Equity Risk Premium Quarterly, published by American Appraisal (January 2015)
19 utilizes a 6.0% US risk premium combined with the actual risk free rate as of
20 January 2015 (Attachment ERK-17).
- 21 On a quarterly basis KPMG publishes an Equity Risk Premium – Research
22 Summary. The April 2, 2015 edition recommends a 6.25% risk premium. While
23 the articles stated risk premium is a global risk premium, a graph on page 6 of the
24 article supports a risk premium of 6.25% for the S&P 500 (Attachment ERK-18)
- 25 An article by Value Line (March 11, 2014) titled Equity Risk Premiums and
26 Stocks Today estimates a market risk premium of 5.5% (Attachment ERK-33).

XXIII. APPENDIX J

LONG TERM MARKET RETURN FORECASTS

1
2 The Duff & Phelps Client Alert (Previously discussed in my testimony) estimates a
3 Base U.S. Cost of Equity Capital of 9.0% (Forecasted Risk Premium of 5.0% +
4 normalized risk free rate of return of 4.0%).

5 The KPMG Equity Market Risk Premium – Research Summary (2 April, 2015)
6 estimates an “Implied Equity Return” of approximately 6.25% (See graphs on page
7 4 & 6. A 3.0% yield plus a 6.25% risk premium = 9.25% implied market return
8 (Attachment ERK-18).

9 In its Second Quarter 2015 Survey, Duke University surveyed the CFOs with each
10 company in the S&P 500 for their estimated average annual return for the S&P 500
11 over the next ten years. The average result was 6.81% (Attachment ERK-19). The
12 488 CFOs responding also replied, on average, they believe there is only a 10%
13 chance that the S&P 500’s average annual return during the next 10 years will
14 exceed 11.17%.

15 An article by the Schwab Center for Financial Research titled: Q&A: Estimating
16 Long-term Market Returns: (dated April 24, 2015) forecasts that Large-cap stocks
17 are estimated to return about 6.3 percent per year over the long run, while
18 mid/small-cap international stocks are estimated to return 7.1 percent and 6.1
19 percent, respectively (Attachment ERK-20). The Schwab article uses a 20-year
20 time horizon for their estimates, but noted “calculations using a time horizon
21 between 15-30-year should produce similar results.”

22 An article by J.P. Morgan Asset Management titled: Long-term Capital Market
23 Return Assumptions forecasts expected 10-15 year annualized arithmetic returns for
24 U.S. Large Cap equities of 7.6% as of September 30, 2014 (Attachment ERK-21).

25 Voya, previously ING Investment Management, published an article titled 2015
26 Long-Term Capital Market Forecasts (February 2015; Attachment ERK-22). In this
27 article, ING forecasts a long-term (ten years) geometric return of 5.0% and an
28 arithmetic return of 6.3% for the S&P 500.

29 The First Quarter 2015 Survey of Professional Forecasters (The Federal Reserve
30 Bank of Philadelphia) forecasts a 10 year return for the S&P 500 of 5.45% February
31 13, 2015, (Attachment ERK-2).

32 An article by Edward Jones (October 2014) titled: Expectations for Capital Market
33 Returns publishes a long-term equity return of 6.5% to 8.5%. (Attachment ERK-
34 23).

35 An article by Value Line (March 11, 2014) titled Equity Risk Premiums and Stocks
36 Today estimates a total market return of 8.5% (Attachment ERK-33).

XXIV. APPENDIX K

**DR. AVERA'S UTILITY RISK PREMIUM AND
EXPECTED EARNINGS ANALYSES**

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Q: Does Dr. Avera use any models that you do not?

A: Yes. In addition to his DCF and CAPM analyses, Dr. Avera developed a Utility Risk Premium Model and an Expected Earnings Model. Below I discuss my concerns with Dr. Avera's additional models.

A. Utility Risk Premium

Q: Please discuss Dr. Avera's Utility Risk Premium model.

A: Dr. Avera's Risk Premium models produce estimated costs of equity of 10.1% and 11.24% (WEA Attachment 7 pages 1 & 2 of 4). Dr. Avera uses a current bond yield for his first risk premium model and a forecasted bond yield for his second risk premium model. Dr. Avera's Utility Risk Premium model is based on calculating the historical spread (risk premium) between Commission authorized costs of equity and average utility bond yields from 1974 – 2013. Dr. Avera further argues that the risk premium tends to be lower when interest rates are high and higher when interest rates are low. For both risk premium models, Dr. Avera calculates an average risk premium of 3.53% during the study period.

Q: Please discuss Dr. Avera's Risk Premium model based on current bond yields.

A: Dr. Avera uses a six month utility bond yield of 4.76% and calculates an adjusted risk premium of 5.34%. Dr. Avera adds the 5.34% adjusted risk premium to the six month average (August 2014) BBB utility bond yield of 4.76% to derive an estimated cost of equity of 10.10%.

1 **Q: Please discuss your general concerns with Dr. Avera's Risk Premium models.**

2 A: Using Commission authorized costs of equity is not appropriate to estimate a
3 required rate of return. Commission authorized returns are the result of a cost of
4 equity analysis and they should not be used as an input to the analysis. The direct
5 use of prior costs of equity makes the model circular. Moreover, Commission
6 authorized rates of return may include incentives (such as those allowed by the
7 Virginia Commission) that cause the authorized return on equity to overstate cost
8 of equity.

9 **Q: Dr. Avera performs a Risk Premium model based on forecasted bond yields.
10 Do the concerns about a forecasted bond yield in Dr. Avera's CAPM analysis
11 also apply to his Risk Premium Model?**

12 A: Yes. There is a further concern about using forecasted bond yields in his Risk
13 Premium model. The risk premium that Dr. Avera calculates is based on current
14 bond yields. If one is going to use a forecasted bond yield as an adder to the
15 premium, then it is appropriate to also use forecasted bond yields to calculate the
16 premium.

17 **Q: Do you have any additional comments on Dr. Avera's Risk Premium
18 analysis?**

19 A: Yes. The results of Dr. Avera's Risk Premium analysis (10.1% and 11.2%)
20 exceed both recent authorized returns for regulated electric utilities and expected
21 returns from utility stocks. First, as the Regulatory Research Associates article
22 cited earlier explains, the average authorized electric ROE in 2014 was 9.76%
23 (excluded Virginia Surcharge/rider generation cases). Next, the average earned
24 return of the S&P Public Utility Index from 1928 – 2012 was 8.39%. Dr. Avera's
25 Risk Premium analysis should not be given any weight.

B. Expected Earnings

1 **Q: Please summarize Dr. Avera's Expected Earnings ("EE") Approach.**

2 A: Dr. Avera's EE approach produces estimated costs of equity of 10.4% (average)
3 and 11.30% (midpoint). His EE approach averages 3-5 year estimated returns on
4 common equity of 31 electric companies from his proxy group. Dr. Avera starts
5 with his proxy group of 32 electric utilities, but eliminates one company from his
6 analysis because it provides an estimated cost of equity that provides an
7 anomalously high result (ITC Holdings 18.4%). In a footnote at the bottom of
8 WEA Attachment 8, Dr Avera notes that he adjusts Value Line's Expected Return
9 on Common Equity to convert year-end returns to average rates of return.

10 **Q: Please discuss your specific concerns regarding Dr. Avera's EE approach.**

11 A: Dr. Avera's Expected Earnings approach is simply a compilation of Value Line's
12 3-5 year estimated return on common equity. Value Line's 3-5 year forecasted
13 return on common equity is not a required return and it is not a cost of equity. It
14 is also an intermediate term forecast. If a company was forecasted to over/under
15 earn during the forecast period, using that figure to determine an authorized cost
16 of equity would simply reinforce out-of-place expectations into future rates.
17 Value Line's intermediate-term expected returns should not be used to estimate
18 cost of equity.

19 **Q: Please discuss some of your other concerns regarding Dr. Avera's Expected**
20 **Earnings approach.**

21 A: As mentioned above, I have excluded several companies from Dr. Avera's proxy
22 group of electric companies, because I do not believe they have a comparable risk
23 to Petitioner. I have also updated Dr. Avera's EE approach, (using a more recent
24 Value Line reports) and applied the results to my proxy group. When the non-

1 comparable companies are excluded and a more recent Value Line report is used,
2 Dr. Avera's methodology produces a 10.16% return (Schedule ERK-4, page 3).
3 Next, Dr. Avera also presents the midpoint expected return (11.3%). But
4 remember, the midpoint is simply the average of Dr. Avera's highest (Dominion
5 Resources - 14.6%) and lowest (Duke Energy/Great Plains Energy 8.1%) results.
6 In this context the midpoint is not an appropriate figure and should have no
7 bearing on Petitioner's estimated cost of equity (even if you except Value Line's
8 expected returns as means to estimate cost of equity).

9 **Q: Please summarize your concerns regarding Dr. Avera's Expected Earnings**
10 **Approach.**

11 A: Dr. Avera's Comparable Earnings approach includes companies that are not
12 comparable to Petitioner. The use of Value Line's forecasted return on common
13 equity is not an estimate of the company's cost of equity. His use of a midpoint
14 simply serves to overstate the expected return. Dr. Avera's Comparable Earnings
15 Approach should not be given any weight.

XXV. TABLE OF CITATIONS

1	Page 102	Footnote 15: Robert D. Arnott and Peter L. Bernstein “What Risk
2		Premium is Normal? <i>Financial Analysts Journal</i> , 58 (2) March/April
3		2002): 64-85.
4		Footnote 16: Source Council of Economic Advisors, <i>Economic Report of</i>
5		<i>the President</i> , 2002.
6		Footnote 17: See for example, Vijay Kumar Chopra, “Why So Much Error
7		in analysts’ Earnings Forecasts?” <i>Financial Analysts Journal</i> , 54(6)
8		November/December 1998): 35-42.
9		Footnote 18: See Masakao N. Darrough and Thomas Russal, “A Positive
10		Model of Earnings Forecasts: Top Down Versus Bottom Up.” <i>Journal of</i>
11		<i>Business</i> , 75(1) (January 2002) 127-52.
12	Page 103	Footnote 2: See Marc H. Goedhart, Brendan Russel and Zane Williams,
13		“Prophets and profits?” <i>McKinsey on Finance</i> , Number 2, Autumn 2001.
14		Footnote 1: See Marc H. Goedhart, Brendan Russel and Zane Williams,
15		“Prophets and profits?” <i>McKinsey on Finance</i> , Number 2, Autumn 2001.
16	Page 104	Footnote 2: US Securities and Exchange Commission (SEC) Regulation
17		Fair Disclosure (FD), passed in 2000, prohibits the selective disclosure of
18		material information to some people but not others. The Sarbanes-Oxley
19		Act of 2002 includes provisions specifically intended to help restore
20		investor confidence in the reporting of securities’ analysts, including a
21		code of conduct for them and a requirement to disclose knowable conflicts
22		of interest. The Global Settlement of 2003 between regulators and ten of
23		the largest US Investment firms aimed to prevent conflicts of interest
24		between their analyst and investment businesses.
25	Page 105	Footnote 6: The Sarbanes-Oxley bill may be found at
26		banking.senate.gov/pss/acctrfm/conf_rpt.pdf .
27	Page 106	Footnote 4 of the text cites to Ibbotson Associates, <i>Stocks, Bonds, Bills</i>
28		<i>and Inflation 1993 Yearbook</i> (Chicago, 1993).

1 Page 107 Footnote 5 of the text cites A. Lo and C. MacKinlay, "Stock market Prices
2 Do Not Follow Random Walks: Evidence from a Simple Specification
3 Test," *Review of Financial Studies* (Spring 1988): 41-66; E. Fama and K.
4 French, "Dividend Yields and Expected Stock Returns," *Journal of*
5 *Financial Economics* (October 1988): 3-25; J. Poterba and L. Summers,
6 "Mean reversions in Stock Prices: Evidence and Implications," *Journal of*
7 *Financial Economics* (October 1988): 27-59.

8 Page 108 Footnote 14 of the text cites Mehra and Prescott (1985). The relatively
9 large size of the historical U.S. equity premium relative to that predicted
10 by theory, given estimates of investors' risk aversion, is known as the
11 "equity premium puzzle" The geometric mean was also the choice of
12 Dimson, Marsh, and Staunton (2000) in their authoritative survey of world
13 equity markets.

14 Footnote 58 The compounded return is computed by taking the value of
15 the investment at the start of the period ($Value_{[0]}$) and the value at the end
16 ($Value_{[N]}$), and then computing the following:

17
$$\text{Geometric Average} = (Value_{[N]} / Value_{[0]})^{1/n} - 1$$

18 Footnote 59: In other words, good years are more likely to be followed by
19 poor years, and vice versa. The evidence on negative serial correlation in
20 stock market returns over time is extensive, and can be found in Fama and
21 French (1988). While they find that one-year correlations are low, the
22 five-year serial correlations are strongly negative for all size classes.
23 Fama, E.F. and K.R. French. 1992, The Cross-Section of Expected
24 Returns, *Journal of Finance*, Vol 47, 427-466.

SUMMARY OF COST OF EQUITY STUDIES

DCF Studies:

Value Line Proxy Group

DCF Study using 3 month Dividend yield:(Schedule 2)	9.00%
DCF Study using 6 month Dividend yield: (Schedule 2)	8.88%
DCF Study using Value Line's Dividend yield: (Schedule 2)	9.04%

Growth in Forecasted Earnings Per Share (Only)

DCF Study using 3 month: Dividend yield: (Schedule 2)	8.79%
DCF Study using 6 month: Dividend yield: (schedule 2)	8.66%
DCF Study using Value Line's Dividend yield: (Schedule 2)	8.84%
Multi-Stage DCF Model	8.79%

Range of DCF Studies: 8.66% - 9.04%

CAPM Studies

Value Line Proxy Group

Historical Risk Premium

CAPM Study using Duff & Phelps Normalized Risk Free Rate: (Schedule 3, page 3)	7.89%
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SUMMARY OF COST OF EQUITY STUDIES

CAPM Studies (cont)

Forecasted Risk Premium

CAPM Study using
Duff & Phelps Normalized Risk Free Rate: 8.49%
(Schedule 3, page 3)

Range of CAPM Studies: 7.89% - 8.49%

Range of all Studies: 7.89% - 9.04%

Cost of Equity for Electric Industry 9.00%

Recommended Cost of
Equity for Petitioner: 9.20%

DCF MODEL
VALUE LINE PROXY
SUMMARY OF GROWTH RATES (g)

	10 YEAR EARNINGS PER SHARE	5 YEAR EARNINGS PER SHARE	FORECASTED EARNINGS PER SHARE	10 YEAR DIVIDENDS PER SHARE	5 YEAR DIVIDENDS PER SHARE	FORECASTED DIVIDENDS PER SHARE	10 YEAR BOOK VALUE PER SHARE	5 YEAR BOOK VALUE PER SHARE	FORECASTED BOOK VALUE PER SHARE	AVERAGE
ALLETE	7.00%		6.50%		2.00%	4.00%	4.50%	5.00%	4.50%	4.79%
ALLIANT ENERGY	8.00%	6.50%	6.00%	3.50%	6.50%	4.50%	3.50%	3.50%	4.00%	5.11%
AMEREN			6.00%			2.50%			4.00%	4.17%
AMERICAN ELECTRIC POWER			5.00%		4.00%	5.00%	4.50%	4.50%	4.00%	4.50%
AVISTA	7.50%	6.50%	7.00%	9.50%	11.50%	4.00%	4.00%	4.00%	3.50%	6.39%
BLACK HILLS CORP	2.50%	7.50%	4.50%	2.50%		4.00%	3.50%	2.00%	3.50%	3.75%
CLECO CORPORATION	7.00%	10.50%		5.00%	9.50%	5.00%	9.00%	8.00%	3.00%	7.13%
CON. EDISON	3.50%	2.50%	3.00%			2.50%	4.00%	3.50%	3.50%	3.21%
DOMINION RES.	3.00%	2.50%	8.00%	5.50%	7.00%	7.50%		2.00%	6.50%	5.25%
DUKE ENERGY		3.50%	5.00%		2.50%	2.50%		3.00%	2.00%	3.08%
EDISON INTERNATIONAL	10.00%	4.50%	3.00%		2.50%	10.00%	6.50%	2.00%	6.00%	5.56%
EL PASO ELECTRIC	13.50%	6.50%	3.50%			5.00%	8.50%	8.00%	4.50%	7.07%
EMPIRE DISTRICT	2.50%	5.00%	3.00%			3.00%		2.00%	2.50%	3.00%
GREAT PLAINS ENERGY		2.50%	5.00%			6.00%	4.50%	2.50%	3.00%	3.92%
HAWAIIAN ELECTRIC		10.00%	3.50%					2.00%	3.50%	4.75%
IDACORP, INC.	9.00%	10.00%			5.50%	6.00%	5.00%	6.00%	4.00%	6.50%
NEXTERA ENERGY	8.00%	6.00%	6.50%	8.00%	8.50%	7.00%	8.00%	7.50%	6.50%	7.33%
NORTHEAST UTILITIES / EVERSOURCE ¹	8.00%	5.50%	8.50%	9.50%	11.50%	6.50%	5.50%	9.50%	4.00%	7.61%
OGE ENERGY CORPORATION	8.50%	8.00%	3.00%	2.50%	4.50%	10.00%	8.50%	9.00%	5.00%	6.56%
PG&E CORPORATION	14.50%		8.50%		3.00%	2.50%	9.00%	4.00%	5.00%	6.64%
PINNACLE WEST	3.50%	8.00%	4.00%	3.50%	3.00%	3.50%	2.00%	2.00%	3.50%	3.67%
PORTLAND GENERAL		3.00%	6.00%		2.50%	6.00%		2.00%	4.50%	4.00%
SCANA CORPORATION	3.00%	4.00%	4.50%	4.00%	2.00%	3.50%	5.00%	5.00%	5.50%	4.06%
WESTAR ENERGY	6.50%	9.00%	6.00%	3.50%	3.50%	3.00%	5.00%	3.50%	5.00%	5.00%
XCEL	7.00%	6.00%	4.50%	2.50%	3.50%	6.00%	4.50%	4.50%	4.00%	4.72%
AVERAGE	6.97%	6.07%	5.24%	4.96%	5.17%	4.98%	5.53%	4.38%	4.20%	5.28%
50/50 WEIGHT HISTORICAL/FORECASTED		6.52%	5.24%		5.06%	4.98%		4.95%	4.20%	5.16%
EACH COMPANY EQUAL WEIGHT										5.11%

Value Line: May 1, 2015, May 22, 2015, June 19, 2015

(1) Northeast Utilities changed its name to Eversource Energy in February 2015

	VALUE LINE FORECASTED EPS*	YAHOO.COM FORECASTED EPS**	ZACKS' FORECASTED EPS***
ALLETE	6.50%	6.00%	
ALLIANT ENERGY	6.00%	5.45%	5.30%
AMEREN	6.00%	5.85%	6.80%
AMERICAN ELECTRIC POWER	5.00%	5.10%	4.90%
AVISTA	7.00%	5.00%	
BLACK HILLS CORP	4.50%	7.00%	
CLECO CORPORATION		3.00%	3.00%
CON. EDISON	3.00%	2.48%	2.70%
DOMINION RES.	8.00%	5.89%	6.30%
DUKE ENERGY	5.00%	4.49%	4.70%
EDISON INTERNATIONAL	3.00%		4.70%
EL PASO ELECTRIC	3.50%	7.00%	6.70%
EMPIRE DISTRICT	3.00%	5.00%	5.00%
GREAT PLAINS ENERGY	5.00%	6.80%	5.80%
HAWAIIAN ELECTRIC	3.50%	3.80%	3.80%
IDACORP, INC.		4.00%	4.00%
NEXTERA ENERGY	6.50%	6.44%	6.20%
NORTHEAST UTILITIES / EVERSOURCE1	8.50%	6.60%	6.80%
OG E ENERGY CORPORATION	3.00%	4.00%	5.00%
PG&E CORPORATION	8.50%	4.71%	5.30%
PINNACLE WEST	4.00%	4.70%	4.30%
PORTLAND GENERAL	6.00%	4.72%	5.20%
SCANA CORPORATION	4.50%	4.30%	4.20%
WESTAR ENERGY	6.00%	3.40%	3.50%
XCEL	4.50%	4.58%	4.70%
AVERAGE	5.24%	5.01%	4.95%
AVERAGE OF ALL 3 FORECASTS OF GROWTH			5.07%

*Value Line: May 1, 2015, May 22, 2015, June 19, 2015

**Yahoo.com June 5, 2015 - Yahoo.com relies on Thomson Financial Network for its Analyst estimates

***Zacks, June 5, 2015

DIVIDEND YIELDS

	Dec-2014	Jan-2015	Feb-2015	Mar-2015	Apr-2015	May-2015	3 MONTH AVERAGE	6 MONTH AVERAGE	VALUE LINE
ALLETE	3.8%	3.5%	3.7%	3.8%	3.9%	4.1%	3.93%	3.80%	4.30%
ALLIANT ENERGY	3.2%	3.0%	3.5%	3.6%	3.5%	3.6%	3.57%	3.40%	3.80%
AMEREN	3.8%	3.6%	3.9%	4.0%	4.0%	4.0%	4.00%	3.88%	4.40%
AMERICAN ELECTRIC POWER	3.6%	3.4%	3.7%	3.8%	3.8%	3.8%	3.80%	3.68%	4.10%
AVISTA	3.8%	3.5%	3.9%	4.0%	4.0%	4.1%	4.03%	3.88%	4.00%
BLACK HILLS CORP	3.0%	3.1%	3.3%	3.4%	3.3%	3.5%	3.40%	3.27%	3.20%
CLECO CORPORATION	3.0%	2.9%	3.0%	3.0%	2.9%	2.9%	2.93%	2.95%	3.00%
CON. EDISON	3.9%	3.7%	4.1%	4.3%	4.3%	4.3%	4.30%	4.10%	4.30%
DOMINION RES.	3.3%	3.1%	3.6%	3.8%	3.6%	3.6%	3.67%	3.50%	3.80%
DUKE ENERGY	3.9%	3.7%	4.0%	4.3%	4.1%	4.2%	4.20%	4.03%	4.20%
EDISON INTERNATIONAL	2.6%	2.5%	2.7%	2.7%	2.8%	2.8%	2.77%	2.68%	2.90%
EL PASO ELECTRIC	3.0%	2.8%	3.0%	3.1%	3.0%	3.1%	3.07%	3.00%	3.10%
EMPIRE DISTRICT	3.7%	3.4%	4.2%	4.3%	4.2%	4.4%	4.30%	4.03%	4.80%
GREAT PLAINS ENERGY	3.8%	3.4%	3.7%	3.9%	3.7%	3.8%	3.80%	3.72%	4.20%
HAWAIIAN ELECTRIC	3.8%	5.9%	3.7%	3.9%	3.9%	4.0%	3.93%	4.20%	3.90%
IDACORP, INC.	3.0%	2.8%	3.1%	3.1%	3.0%	3.1%	3.07%	3.02%	3.00%
NEXTERA ENERGY	2.9%	2.7%	3.0%	3.1%	3.0%	3.0%	3.03%	2.95%	3.10%
NORTHEAST UTILITIES / EVERSOURCE1	3.1%	2.8%				3.4%	3.40%	3.10%	3.50%
OGE ENERGY CORPORATION	2.9%	2.9%	3.0%	3.2%	3.1%	3.1%	3.13%	3.03%	3.80%
PG&E CORPORATION	3.5%	3.2%	3.4%	3.6%	3.5%	3.5%	3.53%	3.45%	3.50%
PINNACLE WEST	3.7%	3.4%	4.0%	3.9%	3.8%	3.9%	3.87%	3.78%	3.90%
PORTLAND GENERAL	3.7%	2.9%	3.1%	3.2%	3.1%	3.4%	3.23%	3.23%	3.20%
SCANA CORPORATION	3.0%	3.3%	3.6%	4.2%	4.1%	4.1%	4.13%	3.72%	4.20%
WESTAR ENERGY	3.6%	3.4%	3.6%	3.8%	3.8%	4.0%	3.87%	3.70%	4.20%
XCEL	3.5%	3.3%	3.4%	3.8%	3.7%	3.7%	3.73%	3.57%	3.80%
AVERAGE	3.40%	3.29%	3.51%	3.66%	3.59%	3.66%	3.63%	3.51%	3.77%

COST OF EQUITY = DIVIDEND YIELD * (1+.5 * GROWTH RATE) + GROWTH RATE

USING A THREE MONTH AVERAGE YIELD AND A
5.28% Growth Rate 9.00%

USING A THREE MONTH AVERAGE YIELD AND A
5.07% Growth Rate 8.79%

USING A SIX MONTH AVERAGE YIELD AND A
5.28% Growth Rate 8.88%

USING A SIX MONTH AVERAGE YIELD AND A
5.07% Growth Rate 8.66%

USING VALUE LINE AVERAGE YIELD AND A
5.28% Growth Rate 9.04%

USING VALUE LINE AVERAGE YIELD AND A
5.07% Growth Rate 8.84%

2-Stage DCF Model results
Electric Industry

	<u>Hypothetical</u>	<u>Value Line</u> <u>Inputs*</u>	<u>Combined</u> <u>Inputs**</u>
Price	\$ 10.00	\$ 10.00	\$ 10.00
Current DPS	\$ 0.40	\$ 0.377	\$ 0.363
Growth rate, 1st Stage	6.00%	5.24%	5.07%
Growth rate, 2nd Stage	5.00%	4.75%	4.75%
Years in 1st stage	5	5	5
COE (r)	<u>9.39%</u>	<u>8.79%</u>	<u>8.61%</u>

*Value Line forecasted growth in EPS (Schedule ERK-2, page 3 of 4)

** Average forecasted growth rates from Value Line, Zacks and Yahoo.com (Schedule ERK-2, page 3 of 4)

YIELDS ON U.S. TREASURY SECURITIES

	<u>1 Year</u> <u>T-NOTE</u>	<u>5 Year</u> <u>T-NOTE</u>	<u>10 Year</u> <u>T-NOTE</u>	<u>30 Year</u> <u>T-BOND</u>
3-Jan-14	0.12%	1.74%	2.99%	3.91%
7-Feb-14	0.10%	1.53%	2.70%	3.64%
7-Mar-14	0.10%	1.49%	2.65%	3.61%
4-Apr-14	0.11%	1.74%	2.71%	3.55%
2-May-14	0.09%	1.76%	2.72%	3.49%
6-Jun-14	0.09%	1.51%	2.44%	3.30%
4-Jul-14	0.10%	1.68%	2.55%	3.37%
1-Aug-14	0.10%	1.69%	2.50%	3.29%
5-Sep-14	0.09%	1.64%	2.36%	3.10%
3-Oct-14	0.09%	1.80%	2.57%	3.28%
7-Nov-14	0.10%	1.59%	2.32%	3.05%
5-Dec-14	0.12%	1.57%	2.26%	2.96%
2-Jan-15	0.25%	1.74%	2.26%	2.85%
6-Feb-15	0.15%	1.24%	1.72%	2.29%
6-Mar-15	0.19%	1.45%	1.97%	2.57%
3-Apr-15	0.24%	1.42%	1.93%	2.51%
1-May-15	0.21%	1.38%	1.97%	2.65%
5-Jun-15	0.23%	1.53%	2.13%	2.87%
3-Month Average	0.23%	1.44%	2.01%	2.68%
6-Month Average	0.21%	1.46%	2.00%	2.62%
Spot yields (June 19, 2015)			2.26%	3.05%
Spot yields (July 10, 2015)			2.40%	3.19%

Interest rates obtained from Value: Line Selection & Opinion
 Spot yields taken from CNBC.com

RISK PREMIUM

Historical Risk Premiums

Total Returns 1926 - 2014

	Stocks	Long Bonds	Int Bonds	Short Bonds
Geometric Mean	10.10%	5.70%	5.30%	3.50%
Arithmetic Mean	12.10%	6.10%	5.40%	3.50%

Market Risk Premiums

Geometric Mean	4.40%	4.80%	6.60%
Arithmetic Mean	6.00%	6.70%	8.60%
Average Premium	5.20%	5.75%	7.60%

Total return data obtained from Ibbotson Associates:
SBBI 2015 Yearbook Classic Edition.

Value Line
 Beta*

ALLETE	0.80
ALLIANT ENERGY	0.80
AMEREN	0.75
AMERICAN ELECTRIC POWER	0.70
AVISTA	0.80
BLACK HILLS CORP	0.95
CLECO CORPORATION	0.75
CON. EDISON	0.60
DOMINION RES.	0.70
DUKE ENERGY	0.60
EDISON INTERNATIONAL	0.75
EL PASO ELECTRIC	0.70
EMPIRE DISTRICT	0.70
GREAT PLAINS ENERGY	0.85
HAWAIIAN ELECTRIC	0.80
IDACORP, INC.	0.80
NEXTERA ENERGY	0.75
NORTHEAST UTILITIES / EVERSOURCE	0.75
OGE ENERGY CORPORATION	0.90
PG&E CORPORATION	0.65
PINNACLE WEST	0.70
PORTLAND GENERAL	0.80
SCANA CORPORATION	0.75
WESTAR ENERGY	0.75
XCEL	0.65
Average	0.748

*Value Line: May 1, 2015, May 22, 2015, and June 19, 2015"

CAPM Calculations
 Historical Risk Premiums

Risk premiums		Long ¹	Int	Short
Premiums		5.20%	5.75%	7.60%
Interest Rates	3 month	4.00%	1.73%	0.23%
Beta	0.748	7.89%	6.03%	5.91%

Risk premiums		Long ¹	Int	Short
Premiums		5.20%	5.75%	7.60%
Interest Rates	6 month	4.00%	1.73%	0.21%
Beta	0.748	7.89%	6.03%	5.90%

(1) The Duff & Phelps Normalized Risk Free is used as a proxy for the current long term risk free rate of return

Forecasted Risk Premium

Risk premiums		Long Term
Premium		6.00%
Interest Rate ¹		4.00%
Beta	0.748	8.49%

(1) The Duff & Phelps Normalized Risk Free is used as a proxy for the current long term risk free rate of return

How the price of a bond decreases
 when interest rates increase from 5.0% to 6.0%

Initial Interest Rate, Year 1 and 2 5.00%
 Interest Rate Year 3 and beyond 6.00%
 Initial Price \$ 1,000.00

<u>Year</u>	<u>Payment</u>	<u>Present Value 5% Yield Unchanged</u>	<u>Present Value 5% Yield Year 1 and 2 Changes to 6% in Year 3</u>
1	\$50.00	\$47.62	\$47.62
2	\$50.00	\$45.35	\$45.35
3	\$50.00	\$43.19	\$41.98
4	\$50.00	\$41.14	\$39.60
5	\$50.00	\$39.18	\$37.36
6	\$50.00	\$37.31	\$35.25
7	\$50.00	\$35.53	\$33.25
8	\$50.00	\$33.84	\$31.37
9	\$50.00	\$32.23	\$29.59
10	\$50.00	\$30.70	\$27.92
11	\$50.00	\$29.23	\$26.34
12	\$50.00	\$27.84	\$24.85
13	\$50.00	\$26.52	\$23.44
14	\$50.00	\$25.25	\$22.12
15	\$50.00	\$24.05	\$20.86
16	\$50.00	\$22.91	\$19.68
17	\$50.00	\$21.81	\$18.57
18	\$50.00	\$20.78	\$17.52
19	\$50.00	\$19.79	\$16.53
20	\$50.00	\$18.84	\$15.59
21	\$50.00	\$17.95	\$14.71
22	\$50.00	\$17.09	\$13.88
23	\$50.00	\$16.28	\$13.09
24	\$50.00	\$15.50	\$12.35
25	\$50.00	\$14.77	\$11.65
26	\$50.00	\$14.06	\$10.99
27	\$50.00	\$13.39	\$10.37
28	\$50.00	\$12.75	\$9.78
29	\$50.00	\$12.15	\$9.23
30	\$1,050.00	\$242.95	\$182.82
Total		\$1,000.00	\$863.65

Dr. Avera's CAPM
 How a change in interest rates
 influences the estimated cost of equity
 at various betas

Market return	12.30%	12.30%
interest rate	4.00%	5.00%
risk premium	8.30%	7.30%

<u>Beta</u>	<u>Cost of Equity</u> 4.00%	<u>Cost of Equity</u> 5.00%	<u>Spread</u>	
0.50	8.15%	8.65%	0.50%	
0.55	8.57%	9.02%	0.45%	
0.60	8.98%	9.38%	0.40%	
0.65	9.40%	9.75%	0.35%	
0.70	9.81%	10.11%	0.30%	
0.75	10.23%	10.48%	0.25%	
0.80	10.64%	10.84%	0.20%	
0.85	11.06%	11.21%	0.15%	
0.90	11.47%	11.57%	0.10%	
0.95	11.89%	11.94%	0.05%	
1.00	12.30%	12.30%	0.00%	
1.05	12.72%	12.67%	-0.05%	When beta is above 1.0: Cost of Equity decreases as risk free rate increases
1.10	13.13%	13.03%	-0.10%	
1.15	13.55%	13.40%	-0.15%	
1.20	13.96%	13.76%	-0.20%	
1.25	14.38%	14.13%	-0.25%	
1.30	14.79%	14.49%	-0.30%	
1.35	15.21%	14.86%	-0.35%	
1.40	15.62%	15.22%	-0.40%	
1.45	16.04%	15.59%	-0.45%	
1.50	16.45%	15.95%	-0.50%	
1.55	16.87%	16.32%	-0.55%	

Dr. Avera's Expected Earnings Approach
 Updated figures from Value Line
 Mr. Kaufman's proxy group

	Current Value Line <u>Expected Return</u>	Dr. Avera's Adjustment <u>Factor</u>	Adjusted <u>COE</u>	
1	ALLETE	9.5%	1.0338	9.82%
2	ALLIANT ENERGY	12.0%	1.0269	12.32%
3	AMEREN	9.5%	1.0217	9.71%
4	AMERICAN ELECTRIC POWER	10.5%	1.0220	10.73%
5	AVISTA	9.0%	1.0219	9.20%
6	BLACK HILLS CORP	8.5%	1.0218	8.69%
7	CLECO CORPORATION	9.0%	1.0221	9.20%
8	CON. EDISON	9.0%	1.0160	9.14%
9	DOMINION RES.	17.5%	1.0427	18.25%
10	DUKE ENERGY	8.0%	1.0115	8.09%
11	EDISON INTERNATIONAL	11.5%	1.0302	11.85%
12	EL PASO ELECTRIC	9.0%	1.0198	9.18%
13	EMPIRE DISTRICT	8.5%	1.0237	8.70%
14	GREAT PLAINS ENERGY	7.5%	1.0160	7.62%
15	HAWAIIAN ELECTRIC	9.5%	1.0260	9.75%
16	IDACORP, INC.	8.5%	1.0211	8.68%
17	NEXTERA ENERGY	12.0%	1.0540	12.65%
18	NORTHEAST UTILITIES / EVERSOURCE	10.0%	1.0404	10.40%
19	OGE ENERGY CORPORATION	11.0%	1.0193	11.21%
20	PG&E CORPORATION	9.5%	1.0306	9.79%
21	PINNACLE WEST	9.5%	1.0242	9.73%
22	PORTLAND GENERAL	9.0%	1.0247	9.22%
23	SCANA CORPORATION	9.5%	1.0380	9.86%
24	WESTAR ENERGY	9.5%	1.0298	9.78%
25	XCEL	10.0%	1.0305	10.31%
	Average	9.88%		10.16%

The influence one company can have
on Dr. Avera's estimated costs of equity

Schedule #	Affected Model	Company With Highest Value	Highest Value	2nd Highest Value	Midpoint Increased By	Company With 2nd Highest Value
WEA 5	DCF Value Line	Black Hills Corp	12.50%	11.70%	0.40%	Northeast Utilities
WEA 5	DCF IBES	Portland General	14.40%	13.00%	0.70%	Ameren
WEA 5	DCF Zacks	ITC Holdings	14.30%	12.40%	0.95%	Ameren
WEA 5	DCF Reuters	Portland General	14.40%	13.00%	0.70%	Ameren
WEA 8	Expected Earnings	Dominion Resources	14.60%	13.90%	0.35%	CMS Energy

HOW PARENT COMPANY LEVERAGE CAUSES THE REALIZED RETURN TO EXCEED THE COST OF CAPITAL

IPL(1) REGULATED SUBSIDIARY			IPALCO(2) UNREGULATED PARENT COMPANY		
Type of Capital	Amount	Percent of Total	Type of Capital	Amount	Percent of Total
Equity	\$928	44.69%	Equity	\$151	15.88%
Debt	\$1,149	55.31%	Debt	\$800	84.12%
Total	\$2,077	100.00%	Total	\$951	100.00%

Assumptions: Cost of Debt = 5.67% (Sub); 6.125% (Parent) (3) Subsidiary Cost of Equity = 10.00% Tax Rate = 35.00%

PARENT COMPANY'S EFFECTIVE RATE OF RETURN

Step 1: Calculate SUBSIDIARY overall return.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$928	44.69%	10.00%	4.47%	6.88%
Debt	\$1,149	55.31%	5.67%	3.14%	3.14%
Total	\$2,077	100.00%		7.61%	10.01%

Step 2: Apply SUBSIDIARY overall return to PARENT company.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$151	15.88%	19.89%	3.16%	4.86%
Debt	\$800	84.12%	6.13%	5.15%	5.15%
Total	\$951	100.00%		8.31%	10.01%

If the Subsidiary earns a 10.0% return on equity, the Parent company's effective return is 19.89%

Note (1) Total equity and debt figures from IPL Witness WEA Attachment 9

Note (2) Total equity and debt figures from (source) IPALCO debt only

Note (3) IPALCO has two \$400 million notes: One at 7.25% and one at 5.00% (average 6.125%)

HOW PARENT COMPANY LEVERAGE CAUSES THE REALIZED RETURN TO EXCEED THE COST OF CAPITAL

IPL(1) REGULATED SUBSIDIARY			IPALCO(2) UNREGULATED PARENT COMPANY		
Type of Capital	Amount	Percent of Total	Type of Capital	Amount	Percent of Total
Equity	\$928	44.69%	Equity	\$151	15.88%
Debt	<u>\$1,149</u>	<u>55.31%</u>	Debt	<u>\$800</u>	<u>84.12%</u>
Total	\$2,077	100.00%	Total	\$951	100.00%

Assumptions: Cost of Debt = 5.67% (Sub); 6.125% (Parent) (3) Parent Cost of Equity = 12.50% Tax Rate = 35.00%

Subsidiary Required Return to Achieve Parent Company Return

Step 1: Calculate PARENT overall return.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$151	15.88%	<u>12.50%</u>	1.98%	3.05%
Debt	<u>\$800</u>	<u>84.12%</u>	<u>6.125%</u>	<u>5.15%</u>	<u>5.15%</u>
Total	\$951	100.00%		7.14%	<u>8.21%</u>

Step 2: Apply PARENT overall return to SUBSIDIARY company.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$928	44.68%	<u>7.51%</u>	3.36%	5.16%
Debt	<u>\$1,149</u>	<u>55.32%</u>	<u>5.50%</u>	<u>3.04%</u>	<u>3.04%</u>
Total	\$2,077	100.00%		6.40%	<u>8.21%</u>

For the Parent company to achieve a 12.50% return on equity the Subsidiary only needs to earn a 7.51% on its equity

Note (1) Total equity and debt figures from IPL Witness WEA Attachment 9

Note (2) Total equity and debt figures from (source) IPALCO debt only

Note (3) IPALCO has two \$400 million notes: One at 7.25% and one at 5.00% (average 6.125%)

HOW PARENT COMPANY LEVERAGE CAUSES THE REALIZED RETURN TO EXCEED THE COST OF CAPITAL

IPL(1) REGULATED SUBSIDIARY			IPALCO(2) UNREGULATED PARENT COMPANY		
Type of Capital	Amount	Percent of Total	Type of Capital	Amount	Percent of Total
Equity	\$928	44.69%	Equity	\$151	15.88%
Debt	\$1,149	55.31%	Debt	\$800	84.12%
Total	\$2,077	100.00%	Total	\$951	100.00%

Assumptions: Cost of Debt = 5.67% (Sub); 6.125% (Parent) (3) Subsidiary Cost of Equity = 9.20% Tax Rate = 35.00%

PARENT COMPANY'S EFFECTIVE RATE OF RETURN

Step 1: Calculate SUBSIDIARY overall return.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$928	44.69%	9.20%	4.11%	6.33%
Debt	\$1,149	55.31%	5.67%	3.14%	3.14%
Total	\$2,077	100.00%		7.25%	9.46%

Step 2: Apply SUBSIDIARY overall return to PARENT company.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$151	15.88%	17.64%	2.80%	4.31%
Debt	\$800	84.12%	6.13%	5.15%	5.15%
Total	\$951	100.00%		7.95%	9.46%

If the Subsidiary earns a 9.20% return on equity, the Parent company's effective return is 17.64%

Note (1) Total equity and debt figures from IPL Witness WEA Attachment 9

Note (2) Total equity and debt figures from (source) IPALCO debt only

Note (3) IPALCO has two \$400 million notes: One at 7.25% and one at 5.00% (average 6.125%)

Data Request OUCC DR 22 - 04

For AFUDC and any current or future trackers that include an equity return component, does Petitioner intend to use its proposed 7.75% cost of equity as the equity return component? If no, please explain a) why not; b) Petitioner's proposed cost of equity for these applications, and; c) why that cost of equity is appropriate.

Objection:

Response:

No

- a) The 7.75% is only applicable to a fair value rate base that fully reflects the current value of IPL's rate base as discussed in Dr. Avera's testimony on page 82. AFUDC is based on original cost measurements so the fair rate of return to fair value would not apply. Similarly, applying the fair value return on equity in any current or future trackers based on original cost would be a mismatch and not consistent with the assumptions underlying the 7.75% fair return on equity for fair value rate base fully reflecting current cost.
- b) Any application of return on equity to original cost measures of investment should use the 10.93% return on equity developed in Dr. Avera's Direct Testimony. This return on equity is based on the cost of equity analyses presented in Dr. Avera's Direct Testimony on pages 43 – 80.
- c) The original cost return on equity of 10.93% is appropriate because it represents an "apples to apples" matching of a fair return to original cost to investments measured based on original costs.

Data Request IG DR 6 - 13

In response to OUCC DR 22-4, IPL states that the 10.93% “return on equity developed in Dr. Avera’s Direct Testimony” should be applied to any “original cost measures of investment.” IPL’s response indicates that the 10.93% return on equity would apply to AFUDC, and “any current or future trackers based on original cost.” With respect to IPL’s response please answer the following:

- a. Admit or deny that IPL is requesting the Commission approve two cost of equities: one that is applicable when calculating a rate of return on the fair value of its assets derived through a fair value measurement of investment (i.e., 7.75%) and one that is applicable when calculating a rate of return on the fair value of its assets derived through an original cost measurement of investment (i.e., 10.93%). If the answer is anything other than an unqualified admission, provide a complete explanation of the answer.
- b. Identify all current trackers which IPL believes are based on original cost measures of investment.
- c. Identify all current trackers which IPL believes are based on fair value cost measures of investment.
- d. Does IPL intend to apply a rate of return developed using the 10.93% return on equity to deferred amounts related to its environmental and replacement generation expenditures?

Objection:

Response:

- a. Deny. IPL is not requesting that the Commission approve two costs of equity. IPL is requesting that the Commission find a fair return to fair value for use in determining an authorized NOI using a fair return on equity of 7.75% only if is applied to the current value rate base of \$4,101,456. Dr. Avera’s testimony presents evidence to support a cost of equity of 10.93% applicable to IPL that can be applied to original cost for other regulatory purposes. Dr. Avera’s testimony does not present “two cost of equities” but instead estimates a cost of equity specific to IPL (Avera Direct Testimony pp. 43 – 80) of 10.93%. His testimony also recommends a fair return on equity to be included in the fair return to fair value (before adjusted for inflation) to be applied to a fair value rate base (Avera Direct Testimony pp. 80 – 82) of 7.75%. The 7.75% is not a cost of equity estimate for IPL but is a fair return on equity (based on the minimum cost of equity estimate for a utility that FERC would find logical adjusted for current capital market

- conditions for any utility with IPL's BBB bond rating (as calculated on p. 58 of Dr. Avera's Direct Testimony).
- b. Standard Contract Rider No. 20 Environmental Compliance Cost Recovery Adjustment ("ECR" or "ECCRA")
 - c. None
 - d. Yes. The 7.75% is only applicable to the \$4,101,456 current value rate base for purposes of finding a fair return on fair value for establishing an allowed NOI for IPL. IPL proposes to use Dr. Avera's 10.93% cost of equity in the calculation of the AFUDC rate for construction expenditures and the "return on" ECCRA capital expenditures and deferred amounts.

Data Request OUCC DR 53 - 01

In response to IG DR 6-13 Petitioner responded as follows:

IPL is requesting that the Commission find a fair return to fair value for use in determining an authorized NOI using a fair return on equity of 7.75% only if is applied to the current value rate base of \$4,101,456. (emphasis in original)

Did Petitioner mean \$4,101,456,000 and not \$4,101,456?

Objection:

Response:

Yes.

Data Request OUCR DR 53 - 02

If the Commission were to find that IPL's current fair value rate base was something other than its proposed \$4,101,456,000, would a fair return on equity of 7.75% be applicable to the Commission's other fair value rate bases? If no, how should the Commission determine the applicable fair return on equity?

Objection:

Response:

The 7.75% is the minimal cost of equity estimate considered logical, adjusted for current capital market conditions. It should only be used to derive a fair return to fair value rate base with the \$4,101,456,000 current value rate base. The reasoning for only using the 7.75% is presented in Dr. Avera's Direct Testimony on pages 80-82. If the Commission were to find a lower fair value rate base, the fair return should be based on a cost of equity from the IPL's cost of equity estimates developed in Dr. Avera's Direct Testimony on pages 43-80. Any result using a different rate base and different fair return on fair value must be tested for reasonableness as described in Dr. Avera's Direct Testimony on pages 82-86.



First Quarter 2015 Survey of Professional Forecasters

Release Date: February 13, 2015

Unchanged Outlook for Growth, but Brighter Outlook for Labor Markets

The outlook for growth in the U.S. economy over the next three years has changed little from the survey of three months ago, according to 39 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The forecasters predict real GDP will grow at an annual rate of 2.7 percent this quarter and 3.0 percent next quarter. On an annual-average over annual-average basis, real GDP will grow 3.2 percent in 2015, up 0.2 percentage point from the previous estimate. The forecasters predict real GDP will grow 2.9 percent in 2016, 2.7 percent in 2017, and 2.7 percent in 2018.

A brighter outlook for the labor market accompanies the nearly stable outlook for growth. The forecasters predict that the unemployment rate will be an annual average of 5.4 percent in 2015, before falling to 5.1 percent in 2016, 5.0 percent in 2017, and 4.9 percent in 2018. The projections for 2015, 2016, and 2017 are below those of the last survey.

The panelists also predict an improved outlook on the employment front. They have revised upward their estimates for job gains in the next four quarters. The forecasters see nonfarm payroll employment growing at a rate of 269,300 jobs per month this quarter, 233,800 jobs per month next quarter, 222,000 jobs per month in the third quarter of 2015, and 229,400 jobs per month in the fourth quarter of 2015. The forecasters' projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 252,500 in 2015 and 213,600 in 2016, 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
<i>Quarterly Data:</i>						
2015:Q1	2.8	2.7	5.8	5.6	211.2	269.3
2015:Q2	3.1	3.0	5.7	5.5	195.4	233.8
2015:Q3	2.8	2.8	5.6	5.4	208.0	222.0
2015:Q4	3.0	2.8	5.5	5.2	201.3	229.4
2016:Q1	N.A.	2.9	N.A.	5.2	N.A.	213.8
<i>Annual Data (projections are based on annual-average levels):</i>						
2015	3.0	3.2	5.6	5.4	212.3	252.5
2016	2.9	2.9	5.4	5.1	N.A.	213.6
2017	2.7	2.7	5.2	5.0	N.A.	N.A.
2018	N.A.	2.7	N.A.	4.9	N.A.	N.A.

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 one for 2018) presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The probability estimates for growth in 2015, 2016, and 2017 are about the same now as they were in the previous survey.

- [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 \(chart\)](#)
- [Mean Probabilities for Real GDP Growth in 2018 \(chart\)](#)

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 charts show the forecasters are raising their density estimates over the next three years at the lower levels of unemployment outcomes, suggesting they are more confident about lower unemployment than they were in the last survey.

- [Mean Probabilities for Unemployment Rate in 2015 \(chart\)](#)
- [Mean Probabilities for Unemployment Rate in 2016 \(chart\)](#)
- [Mean Probabilities for Unemployment Rate in 2017 \(chart\)](#)
- [Mean Probabilities for Unemployment Rate in 2018 \(chart\)](#)

Forecasters Predict Lower Inflation in 2015

The forecasters expect current-quarter headline CPI inflation to average -1.4 percent, lower than the last survey's estimate of 1.8 percent. The forecasters predict current-quarter headline PCE inflation of -0.6 percent, lower than the prediction of 1.7 percent from the survey of three months ago.

The forecasters also see lower headline and core measures of CPI and PCE inflation in 2015. Measured on a fourth-quarter over fourth-quarter basis, headline CPI inflation is expected to average 1.1 percent in 2015, down from 1.9 percent in the last survey. Forecasters expect fourth-quarter over fourth-quarter headline PCE inflation to also average 1.1 percent in 2015, down from 1.8 percent in the last survey.

Over the next 10 years, 2015 to 2024, the forecasters expect headline CPI inflation to average 2.1 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
<i>Quarterly</i>								
2015:Q1	1.8	-1.4	1.9	1.3	1.7	-0.6	1.7	1.2
2015:Q2	1.9	1.6	1.9	1.7	1.8	1.4	1.7	1.4
2015:Q3	2.0	1.9	1.9	1.8	1.8	1.9	1.8	1.5
2015:Q4	2.0	2.0	2.0	1.8	1.9	1.8	1.8	1.7
2016:Q1	N.A.	2.1	N.A.	1.9	N.A.	1.8	N.A.	1.6
<i>Q4/Q4 Annual Averages</i>								
2015	1.9	1.1	2.0	1.7	1.8	1.1	1.8	1.4
2016	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.7
2017	N.A.	2.3	N.A.	2.1	N.A.	2.1	N.A.	1.9
<i>Long-Term Annual Averages</i>								
2014-2018	2.09	N.A.	N.A.	N.A.	1.90	N.A.	N.A.	N.A.
2015-2019	N.A.	2.00	N.A.	N.A.	N.A.	1.80	N.A.	N.A.
2014-2023	2.20	N.A.	N.A.	N.A.	2.00	N.A.	N.A.	N.A.
2015-2024	N.A.	2.10	N.A.	N.A.	N.A.	2.00	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 a slightly lower level of the long-term projection for CPI inflation, at 2.1 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 2015 and 2016 will fall into each of 10 ranges. For 2015, the forecasters assign a higher chance than previously predicted that core PCE inflation will be below 1.5 percent (and a lower probability that inflation will be above 1.5 percent).

- [Mean Probabilities for Core PCE Inflation in 2015](#) (chart)
- [Mean Probabilities for Core PCE Inflation in 2016](#) (chart)

Lower Risk of a Negative Quarter

For the current quarter, the forecasters predict a 7.9 percent chance of negative growth. As the table below shows, the forecasters have also reduced their risk estimates for a downturn in the following quarters, compared with their previous estimates.

Risk of a Negative Quarter (%)
Survey Means

Quarterly Data:	Previous	New
2015: Q1	10.3	7.9
2015: Q2	11.4	9.3
2015: Q3	12.6	11.1
2015: Q4	13.5	11.9
2016: Q1	N.A.	13.2

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 their measure from a list of indices or to write in their own index. For each index of their choosing, the panelists provided forecasts for growth in 2015 and 2016.

Twenty-two 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 seven house-price indices listed in the table below range from 3.7 percent to 5.9 percent in 2015 and from 3.0 percent to 5.0 percent in 2016.

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

Index	N	2015 (Q4/Q4 Percent Change)		2016 (Q4/Q4 Percent Change)		
		Mean	Median	N	Mean	Median
S&P/Case-Shiller: U.S. National	7	4.4	4.5	7	5.0	4.0
S&P/Case-Shiller: Composite 10	2	4.0	4.0	2	3.5	3.5
S&P/Case-Shiller: Composite 20	5	3.7	4.0	5	2.9	3.5
FHFA: U.S. Total	5	4.9	5.6	5	4.8	5.0
FHFA: Purchase Only	8	3.5	3.7	8	3.0	3.0
CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined)	4	5.1	5.3	4	4.4	4.5
NAR Median: Total Existing	2	5.9	5.9	2	3.7	3.7

Forecasters See Slightly Lower Long-Run Growth in Output and Productivity and in Returns to Financial Assets

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 reduced 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 2.50 percent over the next 10 years, down from 2.60 percent in the first-quarter survey of 2014.

Similarly, productivity growth is now expected to average 1.70 percent, down from 1.80 percent. Downward revisions to the return on two of the financial assets accompany the current outlook. The forecasters see the S&P 500 returning an annual-average 5.45 percent per year over the next 10 years, down from 6.00 percent. The forecasters expect the rate on 10-year Treasuries to average 3.98 percent over the next 10 years, down from 4.35 percent in last year's first-quarter survey. Three-month Treasury bills will return 2.67 percent, up from 2.50 percent.

Median Long-Term (10-Year) Forecasts (%)

	First Quarter 2014	Current Survey
Real GDP Growth	2.60	2.50
Productivity Growth	1.80	1.70
Stock Returns (S&P 500)	6.00	5.45
Rate on 10-Year Treasury Bonds	4.35	3.98
Bill Returns (3-Month)	2.50	2.67

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; David Crowe, National Association of Home Builders; Nathaniel Curtis, Navigant Consulting; Gregory Daco, Oxford Economics USA, Inc.; Rajeev Dhawan, Georgia State University; Michael R. Englund, Action Economics, LLC; Michael Gapen, Barclays Capital; James Glassman, JPMorgan Chase & Co.; Matthew Hall and Daniil Manaenkov, RSQE, University of Michigan; Jan Hatzius, Goldman Sachs; Keith Hembre, Nuveen Asset Management; 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; Jack Kleinhenz, Kleinhenz & Associates, Inc.; Thomas Lam, OSK-DMG/RHB; L. Douglas Lee, Economics from Washington; John Lonski, Moody's Capital Markets Group; Macroeconomic Advisers, LLC; R. Anthony Metz, Pareto Optimal Economics; Michael Moran, Daiwa Capital Markets America; Joel L. Naroff, Naroff Economic Advisors; Luca Noto, Anima Sgr; Brendon Ogmundson, BC Real Estate Association; Tom Porcelli, RBC Capital Markets; Arun Raha, Eaton Corporation; Martin A. Regalia, U.S. Chamber of Commerce; Vincent Reinhart, Morgan Stanley; Philip Rothman, East Carolina University; Chris Rupkey, Bank of Tokyo-Mitsubishi UFJ; John Silvia, Wells Fargo; Allen Sinai, Decision Economics, Inc.; Sean M. Snaith, Ph.D., University of Central Florida; Neal Soss, Credit Suisse; Stephen Stanley, Amherst Pierpont Securities; Charles Steindel, Ramapo College of New Jersey; Susan M. Sterne, Economic Analysis Associates, Inc.; Thomas Kevin Swift, American Chemistry Council; Richard Yamarone, Bloomberg, LP; Mark Zandi, Moody's Analytics.

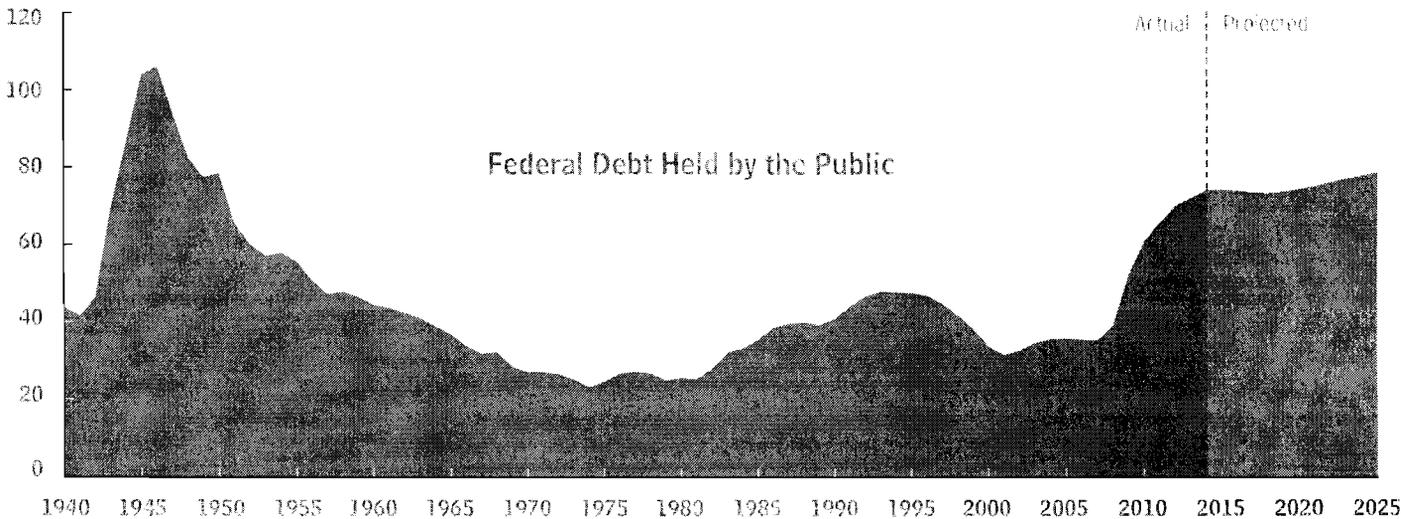
This is a partial list of participants. We also thank those who wish to remain anonymous.

CONGRESS OF THE UNITED STATES
 CONGRESSIONAL BUDGET OFFICE

CBO

The Budget and Economic Outlook: 2015 to 2025

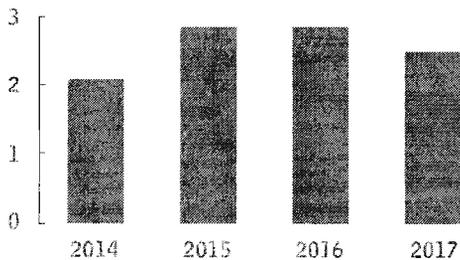
Percentage of GDP



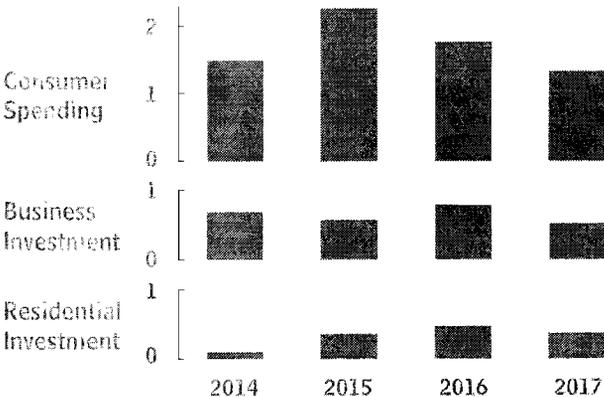
Largest Contributors to the Growth Rate of GDP

Growth Rate of GDP

Percentage Points, Adjusted for Inflation



Percentage Points, Adjusted for Inflation



JANUARY 2015



CBO's Economic Projections for 2015 to 2025

The tables in this appendix expand on the information in Chapter 2 by showing the Congressional Budget Office's economic projections for each year from 2015 to 2025 (by calendar year in Table F-1 and by fiscal year in Table F-2). For years after 2019, CBO did not attempt to forecast the frequency or size of fluctuations in

the business cycle. Instead, the values shown in these tables for 2020 to 2025 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 F-1.

CBO's Economic Projections, by Calendar Year

	Estimated, 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Percentage Change From Year to Year												
Gross Domestic Product												
Real (Inflation-adjusted)	2.2	2.8	3.0	2.7	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1
Nominal	3.9	4.5	4.6	4.6	4.3	4.1	4.3	4.3	4.2	4.2	4.2	4.2
Inflation												
PCE price index	1.4	1.1	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index ^a	1.4	1.7	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index ^b	1.6 ^c	1.1	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Core consumer price index ^a	1.7 ^c	2.0	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	1.6	1.6	1.6	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Employment Cost Index ^d	2.0	2.7	3.0	3.5	3.6	3.6	3.5	3.5	3.4	3.4	3.3	3.3
Calendar Year Average												
Unemployment Rate (Percent)	6.2 ^c	5.5	5.4	5.3	5.4	5.5	5.5	5.5	5.4	5.4	5.4	5.4
Payroll Employment (Monthly change, in thousands) ^e	234 ^c	184	148	111	70	68	75	77	79	80	80	80
Interest Rates (Percent)												
Three-month Treasury bills	* ^c	0.2	1.2	2.6	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Ten-year Treasury notes	2.5 ^c	2.8	3.4	3.9	4.2	4.5	4.6	4.6	4.6	4.6	4.6	4.6
Tax Bases (Percentage of GDP)												
Wages and salaries	42.7	42.6	42.6	42.7	42.8	42.8	42.9	42.9	43.0	43.0	43.1	43.1
Domestic economic profits	9.9	10.0	9.7	9.4	9.0	8.6	8.4	8.2	8.0	7.9	7.8	7.8
Tax Bases (Billions of dollars)												
Wages and salaries	7,432	7,755	8,118	8,503	8,880	9,259	9,665	10,090	10,533	10,994	11,472	11,965
Domestic economic profits	1,716	1,825	1,843	1,867	1,875	1,865	1,889	1,924	1,962	2,016	2,086	2,161
Nominal GDP (Billions of dollars)	17,422	18,204	19,045	19,919	20,768	21,625	22,550	23,515	24,515	25,550	26,625	27,736

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

Note: GDP = gross domestic product; PCE = personal consumption expenditures; * = between zero and 0.05 percent.

- a. Excludes prices for food and energy.
- b. The consumer price index for all urban consumers.
- c. Actual value for 2014.
- d. The employment cost index for wages and salaries of workers in private industries.
- e. Calculated as the monthly average of the fourth-quarter-to-fourth-quarter change in payroll employment.

Table F-2.
CBO's Economic Projections, by Fiscal Year

	Actual, 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Percentage Change From Year to Year												
Gross Domestic Product												
Real (Inflation-adjusted)	2.6	2.7	3.0	2.8	2.3	2.0	2.2	2.2	2.2	2.1	2.1	2.1
Nominal	4.1	4.4	4.5	4.6	4.3	4.1	4.3	4.3	4.3	4.2	4.2	4.2
Inflation												
PCE price index	1.3	1.1	1.7	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index ^a	1.4	1.6	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index ^b	1.6	1.1	2.0	2.3	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.4
Core consumer price index ^a	1.7	1.9	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	1.5	1.7	1.5	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Employment Cost Index ^c	1.9	2.7	2.9	3.4	3.6	3.6	3.6	3.5	3.4	3.4	3.3	3.3
Fiscal Year Average												
Unemployment Rate (Percent)	6.5	5.6	5.4	5.4	5.3	5.4	5.5	5.5	5.5	5.4	5.4	5.4
Payroll Employment (Monthly change, in thousands) ^d	217	208	153	119	80	65	75	76	79	79	80	79
Interest Rates (Percent)												
Three-month Treasury bills	*	0.1	0.9	2.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Ten-year Treasury notes	2.7	2.6	3.2	3.8	4.1	4.4	4.6	4.6	4.6	4.6	4.6	4.6
Tax Bases (Percentage of GDP)												
Wages and salaries	42.6	42.6	42.6	42.7	42.7	42.8	42.8	42.9	43.0	43.0	43.1	43.1
Domestic economic profits	9.8	10.1	9.8	9.4	9.1	8.7	8.4	8.2	8.0	7.9	7.8	7.8
Tax Bases (Billions of dollars)												
Wages and salaries	7,350	7,668	8,024	8,406	8,787	9,162	9,562	9,982	10,421	10,877	11,351	11,840
Domestic economic profits	1,684	1,827	1,842	1,861	1,878	1,863	1,880	1,916	1,951	2,001	2,068	2,142
Nominal GDP (Billions of dollars)	17,263	18,016	18,832	19,701	20,558	21,404	22,315	23,271	24,261	25,287	26,352	27,456

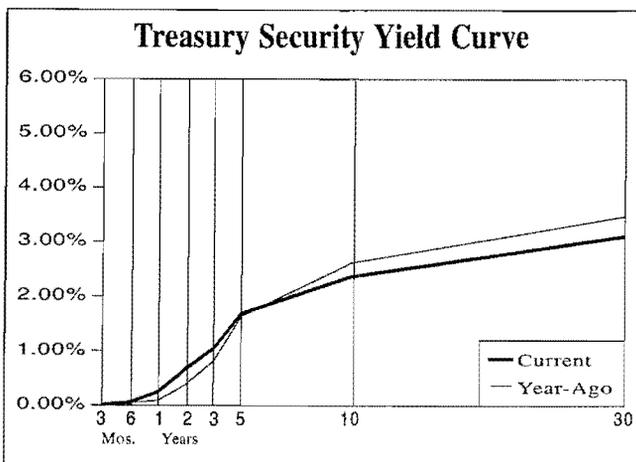
Sources: Congressional Budget Office; Bureau of Labor Statistics; Federal Reserve.

Note: GDP = gross domestic product; PCE = personal consumption expenditures; * = between zero and 0.05 percent.

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

Selected Yields

	Recent (6/03/15)	3 Months Ago (3/04/15)	Year Ago (6/04/14)		Recent (6/03/15)	3 Months Ago (3/04/15)	Year Ago (6/04/14)
TAXABLE							
Market Rates				Mortgage-Backed Securities			
Discount Rate	0.75	0.75	0.75	GINMA 5.5%	1.26	1.52	1.66
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	FHLMC 5.5% (Gold)	1.60	1.48	1.74
Prime Rate	3.25	3.25	3.25	FNMA 5.5%	1.39	1.19	1.65
30-day CP (A1/P1)	0.13	0.16	0.10	FNMA ARM	1.84	1.86	1.84
3-month LIBOR	0.28	0.27	0.23	Corporate Bonds			
Bank CDs				Financial (10-year) A	3.70	3.30	3.61
6-month	0.17	0.16	0.14	Industrial (25/30-year) A	4.39	3.90	4.33
1-year	0.27	0.28	0.23	Utility (25/30-year) A	4.39	3.82	4.30
5-year	0.86	0.87	0.78	Utility (25/30-year) Baa/BBB	4.78	4.14	4.62
U.S. Treasury Securities				Foreign Bonds (10-Year)			
3-month	0.01	0.01	0.03	Canada	1.78	1.51	2.35
6-month	0.06	0.08	0.05	Germany	0.88	0.38	1.43
1-year	0.25	0.24	0.09	Japan	0.47	0.41	0.62
5-year	1.69	1.59	1.64	United Kingdom	2.08	1.88	2.70
10-year	2.37	2.12	2.62	Preferred Stocks			
10-year (inflation-protected)	0.53	0.25	0.41	Utility A	5.95	5.95	6.01
30-year	3.10	2.72	3.47	Financial BBB	6.15	6.20	6.48
30-year Zero	3.22	2.80	3.63	Financial Adjustable A	5.53	5.53	5.53



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	3.73	3.62	4.26				
25-Bond Index (Revs)	4.48	4.28	4.79				
General Obligation Bonds (GOs)							
1-year AAA	0.25	0.19	0.15				
1-year A	0.80	0.58	0.65				
5-year AAA	1.48	1.30	1.23				
5-year A	2.34	1.82	2.00				
10-year AAA	2.32	2.13	2.43				
10-year A	3.35	2.84	3.61				
25/30-year AAA	3.24	3.02	3.74				
25/30-year A	4.91	3.82	5.58				
Revenue Bonds (Revs) (15 Years)							
Education AA	3.29	2.98	3.21				
Electric AA	3.45	3.09	3.33				
Housing AA	3.64	3.39	3.88				
Hospital AA	3.36	2.63	3.09				
Toll Road AA	3.06	2.70	2.82				

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...		
	5/27/15	5/13/15	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	2476603	2518074	-41471	2540461	2525289	2572525
Borrowed Reserves	95	70	25	46	63	142
Net Free/Borrowed Reserves	2476508	2518004	-41496	2540414	2525226	2572383

MONEY SUPPLY

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

	Recent Levels			Ann'l Growth Rates Over the Last...		
	5/18/15	5/11/15	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2986.9	2988.5	-1.6	1.8%	7.6%	7.4%
M2 (M1+savings+small time deposits)	11940.3	11913.3	27.0	4.3%	6.8%	6.0%

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 Sinquefeld, 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 Sinquefeld 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.

The most important thing to understand about the forecast that Roger Ibbotson and Rex Sinquefeld 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 Sinquefeld 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 Sinquefeld, 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 Sinquefeld 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 Sinquefeld 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. Sinquefeld, meanwhile, launched small-cap index fund manager Dimensional Fund Advisors with another Chicago finance graduate, David Booth, in 1981.

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.

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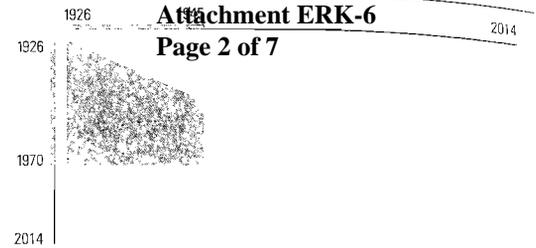
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Inflation:

Rates of Return for all holding periods

Percent per annum compounded annually

from 1926 to 2014



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

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1926

1945

2014

Inflation:

Rates of Return for all holding periods

Percent per annum compounded annually

from 1926 to 2014

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	3.9	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
2013	3.0	3.0	3.1	3.1	3.2	3.3	3.4	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.9	3.9	3.8	3.8	3.8	3.8
2014	2.9	3.0	3.1	3.1	3.1	3.2	3.4	3.6	3.6	3.6	3.7	3.7	3.7	3.8	3.8	3.9	3.8	3.7	3.7	3.8

Table C-7 (page 3 of 6)

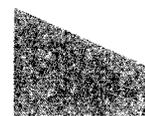
Inflation:

Rates of Return for all holding periods

Percent per annum compounded annually

1926
1946
1966
1986
2014

Page 4 of 7



from 1926 to 2014

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 2014

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	3.8	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
2013		3.8	3.6	3.5	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.9	3.9	4.0	4.0	4.1	4.1	4.2
2014		3.8	3.6	3.5	3.5	3.6	3.6	3.5	3.6	3.6	3.7	3.8	3.8	3.8	3.8	3.9	3.9	4.0	4.0	4.1	4.1

Table C-7 (page 5 of 6)

Inflation:

Rates of Return for all holding periods

Percent per annum compounded annually

from 1926 to 2014

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
2013		4.2	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.1	3.9	3.8	3.8	3.7	3.6	3.3	3.1	2.9	2.8	2.8	2.8
2014		4.2	4.2	4.2	4.2	4.2	4.1	4.2	4.2	4.1	3.9	3.8	3.8	3.7	3.5	3.3	3.0	2.8	2.8	2.8	2.7

Table C-7 (page 6 of 6)-a

Inflation:
Rates of Return for all holding periods
Percent per annum compounded annually

from 1926 to 2014

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	2.5	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
2013	2.7	2.8	2.7	2.7	2.6	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.3
2014	2.7	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.2

Table C-7 (page 6 of 6)-b

Inflation:
Rates of Return for all holding periods
Percent per annum compounded annually

from 1926 to 2014

To the end of	From the beginning of												
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
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	1.5				
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		
2013	2.3	2.3	2.4	2.3	2.1	2.1	1.7	2.1	1.9	2.1	1.6	1.5	
2014	2.3	2.2	2.3	2.2	2.0	2.0	1.7	2.0	1.8	1.9	1.5	1.4	1.3

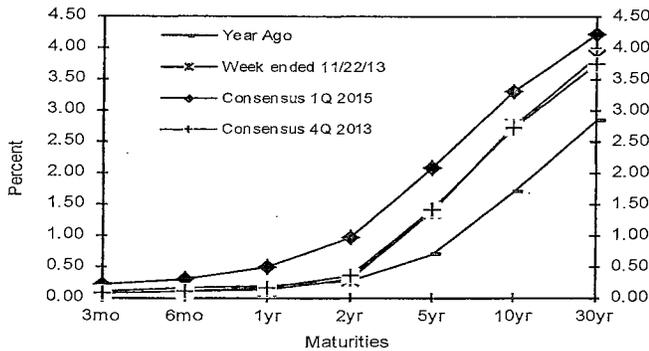
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions¹

Interest Rates	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month				Latest Q	4Q 2013	1Q 2014	2Q 2014	3Q 2014	4Q 2014
	Nov. 22	Nov. 15	Nov. 8	Nov. 1	Oct.	Sep.	Aug.	3Q 2013						
Federal Funds Rate	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.1	0.1	0.1	0.2	0.2	0.2
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.3	3.3	3.3	3.3	3.3	3.3
LIBOR, 3-mo.	0.24	0.24	0.24	0.24	0.24	0.25	0.26	0.26	0.3	0.3	0.3	0.3	0.4	0.4
Commercial Paper, 1-mo.	0.06	0.06	0.04	0.05	0.07	0.05	0.05	0.05	0.1	0.1	0.1	0.2	0.2	0.2
Treasury bill, 3-mo.	0.08	0.08	0.05	0.04	0.05	0.02	0.04	0.03	0.1	0.1	0.1	0.1	0.1	0.2
Treasury bill, 6-mo.	0.10	0.10	0.09	0.08	0.08	0.04	0.07	0.06	0.1	0.1	0.1	0.2	0.2	0.3
Treasury bill, 1 yr.	0.13	0.13	0.11	0.11	0.12	0.12	0.13	0.12	0.1	0.2	0.2	0.3	0.4	0.5
Treasury note, 2 yr.	0.30	0.32	0.31	0.32	0.34	0.40	0.36	0.37	0.3	0.4	0.5	0.7	0.8	1.0
Treasury note, 5 yr.	1.37	1.40	1.36	1.32	1.37	1.60	1.52	1.51	1.4	1.5	1.7	1.8	2.0	2.1
Treasury note, 10 yr.	2.74	2.74	2.68	2.57	2.62	2.81	2.74	2.71	2.7	2.8	3.0	3.1	3.2	3.3
Treasury note, 30 yr.	3.84	3.82	3.76	3.64	3.68	3.79	3.76	3.72	3.7	3.9	4.0	4.1	4.2	4.2
Corporate Aaa bond	4.65	4.67	4.60	4.48	4.53	4.64	4.54	4.51	4.6	4.7	4.8	4.9	5.0	5.0
Corporate Baa bond	5.40	5.43	5.36	5.23	5.31	5.47	5.42	5.40	5.4	5.5	5.6	5.7	5.8	5.9
State & Local bonds	4.60	4.64	4.56	4.48	4.56	4.79	4.82	4.72	4.6	4.6	4.7	4.8	4.8	4.9
Home mortgage rate	4.22	4.35	4.16	4.10	4.19	4.49	4.46	4.44	4.3	4.5	4.6	4.7	4.8	4.9

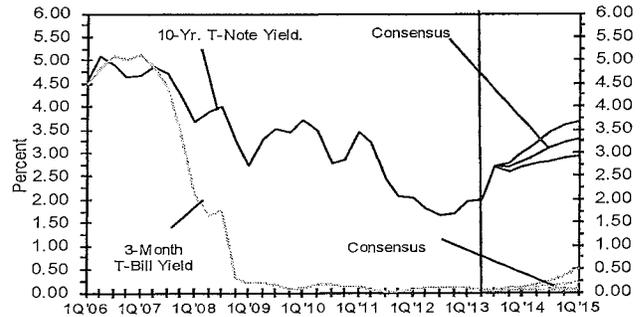
Key Assumptions	History								Consensus Forecasts-Quarterly					
	4Q 2011	1Q 2012	2Q 2012	3Q 2012	4Q 2012	1Q 2013	2Q 2013	3Q 2013	4Q 2013	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015
Major Currency Index	72.4	72.9	73.9	74.0	73.2	74.7	76.4	76.7	76.3	76.5	76.9	77.2	77.4	77.5
Real GDP	4.9	3.7	1.2	2.8	0.1	1.1	2.5	2.8	1.9	2.6	2.7	2.8	2.9	3.0
GDP Price Index	0.5	2.0	1.8	2.3	1.1	1.3	0.6	1.9	1.5	1.7	1.8	1.9	1.9	2.0
Consumer Price Index	1.4	2.3	1.0	2.1	2.2	1.4	0.0	2.6	1.3	1.8	1.8	2.1	2.0	2.2

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Interest rate definitions are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for Fed's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

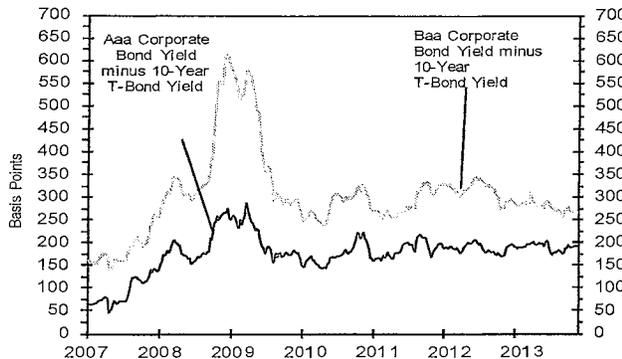
U.S. Treasury Yield Curve
 Week ended November 22, 2013 and Year Ago vs. 4Q 2013 and 1Q 2015 Consensus Forecasts



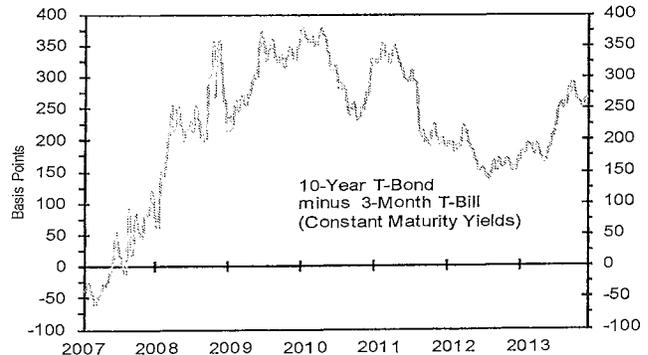
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
 (Quarterly Average) History Forecast



Corporate Bond Spreads
 As of week ended November 22, 2013



U.S. Treasury Yield Curve
 As of week ended November 22, 2013



Long-Range Estimates:

The table below contains results of our semi-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are estimates for the years 2015 through 2019 and averages for the five-year periods 2015-2019 and 2020-2024. Apply these projections cautiously. Few economic, demographic and political forces can be evaluated accurately over such long time spans.

<u>Interest Rates</u>		-----Average For The Year-----					Five-Year Averages	
		<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2015-2019</u>	<u>2020-2024</u>
1. Federal Funds Rate	CONSENSUS	0.4	1.7	2.9	4.7	3.9	2.7	3.7
	Top 10 Average	0.8	2.6	3.9	8.3	4.5	4.0	4.4
	Bottom 10 Average	0.2	0.8	1.6	2.6	3.1	1.6	2.9
2. Prime Rate	CONSENSUS	3.5	4.8	6.0	6.6	6.9	5.6	6.7
	Top 10 Average	3.9	5.6	6.9	7.2	7.6	6.2	7.4
	Bottom 10 Average	3.3	4.1	5.0	5.7	6.1	4.8	5.8
3. LIBOR, 3-Mo.	CONSENSUS	0.9	2.2	3.3	4.0	4.2	2.9	4.0
	Top 10 Average	1.6	3.3	4.6	5.0	5.2	3.9	5.0
	Bottom 10 Average	0.4	1.1	2.0	2.8	3.3	1.9	3.0
4. Commercial Paper, 1-Mo.	CONSENSUS	0.6	2.0	3.1	3.7	3.9	2.6	3.7
	Top 10 Average	1.0	2.7	3.9	4.3	4.5	3.3	4.3
	Bottom 10 Average	0.3	1.3	2.3	2.9	3.1	2.0	3.0
5. Treasury Bill Yield, 3-Mo.	CONSENSUS	0.5	1.7	2.9	3.5	3.7	2.5	3.6
	Top 10 Average	1.0	2.7	3.9	4.3	4.5	3.3	4.3
	Bottom 10 Average	0.2	0.8	1.7	2.4	3.0	1.6	2.7
6. Treasury Bill Yield, 6-Mo.	CONSENSUS	0.7	2.0	3.1	3.7	3.9	2.7	3.8
	Top 10 Average	1.2	2.9	4.1	4.5	4.6	3.5	4.5
	Bottom 10 Average	0.3	1.1	1.9	2.7	3.1	1.8	2.8
7. Treasury Bill Yield, 1-Yr.	CONSENSUS	0.9	2.2	3.2	3.8	4.0	2.8	3.9
	Top 10 Average	1.5	3.2	4.3	4.7	4.8	3.7	4.6
	Bottom 10 Average	0.4	1.2	2.0	2.8	3.1	1.9	2.9
8. Treasury Note Yield, 2-Yr.	CONSENSUS	1.4	2.6	3.6	4.0	4.3	3.2	4.2
	Top 10 Average	2.0	3.5	4.5	4.9	5.0	4.0	4.9
	Bottom 10 Average	0.8	1.7	2.4	3.1	3.5	2.3	3.3
10. Treasury Note Yield, 5-Yr.	CONSENSUS	2.3	3.3	4.1	4.4	4.6	3.7	4.4
	Top 10 Average	2.9	4.0	4.8	5.1	5.3	4.4	5.1
	Bottom 10 Average	1.7	2.6	3.2	3.5	3.7	2.9	3.6
11. Treasury Note Yield, 10-Yr.	CONSENSUS	3.4	4.1	4.6	4.8	5.0	4.4	4.9
	Top 10 Average	3.9	4.8	5.3	5.6	5.8	5.1	5.6
	Bottom 10 Average	2.8	3.5	3.8	4.0	4.1	3.7	4.0
12. Treasury Bond Yield, 30-Yr.	CONSENSUS	4.3	4.7	5.2	5.5	5.6	5.0	5.5
	Top 10 Average	4.8	5.5	6.0	6.3	6.5	5.8	6.2
	Bottom 10 Average	3.7	4.0	4.4	4.6	4.7	4.3	4.6
13. Corporate Aaa Bond Yield	CONSENSUS	4.9	5.4	5.9	6.2	6.3	5.7	6.2
	Top 10 Average	5.6	6.2	6.7	7.0	7.2	6.5	7.0
	Bottom 10 Average	4.2	4.5	4.9	5.2	5.3	4.8	5.3
13. Corporate Baa Bond Yield	CONSENSUS	5.9	6.3	6.8	7.1	7.2	6.7	7.0
	Top 10 Average	6.5	7.1	7.5	7.9	8.1	7.4	7.9
	Bottom 10 Average	5.1	5.4	5.7	6.1	6.1	5.7	6.0
14. State & Local Bonds Yield	CONSENSUS	4.8	5.2	5.6	5.7	5.7	5.4	5.5
	Top 10 Average	5.2	5.9	6.3	6.5	6.6	6.1	6.3
	Bottom 10 Average	4.3	4.5	4.8	4.9	4.9	4.7	4.7
15. Home Mortgage Rate	CONSENSUS	5.1	5.6	6.1	6.4	6.5	5.9	6.4
	Top 10 Average	5.6	6.3	6.9	7.1	7.3	6.6	7.1
	Bottom 10 Average	4.4	5.0	5.3	5.5	5.6	5.2	5.6
A. FRB - Major Currency Index	CONSENSUS	77.8	78.4	78.8	79.1	79.2	78.7	79.7
	Top 10 Average	81.0	82.3	83.4	84.2	84.4	83.1	84.8
	Bottom 10 Average	74.6	74.3	74.0	73.7	74.0	74.1	74.7
		-----Year-Over-Year, % Change-----					Five-Year Averages	
		<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2015-2019</u>	<u>2020-2024</u>
B. Real GDP	CONSENSUS	3.0	2.9	2.7	2.6	2.5	2.7	2.4
	Top 10 Average	3.5	3.3	3.1	2.9	2.9	3.1	2.7
	Bottom 10 Average	2.5	2.5	2.3	2.1	2.2	2.3	2.1
C. GDP Chained Price Index	CONSENSUS	2.0	2.1	2.1	2.1	2.1	2.1	2.1
	Top 10 Average	2.5	2.5	2.6	2.5	2.5	2.5	2.5
	Bottom 10 Average	1.5	1.7	1.7	1.7	1.7	1.7	1.7
D. Consumer Price Index	CONSENSUS	2.2	2.3	2.3	2.3	2.3	2.3	2.3
	Top 10 Average	2.6	2.8	2.8	2.8	2.8	2.8	2.8
	Bottom 10 Average	1.7	1.9	1.9	1.9	2.0	1.9	1.9

Blue Chip Financial Forecasts®

**Top Analysts' Forecasts Of U.S. And Foreign Interest Rates, Currency Values
And The Factors That Influence Them**

Vol. 34, No. 6, June 1, 2015

Wolters Kluwer

2 BLUE CHIP FINANCIAL FORECASTS JUNE 1, 2015

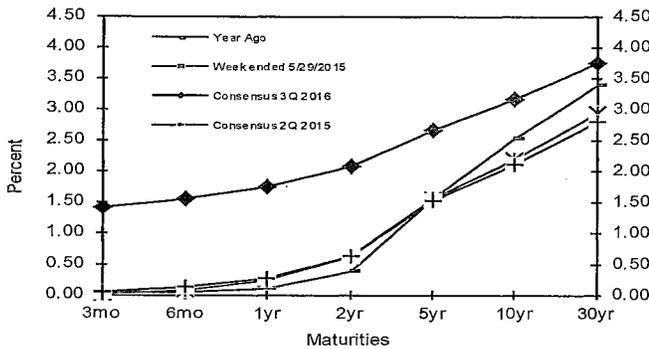
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions¹

Interest Rates	History								Consensus Forecasts-Quarterly Avg.						
	Average For Week Ending				Average For Month				Latest Q	2Q 2015	3Q 2015	4Q 2015	1Q 2016	2Q 2016	3Q 2016
	May 29	May 22	May 15	May 8	Apr.	Mar.	Feb.	1Q 2015	2015	2015	2015	2016	2016	2016	
Federal Funds Rate	0.12	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.1	0.3	0.5	0.8	1.1	1.4	
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.3	3.3	3.5	3.8	4.1	4.5	
LIBOR, 3-mo.	0.29	0.29	0.29	0.29	0.28	0.26	0.26	0.26	0.3	0.4	0.7	1.0	1.4	1.7	
Commercial Paper, 1-mo.	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.1	0.3	0.5	0.9	1.2	1.5	
Treasury bill, 3-mo.	0.02	0.02	0.02	0.01	0.02	0.03	0.02	0.03	0.0	0.2	0.5	0.8	1.1	1.4	
Treasury bill, 6-mo.	0.08	0.08	0.09	0.08	0.09	0.11	0.07	0.09	0.1	0.3	0.6	0.9	1.2	1.5	
Treasury bill, 1 yr.	0.24	0.23	0.24	0.24	0.23	0.25	0.22	0.22	0.3	0.5	0.8	1.1	1.4	1.7	
Treasury note, 2 yr.	0.63	0.61	0.59	0.62	0.54	0.64	0.62	0.60	0.6	0.9	1.2	1.5	1.8	2.1	
Treasury note, 5 yr.	1.54	1.54	1.54	1.54	1.35	1.52	1.57	1.49	1.5	1.7	2.0	2.2	2.4	2.7	
Treasury note, 10 yr.	2.17	2.23	2.24	2.19	1.94	2.04	1.98	1.97	2.1	2.3	2.5	2.7	2.9	3.1	
Treasury note, 30 yr.	2.94	3.02	3.02	2.91	2.59	2.63	2.57	2.55	2.8	3.0	3.2	3.4	3.6	3.7	
Corporate Aaa bond	3.99	4.07	4.02	3.91	3.52	3.64	3.61	3.57	3.8	4.0	4.2	4.4	4.7	4.9	
Corporate Baa bond	4.90	4.96	4.94	4.82	4.48	4.54	4.51	4.50	4.7	4.9	5.0	5.2	5.4	5.6	
State & Local bonds	3.73	3.81	3.74	3.74	3.51	3.59	3.58	3.52	3.7	3.8	4.0	4.2	4.4	4.6	
Home mortgage rate	3.87	3.84	3.85	3.80	3.67	3.77	3.71	3.73	3.8	4.0	4.2	4.5	4.7	4.9	

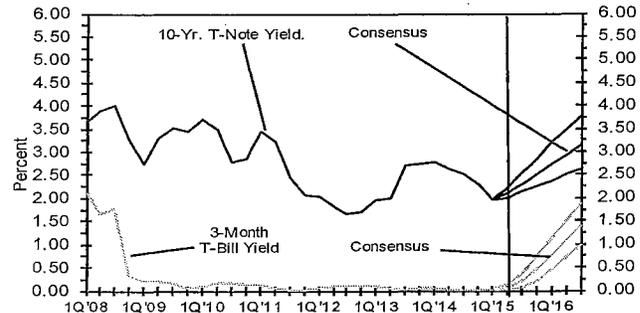
Key Assumptions	History								Consensus Forecasts-Quarterly					
	2Q				3Q				4Q				1Q	
	2013	2013	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2016	2016
Major Currency Index	76.4	76.7	76.0	77.1	76.6	77.8	82.6	89.4	90.4	90.9	91.6	91.7	91.6	91.3
Real GDP	1.8	4.5	3.5	-2.1	4.6	5.0	2.2	-0.7	2.6	3.2	3.0	2.7	2.8	2.8
GDP Price Index	1.2	1.7	1.5	1.3	2.1	1.4	0.1	-0.1	1.7	1.8	1.8	1.9	2.0	2.1
Consumer Price Index	-0.1	2.3	1.4	2.1	2.4	1.2	-0.9	-3.1	2.2	2.2	2.2	2.1	2.3	2.4

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Interest rate definitions are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for Fed's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

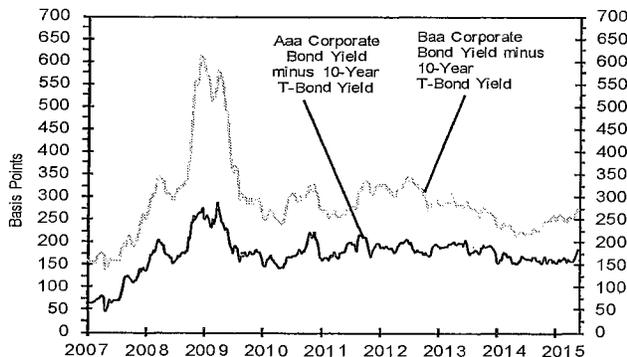
U.S. Treasury Yield Curve
Week ended May 29, 2015 and Year Ago v.s.
2Q 2015 and 3Q 2016 Consensus Forecasts



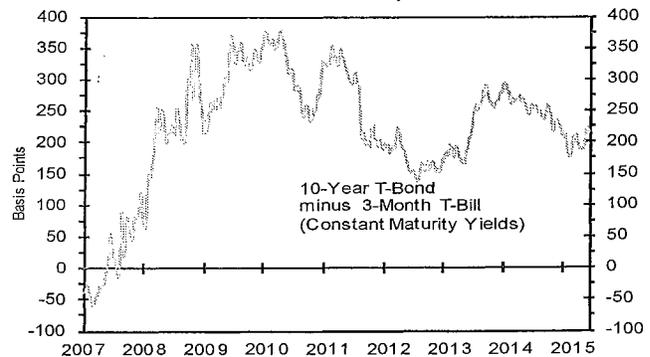
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
(Quarterly Average) Forecast



Corporate Bond Spreads
As of week ended May 29, 2015



U.S. Treasury Yield Curve
As of week ended May 29, 2015



Long-Range Estimates:

The table below contains results of our semi-annual long-range CONSENSUS survey. There are also Top 10 and bottom 10 averages for each variable. Shown are estimates for the years 2017 through 2021 and averages for the five-year periods 2017-2021 and 2022-2026. Apply these projections cautiously. Few economic, demographic and political forces can be evaluated accurately over such long time spans.

Interest Rates		-----Average For The Year-----					Five-Year Averages	
		2017	2018	2019	2020	2021	2017-2021	2022-2026
1. Federal Funds Rate	CONSENSUS	2.5	3.3	3.5	3.6	3.7	3.3	3.5
	Top 10 Average	3.1	4.0	4.2	4.3	4.2	4.0	4.0
	Bottom 10 Average	1.8	2.5	2.7	2.8	3.0	2.6	2.9
2. Prime Rate	CONSENSUS	5.5	6.2	6.5	6.6	6.6	6.3	6.5
	Top 10 Average	6.1	7.0	7.3	7.3	7.3	7.0	7.0
	Bottom 10 Average	4.7	5.3	5.6	5.8	5.9	5.5	5.8
3. LIBOR, 3-Mo.	CONSENSUS	2.7	3.5	3.8	3.9	3.9	3.6	3.8
	Top 10 Average	3.4	4.3	4.6	4.6	4.6	4.3	4.4
	Bottom 10 Average	1.9	2.7	2.9	3.1	3.1	2.7	3.0
4. Commercial Paper, 1-Mo.	CONSENSUS	2.6	3.4	3.7	3.8	3.8	3.5	3.7
	Top 10 Average	3.2	4.0	4.3	4.3	4.3	4.0	4.0
	Bottom 10 Average	2.1	2.8	3.0	3.2	3.2	2.9	3.3
5. Treasury Bill Yield, 3-Mo.	CONSENSUS	2.4	3.1	3.4	3.5	3.5	3.2	3.4
	Top 10 Average	3.2	3.9	4.2	4.3	4.2	3.9	4.0
	Bottom 10 Average	1.7	2.3	2.6	2.8	2.9	2.4	2.7
6. Treasury Bill Yield, 6-Mo.	CONSENSUS	2.5	3.2	3.5	3.7	3.7	3.3	3.5
	Top 10 Average	3.4	4.1	4.4	4.5	4.4	4.1	4.2
	Bottom 10 Average	1.8	2.4	2.7	2.9	3.0	2.6	2.8
7. Treasury Bill Yield, 1-Yr.	CONSENSUS	2.8	3.5	3.7	3.8	3.8	3.5	3.7
	Top 10 Average	3.6	4.3	4.5	4.6	4.5	4.3	4.4
	Bottom 10 Average	1.9	2.6	2.9	3.0	3.0	2.7	2.9
8. Treasury Note Yield, 2-Yr.	CONSENSUS	3.0	3.6	3.9	4.0	4.0	3.7	3.9
	Top 10 Average	3.9	4.4	4.7	4.8	4.8	4.5	4.6
	Bottom 10 Average	2.1	2.8	3.0	3.1	3.1	2.8	3.0
10. Treasury Note Yield, 5-Yr.	CONSENSUS	3.4	3.9	4.1	4.3	4.3	4.0	4.2
	Top 10 Average	4.1	4.7	5.1	5.2	5.2	4.8	5.0
	Bottom 10 Average	2.6	3.0	3.1	3.3	3.3	3.1	3.3
11. Treasury Note Yield, 10-Yr.	CONSENSUS	3.7	4.2	4.4	4.6	4.6	4.3	4.5
	Top 10 Average	4.5	5.1	5.5	5.7	5.8	5.3	5.6
	Bottom 10 Average	3.0	3.2	3.4	3.5	3.6	3.3	3.5
12. Treasury Bond Yield, 30-Yr.	CONSENSUS	4.3	4.7	4.9	5.1	5.1	4.8	5.0
	Top 10 Average	5.1	5.7	6.0	6.2	6.2	5.8	6.1
	Bottom 10 Average	3.4	3.7	3.8	4.0	4.0	3.8	3.8
13. Corporate Aaa Bond Yield	CONSENSUS	5.4	5.8	5.9	6.1	6.1	5.9	6.1
	Top 10 Average	6.0	6.5	6.8	7.0	7.1	6.7	6.9
	Bottom 10 Average	4.8	5.0	5.1	5.2	5.2	5.0	5.3
13. Corporate Baa Bond Yield	CONSENSUS	6.1	6.6	6.8	6.9	6.9	6.7	6.9
	Top 10 Average	6.9	7.4	7.8	8.0	8.0	7.6	8.0
	Bottom 10 Average	5.4	5.7	5.7	5.8	5.8	5.7	5.9
14. State & Local Bonds Yield	CONSENSUS	4.9	5.1	5.3	5.4	5.4	5.2	5.3
	Top 10 Average	5.6	5.9	6.1	6.2	6.2	6.0	6.1
	Bottom 10 Average	4.2	4.4	4.4	4.5	4.5	4.4	4.6
15. Home Mortgage Rate	CONSENSUS	5.4	5.8	6.0	6.1	6.1	5.9	6.0
	Top 10 Average	6.0	6.6	7.0	7.1	7.1	6.8	6.9
	Bottom 10 Average	4.7	4.9	5.0	5.2	5.2	5.0	5.0
A. FRB - Major Currency Index	CONSENSUS	90.0	89.8	89.1	88.5	88.1	89.1	87.9
	Top 10 Average	93.7	93.8	93.4	92.9	92.7	93.3	92.4
	Bottom 10 Average	86.4	85.8	84.7	84.2	83.5	84.9	83.4
B. Real GDP	CONSENSUS	2.6	2.5	2.4	2.4	2.4	2.5	2.3
	Top 10 Average	3.0	2.9	2.8	2.8	2.8	2.9	2.7
C. GDP Chained Price Index	CONSENSUS	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	Top 10 Average	2.3	2.5	2.4	2.4	2.4	2.4	2.4
	Bottom 10 Average	1.8	1.8	1.9	1.9	1.8	1.8	1.9
D. Consumer Price Index	CONSENSUS	2.4	2.4	2.3	2.3	2.3	2.3	2.3
	Top 10 Average	2.7	2.7	2.7	2.6	2.5	2.6	2.5
	Bottom 10 Average	2.1	2.1	2.1	2.0	2.1	2.1	2.0

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Press Release



Release Date: January 28, 2015

For immediate release

Information received since the Federal Open Market Committee met in December suggests that economic activity has been expanding at a solid pace. Labor market conditions have improved further, with strong job gains and a lower unemployment rate. On balance, a range of labor market indicators suggests that underutilization of labor resources continues to diminish. Household spending is rising moderately; recent declines in energy prices have boosted household purchasing power. Business fixed investment is advancing, while the recovery in the housing sector remains slow. Inflation has declined further below the Committee's longer-run objective, largely reflecting declines in energy prices. Market-based measures of inflation compensation have declined substantially in recent months; survey-based measures of longer-term inflation expectations have remained stable.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators continuing to move toward levels the Committee judges consistent with its dual mandate. The Committee continues to see the risks to the outlook for economic activity and the labor market as nearly balanced. Inflation is anticipated to decline further in the near term, but the Committee expects inflation to rise gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of lower energy prices and other factors dissipate. The Committee continues to monitor inflation developments closely.

To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that the current 0 to 1/4 percent target range for the federal funds rate remains appropriate. In determining how long to maintain this target range, the Committee will assess progress--both realized and expected--toward its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. Based on its current assessment, the Committee judges that it can be patient in beginning to normalize the stance of monetary policy. However, if incoming information indicates faster progress toward the Committee's employment and inflation objectives than the Committee now expects, then increases in the target range for the federal funds rate are likely to occur sooner than currently anticipated. Conversely, if progress proves slower than expected, then increases in the target range are likely to occur later than currently anticipated.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. The Committee currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

Voting for the FOMC monetary policy action were: Janet L. Yellen, Chair; William C. Dudley, Vice Chairman; Lael Brainard; Charles L. Evans; Stanley Fischer; Jeffrey M. Lacker; Dennis P. Lockhart; Jerome H. Powell; Daniel K. Tarullo; and John C. Williams.

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ROE Risk Remains in Focus

ROE risk remains a significant headwind for the company into '16

We believe 2015 represents the calm before the storm. We're not sure the latest move down in shares still fully appreciates the potential for a meaningful ROE cut in '16 with its latest CECONY electric rate. Falling treasuries and peer group ROEs will adversely impact the benchmark that the PSC considers when assessing ED's upcoming ratecases. Even though Central Hudson recently settled in the State for a 9.0% ROE (+30bp premium already embedded for a 3-year deal), we estimate the ROE per the PSC's own formula approaches an even lower 8.4% based on peer group analysis (see Fig 3 below). With rates lower and stocks higher from the test period in the CHE&G case, we see a 2-3 year rate deal for CECONY as potentially translating to a ~8.7-8.8% ROE vs. the 9.2% authorized and the 9.1% earned in '14 (and seemingly the ~same for '15). A 40bp reduction would translate to \$0.12 in EPS for electric rates alone (we est. Street has yet to reflect any of this downside). Further risk for gas rates and O&R as well.

'15 Guidance intact, as CECONY steady and unreg biz pulls it together a bit

Mgmt guided 2015 EPS to \$3.80-\$4.00 – largely inline with the Street. UBS estimate for 2015 adj EPS is \$3.93; Street consensus at \$3.91. ED reported adj FY14 \$3.89 vs. UBSe \$3.85 and consensus \$3.86; 4Q14 adj EPS of \$0.58 vs. UBS estimate \$0.55 and consensus \$0.54. CECONY largely earned its authorized, with a blended ROE for FY14 of 9.1% (9.2% elec, 7.5% gas, 11.5% steam).

Planning to re-open equity spigot with DRIP as over-equitization fades

While CECONY is currently at 50.7%, ED appears temporarily over-equitized vs. max 50% equity layer due to bonus depreciation benefits; we understand current financing plants contemplate DRIP once more, at a pace of \$100Mn/yr (we estimate ~\$50Mn/yr for 2015). Barring a further extension of bonus dep., DRIP is contemplated in '16+.

Valuation: Maintain Sell rating, \$59 PT – rate case risk is real

Our valuation remains set on 2017E P/E basis with a 5% discount to peers. Our estimates now assume an 8.8% ROE (vs. 9.2% previously). We further see more competition and risk to Development from lack of SRE partnership.

Equities

 Americas
 Electric Utilities

12-month rating **Sell**
12m price target **US\$59.00**
Price **US\$64.27**
RIC: ED.N BBG: ED US

Trading data and key metrics

52-wk range	US\$71.40-52.46
Market cap.	US\$18.9bn
Shares o/s	294m (COM)
Free float	100%
Avg. daily volume ('000)	651
Avg. daily value (m)	US\$43.2
Common s/h equity (12/14E)	US\$12.5bn
P/BV (12/14E)	1.5x
Net debt / EBITDA (12/14E)	4.0x

EPS (UBS, diluted) (US\$)

	12/14E			Cons.
	From	To	% ch	
Q1	1.17	1.17	0.00	1.17
Q2	0.65	0.65	0.00	0.65
Q3	1.49	1.49	0.00	1.48
Q4E	0.54	0.58	6.97	0.58
12/14E	3.83	3.57	-7.01	3.89
12/15E	3.90	3.93	0.77	3.91
12/16E	3.98	4.03	1.23	4.00

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Highlights (US\$m)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Revenues	12,938	12,188	12,354	12,919	12,009	11,965	11,991	12,243
EBIT (UBS)	2,254	2,340	2,244	2,188	2,409	2,476	2,495	2,589
Net earnings (UBS)	1,066	1,102	1,115	1,051	1,159	1,196	1,199	1,269
EPS (UBS, diluted) (US\$)	3.62	3.74	3.79	3.57	3.93	4.03	4.02	4.23
DPS (US\$)	2.40	2.42	2.46	2.51	2.54	2.56	2.58	2.60
Net (debt) / cash	(10,238)	(10,913)	(11,751)	(13,099)	(13,818)	(14,604)	(15,486)	(12,449)
Profitability/valuation	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
EBIT margin %	17.4	19.2	18.2	16.9	20.1	20.7	20.8	21.1
ROIC (EBIT) %	8.9	8.8	8.6	8.4	8.8	8.6	8.3	8.5
EV/EBITDA (core) x	9.4	9.8	9.5	10.0	9.5	9.3	9.1	8.8
P/E (UBS, diluted) x	14.9	15.9	15.3	18.0	16.4	15.9	16.0	15.2
Equity FCF (UBS) yield %	8.3	3.9	1.3	(0.4)	1.7	0.9	13.1	13.7
Net dividend yield %	4.5	4.1	4.3	3.9	4.0	4.0	4.0	4.0

Source: Company accounts, Thomson Reuters, UBS estimates. UBS adjusted EPS is stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement. Valuations: based on an average share price that year, (E): based on a share price of US\$64.27 on 23 Feb 2015 19:42 EST

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Investment Thesis

Consolidated Edison

Investment case

ConEd is the largest regulated T&D focused utility company and has an above-average yield for the group. Over 90% of adjusted earnings are derived from regulated transmission and distribution. The company operates in a generally constructive regulatory environment (NY), with forward-looking test years. The competitive energy business has been growing via acquisitions over the past year and could provide a modest boost to earnings; however, non-utility EPS is estimated at ~6% in 2014. The most significant capex going forward relates to Sandy storm hardening, the Indian Point Contingency, and the NY Energy Highway. Our price target is derived by applying a discounted peer multiple to 2017E EPS.

Upside scenario

Our upside case is predicated on: 1) ConEd receiving approval for all of its \$1bn in storm hardening and executing on its capex plan; and 2) approval of its \$1.6bn in transmission upgrades and the Indian Point Contingency. Assuming a 5% P/E premium, we see potential upside to \$65 per share.

Downside scenario

Delays and/or reductions in its proposals for the projects mentioned above could drive shares lower. ConEd is also under-earning its ROE in its primary market (CECONY), with an equity ratio above the regulatory allowance – factors that could drive shares lower if they persist. Assuming a 10% discount, we see potential downside to \$56 per share.

Upcoming catalysts

Early 2015	O&R Rate Case Proceedings
Early 2015	Generic PSC REV Track I PSC Policy
March 20	Comment on Track II Straw Proposal
2Q15	Generic PSC Track II PSC Policy
Late 2015	Expected CECONY Electric Rate Case Filing
Unknown	Harlem NTSB Finding of Facts Report

12-month rating

Sell

12m price target

US\$59.00

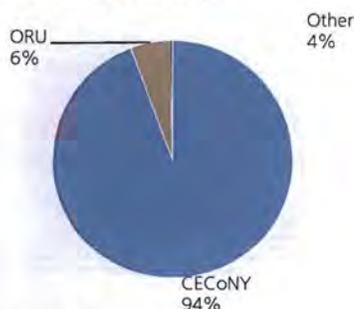
Business description

Consolidated Edison's (ConEd) principal business segments are ConEd of NY (CECONY), providing regulated electric, gas, and steam utility activities; Orange & Rockland (ORU), providing regulated electric and gas; and ConEd's competitive energy businesses. Combined, these regulated businesses serve over 3.6 million electricity and 1.2 million gas customers. ConEd's competitive energy businesses include the operation of unregulated generation, electricity and fuel trading, and retail services. The regulated utilities provide the majority of the company's earnings.

Industry outlook

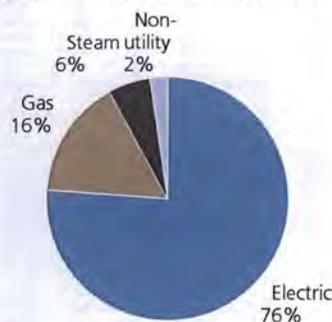
The electric utility industry is projected to experience weak or negative electric demand growth in coming years as a tepid economy and energy efficiency dampen demand. In the unregulated merchant power space, we see limited potential for a meaningful recovery from currently low power prices due to limited projected demand growth, growth of subsidized renewables, and potential for only modest further retirements. At regulated utilities, we believe rising interest rates and robust valuations are a challenge to the sector, particularly as earnings growth stalls once EPA-mandated growth capex slow mid-decade. We expect cost-cutting and strategic planning to be a key theme across both regulated and competitive companies, with M&A at modest (at best) premiums designed to extract cost synergies. We believe utilities with high parent leverage will disproportionately suffer, as they are unable to recoup from rising interest rates.

EPS by Segment 2016E (%)



Source: Company filings and UBS estimates

Operating Income by Segment 2016E (%)



Source: Company filings and UBS estimates

This note replaces an earlier version to correct numbers in Figures 6 & 7

The Power Line on ED:

We remain more cautious on shares of ConEd seeing ROE risk around its pending rate case. We see a wave of potential utility peers facing such pressure in 2015 amidst the lower rate and higher utility equity valuations seen of late. ED is the clearest large cap example of such risk this year, with risk to all of its utilities in coming ~2 years. We suspect our cautious call could yet take some time to transpire, seeing negative revisions only likely coinciding with Staff testimony and discussion of any settlement in 2H15. In the interim, we continue to see wildcard risks related to both the pending NTSB investigation around the Harlem building explosion from a gas distribution leak and the long-standing bribery investigation, for which management took a 4Q charge following the latest discussions with interveners. Altogether, we see a litany of potential datapoints that could impair shares in both 1H and 2H. Even among the bright spots in the story around a turnaround in the unregulated businesses, we look for ED to reformulate its development growth strategy, with ED likely having lost its long-standing renewable developer, Semptra, which appears poised to pursue a stand-alone YieldCo structure. We maintain our Sell rating on shares and \$59 price target.

Please click on the links below to read some of our latest notes on relevant to the case for ED:

[ROE Pothole Along Energy Highway](#)

[Breaking Gridlock on the Energy Highway](#)

[3Q14 Earnings Playbook](#)

[Dropping the Danskammer on New York](#)

[Light At the End of the Regulatory Tunnel](#)

[Painting a Turnaround for 2015?](#)

Central Hudson Rate Settlement at 9.0% Highlights ED's ROE Risk

Central Hudson Gas & Electric announced a settlement this month with the New York State Department of Public Service (and other intervenors) proposing a three-year rate plan for a 9.0% ROE (based on 48% equity). Although the plan still needs approval from the PSC, this clearly underlines the ROE risk we have been highlighting for ConEd.

Peer group analysis suggests an even lower 8.4% ROE

We ran a peer group ROE analysis; the table below shows that latest data suggests required ROE should be even lower than Central Hudson's 9% settlement. An average of the CAPM rate of return and constant growth and three-step DCF analysis gives us a required rate of return of 8.4%. In the appendix to this note, we include a complete list of the peer group we used for this analysis.

We see risk down to the 8.7-8.8% ROE, which would add a 30bp premium for a ~3-year deal as requested by CECONY. The last ratecase was 2 years for electric, but typically the company has been successful in achieving 3-year deals under most instances.

Figure 1: Required ROE: Discounted DCF Analysis

Three-step Discounted Cash Flow	
Step 1: 0-5 years (comps DPS growth)	5.24
Step 2: 5-10 years (avg comps & GDP growth)	4.80
Step 3: Over 10 years (GDP growth)	4.37
Average	4.80
Dividend yield	3.55
Required ROE	8.35

Source: UBS estimates, FactSet

Figure 2: Required ROE: CAPM Analysis

CAPM Analysis	
Risk free rate	
10-Yr	2.13
30-Yr	2.74
Average	2.43
S&P 500 Dividend Yield (Next Year)	2.26
S&P 500 LT Growth Rate (Annualized)	8.83
Expected Market Return	11.09
Market Risk Premium	8.65
Average beta	0.65
Comp Group Risk Premium	5.66
CAPM Rate of Return	8.10

Source: UBS estimates, FactSet

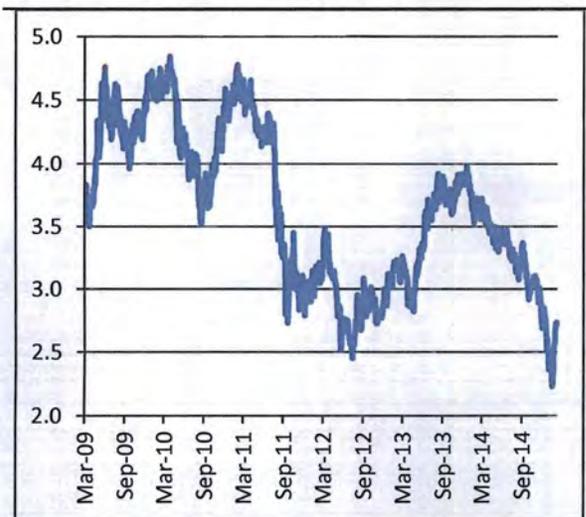
Figure 3: Required ROE Estimate: 8.4%

Required Equity Return	
Constant Growth Discounted Cash Flow Analysis	8.74
Three-step Discounted Cash Flow	8.35
Average of both Constant Growth and Three-Step DCF Analysis	8.54 2/3
CAPM Rate of Return	8.10 1/3
Required Equity Return	8.39

Source: UBS estimates, FactSet

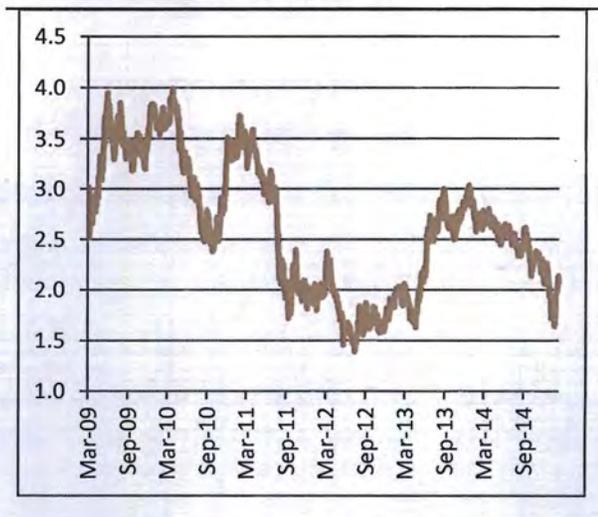
ROEs in NY are heavily influenced by US Treasuries, which are a key input in the CAPM third of the ROE calculation. Specifically the PSC determines ROEs based on weighting dividend-discount (2/3rds) and CAPM models. Yields continue to decline and are now at their lowest point since May 2013, putting further pressure on ROEs.

Figure 4: Thirty-Year US Treasury Rates



Source: FactSet

Figure 5: Ten-Year US Treasury Rates



Source: FactSet

Equity Ratio Reset?

We flag the company's authorized equity layer has conventionally been set at actual equity, up to a 50% maximum; however, with 50.9% as of year-end 2014, we see a need to re-lever the balance sheet in 2015, providing limited EPS growth this year. Moreover, the base equity layer will be 48%, and applicable to true-up to the 50% assuming the rate case leaves this approach intact.

Bribery Case Outstanding – Resolution?

Management took a \$105 Mn charge in the quarter around its long-standing bribery case. Parties appear to be finally talking, with the potential for resolution in 1H15. We generally see this as a negative cash flow impact, as well as negative headlines in coming months.

No Further Updates on REV

ConEd investors continue to wait for the next steps on the AC Transmission docket (perhaps April?), its BQDM 'Utility 1.5' request, and ultimately the larger 'Reforming Energy Vision' (REV) 'Utility 2.0' reforms. Track I and II of REV are unlikely to have generic PSC policy outcomes until ~2Q15, out of time to incorporate into the next rate case cycle. There was no further update on developments around this yet. Track I resolution appears forthcoming in the very near term, providing clues as to the direction of the reforms.

Despite presenting earnings opportunity, we expect a tumultuous path forward (typical for New York). PSE&G Long Island has a 'Utility 2.0' type request which presents opportunities for enhanced earnings growth but we do not believe the performance incentives would be great enough for O&R or CECONY to compensate for a low ROE.

NTSB Update: None

There is still no clarity around the circumstances and consequences of the explosions in Harlem, and the National Transportation Safety Board (NTSB) investigation continues. Management has stated it remains unable to estimate the amount or range of its possible loss related to the incident; and also that as of December 31, 2014, the company had not accrued any liability for the incident.

The gas explosion had killed eight people in Harlem, and the ongoing investigation has ConEd, the city of New York, and New York Public Service Commission (PSC) as parties to the investigation. Previously we had expected the NTSB statement of facts (no conclusion) in the September/October window with a more important recommendation around 1Q15 but with that timeline having passed, we lack any real direction here. Given confidentiality, there has been uniform silence from all parties to date. Importantly, being a party on the case means that the entities are privy to the proceedings with the ability to fact-check, etc., with the caveat being that ability to opine publicly is limited. Consequently, we do not expect to hear any updates (material or immaterial) from any of the parties ahead of the NTSB's investigation conclusion. *This remains a lingering uncertainty for shares.*

Harlem explosion clarity remains elusive for now

Statement of fact report from NTSB had been expected by September but that timeframe has gone out the window

Unregulated Biz: Development Headwinds?

While management has budgeted ~\$370 Mn/yr in capex, we see an increasingly competitive landscape, coupled with the lack of its traditional partner, Sempra, as the company is likely to seek to grow out its own YieldCo rather than continue to partner with ConEd as its traditional selldown partner. We suspect this business

will need to re-illustrate its ability to deploy capital without SRE. We suspect a formal announcement by SRE to pursue a YieldCo would be a negative to ED shares.

Retail Uncertainty?

It remains unclear what management's strategy is on this front, as management has been able to reign in this business back to break-even in 2014. We suspect a scaling back remains in the cards, leveraging its home-town advantage in New York (and balance sheet) to compete for customers – large and small.

Bonus D&A Impact: Asking for a \$224mn 2014 Tax Refund

Following President Obama's Tax Increase Prevention Act of 2014 signed in December, ConEd will be requesting a refund of \$224 mn of 2014 estimated federal tax payments (including \$128 million attributable to CECONY). Tax Increase Prevention Act extends bonus depreciation for another year through December 31, 2014.

Updated Estimates

We show below our earnings estimates for ED vs. guidance and consensus. We are below consensus for 2017 when we assume ROEs at ~8.8%, which is 40bps below the 2014 ROE. We also highlight here that Con Ed has very recently opened settlement discussions on their electric rate case (Docket: C-15-E-0050).

Figure 6: Updated Consolidated Edison EPS Estimates **UPDATED**

Consolidated Edison EPS Ests.	2012A	2013E	2014E	2015E	2016E	2017E	2018E
Consolidated Edison of New York	\$3.45	\$3.33	\$3.61	\$3.66	\$3.71	\$3.76	\$3.78
Orange & Rockland	\$0.21	\$0.23	\$0.20	\$0.22	\$0.23	\$0.22	\$0.25
Other	\$0.08	\$0.22	\$0.08	\$0.05	\$0.07	\$0.08	\$0.10
Consolidated (diluted shares)	\$3.73	\$3.79	\$3.89	\$3.93	\$4.01	\$4.06	\$4.13
% Growth		1%	3%	1%	2%	1%	2%
Prior estimates		\$3.79	\$3.57	\$3.93	\$4.03	\$4.02	\$4.23
Guidance				\$3.80-\$4.00			
Consensus		\$3.80	\$3.89	\$3.91	\$4.00	\$4.16	

Source: Company filings, FactSet, and UBS estimates

Valuation: Maintain Sell Rating; PT \$59

We value ED on 2017E, applying a 5% discount to shares given the ROE risk discussed previously. We show our valuation for ED below:

Figure 7: 2017 ConEd Discounted Valuation

Consolidated Edison Valuation			
Regulated 2017 P/E Multiple	15.4x		
	Low Case	Base Case	High Case
2017 EPS	\$ 4.06	\$ 4.06	\$ 4.06
x P/E Multiple	15.4x	15.4x	15.4x
Discount	-10%	-5%	5%
Assumed CECONY ROE	8.8%	8.8%	8.8%
Valuation	\$56.04	\$59.16	\$65.39

Reflects downside toward 8.8% ROE (-0.12¢ EPS risk)

Source: Company filings, FactSet, and UBS estimates

What About 2014 and 4Q Results: What do they Say?

ED reported adj FY14 \$3.89 vs. UBSe \$3.85 and consensus \$3.86; 4Q14 adj EPS of \$0.58 vs. UBS estimate \$0.55, and consensus \$0.54. CECONY largely earned its authorized, with a blended ROE for FY14 of 9.1% (9.2% elec, 7.5% gas, 11.5% steam). O&R saw a YoY decline to \$0.20 from \$0.22, with its electric ROE at 10.5%, and gas at 5.3%. On the unreg side, its retail biz, ConEd Solutions, was breakeven after years of slightly negative EPS. Meanwhile, Development, largely its solar biz posted \$0.06; it's expected to continue to grow ~\$0.02/yr with current ~\$370/yr capex budget.

Appendix

Peer group of companies used in our constant growth discounted cash flow analysis, to estimate required ROE.

Figure 8: Constant growth discounted cash flow analysis – using peer group from Central Hudson E&G Case

Constant Growth Discounted Cash Flow Analysis													
Company	Tickers	I/B/E/S EPS LT Growth Rate	FactSet EPS LT Growth Rate	Average IBES & FactSet EPS LT Growth	I/B/E/S DPS LT Growth Rate	12/1/14- 2/1/15 Avg Price	IBES Fwd 1- Yr Dividend	Fwd 1-yr Div. Yield	Required ROE (Growth + Yield)	5-Yr beta	S&P Rating	Moody's Rating	
ALLETE	ALE	6.00	6.00	6.00	2.97	55.19	2.14	3.88	9.88	0.72	BBB+	Baa1	
Cleco	CNL	4.00	NA	4.00		54.52	1.81	3.32	7.32	0.74	BBB+	Baa1	
Duke Energy	DUK	4.71	4.80	4.76	3.61	84.62	3.37	3.98	8.73	0.46	BBB+	A3	
Alliant Energy	LNT	4.90	NA	4.90	7.84	66.61	2.20	3.30	8.20	0.72	A-	Baa1	
Northeast Utilities	NU	NA	6.58	6.58	6.31	53.60	1.79	3.34	9.91	0.65	A-	N/A	
OGE Energy	OGE	5.10	3.20	4.15	8.81	35.13	1.00	2.86	7.01	0.85	A-	A3	
Pinnacle West Capital	PNW	4.20	4.47	4.33	4.96	68.55	2.54	3.70	8.03	0.66	A-	Baa3	
PEPCO Holdings	POM	7.80	NA	7.80		27.15	1.08	3.98	11.78	0.62	BBB+	Baa3	
SCANA	SCG	4.30	4.30	4.30	3.91	60.58	2.24	3.70	8.00	0.63	BBB+	Baa3	
Southern Company	SO	3.40	3.83	3.61	3.29	49.73	2.23	4.47	8.09	0.38	A	Baa1	
Sempra	SRE	7.63	7.70	7.66	5.33	111.26	2.78	2.50	10.16	0.71	BBB+	Baa1	
TECO Energy	TE	7.08	6.65	6.87	2.10	20.43	0.92	4.52	11.38	0.77	BBB+	Baa3	
Ameren	AEE	8.90	9.80	9.35	2.98	45.15	1.67	3.71	13.06	0.68	BBB+	Baa3	
American Electric Power	AEP	5.05	5.15	5.10	5.48	61.02	2.24	3.67	8.77	0.59	BBB	Baa1	
CMS Energy Corp	CMS	6.73	6.17	6.45	7.10	35.27	1.24	3.52	9.97	0.65	BBB+	Baa2	
Consolidated Edison	ED	2.77	2.76	2.77	1.82	66.75	2.61	3.91	6.68	0.43	A-	WR	
Edison International	EIX	3.53	3.02	3.27	11.05	66.11	1.65	2.50	5.77	0.61	BBB-	A3	
Empire Distric Electric	EDE	3.00	3.00	3.00	3.00	29.61	1.08	3.66	6.66	0.70	BBB	Baa1	
Entergy	ETR	(0.20)	6.20	3.00	1.08	87.28	3.36	3.85	6.85	0.58	BBB	Baa3	
Great Plains Electric	GXP	4.60	4.43	4.52	7.29	28.15	1.00	3.56	8.08	0.71	BBB	Baa2	
Hawaiian Electric Industry	HE	3.35	3.77	3.56	0.67	33.16	1.25	3.78	7.33	0.70	BBB-	Baa2	
IDACORP Inc.	IDA	3.00	3.00	3.00	13.24	66.06	2.06	3.11	6.11	0.82	BBB	Baa2	
PG&E Corp	PCG	8.04	5.77	6.90	5.03	54.79	1.96	3.58	10.48	0.50	BBB	Baa1	
PNM Resources	PNM	9.86	8.10	8.98	9.90	29.81	0.80	2.68	11.66	0.89	BBB	Baa3	
Portland General Electric Co	POR	5.26	6.21	5.74	6.24	38.69	1.29	3.33	9.06	0.71	BBB	Baa2	
UIL Holdings	UIL	5.39	5.55	5.47	0.01	44.14	1.74	3.93	9.40	0.68	BBB	Baa2	
Westar Energy	WR	3.37	3.73	3.55	4.60	41.15	1.45	3.52	7.07	0.64	BBB	Baa3	
Wisconsin Energy	WEC	5.84	6.00	5.92	7.78	53.25	1.83	3.44	9.36	0.60	A-	A2	
Xcel Energy	XEL	4.51	5.33	4.92	5.04	36.01	1.31	3.65	8.57	0.56	A-	A3	
Average		5.07	5.21	5.19	5.24			3.55	8.74	0.65			

Source: FacSet, UBS estimates

Consolidated Edison (ED.N)

Income statement (US\$m)	12/11	12/12	12/13	12/14E	% ch	12/15E	% ch	12/16E	12/17E	12/18E
Revenues	12,938	12,188	12,354	12,919	4.6	12,009	-7.0	11,965	11,991	12,243
Gross profit	7,951	8,301	8,301	8,405	1.3	8,766	4.3	8,891	9,091	9,358
EBITDA (UBS)	3,138	3,295	3,269	3,259	-0.3	3,544	8.8	3,683	3,775	3,915
Depreciation & amortization	(884)	(955)	(1,025)	(1,071)	4.5	(1,135)	6.0	(1,207)	(1,280)	(1,326)
EBIT (UBS)	2,254	2,340	2,244	2,188	-2.5	2,409	10.1	2,476	2,495	2,589
Associates & investment income	17	5	14	41	192.9	7	-82.9	7	7	7
Other non-operating income	0	0	0	0	-	0	-	0	0	0
Net interest	(594)	(603)	(720)	(592)	17.8	(692)	-16.9	(692)	(760)	(769)
Exceptionals (incl goodwill)	0	0	0	0	-	0	-	0	0	0
Profit before tax	1,677	1,742	1,538	1,637	6.4	1,724	5.3	1,791	1,742	1,826
Tax	(600)	(601)	(476)	(586)	-23.1	(565)	3.7	(596)	(544)	(557)
Profit after tax	1,077	1,141	1,062	1,051	-1.0	1,159	10.3	1,196	1,199	1,269
Preference dividends	(11)	0	0	0	-	0	-	0	0	0
Minorities	0	0	0	0	-	0	-	0	0	0
Extraordinary items	0	0	0	0	-	0	-	0	0	0
Net earnings (local GAAP)	1,066	1,141	1,062	1,051	-1.0	1,159	10.3	1,196	1,199	1,269
Net earnings (UBS)	1,066	1,102	1,115	1,051	-5.7	1,159	10.3	1,196	1,199	1,269
Tax rate (%)	35.8	34.5	31.0	35.8	15.7	32.8	-8.5	33.3	31.2	30.5
Per share (US\$)	12/11	12/12	12/13	12/14E	% ch	12/15E	% ch	12/16E	12/17E	12/18E
EPS (UBS, diluted)	3.62	3.74	3.79	3.57	-5.9	3.93	10.1	4.03	4.02	4.23
EPS (local GAAP, diluted)	3.62	3.87	3.61	3.57	-1.2	3.93	10.1	4.03	4.02	4.23
EPS (UBS, basic)	3.65	3.74	3.79	3.57	-5.9	3.93	10.1	4.03	4.02	4.23
Net DPS (US\$)	2.40	2.42	2.46	2.51	2.0	2.54	1.2	2.56	2.58	2.60
Cash EPS (UBS, diluted)*	6.62	6.99	7.27	7.20	-1.0	7.77	8.0	8.10	8.30	8.64
Book value per share	39.04	40.34	41.61	42.31	1.7	43.80	3.5	45.39	46.63	55.90
Average shares (diluted)	294.40	294.50	294.30	294.75	0.2	295.22	0.2	296.64	298.52	300.41
Balance sheet (US\$m)	12/11	12/12	12/13	12/14E	% ch	12/15E	% ch	12/16E	12/17E	12/18E
Cash and equivalents	648	394	674	356	-47.2	422	18.5	186	273	1,155
Other current assets	2,990	3,057	3,217	3,180	-1.1	2,956	-7.0	2,939	2,932	3,125
Total current assets	3,638	3,451	3,891	3,536	-9.1	3,378	-4.5	3,125	3,205	4,280
Net tangible fixed assets	24,965	26,301	27,795	28,995	4.3	30,360	4.7	31,923	33,433	35,685
Net intangible fixed assets	429	429	429	429	0.0	429	0.0	429	429	429
Investments / other assets	10,182	11,028	8,532	8,979	5.2	9,354	4.2	9,720	10,094	10,594
Total assets	39,214	41,209	40,647	41,939	3.2	43,521	3.8	45,197	47,160	50,988
Trade payables & other ST liabilities	2,457	2,700	2,794	2,261	-19.1	2,049	-9.4	2,059	2,071	2,301
Short term debt	530	1,245	1,936	1,921	-0.77	1,941	1.04	2,182	2,182	2,182
Total current liabilities	2,987	3,945	4,730	4,182	-11.6	3,990	-4.6	4,241	4,253	4,483
Long term debt	10,143	10,062	10,489	11,534	10.0	12,299	6.6	12,608	13,577	11,422
Other long term liabilities	14,435	15,333	13,183	13,753	4.3	14,303	4.0	14,883	15,412	18,290
Preferred shares	213	0	0	0	-	0	-	0	0	0
Total liabilities (incl pref shares)	27,778	29,340	28,402	29,469	3.8	30,592	3.8	31,732	33,242	34,195
Common s/h equity	11,436	11,869	12,245	12,470	1.8	12,929	3.7	13,465	13,919	16,793
Minority interests	0	0	0	0	-	0	-	0	0	0
Total liabilities & equity	39,214	41,209	40,647	41,939	3.2	43,521	3.8	45,197	47,160	50,988
Cash flow (US\$m)	12/11	12/12	12/13	12/14E	% ch	12/15E	% ch	12/16E	12/17E	12/18E
Net income (before pref divs)	1,077	1,141	1,062	1,051	-1.0	1,159	10.3	1,196	1,199	1,269
Depreciation & amortization	884	955	1,025	1,071	4.5	1,135	6.0	1,207	1,280	1,326
Net change in working capital	496	(35)	498	(496)	-	11	-	28	0	0
Other operating	706	538	(32)	572	-	552	-3.6	582	0	0
Operating cash flow	3,163	2,599	2,553	2,198	-13.9	2,858	30.0	3,013	2,478	2,596
Tangible capital expenditure	(1,887)	(1,917)	(2,339)	(2,274)	2.8	(2,537)	-11.6	(2,843)	0	0
Intangible capital expenditure	0	0	0	0	-	0	-	0	0	0
Net (acquisitions) / disposals	0	0	0	0	-	0	-	0	0	0
Other investing	(263)	(606)	(320)	(446)	-	(340)	-	(296)	0	0
Investing cash flow	(2,150)	(2,523)	(2,659)	(2,720)	-2.3	(2,877)	-5.8	(3,139)	0	0
Equity dividends paid	(693)	(709)	(721)	(740)	-2.6	(750)	-1.4	(759)	(770)	(781)
Share issues / (buybacks)	31	(9)	(8)	0	-	50	-	100	0	0
Other financing	(22)	(10)	(6)	0	-	0	-	0	0	0
Change in debt & pref shares	(4)	395	1,122	1,030	-8.20	785	-23.79	550	0	0
Financing cash flow	(688)	(333)	387	290	-25.0	85	-70.7	(109)	(770)	(781)
Cash flow inc/(dec) in cash	325	(257)	281	(232)	-	66	-	(236)	1,708	1,815
FX / non cash items	(15)	3	(1)	(86)	NM	0	-	0	(1,622)	(933)
Balance sheet inc/(dec) in cash	310	(254)	280	(318)	-	66	-	(236)	86	882

Source: Company accounts, UBS estimates. (UBS) metrics use reported figures which have been adjusted by UBS analysts. *Cash EPS (UBS, diluted) is calculated using UBS net income adding back depreciation and amortization.

Consolidated Edison (ED.N)

Valuation (x)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
P/E (local GAAP, diluted)	14.9	15.3	16.0	18.0	16.4	15.9	16.0	15.2
P/E (UBS, diluted)	14.9	15.9	15.3	18.0	16.4	15.9	16.0	15.2
P/CEPS	8.1	8.5	8.0	8.9	8.3	7.9	7.7	7.4
Equity FCF (UBS) yield %	8.3	3.9	1.3	(0.4)	1.7	0.9	13.1	13.7
Net dividend yield (%)	4.5	4.1	4.3	3.9	4.0	4.0	4.0	4.0
P/BV x	1.4	1.5	1.4	1.5	1.5	1.4	1.4	1.1
EV/revenues (core)	2.3	2.6	2.5	2.5	2.8	2.9	2.9	2.8
EV/EBITDA (core)	9.4	9.8	9.5	10.0	9.5	9.3	9.1	8.8
EV/EBIT (core)	13.0	13.8	13.9	14.9	14.0	13.9	13.8	13.3
EV/OpFCF (core)	12.6	12.9	12.6	13.3	12.3	11.9	11.6	11.0
EV/op. invested capital	1.2	1.2	1.2	1.3	1.2	1.2	1.1	1.1
Enterprise value (US\$m)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Market cap.	15,369	17,413	17,029	18,895	18,895	18,895	18,895	18,895
Net debt (cash)	10,395	10,576	11,332	12,425	13,458	14,211	14,211	14,211
Buy out of minorities	0	0	0	0	0	0	0	0
Pension provisions/other	4,061	4,757	3,203	1,727	1,727	1,727	1,727	1,727
Total enterprise value	29,824	32,745	31,563	33,047	34,081	34,833	34,833	34,833
Non core assets	(455)	(467)	(461)	(461)	(461)	(461)	(461)	(461)
Core enterprise value	29,369	32,278	31,102	32,586	33,620	34,372	34,372	34,372
Growth (%)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Revenue	-2.9	-5.8	1.4	4.6	-7.0	-0.4	0.2	2.1
EBITDA (UBS)	6.4	5.0	-0.8	-0.3	8.8	3.9	2.5	3.7
EBIT (UBS)	6.9	3.8	-4.1	-2.5	10.1	2.8	0.8	3.8
EPS (UBS, diluted)	5.6	3.3	1.2	-5.9	10.1	2.6	-0.4	5.2
Net DPS	0.8	0.8	1.7	2.0	1.2	0.8	0.8	0.8
Margins & Profitability (%)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Gross profit margin	61.5	68.1	67.2	65.1	73.0	74.3	NM	NM
EBITDA margin	24.3	27.0	26.5	25.2	29.5	30.8	31.5	32.0
EBIT margin	17.4	19.2	18.2	16.9	20.1	20.7	20.8	21.1
Net earnings (UBS) margin	8.2	9.0	9.0	8.1	9.7	10.0	10.0	10.4
ROIC (EBIT)	8.9	8.8	8.6	8.4	8.8	8.6	8.3	8.5
ROIC post tax	5.7	5.6	5.9	5.4	5.9	5.8	5.7	5.9
ROE (UBS)	9.5	9.5	9.2	8.5	9.1	9.1	8.8	8.3
Capital structure & Coverage (x)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Net debt / EBITDA	3.3	3.3	3.6	4.0	3.9	4.0	4.1	3.2
Net debt / total equity %	89.5	91.9	96.0	105.0	106.9	108.5	111.3	74.1
Net debt / (net debt + total equity) %	47.2	47.9	49.0	51.2	51.7	52.0	52.7	42.6
Net debt/EV	34.9	33.8	37.8	40.2	41.1	42.5	45.1	36.2
Capex / depreciation %	NM	NM	NM	NM	NM	NM	0.0	0.0
Capex / revenue %	14.6	15.7	18.9	17.6	21.1	23.8	0.0	0.0
EBIT / net interest	3.8	3.9	3.1	3.7	3.5	3.6	3.3	3.4
Dividend cover (UBS)	1.5	1.5	1.5	1.4	1.5	1.6	1.6	1.6
Div. payout ratio (UBS) %	65.7	64.7	64.9	70.4	64.7	63.5	64.3	61.5
Revenues by division (US\$m)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Others	12,938	12,188	12,354	12,919	12,009	11,965	11,991	12,243
Total	12,938	12,188	12,354	12,919	12,009	11,965	11,991	12,243
EBIT (UBS) by division (US\$m)	12/11	12/12	12/13	12/14E	12/15E	12/16E	12/17E	12/18E
Others	2,254	2,340	2,244	2,188	2,409	2,476	2,495	2,589
Total	2,254	2,340	2,244	2,188	2,409	2,476	2,495	2,589

Source: Company accounts, UBS estimates. (UBS) metrics use reported figures which have been adjusted by UBS analysts.

Forecast returns

Forecast price appreciation	-8.2%
Forecast dividend yield	4.0%
Forecast stock return	-4.2%
Market return assumption	5.6%
Forecast excess return	-9.8%

Statement of Risk

Investors should be aware of the following risk factors when owning ConEd's shares: the risk of an adverse decision in New York State rate cases; the potential impact of mild weather on regulated utility sales; the commodity price risk associated with the company's unregulated retail business (ConEd Solutions); the potential impact of a sluggish economy; and the risk of any unexpected or unreasonable regulatory/legislative decisions.

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12-Month Rating	Definition	Coverage ¹	IB Services ²
Buy	FSR is > 6% above the MRA.	47%	37%
Neutral	FSR is between -6% and 6% of the MRA.	42%	32%
Sell	FSR is > 6% below the MRA.	11%	21%
Short-Term Rating	Definition	Coverage ³	IB Services ⁴
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	less than 1%	less than 1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	less than 1%	less than 1%

Source: UBS. Rating allocations are as of 31 December 2014.

1:Percentage of companies under coverage globally within the 12-month rating category. 2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

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UBS Securities LLC: Julien Dumoulin-Smith; Michael Weinstein; Paul Zimbardo.

Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
Consolidated Edison ¹⁶	ED.N	Sell	N/A	US\$65.26	24 Feb 2015

Source: UBS. All prices as of local market close.

Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

16. UBS Securities LLC makes a market in the securities and/or ADRs of this company.

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report.

Consolidated Edison (US\$)



Source: UBS; as of 24 Feb 2015

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Data Request OUCC DR 22 - 02

On page 61 of his direct testimony, Dr. Avera explains why he includes the ECAPM approach in this case. Dr. Avera did not include the ECAPM approach when filing in IURC Cause No. 44075 (I&M).

- a) Does Dr. Avera believe today that the ECAPM approach should generally be included in cost of equity testimony, or does he make this decision on a case specific basis?
- b) If Dr. Avera believes today that the ECAPM approach should generally be included in cost of equity testimony, please explain when he came to this conclusion and why.
- c) If Dr. Avera believes today that the ECAPM approach should be applied on a case-specific basis, please explain the factors influencing Dr. Avera's decision to include or exclude the ECAPM from a particular case?

Objection:

Response:

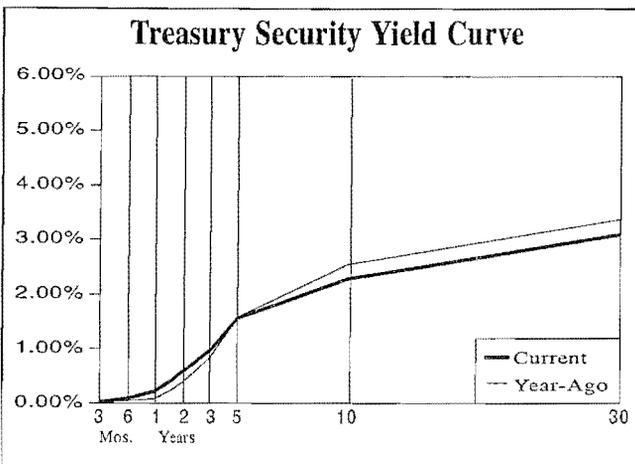
- a) Dr. Avera believes today that the ECAPM should generally be included in cost of equity testimony.
- b) Dr. Avera came to believe that the ECAPM should be included with the traditional CAPM in 2013 during his participation in Docket No. 9326 before the Public Service Commission of Maryland (discussed in Dr. Avera's Direct Testimony in this case on page 67). Dr. Avera came to his belief based on a careful review of the rationale and research supporting the ECAPM as discussed on pages 61-62 of his Direct Testimony in this case. Moreover, he came to the conclusion that the arguments that have been raised against the ECAPM (such as those discussed on pages 66-68 of Dr. Avera's Direct Testimony in this case) do not undermine the validity of this approach to estimating the cost of equity.
- c) See response to a).

Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(2009 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	14718	14979	15304	15637	16086	16456	16945	17487	18012	18516
Total Consumption	10036	10264	10448	10700	10969	11311	11677	12039	12400	12747
Nonresidential Fixed Investment	1674	1803	1932	1991	2116	2198	2343	2484	2608	2738
Structures	366	375	424	422	456	427	438	477	510	541
Equipment & Software	747	848	906	947	1008	1062	1151	1220	1281	1332
Residential Fixed Investment	382	385	437	488	496	533	602	644	682	716
Exports	1765	1898	1960	2020	2085	2119	2215	2326	2442	2576
Imports	2228	2358	2413	2440	2537	2647	2811	2952	3085	3208
Federal Government	1271	1236	1214	1145	1124	1127	1118	1107	1102	1096
State & Local Governments	1821	1761	1740	1748	1765	1786	1812	1830	1848	1867
Gross Domestic Product	14958	15518	16163	16768	17419	17986	18843	19815	20858	21914
Real GDP (2009 Chain Weighted \$)	14779	15021	15389	15710	16086	16456	16934	17459	18018	18559
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	1.2	2.0	1.8	1.5	1.5	1.2	2.0	2.0	2.0	2.0
CPI-All Urban Consumers	1.6	3.1	2.1	1.5	1.6	0.3	2.2	2.5	2.5	2.6
PPI-Finished Goods	4.2	6.0	1.9	1.2	1.9	-3.3	2.3	2.7	2.8	2.8
Employment Cost Index—Total Comp.	1.9	2.1	2.0	1.9	2.1	2.7	2.8	3.0	3.2	3.2
Productivity	3.2	0.5	1.5	0.5	0.7	0.5	2.3	2.0	2.1	2.2
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	5.7	3.3	3.8	2.9	4.2	0.5	3.6	3.5	3.2	3.0
Factory Operating Rate (%)	71.3	73.9	75.5	76.1	77.2	77.1	77.7	77.8	78.0	78.0
Nonfarm Inven. Change (2009 Chain Weighted \$)	65.9	39.7	68.7	58.3	65.2	68.9	60.0	50.0	45.0	40.0
Housing Starts (Mill. Units)	0.59	0.61	0.78	0.93	1.00	1.09	1.31	1.40	1.50	1.55
Existing House Sales (Mill. Units)	4.18	4.28	4.66	5.07	4.92	5.27	5.58	5.50	5.55	5.60
Total Light Vehicle Sales (Mill. Units)	11.6	12.7	14.4	15.5	16.4	16.9	17.3	17.5	17.5	17.5
National Unemployment Rate (%)	9.6	8.9	8.1	7.4	6.2	5.4	5.1	5.0	5.0	5.0
Federal Budget Surplus (Unified, FY, \$Bill)	-1294	-1297	-1089	-680	-483	-463	-375	-450	-500	-530
Price of Oil (\$Bbl., U.S. Refiners' Cost)	76.70	101.75	101.00	100.47	92.20	54.50	61.75	65.00	75.00	85.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	0.1	0.1	0.1	0.1	0.1	0.3	1.2	2.8	3.2	3.5
Federal Funds Rate (%)	0.2	0.1	0.1	0.1	0.1	0.3	1.2	3.0	3.5	3.8
10-Year Treasury Note Rate (%)	3.2	2.8	1.8	2.4	2.5	2.2	2.9	3.6	3.8	4.0
Long-Term Treasury Bond Rate (%)	4.3	3.9	2.9	3.5	3.3	2.9	3.6	4.2	4.4	4.5
AAA Corporate Bond Rate (%)	4.9	4.6	3.7	4.2	4.2	3.8	4.6	5.5	5.3	5.0
Prime Rate (%)	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.5	5.0	6.0
INCOMES										
Personal Income (% Change)	2.9	6.1	4.2	2.8	4.0	3.8	4.6	5.0	5.2	5.0
Real Disp. Inc. (% Change)	1.1	2.4	2.0	0.7	2.5	3.2	2.8	3.5	3.2	3.0
Personal Savings Rate (%)	5.6	5.7	5.6	4.5	4.9	5.1	4.5	5.0	5.5	6.0
After-Tax Profits (\$Bill)	1464	1473	1755	1761	1827	2046	2198	2291	2428	2549
Yr-to-Yr % Change	22.2	0.6	19.2	4.7	3.7	12.0	7.4	4.2	6.0	5.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	2.5	1.6	2.3	2.2	2.4	2.3	2.9	3.1	3.2	3.0
Final Sales	1.0	1.7	2.2	2.2	2.3	2.3	3.0	3.2	3.0	2.8
Total Consumption	2.0	2.3	1.8	2.4	2.5	3.1	3.2	3.1	3.0	2.8
Nonresidential Fixed Investment	2.5	7.7	7.2	3.0	6.3	3.9	6.6	6.0	5.0	5.0
Structures	-16.4	2.3	13.1	-0.5	8.2	-6.4	2.5	9.0	7.0	6.0
Equipment & Software	15.9	13.6	6.8	4.6	6.4	5.3	8.4	6.0	5.0	4.0
Residential Fixed Investment	-2.5	0.5	13.5	11.9	1.6	7.4	12.9	7.0	6.0	5.0
Exports	11.5	6.9	3.3	3.0	3.2	1.6	4.5	5.0	5.0	5.5
Imports	12.8	5.5	2.3	1.1	4.0	4.3	6.2	5.0	4.5	4.0
Federal Government	4.3	-2.7	-1.8	-5.7	-1.9	0.3	-0.8	-1.0	-0.5	-0.5
State & Local Governments	-2.7	-3.3	-1.2	0.5	1.0	1.2	1.5	1.0	1.0	1.0

Selected Yields

	Recent (5/13/15)	3 Months Ago (2/11/15)	Year Ago (5/14/14)		Recent (5/13/15)	3 Months Ago (2/11/15)	Year Ago (5/14/14)
TAXABLE							
Market Rates							
Discount Rate	0.75	0.75	0.75	Mortgage-Backed Securities			
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	GNMA 5.5%	1.39	1.49	1.75
Prime Rate	3.25	3.25	3.25	FHLMC 5.5% (Gold)	1.50	1.49	1.78
30-day CP (A1/P1)	0.12	0.13	0.10	FNMA 5.5%	1.29	1.24	1.66
3-month LIBOR	0.28	0.26	0.23	FNMA ARM	1.85	1.85	1.86
Bank CDs							
6-month	0.17	0.16	0.06	Corporate Bonds			
1-year	0.27	0.28	0.09	Financial (10-year) A	3.50	3.23	3.50
5-year	0.85	0.87	0.53	Industrial (25/30-year) A	4.26	3.85	4.24
U.S. Treasury Securities							
3-month	0.02	0.01	0.02	Utility (25/30-year) A	4.29	3.70	4.22
6-month	0.08	0.07	0.05	Utility (25/30-year) Baa/BBB	4.62	4.05	4.56
1-year	0.22	0.23	0.08	Foreign Bonds (10-Year)			
5-year	1.57	1.54	1.59	Canada	1.83	1.45	2.29
10-year	2.29	2.02	2.55	Germany	0.72	0.36	1.36
10-year (inflation-protected)	0.41	0.35	0.35	Japan	0.46	0.40	0.60
30-year	3.09	2.59	3.37	United Kingdom	2.02	1.67	2.58
30-year Zero	3.21	2.67	3.58	Preferred Stocks			
				Utility A	5.95	5.93	5.93
				Financial BBB	6.13	6.57	6.42
				Financial Adjustable A	5.51	5.51	5.51



TAX-EXEMPT							
Bond Buyer Indexes							
20-Bond Index (GOs)	3.74	3.49	4.31				
25-Bond Index (Revs)	4.47	4.16	4.97				
General Obligation Bonds (GOs)							
1-year Aaa	0.33	0.16	0.13				
1-year A	0.65	0.52	0.66				
5-year Aaa	1.45	1.08	1.28				
5-year A	1.81	1.64	2.01				
10-year Aaa	2.27	2.05	2.44				
10-year A	2.87	2.68	3.62				
25/30-year Aaa	3.19	2.86	3.84				
25/30-year A	3.73	3.75	5.59				
Revenue Bonds (Revs) (15 Years)							
Education AA	3.16	2.79	3.09				
Electric AA	3.04	2.81	3.42				
Housing AA	3.38	3.30	3.80				
Hospital AA	2.78	2.66	3.09				
Toll Road Aaa	3.06	2.65	2.75				

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...		
	4/29/15	4/15/15	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	2536553	2683716	-147163	2540478	2529146	2575497
Borrowed Reserves	57	47	10	31	77	146
Net Free/Borrowed Reserves	2536496	2683669	-147173	2540447	2529069	2575351

MONEY SUPPLY

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

	Recent Levels			Ann'l Growth Rates Over the Last...		
	4/27/15	4/20/15	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2992.0	2995.7	-3.7	10.5%	9.7%	8.0%
M2 (M1+savings+small time deposits)	11863.0	11890.4	-27.4	5.0%	5.2%	5.4%

Source: United States Federal Reserve Bank

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VALUE LINE SELECTION & OPINION

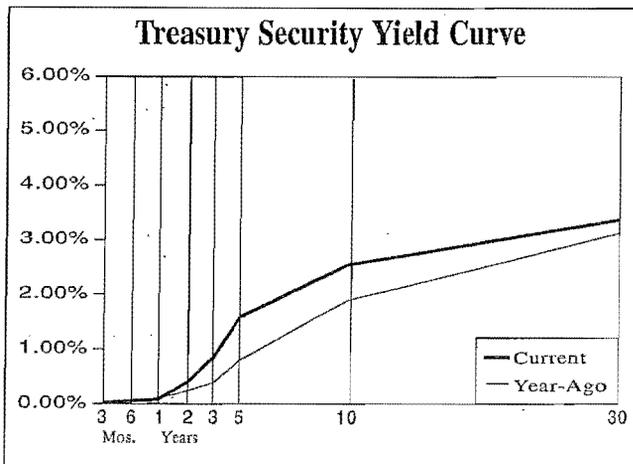
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(2009 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	14566	14718	15014	15403	15670	16036	16572	17152	17718	18285
Total Consumption	9843	10036	10291	10518	10728	11034	11392	11768	12144	12508
Nonresidential Fixed Investment	1633	1674	1801	1932	1985	2070	2221	2376	2519	2645
Structures	438	366	374	422	427	447	474	512	563	619
Equipment & Software	644	747	842	906	935	977	1069	1144	1212	1273
Residential Fixed Investment	392	382	384	434	487	507	602	662	708	744
Exports	1584	1765	1891	1957	2010	2067	2175	2284	2421	2566
Imports	1976	2228	2336	2388	2422	2468	2616	2773	2912	3058
Federal Government	1218	1271	1238	1220	1158	1132	1128	1117	1111	1106
State & Local Governments	1871	1821	1755	1743	1739	1747	1765	1782	1806	1833
Gross Domestic Product	14418	14958	15534	16245	16800	17472	18363	19291	20267	21292
Real GDP (2009 Chain Weighted \$)	14418	14779	15052	15471	15761	16120	16637	17203	17771	18339
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	0.8	1.2	2.0	1.7	1.4	1.9	1.6	1.6	1.7	1.8
CPI-All Urban Consumers	-0.3	1.6	3.1	2.1	1.5	2.2	2.0	1.8	2.0	2.3
PPI-Finished Goods	-2.5	4.2	6.0	1.9	1.2	3.3	1.7	1.5	1.8	2.2
Employment Cost Index—Total Comp.	1.5	1.9	2.2	1.9	1.9	1.9	2.6	2.8	3.0	3.2
Productivity	3.2	3.2	0.5	1.5	0.5	0.2	1.3	1.7	1.7	1.8
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	-11.3	5.7	3.4	3.6	2.9	3.0	3.3	3.8	3.5	3.3
Factory Operating Rate (%)	65.7	71.3	74.0	75.8	76.1	76.9	78.2	78.5	78.7	78.5
Nonfarm Inven. Change (2009 Chain Weighted \$)	-146.0	65.9	39.7	68.7	58.3	65.0	53.8	55.0	45.0	40.0
Housing Starts (Mill. Units)	0.55	0.59	0.61	0.78	0.93	1.02	1.39	1.55	1.60	1.60
Existing House Sales (Mill. Units)	4.33	4.18	4.28	4.66	5.07	4.95	5.65	5.70	5.65	5.60
Total Light Vehicle Sales (Mill. Units)	10.4	11.6	12.7	14.4	15.5	16.0	16.4	16.7	16.6	16.5
National Unemployment Rate (%)	9.3	9.6	8.9	8.1	7.4	6.5	6.0	5.6	5.3	5.2
Federal Budget Surplus (Unified, FY, \$Bill)	-1416	-1294	-1297	-1089	-680	-541	-570	-500	-550	-600
Price of Oil (\$Bbl., U.S. Refiners' Cost)	59.20	76.70	101.75	101.00	100.47	98.25	92.50	95.00	97.00	100.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	0.2	0.1	0.1	0.1	0.1	0.1	0.4	2.5	3.0	3.5
Federal Funds Rate (%)	0.2	0.2	0.1	0.1	0.1	0.1	0.3	2.0	3.5	4.0
10-Year Treasury Note Rate (%)	3.3	3.2	2.8	1.8	2.4	2.9	3.3	3.8	4.3	4.5
Long-Term Treasury Bond Rate (%)	4.1	4.3	3.9	2.9	3.5	3.8	4.3	4.5	4.8	5.0
AAA Corporate Bond Rate (%)	5.3	4.9	4.6	3.7	4.2	4.4	4.8	5.5	5.8	6.0
Prime Rate (%)	3.3	3.3	3.3	3.3	3.3	3.5	5.3	5.5	6.0	6.5
INCOMES										
Personal Income (% Change)	-2.8	2.9	6.1	4.2	2.8	4.3	4.7	5.3	5.5	5.3
Real Disp. Inc. (% Change)	-0.5	1.1	2.4	2.0	0.7	2.4	3.9	4.0	4.1	4.0
Personal Savings Rate (%)	6.1	5.6	5.7	5.6	4.5	4.0	4.4	5.0	5.4	5.5
After-Tax Profits (\$Bill)	1199	1464	1473	1755	1845	2032	2129	2235	2369	2535
Yr-to-Yr % Change	11.7	22.2	0.6	19.2	5.1	10.1	4.8	5.0	6.0	7.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	-2.8	2.5	1.8	2.8	1.9	2.3	3.2	3.4	3.3	3.2
Final Sales	-2.0	1.0	2.0	2.6	1.7	2.3	3.3	3.5	3.3	3.2
Total Consumption	-1.6	2.0	2.5	2.2	2.0	2.9	3.2	3.3	3.2	3.0
Nonresidential Fixed Investment	-15.6	2.5	7.6	7.3	2.7	4.3	7.3	7.0	6.0	5.0
Structures	-18.9	-16.4	2.1	12.7	1.3	4.7	6.1	8.0	10.0	10.0
Equipment & Software	-22.9	15.9	12.7	7.6	3.1	4.5	9.4	7.0	6.0	5.0
Residential Fixed Investment	-21.2	-2.5	0.5	12.9	12.2	4.3	18.6	10.0	7.0	5.0
Exports	-9.1	11.5	7.1	3.5	2.7	2.8	5.2	5.0	6.0	6.0
Imports	-13.7	12.8	4.9	2.2	1.4	1.9	6.0	6.0	5.0	5.0
Federal Government	5.7	4.3	-2.6	-1.4	-5.2	-2.2	-0.3	-1.0	-0.5	-0.5
State & Local Governments	1.6	-2.7	-3.6	-0.7	-0.2	0.4	1.0	1.0	1.3	1.5

Selected Yields

	Recent (5/14/14)	3 Months Ago (2/11/14)	Year Ago (5/15/13)		Recent (5/14/14)	3 Months Ago (2/11/14)	Year Ago (5/15/13)
TAXABLE							
Market Rates							
Discount Rate	0.75	0.75	0.75	Mortgage-Backed Securities	1.75	1.82	2.08
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	GNMA 5.5%	1.78	1.92	2.22
Prime Rate	3.25	3.25	3.25	FHLMC 5.5% (Gold)	1.66	1.68	1.87
30-day CP (A1/P1)	0.10	0.11	0.19	FNMA 5.5%	1.86	1.94	2.12
3-month LIBOR	0.23	0.24	0.27	Corporate Bonds			
Bank CDs							
6-month	0.14	0.07	0.09	Financial (10-year) A	3.50	3.90	2.96
1-year	0.24	0.09	0.11	Industrial (25/30-year) A	4.24	4.57	4.13
5-year	0.80	0.53	0.64	Utility (25/30-year) A	4.22	4.65	4.07
U.S. Treasury Securities							
3-month	0.02	0.05	0.03	Utility (25/30-year) Baa/BBB	4.56	4.91	4.42
6-month	0.05	0.08	0.07	Foreign Bonds (10-Year)			
1-year	0.08	0.11	0.10	Canada	2.29	2.46	1.92
5-year	1.59	1.56	0.80	Germany	1.36	1.69	1.38
10-year	2.55	2.75	1.90	Japan	0.60	0.61	0.86
10-year (inflation-protected)	0.35	0.45	-0.40	United Kingdom	2.58	2.74	1.92
30-year	3.37	3.71	3.12	Preferred Stocks			
30-year Zero	3.58	3.94	3.41	Utility A	5.93	6.03	5.47
				Financial BBB	6.42	6.56	6.22
				Financial Adjustable A	5.51	5.51	5.51



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.31	4.46	3.67				
25-Bond Index (Revs)	4.97	5.32	4.22				
General Obligation Bonds (GOs)							
1-year Aaa	0.13	0.13	0.17				
1-year A	0.66	0.77	0.82				
5-year Aaa	1.28	1.25	0.85				
5-year A	2.01	2.20	1.78				
10-year Aaa	2.44	2.90	1.99				
10-year A	3.62	3.73	2.99				
25/30-year Aaa	3.84	4.32	3.19				
25/30-year A	5.59	5.87	4.94				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.97	4.99	4.24				
Electric AA	5.04	5.06	4.37				
Housing AA	5.46	5.49	4.69				
Hospital AA	5.21	5.28	4.54				
Toll Road Aaa	4.62	4.78	4.39				

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...		
	4/30/14	4/16/14	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	2538116	2631260	-93144	2538859	2466051	2263296
Borrowed Reserves	135	101	34	110	142	237
Net Free/Borrowed Reserves	2537981	2631159	-93178	2538749	2465909	2263059

MONEY SUPPLY

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

	Recent Levels			Ann'l Growth Rates Over the Last...		
	4/28/14	4/21/14	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2774.9	2763.7	11.2	19.4%	11.6%	10.2%
M2 (M1+savings+small time deposits)	11242.6	11191.4	51.2	6.9%	5.5%	6.3%

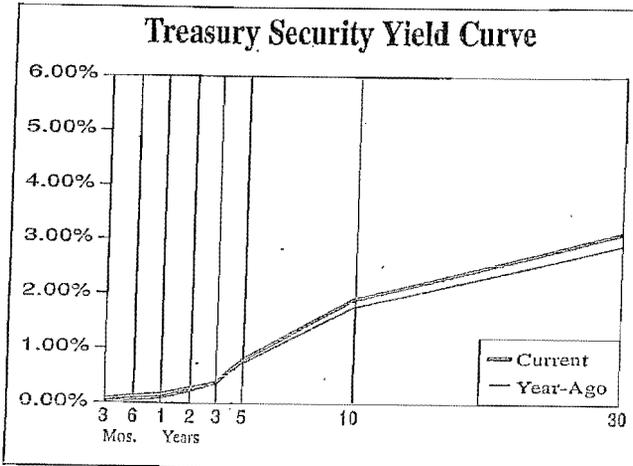
Source: United States Federal Reserve Bank

Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2005 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	13201	12853	13029	13282	13539	13788	14152	14577	15014	15479
Total Consumption	9212	9038	9221	9421	9603	9814	10052	10303	10571	10856
Nonresidential Fixed Investment	1538	1263	1319	1436	1488	1558	1660	1768	1874	1968
Structures	466	367	309	323	354	366	387	410	439	469
Equipment & Software	1059	890	1019	1126	1144	1206	1299	1390	1473	1547
Residential Fixed Investment	444	346	331	326	367	419	490	578	625	656
Exports	1649	1494	1663	1774	1837	1876	1978	2087	2212	2367
Imports	2144	1853	2085	2188	2238	2274	2392	2511	2624	2729
Federal Government	971	1030	1076	1055	1024	967	986	966	952	942
State & Local Governments	1528	1514	1487	1454	1462	1445	1441	1451	1461	1473
Gross Domestic Product	14292	13939	14527	15088	15685	16183	16899	17720	18580	19519
Real GDP (2005 Chain Weighted \$)	13162	12703	13088	13315	13593	13835	14190	14616	15054	15536
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.2	1.1	1.2	2.1	1.8	1.6	1.7	1.7	1.8	1.8
CPI-All Urban Consumers	3.8	-0.3	1.6	3.1	2.1	1.2	1.7	1.8	1.9	2.0
PPI-Finished Goods	6.4	-2.5	4.2	6.0	1.9	0.6	1.0	1.2	1.5	1.8
Employment Cost Index—Total Comp.	2.9	1.4	1.9	2.2	1.9	1.9	2.4	2.5	2.7	2.8
Productivity	0.6	2.3	4.1	0.6	0.9	0.8	1.0	1.2	1.4	1.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	-3.7	-11.2	5.3	4.1	3.6	4.0	3.0	3.0	3.0	3.0
Factory Operating Rate (%)	74.9	66.2	71.7	75.0	75.8	76.8	77.9	78.3	78.5	79.0
Nonfarm Inven. Change (2005 Chain Weighted \$)	-37.6	-143.8	60.7	44.3	59.6	48.2	45.0	50.0	45.0	40.0
Housing Starts (Mill. Units)	0.90	0.55	0.59	0.61	0.78	0.99	1.24	1.50	1.55	1.60
Existing House Sales (Mill. Units)	4.89	5.15	4.92	4.28	4.66	5.06	5.53	5.80	5.75	5.70
Total Light Vehicle Sales (Mill. Units)	13.2	10.4	11.6	12.7	14.4	15.2	15.6	16.2	16.3	16.5
National Unemployment Rate (%)	5.8	9.3	9.6	9.0	8.1	7.5	7.1	6.5	6.2	6.0
Federal Budget Surplus (Unified, FY, \$Bill)	-455.0	-1416	-1294	-1297	-1089	-857	-750	-600	-550	-500
Price of Oil (\$Bbl., U.S. Refiners' Cost)	95.29	59.20	76.70	101.80	101.01	100.00	102.50	105.00	107.50	110.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	1.4	0.2	0.1	0.1	0.1	0.1	0.1	0.5	1.5	3.0
Federal Funds Rate (%)	1.9	0.2	0.2	0.1	0.1	0.2	0.2	0.5	1.5	3.5
10-Year Treasury Note Rate (%)	3.7	3.3	3.2	2.8	1.8	2.1	2.7	3.0	3.5	3.8
Long-Term Treasury Bond Rate (%)	4.3	4.1	4.3	3.9	2.9	3.1	3.6	4.0	4.3	4.5
AAA Corporate Bond Rate (%)	5.6	5.3	4.9	4.6	3.7	3.9	4.3	4.7	5.3	5.8
Prime Rate (%)	5.1	3.3	3.3	3.3	3.3	3.3	3.8	6.0	6.5	7.0
INCOMES										
Personal Income (% Change)	4.6	-4.3	3.7	5.1	3.6	2.2	4.6	4.8	4.9	5.0
Real Disp. Inc. (% Change)	2.4	-2.3	1.8	1.3	1.5	0.7	3.5	3.0	3.1	3.2
Personal Savings Rate (%)	5.4	5.2	5.3	4.7	3.9	2.9	3.3	4.0	4.5	4.8
After-Tax Profits (\$Bill)	1051	1183	1408	1480	1713	1757	1933	2029	2151	2302
Yr-to-Yr % Change	-18.7	12.6	19.0	5.1	16.1	2.6	10.0	5.0	6.0	7.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	-0.3	-3.5	3.0	1.7	2.2	1.8	2.6	3.0	3.0	3.2
Final Sales	0.2	-2.6	1.4	2.0	2.1	1.8	2.6	3.0	3.0	3.1
Total Consumption	-0.6	-1.9	2.0	2.2	1.9	2.2	2.4	2.5	2.6	2.7
Nonresidential Fixed Investment	-0.8	-17.9	4.4	8.8	8.0	4.7	6.6	6.5	6.0	5.0
Structures	6.4	-21.2	-15.8	4.6	10.8	3.5	5.7	6.0	7.0	7.0
Equipment & Software	-4.3	-16.0	14.6	10.4	6.9	5.5	7.7	7.0	6.0	5.0
Residential Fixed Investment	-23.9	-22.2	-4.3	-1.3	12.1	14.3	16.8	18.0	8.0	5.0
Exports	6.1	-9.4	11.3	6.7	3.4	2.1	5.4	5.5	6.0	7.0
Imports	-2.7	-13.6	12.5	4.9	2.4	1.6	5.2	5.0	4.5	4.0
Federal Government	7.2	6.0	4.5	-1.9	-2.2	-5.5	1.9	-2.0	-1.5	-1.0
State & Local Governments	0.0	-0.9	-1.8	-2.2	-1.4	-1.2	-0.3	0.7	0.7	0.8

Selected Yields

	Recent (5/15/13)	3 Months Ago (2/13/13)	Year Ago (5/16/12)		Recent (5/15/13)	3 Months Ago (2/13/13)	Year Ago (5/16/12)
TAXABLE							
Market Rates							
Discount Rate	0.75	0.75	0.75	Mortgage-Backed Securities			
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	GNMA 5.5%	2.08	1.85	1.13
Prime Rate	3.25	3.25	3.25	FHLMC 5.5% (Gold)	2.22	2.16	2.09
30-day CP (A1/P1)	0.19	0.21	0.31	FNMA 5.5%	1.87	1.90	1.87
3-month LIBOR	0.27	0.29	0.47	FNMA ARM	2.12	2.23	2.32
Bank CDs							
6-month	0.09	0.10	0.22	Corporate Bonds			
1-year	0.11	0.13	0.33	Financial (10-year) A	2.96	3.23	3.36
5-year	0.64	0.70	1.12	Industrial (25/30-year) A	4.13	4.18	4.05
U.S. Treasury Securities							
3-month	0.03	0.09	0.09	Utility (25/30-year) A	4.07	4.15	4.00
6-month	0.07	0.12	0.14	Utility (25/30-year) Baa/BBB	4.42	4.50	4.48
1-year	0.10	0.15	0.18	Foreign Bonds (10-Year)			
5-year	0.80	0.89	0.74	Canada	1.92	2.04	1.92
10-year	1.90	2.04	1.76	Germany	1.38	1.67	1.47
10-year (inflation-protected)	-0.40	-0.68	-0.38	Japan	0.86	0.75	0.83
30-year	3.12	3.22	2.90	United Kingdom	1.92	2.21	1.88
30-year Zero	3.41	3.48	3.13	Preferred Stocks			
				Utility A	5.47	5.50	5.31
				Financial BBB	6.22	5.92	6.69
				Financial Adjustable A	5.51	5.51	5.52



TAX-EXEMPT							
Bond Buyer Indexes							
20-Bond Index (GOs)	3.67	3.68	3.71				
25-Bond Index (Revs)	4.22	4.29	4.73				
General Obligation Bonds (GOs)							
1-year Aaa	0.17	0.20	0.21				
1-year A	0.82	0.78	0.95				
5-year Aaa	0.85	0.83	0.78				
5-year A	1.78	1.83	1.78				
10-year Aaa	1.99	1.99	1.92				
10-year A	2.99	2.90	3.06				
25/30-year Aaa	3.19	3.12	3.50				
25/30-year A	4.94	4.83	4.95				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.24	4.21	4.30				
Electric AA	4.37	4.31	4.60				
Housing AA	4.69	4.68	4.70				
Hospital AA	4.54	4.43	4.56				
Toll Road Aaa	4.39	4.36	4.42				

Source: Bloomberg Finance L.P.

Federal Reserve Data

BANK RESERVES							
<i>(Two-Week Period; in Millions, Not Seasonally Adjusted)</i>							
	Recent Levels			Average Levels Over the Last...			
	5/1/13	4/17/13	Change	12 Wks.	26 Wks.	52 Wks.	
Excess Reserves	1751987	1793542	-41555	1687300	1571604	1514671	
Borrowed Reserves	407	397	10	428	666	2320	
Net Free/Borrowed Reserves	1751580	1793145	-41565	1686872	1570938	1512351	

MONEY SUPPLY							
<i>(One-Week Period; in Billions, Seasonally Adjusted)</i>							
	Recent Levels			Ann'l Growth Rates Over the Last...			
	4/29/13	4/22/13	Change	3 Mos.	6 Mos.	12 Mos.	
M1 (Currency+demand deposits)	2523.1	2508.5	14.6	10.1%	8.4%	12.0%	
M2 (M1+savings+small time deposits)	10535.0	10501.4	33.6	4.4%	4.8%	6.9%	

Source: United States Federal Reserve Bank

MAY 25, 2012

VALUE LINE SELECTION & OPINION

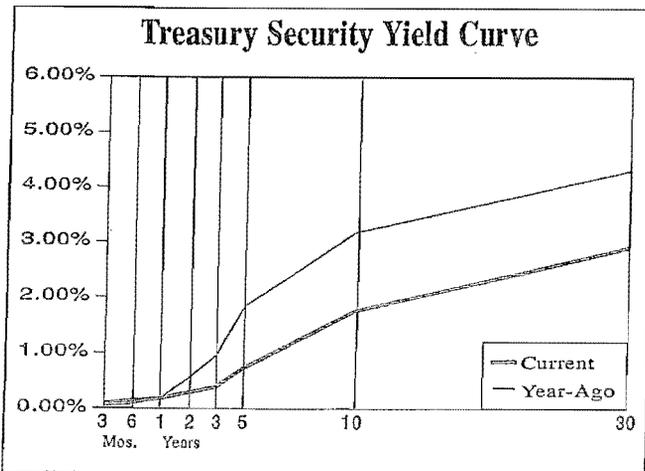
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2005 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	13178	13201	12853	13029	13282	13540	13884	14273	14687	15127
Total Consumption	9263	9212	9038	9221	9421	9645	9879	10097	10329	10567
Nonresidential Fixed Investment	1550	1538	1263	1319	1436	1519	1617	1730	1834	1944
Structures	438	466	367	309	323	324	337	360	389	420
Equipment & Software	1107	1059	890	1019	1126	1218	1318	1410	1495	1584
Residential Fixed Investment	584	444	346	331	326	363	422	498	567	624
Exports	1554	1649	1494	1663	1774	1858	1985	2124	2273	2432
Imports	2203	2144	1853	2085	2188	2266	2355	2461	2560	2662
Federal Government	906	971	1030	1076	1055	1035	1012	981	962	952
State & Local Governments	1528	1528	1514	1487	1454	1432	1418	1418	1425	1440
Gross Domestic Product	14029	14292	13939	14527	15088	15639	16249	17038	17900	18823
Real GDP (2005 Chain Weighted \$)	13206	13162	12703	13088	13315	13616	13950	14369	14829	15318
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.9	2.2	1.1	1.2	2.1	1.4	1.5	1.7	1.8	1.8
CPI-All Urban Consumers	2.9	3.8	-0.3	1.6	3.1	1.9	2.1	2.2	2.3	2.5
PPI-Finished Goods	3.9	6.4	-2.5	4.2	6.0	0.8	1.8	1.8	2.0	2.3
Employment Cost Index—Total Comp.	3.1	2.9	1.4	1.9	2.2	2.0	2.3	2.6	2.8	3.0
Productivity	1.5	0.6	2.3	4.1	0.6	0.1	1.1	1.4	1.4	1.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	2.7	-3.7	-11.2	5.3	4.1	4.0	3.3	3.5	3.5	3.5
Factory Operating Rate (%)	79.2	74.9	66.2	71.7	75.0	78.3	79.2	80.0	80.5	81.0
Nonfarm Inven. Change (2005 Chain Weighted \$)	28.7	-37.6	-143.8	60.7	44.3	49.1	50.0	40.0	40.0	40.0
Housing Starts (Mill. Units)	1.34	0.90	0.55	0.59	0.61	0.75	1.00	1.20	1.40	1.60
Existing House Sales (Mill. Units)	5.68	4.89	5.15	4.92	4.28	4.71	5.03	5.25	5.60	5.70
Total Light Vehicle Sales (Mill. Units)	16.1	13.2	10.4	11.6	12.7	14.3	14.9	15.5	16.0	16.5
National Unemployment Rate (%)	4.6	5.8	9.3	9.6	9.0	8.1	7.8	7.5	7.0	6.5
Federal Budget Surplus (Unified, FY, \$Bill)	-162.0	-455.0	-1416	-1294	-1297	-1107	-825	-650	-550	-500
Price of Oil (\$Bbl., U.S. Refiners' Cost)	67.98	95.29	59.20	76.70	101.80	101.50	107.00	112.00	117.00	120.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	4.4	1.4	0.2	0.1	0.1	0.1	0.1	0.3	1.8	3.0
Federal Funds Rate (%)	5.0	1.9	0.2	0.2	0.1	0.1	0.1	0.2	1.8	3.5
10-Year Treasury Note Rate (%)	4.6	3.7	3.3	3.2	2.8	2.1	2.6	3.0	4.0	4.5
Long-Term Treasury Bond Rate (%)	4.8	4.3	4.1	4.3	3.9	3.2	3.7	4.0	4.8	5.3
AAA Corporate Bond Rate (%)	5.6	5.6	5.3	4.9	4.6	4.0	4.4	4.7	5.3	6.0
Prime Rate (%)	8.1	5.1	3.3	3.3	3.3	3.3	3.3	3.5	4.5	6.5
INCOMES										
Personal Income (% Change)	5.7	4.6	-4.3	3.7	5.1	4.2	4.0	4.7	5.0	5.1
Real Disp. Inc. (% Change)	2.4	2.4	-2.3	1.8	1.3	1.6	1.8	3.0	3.0	3.2
Personal Savings Rate (%)	2.4	5.4	5.2	5.3	4.7	4.0	3.5	3.7	4.0	4.5
After-Tax Profits (\$Bill)	1293	1051	1183	1408	1480	1684	1607	1897	1992	2092
Yr-to-Yr % Change	-4.2	-18.7	12.6	19.0	5.1	13.3	7.3	5.0	5.0	5.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	1.9	-0.3	-3.5	3.0	1.7	2.3	2.5	3.0	3.2	3.3
Final Sales	2.2	0.2	-2.6	1.4	2.0	1.9	2.5	2.8	2.9	3.0
Total Consumption	2.3	-0.6	-1.9	2.0	2.2	2.4	2.4	2.2	2.3	2.3
Nonresidential Fixed Investment	6.5	-0.8	-17.9	4.4	8.8	5.3	6.5	7.0	6.0	6.0
Structures	14.1	6.4	-21.2	-15.8	4.6	0.2	4.0	7.0	3.0	8.0
Equipment & Software	3.3	-4.3	-16.0	14.6	10.4	8.2	8.2	7.0	6.0	6.0
Residential Fixed Investment	-18.7	-23.9	-22.2	-4.3	-1.3	11.2	16.3	18.0	14.0	10.0
Exports	9.3	6.1	-9.4	11.3	6.7	4.8	6.8	7.0	7.0	7.0
Imports	2.4	-2.7	-13.6	12.5	4.9	3.6	3.9	4.5	4.0	4.0
Federal Government	1.2	7.2	6.0	4.5	-1.9	-1.9	-2.3	-3.0	-2.0	-1.0
State & Local Governments	1.4	0.0	-0.9	-1.8	-2.2	-1.5	-1.0	0.0	0.5	1.0

Selected Yields

	Recent (5/16/12)	3 Months Ago (2/15/12)	Year Ago (5/18/11)		Recent (5/16/12)	3 Months Ago (2/15/12)	Year Ago (5/18/11)
TAXABLE							
Market Rates							
Discount Rate	0.75	0.75	0.75	Mortgage-Backed Securities			
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	GNMA 5.5%	1.13	1.41	2.05
Prime Rate	3.25	3.25	3.25	FHLMC 5.5% (Gold)	2.09	1.79	2.60
30-day CP (A1/P1)	0.31	0.29	0.16	FNMA 5.5%	1.87	1.82	2.53
3-month LIBOR	0.47	0.50	0.27	FNMA ARM	2.32	2.37	2.60
Bank CDs							
6-month	0.22	0.22	0.27	Corporate Bonds			
1-year	0.33	0.35	0.45	Financial (10-year) A	3.36	3.91	4.52
5-year	1.12	1.15	1.71	Industrial (25/30-year) A	4.05	4.30	5.25
U.S. Treasury Securities							
3-month	0.09	0.11	0.04	Utility (25/30-year) A	4.00	4.10	5.30
6-month	0.14	0.12	0.08	Utility (25/30-year) Baa/BBB	4.48	4.58	5.79
1-year	0.18	0.15	0.17	Foreign Bonds (10-Year)			
5-year	0.74	0.79	1.85	Canada	1.92	2.01	3.23
10-year	1.76	1.93	3.18	Germany	1.47	1.86	3.12
10-year (inflation-protected)	-0.38	-0.42	0.78	Japan	0.83	0.97	1.16
30-year	2.90	3.09	4.30	United Kingdom	1.88	2.08	3.39
30-year Zero	3.13	3.32	4.63	Preferred Stocks			
				Utility A	5.31	5.61	5.71
				Financial A	6.69	6.07	6.48
				Financial Adjustable A	5.52	5.51	5.52



TAX-EXEMPT							
Bond Buyer Indexes							
20-Bond Index (GOs)	3.71	3.70	4.61				
25-Bond Index (Revs)	4.73	4.77	5.41				
General Obligation Bonds (GOs)							
1-year Aaa	0.21	0.17	0.25				
1-year A	0.95	1.09	1.10				
5-year Aaa	0.78	0.70	1.34				
5-year A	1.78	1.98	2.53				
10-year Aaa	1.92	1.95	2.84				
10-year A	3.06	2.95	4.21				
25/30-year Aaa	3.50	3.56	4.43				
25/30-year A	4.95	4.98	5.95				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.30	4.44	4.91				
Electric AA	4.60	4.53	5.19				
Housing AA	4.70	4.86	5.86				
Hospital AA	4.56	4.63	5.35				
Toll Road Aaa	4.42	4.47	5.07				

Federal Reserve Data

BANK RESERVES							
<i>(Two-Week Period; in Millions, Not Seasonally Adjusted)</i>							
	Recent Levels			Average Levels Over the Last...			
	5/2/12	4/18/12	Change	12 Wks.	26 Wks.	52 Wks.	
Excess Reserves	1457763	1510011	-52248	1518025	1512031	1536369	
Borrowed Reserves	6627	7009	-382	7403	8577	10664	
Net Free/Borrowed Reserves	1451136	1503002	-51866	1510622	1503454	1525705	

MONEY SUPPLY							
<i>(One-Week Period; in Billions, Seasonally Adjusted)</i>							
	Recent Levels			Ann'l Growth Rates Over the Last...			
	4/30/12	4/23/12	Change	3 Mos.	6 Mos.	12 Mos.	
M1 (Currency+demand deposits)	2248.5	2246.3	2.2	5.3%	10.8%	18.0%	
M2 (M1+savings+small time deposits)	9871.3	9814.2	57.1	4.6%	6.9%	9.5%	

MAY 27, 2011

VALUE LINE SELECTION & OPINION

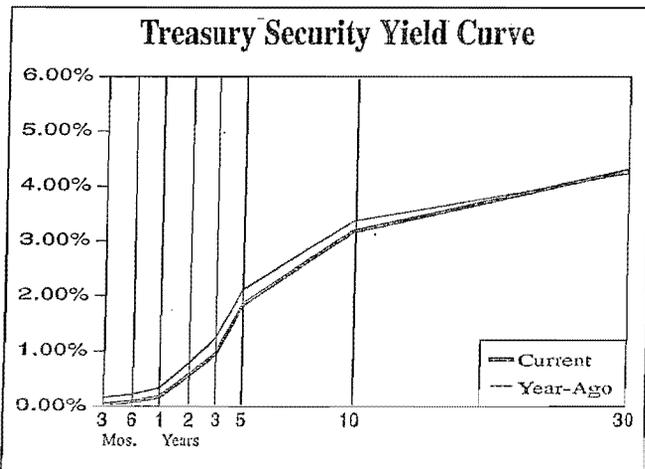
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2005 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	12917	13234	13341	13111	13177	13540	13977	14453	14944	15467
Total Consumption	9074	9314	9265	9154	9314	9580	9850	10047	10288	10566
Nonresidential Fixed Investment	1454	1544	1557	1291	1365	1477	1623	1721	1875	2026
Structures	384	441	464	370	319	310	308	338	365	391
Equipment & Software	1070	1097	1082	916	1056	1186	1326	1458	1560	1638
Residential Fixed Investment	718	585	444	343	333	337	420	517	569	597
Exports	1422	1546	1648	1491	1666	1801	1973	2140	2312	2473
Imports	2151	2194	2152	1854	2088	2183	2320	2413	2546	2648
Federal Government	895	906	972	1028	1076	1081	1058	1021	1000	980
State & Local Governments	1507	1537	1533	1519	1497	1475	1460	1467	1482	1497
Gross Domestic Product	13399	14062	14369	14119	14660	15317	16091	16921	17811	18785
Real GDP (2005 Chain Weighted \$)	12976	13229	13229	12881	13249	13594	14034	14497	14975	15484
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	3.2	2.7	2.2	0.9	1.0	2.1	1.8	1.8	1.9	2.0
CPI-All Urban Consumers	3.2	2.9	3.8	-0.3	1.6	3.1	1.7	2.2	2.3	2.5
PPI-Finished Goods	3.0	3.9	6.4	-2.5	4.2	5.4	1.7	2.2	2.4	2.5
Employment Cost Index—Total Comp.	2.9	3.1	2.8	1.5	1.9	2.0	2.4	2.5	2.7	2.8
Productivity	1.0	1.4	2.8	3.5	3.8	1.0	1.0	1.0	1.3	1.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	2.2	1.7	-2.2	-9.3	5.3	4.9	2.8	3.0	3.3	3.5
Factory Operating Rate (%)	79.4	79.4	75.1	67.2	71.7	76.1	78.6	79.0	80.0	80.0
Nonfarm Inven. Change (2005 Chain Weighted \$)	46.3	-3.7	-34.3	-116.9	57.3	61.5	67.5	50.0	55.0	60.0
Housing Starts (Mill. Units)	1.81	1.34	0.90	0.55	0.59	0.62	1.03	1.35	1.55	1.70
Existing House Sales (Mill. Units)	6.51	5.67	4.89	5.16	4.92	5.26	5.70	5.85	6.10	6.40
Total Light Vehicle Sales (Mill. Units)	16.5	16.1	13.1	10.4	11.6	12.8	14.3	15.5	16.0	17.0
National Unemployment Rate (%)	4.6	4.6	5.8	9.3	9.6	8.8	8.3	7.8	7.5	7.2
Federal Budget Surplus (Unified, FY, \$Bill)	-248.0	-162.0	-455.0	-1416	-1294	-1440	-1000	-750	-675	-600
Price of Oil (\$Bbl., U.S. Refiners' Cost)	66.12	72.18	99.75	59.40	76.70	99.19	103.50	104.00	112.00	120.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	4.7	4.4	1.4	0.2	0.1	0.2	1.5	3.0	3.5	4.0
Federal Funds Rate (%)	5.0	5.0	1.9	0.2	0.2	0.1	1.3	3.3	3.7	4.0
10-Year Treasury Note Rate (%)	4.8	4.6	3.7	3.3	3.2	3.5	3.9	4.3	4.5	5.0
Long-Term Treasury Bond Rate (%)	4.9	4.8	4.3	4.1	4.7	4.8	5.2	5.5	5.7	6.0
AAA Corporate Bond Rate (%)	5.6	5.6	5.6	5.3	4.9	5.1	5.4	5.8	6.2	6.5
Prime Rate (%)	8.0	8.0	5.1	3.3	3.3	3.3	4.8	6.0	6.5	7.0
INCOMES										
Personal Income (% Change)	7.1	6.1	3.8	-1.7	3.1	5.6	4.3	4.7	4.8	5.0
Real Disp. Inc. (% Change)	3.5	2.8	1.3	0.6	1.4	2.5	2.0	2.0	2.5	3.0
Personal Savings Rate (%)	0.7	0.6	1.8	5.9	5.8	5.5	4.8	4.5	4.5	4.5
After-Tax Profits (\$Bill)	1405	1436	1231	1062	1384	1407	1517	1668	1785	1928
Yr-to-Yr % Change	16.4	2.2	-14.3	-13.7	30.4	1.7	7.8	19.0	7.0	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	2.7	2.1	0.4	-2.6	2.9	2.6	3.2	3.3	3.3	3.4
Final Sales	2.8	2.4	1.4	-2.1	1.4	2.8	3.2	3.4	3.4	3.5
Total Consumption	3.0	2.8	0.2	-1.2	1.7	2.9	2.8	2.0	2.4	2.7
Nonresidential Fixed Investment	7.5	4.9	1.6	-17.1	5.7	8.2	9.9	6.0	9.0	8.0
Structures	8.2	12.7	11.2	-20.4	-13.7	-2.7	-0.9	10.0	8.0	7.0
Equipment & Software	7.2	1.7	-3.0	-15.3	15.3	12.3	11.8	10.0	7.0	5.0
Residential Fixed Investment	-7.1	-17.9	-20.8	-22.9	-3.0	1.2	24.6	23.0	10.0	5.0
Exports	9.1	8.4	6.2	-9.5	11.7	8.1	9.5	8.5	8.0	7.0
Imports	6.0	2.2	-3.5	-13.8	12.6	4.6	6.3	4.0	5.5	4.0
Federal Government	2.3	1.6	6.0	5.7	4.8	0.5	-2.2	-3.5	-2.0	-2.0
State & Local Governments	1.3	2.3	1.1	-0.9	-1.4	-1.5	-1.0	0.5	1.0	1.0

Selected Yields

	Recent (5/18/11)	3 Months Ago (2/16/11)	Year Ago (5/19/10)		Recent (5/18/11)	3 Months Ago (2/16/11)	Year Ago (5/19/10)
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)	0.16	0.31	0.33				
3-month LIBOR	0.27	0.31	0.48				
Bank CDs							
6-month	0.27	0.21	0.25				
1-year	0.45	0.29	0.43				
5-year	1.71	1.65	1.99				
U.S. Treasury Securities							
3-month	0.04	0.11	0.16				
6-month	0.08	0.15	0.22				
1-year	0.17	0.27	0.33				
5-year	1.85	2.35	2.12				
10-year	3.18	3.62	3.37				
10-year (inflation-protected)	0.78	1.25	1.29				
30-year	4.30	4.68	4.24				
30-year Zero	4.63	5.01	4.46				
Mortgage-Backed Securities							
GNMA 6.5%	2.05	2.96	1.70				
FHLMC 6.5% (Gold)	2.60	3.51	1.14				
FNMA 6.5%	2.53	3.45	1.19				
FNMA ARM	2.60	2.66	3.01				
Corporate Bonds							
Financial (10-year) A	4.52	4.85	4.74				
Industrial (25/30-year) A	5.25	5.65	5.37				
Utility (25/30-year) A	5.30	5.77	5.53				
Utility (25/30-year) Baa/BBB	5.79	6.15	5.93				
Foreign Bonds (10-Year)							
Canada	3.23	3.50	3.40				
Germany	3.12	3.24	2.77				
Japan	1.16	1.36	1.30				
United Kingdom	3.39	3.81	3.66				
Preferred Stocks							
Utility A	5.71	5.79	6.01				
Financial A	6.48	6.07	6.56				
Financial Adjustable A	5.52	5.52	5.52				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.61	5.29	4.32				
25-Bond Index (Revs)	5.41	5.67	4.90				
General Obligation Bonds (GOs)							
1-year Aaa	0.25	0.38	0.37				
1-year A	1.10	1.16	1.20				
5-year Aaa	1.34	1.95	1.76				
5-year A	2.53	2.87	2.70				
10-year Aaa	2.84	3.52	3.12				
10-year A	4.21	4.52	4.09				
25/30-year Aaa	4.43	4.94	4.39				
25/30-year A	5.95	6.25	5.46				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.91	5.33	4.74				
Electric AA	5.19	5.48	4.74				
Housing AA	5.86	6.42	5.64				
Hospital AA	5.35	5.71	5.08				
Toll Road Aaa	5.07	5.46	4.72				

Federal Reserve Data

BANK RESERVES

(Two-Week Period; in Millions, Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	5/4/11	4/20/11	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1433322	1474432	-41110	1330196	1163742	1092180
Borrowed Reserves	16908	17930	-1022	19864	31461	47019
Net Free/Borrowed Reserves	1416414	1456502	-40088	1310332	1132281	1045161

MONEY SUPPLY

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

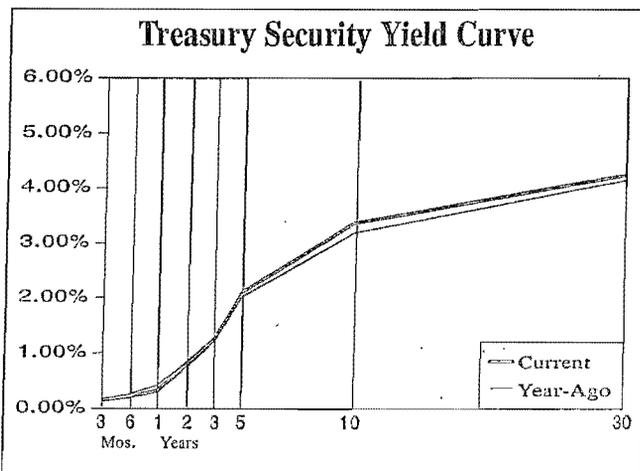
	Recent Levels			Growth Rates Over the Last...		
	5/2/11	4/25/11	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1937.1	1916.9	20.2	8.9%	19.9%	12.3%
M2 (M1+savings+small time deposits)	8992.6	8964.5	28.1	5.7%	4.9%	5.1%

Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2005 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	12588	12917	13234	13341	13111	13405	13797	14239	14708	15194
Total Consumption	8819	9074	9314	9291	9235	9495	9794	10038	10289	10547
Nonresidential Fixed Investment	1347	1454	1544	1570	1291	1342	1444	1588	1731	1870
Structures	351	384	441	487	390	340	326	365	412	466
Equipment & Software	996	1070	1097	1069	891	1004	1138	1252	1390	1529
Residential Fixed Investment	775	718	585	451	359	369	451	541	595	643
Exports	1305	1422	1546	1629	1472	1646	1765	1897	2060	2225
Imports	2028	2151	2194	2124	1828	2040	2211	2333	2435	2533
Federal Government	876	895	906	976	1027	1061	1039	1002	984	970
State & Local Governments	1494	1507	1537	1544	1541	1527	1538	1554	1574	1598
Gross Domestic Product	12638	13399	14078	14441	14377	14904	15612	16417	17298	18244
Real GDP (2005 Chain Weighted \$)	12638	12976	13254	13312	12987	13425	13849	14306	14792	15295
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	3.3	3.2	2.7	2.2	1.2	1.4	1.6	1.8	1.9	2.0
CPI-All Urban Consumers	3.4	3.2	2.9	3.8	-0.3	1.4	2.1	2.2	2.4	2.6
PPI-Finished Goods	4.9	3.0	3.9	6.4	-2.5	2.7	2.2	2.3	2.5	2.8
Employment Cost Index—Total Comp.	3.1	2.9	3.1	2.8	1.5	2.0	2.5	2.5	2.6	2.8
Productivity	1.8	1.0	1.4	2.8	3.7	2.2	0.6	0.8	1.0	1.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	3.3	2.2	1.7	-2.2	-9.7	6.5	4.4	3.5	3.6	3.8
Factory Operating Rate (%)	78.6	79.4	79.4	75.1	66.8	72.0	75.0	76.0	77.0	78.0
Nonfarm Inven. Change (2005 Chain Weighted \$)	39.1	46.3	-3.7	-34.3	-108.3	50.0	60.0	55.0	50.0	50.0
Housing Starts (Mill. Units)	2.07	1.81	1.34	0.90	0.55	0.71	1.18	1.55	1.70	1.80
Existing House Sales (Mill. Units)	7.08	6.51	5.67	4.89	5.16	5.53	5.74	6.10	6.30	6.50
Total Light Vehicle Sales (Mill. Units)	17.0	16.5	16.1	13.1	10.4	11.8	13.8	15.0	16.0	17.0
National Unemployment Rate (%)	5.1	4.6	4.6	5.8	9.3	9.7	9.1	8.3	7.7	7.2
Federal Budget Surplus (Unified, FY, \$Bill)	-321	-248	-162	-455	-1416	-1280	-990	-850	-650	-600
Price of Oil (\$Bbl., U.S. Refiners' Cost)	56.56	66.12	72.18	99.75	59.40	73.30	81.00	85.00	90.00	95.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	3.1	4.7	4.4	1.4	0.2	0.3	1.8	3.4	3.8	4.2
Federal Funds Rate (%)	3.2	5.0	5.0	1.9	0.2	0.2	1.6	3.3	3.7	4.3
10-Year Treasury Note Rate (%)	4.3	4.8	4.6	3.7	3.3	3.7	4.1	4.6	5.0	5.5
Long-Term Treasury Bond Rate (%)	4.6	4.9	4.8	4.3	4.1	4.5	4.9	5.2	5.6	6.0
AAA Corporate Bond Rate (%)	5.2	5.6	5.6	5.6	5.3	5.5	5.7	6.0	6.4	6.8
Prime Rate (%)	6.2	8.0	8.0	5.1	3.3	3.4	4.3	6.0	6.5	7.0
INCOMES										
Personal Income (% Change)	5.6	7.1	6.1	3.8	-1.7	4.0	4.5	5.0	5.2	5.5
Real Disp. Inc. (% Change)	1.4	3.5	2.8	1.3	0.9	2.8	1.9	2.3	2.6	3.0
Personal Savings Rate (%)	0.4	0.7	0.6	1.8	4.2	3.4	2.5	2.3	2.1	2.0
After-Tax Profits (\$Bill)	1207	1405	1436	1231	1113	1417	1462	1535	1627	1741
Yr-to-Yr % Change	34.5	16.4	2.2	-14.3	-9.6	27.3	3.2	5.0	6.0	7.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	3.1	2.7	2.1	0.4	-2.4	3.4	3.2	3.3	3.4	3.4
Final Sales	3.1	2.8	2.4	1.4	-1.7	2.2	2.9	3.2	3.3	3.3
Total Consumption	3.0	3.0	2.8	0.2	-0.6	2.8	3.1	2.5	2.5	2.5
Nonresidential Fixed Investment	7.2	7.5	4.9	1.6	-17.8	3.9	7.6	10.0	9.0	8.0
Structures	1.3	8.2	12.7	11.2	-19.8	-12.8	-4.2	12.0	13.0	13.0
Equipment & Software	9.3	7.2	1.7	-3.0	-16.6	12.7	13.3	10.0	11.0	10.0
Residential Fixed Investment	6.3	-7.1	-17.9	-20.8	-20.5	2.7	22.3	20.0	10.0	8.0
Exports	7.0	9.1	8.4	6.2	-9.6	11.8	7.2	7.5	8.6	8.0
Imports	5.9	6.0	2.2	-3.5	-13.9	11.6	8.4	5.5	4.4	4.0
Federal Government	1.2	2.3	1.6	6.0	5.2	3.3	-2.1	-3.5	-1.8	-1.5
State & Local Governments	-0.1	1.3	2.3	1.1	-0.2	-0.9	0.7	1.0	1.3	1.5

Selected Yields

	Recent (5/19/10)	3 Months Ago (2/17/10)	Year Ago (5/20/09)		Recent (5/19/10)	3 Months Ago (2/17/10)	Year Ago (5/20/09)
TAXABLE							
Market Rates							
Discount Rate	0.75	0.50	0.50	Mortgage-Backed Securities			
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25	GNMA 6.5%	1.70	2.99	3.02
Prime Rate	3.25	3.25	3.25	FHLMC 6.5% (Gold)	1.14	1.75	2.27
30-day CP (A1/P1)	0.33	0.16	0.26	FNMA 6.5%	1.19	2.61	2.03
3-month LIBOR	0.48	0.25	0.72	FNMA ARM	3.01	2.98	2.78
Bank CDs							
6-month	0.25	0.25	0.72	Corporate Bonds			
1-year	0.43	0.45	0.97	Financial (10-year) A	4.74	5.41	6.66
5-year	1.99	1.97	1.92	Industrial (25/30-year) A	5.37	5.85	6.21
U.S. Treasury Securities							
3-month	0.16	0.09	0.17	Utility (25/30-year) A	5.53	5.93	6.01
6-month	0.22	0.18	0.27	Utility (25/30-year) Baa/BBB	5.93	6.44	7.59
1-year	0.33	0.34	0.42	Foreign Bonds (10-Year)			
5-year	2.12	2.38	2.03	Canada	3.40	3.47	3.14
10-year	3.37	3.73	3.19	Germany	2.77	3.19	3.43
10-year (inflation-protected)	1.29	1.44	1.51	Japan	1.30	1.33	1.43
30-year	4.24	4.70	4.14	United Kingdom	3.66	4.03	3.58
30-year Zero	4.46	4.96	4.26	Preferred Stocks			
				Utility A	6.01	5.40	6.09
				Financial A	6.56	7.14	8.37
				Financial Adjustable A	5.52	5.52	5.52



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.32	4.34	4.61				
25-Bond Index (Revs)	4.90	4.96	5.53				
General Obligation Bonds (GOs)							
1-year Aaa	0.37	0.31	0.43				
1-year A	1.20	1.10	1.16				
5-year Aaa	1.76	1.55	1.82				
5-year A	2.70	2.59	3.25				
10-year Aaa	3.12	3.12	2.81				
10-year A	4.09	4.10	4.35				
25/30-year Aaa	4.39	4.45	4.40				
25/30-year A	5.46	5.50	5.92				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.74	4.77	5.97				
Electric AA	4.74	4.76	6.02				
Housing AA	5.64	5.63	6.32				
Hospital AA	5.08	5.03	6.27				
Toll Road Aaa	4.72	4.83	6.07				

Federal Reserve Data

BANK RESERVES

(Two-Week Period; in Millions, Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	5/5/10	4/21/10	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1009469	1055015	-45546	1105241	1084241	952250
Borrowed Reserves	78088	79450	-1362	94490	139947	258022
Net Free/Borrowed Reserves	931381	975565	-44184	1010751	944294	694228

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/3/10	4/26/10	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1736.1	1694.6	41.5	10.1%	7.1%	8.7%
M2 (M1+savings+small time deposits)	8504.3	8470.0	34.3	0.5%	-0.1%	1.5%

MAY 29, 2009

VALUE LINE SELECTION & OPINION

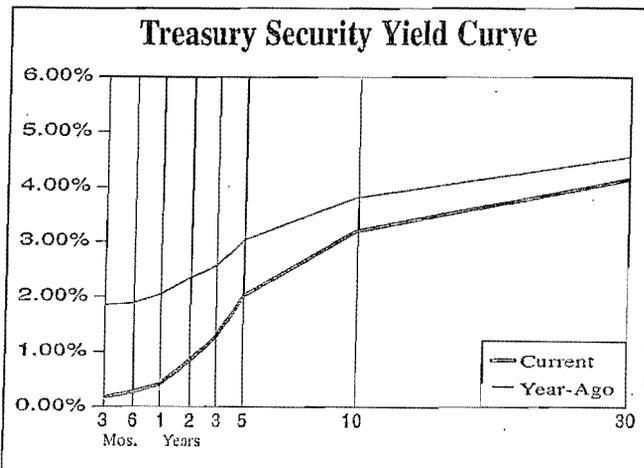
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	10620	10947	11249	11523	11681	11376	11441	11784	12173	12599
Total Consumption	7561	7792	8029	8253	8272	8242	8397	8565	8770	8998
Nonresidential Fixed Investment	1144	1226	1318	1383	1405	1132	1132	1279	1432	1576
Structures	247	250	270	305	339	268	236	248	273	306
Equipment & Software	905	990	1061	1079	1047	853	911	1048	1184	1302
Residential Fixed Investment	560	595	553	454	360	275	307	384	441	485
Exports	1126	1205	1315	1426	1514	1303	1304	1426	1579	1737
Imports	1720	1822	1930	1972	1904	1639	1740	1866	1992	2088
Federal Government	716	724	741	753	798	830	838	807	793	787
State & Local Governments	1216	1214	1230	1259	1273	1253	1249	1243	1246	1267
Gross Domestic Product	11686	12422	13178	13808	14265	14015	14324	14916	15625	16415
Real GDP (2000 Chain Weighted \$)	10676	10990	11295	11524	11652	11296	11454	11775	12151	12552
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.9	3.3	3.2	2.7	2.2	0.8	1.2	1.3	1.5	1.7
CPI-All Urban Consumers	2.7	3.4	3.2	2.9	3.8	0.0	2.0	2.3	2.5	2.8
PPI-Finished Goods	3.6	4.9	3.0	3.9	6.4	-2.1	1.6	2.4	2.8	3.0
Employment Cost Index—Total Comp.	3.8	3.1	2.9	3.1	2.8	1.3	1.6	1.5	2.0	2.5
Productivity	2.7	1.8	1.0	1.4	2.8	1.5	2.6	1.5	1.7	2.0
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	2.5	3.3	2.2	1.7	-2.2	-6.8	2.5	4.0	5.0	5.0
Factory Operating Rate (%)	76.6	78.6	79.4	79.4	75.1	65.8	67.0	70.0	72.0	74.0
Nonfarm Inven. Change (2000 Chain Weighted \$)	48.2	39.1	46.3	-3.7	-34.3	-85.4	-1.3	35.0	45.0	50.0
Housing Starts (Mill. Units)	1.95	2.07	1.81	1.34	0.90	0.54	0.86	1.25	1.55	1.75
Existing House Sales (Mill. Units)	6.73	7.08	6.51	5.67	4.89	4.41	4.48	5.00	5.90	6.40
Total Light Vehicle Sales (Mill. Units)	16.9	17.0	16.5	16.1	13.1	9.7	11.4	14.0	15.5	16.5
National Unemployment Rate (%)	5.5	5.1	4.6	4.6	5.8	9.2	9.9	9.0	8.0	7.0
Federal Budget Surplus (Unified, FY, \$Bill)	-411.0	-321.0	-248.0	-162.0	-455.0	-1585.0	-1350.0	-900.0	-600.0	-500.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	36.91	50.31	60.09	67.95	94.30	42.85	50.45	59.00	71.50	80.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	1.4	3.1	4.7	4.4	1.4	0.2	0.5	2.0	3.0	3.5
Federal Funds Rate (%)	1.4	3.2	5.0	5.0	1.9	0.2	0.4	2.0	3.0	3.5
10-Year Treasury Note Rate (%)	4.3	4.3	4.8	4.6	3.7	3.1	3.3	3.7	4.2	4.7
Long-Term Treasury Bond Rate (%)	5.1	4.6	4.9	4.8	4.3	4.0	4.3	4.5	5.0	5.5
AAA Corporate Bond Rate (%)	5.6	5.2	5.6	5.6	5.6	5.5	5.7	5.8	6.2	6.7
Prime Rate (%)	4.3	6.2	8.0	8.0	5.1	3.3	3.9	4.7	6.0	7.0
INCOMES										
Personal Income (% Change)	6.2	5.6	7.1	6.1	3.8	-0.1	2.9	4.0	5.0	5.5
Real Disp. Inc. (% Change)	3.6	1.4	3.5	2.8	1.3	1.8	0.6	1.5	2.0	2.5
Personal Savings Rate (%)	2.1	0.4	0.7	0.6	1.8	4.5	3.1	2.2	2.1	2.0
After-Tax Profits (\$Bill)	897	1207	1405	1436	1231	1053	1191	1333	1440	1526
Yr-to-Yr % Change	35.0	34.5	16.4	2.2	-14.3	-14.4	13.0	12.0	8.0	6.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	3.6	2.9	2.8	2.0	1.1	-3.1	1.4	2.8	3.2	3.3
Final Sales	3.3	3.1	2.8	2.4	1.4	-2.6	0.6	3.0	3.3	3.5
Total Consumption	3.6	3.0	3.0	2.8	0.2	-0.4	1.9	2.9	2.4	2.6
Nonresidential Fixed Investment	5.8	7.2	7.5	4.9	1.6	-19.4	0.0	13.0	12.0	10.0
Structures	1.3	1.3	8.2	12.7	11.2	-21.1	-11.7	5.0	10.0	12.0
Equipment & Software	7.4	9.3	7.2	1.7	-3.0	-18.5	6.8	15.0	13.0	10.0
Residential Fixed Investment	10.0	6.3	-7.1	-17.9	-20.8	-23.7	11.7	25.0	15.0	10.0
Exports	9.7	7.0	9.1	8.4	6.2	-13.9	0.1	9.3	10.8	10.0
Imports	11.3	5.9	6.0	2.2	-3.5	-13.9	6.2	7.2	6.8	4.8
Federal Government	4.2	1.2	2.3	1.6	6.0	4.0	1.0	-3.7	-1.8	-0.7
State & Local Governments	-0.2	-0.1	1.3	2.3	1.1	-1.6	-0.3	-0.5	0.2	1.7

Selected Yields

	Recent (5/20/09)	3 Months Ago (2/18/09)	Year Ago (5/21/08)		Recent (5/20/09)	3 Months Ago (2/18/09)	Year Ago (5/21/08)
TAXABLE							
Market Rates							
Discount Rate	0.50	0.50	2.25				
Federal Funds	0.00-0.25	0.00-0.25	2.00				
Prime Rate	3.25	3.25	5.00				
30-day CP (A1/P1)	0.26	0.52	2.55				
3-month LIBOR	0.72	1.25	2.64				
Bank CDs							
6-month	0.72	0.87	1.77				
1-year	0.97	1.20	2.05				
5-year	1.92	2.14	3.17				
U.S. Treasury Securities							
3-month	0.17	0.30	1.86				
6-month	0.27	0.48	1.89				
1-year	0.42	0.63	2.05				
5-year	2.03	1.80	3.04				
10-year	3.19	2.76	3.81				
10-year (inflation-protected)	1.51	1.61	1.16				
30-year	4.14	3.55	4.54				
30-year Zero	4.26	3.43	4.64				
Mortgage-Backed Securities							
GNMA 6.5%	3.02	4.05	4.98				
FHLMC 6.5% (Gold)	2.27	3.92	5.11				
FNMA 6.5%	2.03	3.78	4.89				
FNMA ARM	2.78	3.90	4.41				
Corporate Bonds							
Financial (10-year) A	6.66	8.33	5.54				
Industrial (25/30-year) A	6.21	6.14	6.03				
Utility (25/30-year) A	6.01	5.74	6.04				
Utility (25/30-year) Baa/BBB	7.59	7.07	6.36				
Foreign Bonds (10-Year)							
Canada	3.14	2.86	3.58				
Germany	3.43	2.99	4.27				
Japan	1.43	1.26	1.62				
United Kingdom	3.58	3.39	4.88				
Preferred Stocks							
Utility A	6.09	6.03	6.31				
Financial A	8.37	13.57	6.73				
Financial Adjustable A	5.52	5.52	5.52				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.61	4.89	4.53				
25-Bond Index (Revs)	5.53	5.67	4.98				
General Obligation Bonds (GOs)							
1-year Aaa	0.43	0.55	1.80				
1-year A	1.16	0.65	1.90				
5-year Aaa	1.82	1.85	2.92				
5-year A	3.25	2.15	3.02				
10-year Aaa	2.81	2.90	3.56				
10-year A	4.35	3.40	3.76				
25/30-year Aaa	4.40	4.72	4.45				
25/30-year A	5.92	5.72	4.65				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	5.97	5.80	4.75				
Electric AA	6.02	5.90	4.80				
Housing AA	6.32	6.15	5.00				
Hospital AA	6.27	6.10	5.05				
Toll Road Aaa	6.07	5.95	4.80				

Federal Reserve Data

BANK RESERVES

(Two-Week Period; in Millions, Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	5/6/09	4/22/09	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	777464	862393	-84929	731759	706418	385094
Borrowed Reserves	507911	565360	-57449	579211	611473	433308
Net Free/Borrowed Reserves	269553	297033	-27480	152548	94946	-48213

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/4/09	4/27/09	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1608.2	1576.7	31.5	10.0%	11.2%	-16.6%
M2 (M1+savings+small time deposits)	8303.9	8285.0	18.9	4.2%	10.4%	9.1%

MAY 23, 2008

VALUE LINE SELECTION & OPINION

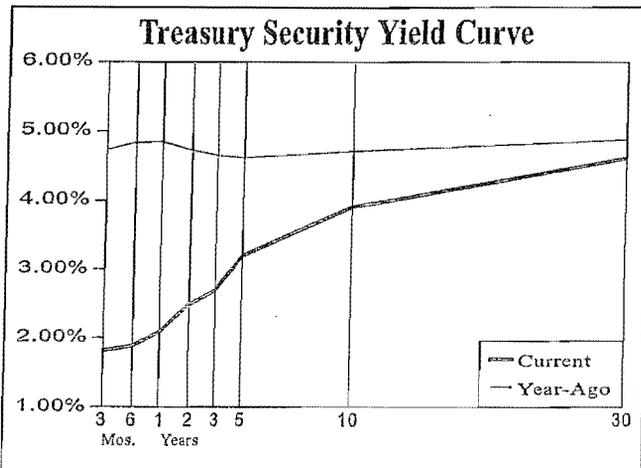
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	10285	10620	10967	11276	11562	11736	11917	12275	12655	13035
Total Consumption	7295	7561	7804	8044	8278	8413	8546	8785	9058	9338
Nonresidential Fixed Investment	1082	1144	1226	1307	1368	1384	1376	1431	1495	1570
Structures	244	247	248	269	303	311	288	280	291	311
Equipment & Software	843	905	992	1051	1064	1069	1069	1133	1213	1285
Residential Fixed Investment	509	560	597	570	473	365	349	391	430	464
Exports	1026	1126	1203	1304	1410	1527	1653	1784	1900	2010
Imports	1545	1720	1822	1929	1966	1970	2006	2120	2260	2387
Federal Government	687	716	726	742	755	783	793	787	781	779
State & Local Governments	1218	1216	1220	1239	1266	1279	1268	1265	1277	1294
Gross Domestic Product	10961	11686	12434	13195	13841	14310	14835	15569	16395	17294
Real GDP (2000 Chain Weighted \$)	10301	10676	11004	11319	11567	11720	11901	12258	12650	13067
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.1	2.9	3.2	3.2	2.7	2.1	2.3	2.3	2.3	2.5
CPI-All Urban Consumers	2.3	2.7	3.4	3.2	2.9	3.3	2.4	2.4	2.5	2.7
PPI-Finished Goods	3.2	3.6	4.9	2.9	3.9	4.6	1.9	2.2	2.3	2.4
Employment Cost Index—Total Comp.	3.8	3.8	3.1	2.9	3.1	3.1	2.9	3.0	3.2	3.4
Productivity	3.9	2.7	1.9	1.0	1.8	1.2	1.8	2.7	3.0	3.2
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	0.6	2.5	3.2	4.0	1.7	0.4	2.5	3.0	3.1	3.3
Factory Operating Rate (%)	73.7	76.6	78.8	80.4	79.4	78.2	78.1	80.0	80.5	81.0
Nonfarm Inven. Change (2000 Chain Weighted \$)	14.0	48.2	34.0	41.7	0.0	-22.1	-1.3	45.0	50.0	40.0
Housing Starts (Mill. Units)	1.85	1.95	2.07	1.81	1.34	0.92	1.05	1.40	1.60	1.70
Existing House Sales (Mill. Units)	6.18	6.73	7.08	6.51	5.67	4.64	4.75	5.25	5.70	6.10
Total Light Vehicle Sales (Mill. Units)	16.6	16.9	16.9	16.5	16.1	14.9	15.1	15.5	16.0	17.0
National Unemployment Rate (%)	6.0	5.5	5.1	4.6	4.6	5.2	5.7	5.7	5.5	5.2
Federal Budget Surplus (Unified, FY, \$Bill)	-377.0	-411.0	-321.0	-248.0	-163.0	-400.0	-335.0	-400.0	-335.0	-315.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	28.60	36.91	50.31	60.09	67.95	107.65	115.00	113.00	112.00	112.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	1.0	1.4	3.1	4.7	4.4	1.6	2.3	3.0	3.7	4.0
Federal Funds Rate (%)	1.1	1.4	3.2	5.0	5.0	2.4	2.8	4.0	4.7	5.0
10-Year Treasury Note Rate (%)	4.0	4.3	4.3	4.8	4.6	3.6	3.8	4.8	5.3	5.5
Long-Term Treasury Bond Rate (%)	5.0	5.1	4.6	4.9	4.8	4.0	4.2	5.1	5.6	5.8
AAA Corporate Bond Rate (%)	5.7	5.6	5.2	5.6	5.6	4.7	4.9	5.8	6.3	6.5
Prime Rate (%)	4.1	4.3	6.2	8.0	8.0	5.2	5.7	7.0	7.7	8.0
INCOMES										
Personal Income (% Change)	3.2	6.2	5.9	6.6	6.2	3.9	4.4	5.0	5.4	5.5
Real Disp. inc. (% Change)	2.2	3.6	1.7	3.1	3.1	1.4	2.1	3.2	3.5	3.5
Personal Savings Rate (%)	2.1	2.1	0.5	0.4	0.4	1.3	1.0	1.7	1.8	2.0
Corporate Economic Profits (\$Bill)	993	1231	1373	1554	1595	1609	1686	1804	1939	2094
Yr-to-Yr % Change	12.1	24.0	11.5	13.2	2.7	0.9	4.8	7.0	7.5	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	2.5	3.6	3.1	2.9	2.2	1.3	1.5	3.0	3.2	3.3
Final Sales	2.5	3.3	3.3	2.8	2.5	1.5	1.5	3.0	3.1	3.0
Total Consumption	2.8	3.6	3.2	3.1	2.9	1.6	1.6	2.8	3.1	3.1
Nonresidential Fixed Investment	1.0	5.8	7.1	6.6	4.7	1.2	-0.6	4.0	4.5	5.0
Structures	-4.1	1.3	0.5	8.4	12.9	2.8	-7.4	-3.0	4.0	7.0
Equipment & Software	2.8	7.4	9.6	5.9	1.3	0.5	0.0	5.0	7.0	6.0
Residential Fixed Investment	8.4	10.0	6.6	-4.6	-17.0	-22.9	-4.3	12.0	10.0	8.0
Exports	1.3	9.7	6.9	8.4	8.1	8.3	8.3	7.9	6.5	5.8
Imports	4.1	11.3	5.9	5.9	1.9	0.2	1.8	5.7	6.6	5.6
Federal Government	6.8	4.2	1.5	2.2	1.7	3.8	1.2	-0.7	-0.8	-0.3
State & Local Governments	0.2	-0.2	0.3	1.6	2.2	1.0	-0.9	-0.2	0.9	1.4

Selected Yields

	Recent (5/14/08)	3 Months Ago (2/13/08)	Year Ago (5/16/07)		Recent (5/14/08)	3 Months Ago (2/13/08)	Year Ago (5/16/07)
TAXABLE							
Market Rates							
Discount Rate	2.25	3.50	6.25	Mortgage-Backed Securities			
Federal Funds	2.00	3.00	5.25	GNMA 6.5%	5.04	4.46	5.58
Prime Rate	5.00	6.00	8.25	FHLMC 6.5% (Gold)	5.16	5.10	5.80
30-day CP (A1/P1)	2.70	3.00	5.24	FNMA 6.5%	4.90	4.71	5.73
3-month LIBOR	2.72	3.07	5.36	FNMA ARM	4.41	5.18	5.49
Bank CDs							
6-month	1.77	2.15	3.11	Corporate Bonds			
1-year	2.05	2.34	3.73	Financial (10-year) A	5.68	5.78	5.69
5-year	3.16	2.85	3.91	Industrial (25/30-year) A	6.06	6.29	5.89
U.S. Treasury Securities							
3-month	1.82	2.26	4.73	Utility (25/30-year) A	6.10	6.20	6.07
6-month	1.88	2.09	4.84	Utility (25/30-year) Baa/BBB	6.41	6.35	6.21
1-year	2.08	2.06	4.85	Foreign Bonds (10-Year)			
5-year	3.20	2.73	4.62	Canada	3.60	3.87	4.24
10-year	3.91	3.73	4.71	Germany	4.17	3.96	4.30
10-year (inflation-protected)	1.35	1.34	2.37	Japan	1.68	1.43	1.67
30-year	4.61	4.54	4.88	United Kingdom	4.82	4.62	5.13
30-year Zero	4.71	4.65	4.85	Preferred Stocks			
				Utility A	6.28	6.13	6.07
				Financial A	7.69	7.00	6.48
				Financial Adjustable A	5.51	5.51	5.52



TAX-EXEMPT

Bond Buyer Indexes			
20-Bond Index (GOs)	4.62	4.33	4.24
25-Bond Index (Revs)	5.07	4.72	4.44
General Obligation Bonds (GOs)			
1-year Aaa	1.83	1.05	3.60
1-year A	1.93	1.15	3.70
5-year Aaa	2.97	2.67	3.63
5-year A	3.07	2.77	3.74
10-year Aaa	3.62	3.40	3.76
10-year A	3.83	3.60	4.26
25/30-year Aaa	4.55	4.36	4.13
25/30-year A	4.75	4.56	4.43
Revenue Bonds (Revs) (25/30-Year)			
Education AA	4.80	4.60	4.55
Electric AA	4.85	4.65	4.45
Housing AA	5.00	4.80	4.63
Hospital AA	5.05	4.85	4.65
Toll Road Aaa	4.85	4.65	4.55

Federal Reserve Data

BANK RESERVES

(Two-Week Period; in Millions, Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	5/7/08	4/23/08	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1980	1718	262	2201	1953	2042
Borrowed Reserves	129197	133027	-3830	89011	52907	27699
Net Free/Borrowed Reserves	-127217	-131309	4092	-86810	-50954	-25657

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	4/28/08	4/21/08	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1379.9	1372.1	7.8	4.6%	1.4%	-0.2%
M2 (M1+savings+small time deposits)	7654.1	7693.3	-39.2	7.6%	7.1%	6.1%

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VALUE LINE SELECTION & OPINION

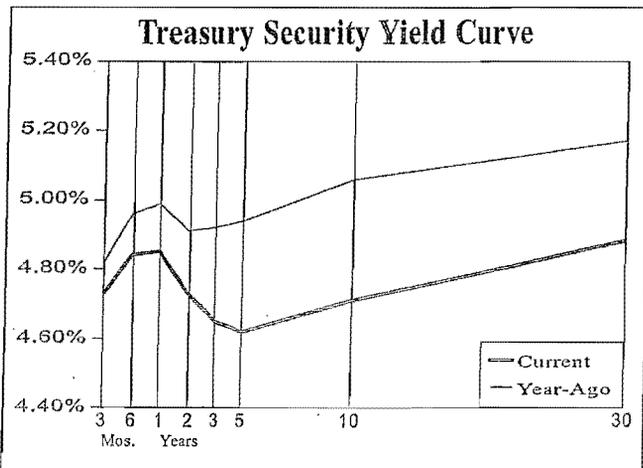
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	10036	10285	10648	11025	11366	11629	11938	12296	12677	13070
Total Consumption	7099	7295	7577	7841	8091	8348	8588	8854	9137	9439
Nonresidential Fixed Investment	1072	1082	1146	1224	1312	1356	1409	1465	1524	1589
Structures	254	244	249	252	274	293	298	301	307	316
Equipment & Software	820	843	904	985	1049	1065	1116	1172	1237	1311
Residential Fixed Investment	470	509	560	608	582	494	479	493	518	560
Exports	1013	1026	1120	1196	1303	1386	1513	1649	1783	1908
Imports	1485	1545	1711	1815	1921	1964	2044	2161	2286	2414
Federal Government	643	687	717	728	742	756	770	768	771	768
State & Local Governments	1216	1218	1224	1230	1256	1286	1300	1313	1331	1350
Gross Domestic Product	10470	10961	11712	12456	13247	13853	14487	15220	16041	16928
Real GDP (2000 Chain Weighted \$)	10049	10301	10704	11049	11415	11647	11946	12304	12698	13117
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	1.7	2.1	2.8	3.0	2.9	2.5	2.0	2.1	2.2	2.3
CPI-All Urban Consumers	1.6	2.3	2.7	3.4	3.2	3.5	2.4	2.4	2.5	2.5
PPI-Finished Goods	-1.3	3.2	3.6	4.9	2.9	4.8	2.0	2.0	2.2	2.3
Employment Cost Index—Total Comp.	3.8	3.8	3.8	3.1	2.9	3.0	3.1	3.3	3.5	3.6
Productivity	4.3	3.9	3.4	2.7	1.6	1.7	2.5	2.5	2.6	2.8
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	-0.3	0.6	4.1	3.2	4.0	1.9	2.5	2.5	2.6	2.6
Factory Operating Rate (%)	73.5	73.7	77.1	78.9	80.4	80.1	80.2	79.8	80.0	80.2
Nonfarm Inven. Change (2000 Chain Weighted \$)	15.2	14.0	47.0	19.6	40.6	15.0	30.0	40.0	42.0	45.0
Housing Starts (Mill. Units)	1.71	1.85	1.95	2.07	1.82	1.44	1.49	1.60	1.70	1.80
Existing House Sales (Mill. Units)	5.65	6.18	6.72	7.06	6.51	6.03	5.89	6.00	6.20	6.40
Total Light Vehicle Sales (Mill. Units)	16.8	16.6	16.9	16.9	16.5	16.5	16.6	16.8	17.0	17.3
National Unemployment Rate (%)	5.8	6.0	5.5	5.1	4.6	4.6	4.9	4.7	4.7	4.6
Federal Budget Surplus (Unified, FY, \$Bill)	-157.8	-377.0	-413.0	-318.0	-248.0	-190.0	-220.0	-230.0	-215.0	-185.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	24.00	28.60	36.91	50.31	60.09	57.60	55.85	56.25	56.25	56.25
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	1.6	1.0	1.4	3.1	4.7	4.9	4.9	4.9	5.0	5.2
Federal Funds Rate (%)	1.7	1.1	1.4	3.2	5.0	5.3	4.9	5.0	5.2	5.5
10-Year Treasury Note Rate (%)	4.6	4.0	4.3	4.3	4.8	4.7	4.8	5.1	5.4	5.6
Long-Term Treasury Bond Rate (%)	5.4	5.0	5.1	4.6	4.9	4.8	5.0	5.3	5.6	5.8
AAA Corporate Bond Rate (%)	6.5	5.7	5.6	5.2	5.6	5.4	5.6	6.1	6.4	6.6
Prime Rate (%)	4.7	4.1	4.3	6.2	8.0	8.3	7.9	8.0	8.2	8.5
INCOMES										
Personal Income (% Change)	1.8	3.2	6.2	5.2	6.3	5.9	5.7	5.5	5.6	5.8
Real Disp. Inc. (% Change)	3.1	2.2	3.6	1.2	2.6	3.6	3.6	3.5	3.6	3.7
Personal Savings Rate (%)	2.4	2.1	2.0	-0.4	-1.1	-1.1	-0.4	0.2	0.6	0.9
Corporate Economic Profits (\$Bill)	886	993	1183	1331	1616	1735	1852	1963	2100	2268
Yr-to-Yr % Change	15.5	12.1	19.1	12.5	21.4	7.4	6.7	6.0	7.0	8.0
COMPOSITION OF REAL GDP- ANNUAL RATES OF CHANGE										
Gross Domestic Product	1.6	2.5	3.9	3.2	3.3	2.0	2.6	3.0	3.2	3.3
Final Sales	1.2	2.5	3.5	3.5	3.1	2.3	2.7	3.0	3.1	3.1
Total Consumption	2.7	2.8	3.9	3.5	3.2	3.2	2.9	3.1	3.2	3.3
Nonresidential Fixed Investment	-9.2	1.0	5.9	6.8	7.2	3.4	3.9	4.0	4.0	4.3
Structures	-17.0	-4.1	2.2	1.1	9.0	6.8	1.9	1.0	2.0	3.0
Equipment & Software	-6.2	2.8	7.3	8.9	6.5	1.6	4.9	5.0	5.5	6.0
Residential Fixed Investment	4.9	8.4	9.9	8.6	-4.2	-15.1	-3.0	3.0	5.0	8.0
Exports	-2.3	1.3	9.2	6.8	8.9	6.3	9.2	9.0	8.1	7.0
Imports	3.4	4.1	10.8	6.1	5.8	2.3	4.1	5.7	5.8	5.6
Federal Government	7.0	6.8	4.3	1.5	2.0	1.9	1.8	-0.2	0.4	-0.4
State & Local Governments	3.1	0.2	0.5	0.5	2.1	2.4	1.1	1.0	1.4	1.4

Selected Yields

	Recent (5/16/07)	3 Months Ago (2/14/07)	Year Ago (5/18/06)		Recent (5/16/07)	3 Months Ago (2/14/07)	Year Ago (5/18/06)
TAXABLE							
Market Rates							
Discount Rate	6.25	6.25	6.00				
Federal Funds	5.25	5.25	5.00				
Prime Rate	8.25	8.25	8.00				
30-day CP (A1/P1)	5.24	5.23	5.00				
3-month LIBOR	5.36	5.36	5.19				
Bank CDs							
6-month	3.11	3.27	3.06				
1-year	3.73	3.86	3.87				
5-year	3.91	3.91	4.03				
U.S. Treasury Securities							
3-month	4.73	5.15	4.82				
6-month	4.84	5.14	4.96				
1-year	4.85	5.10	4.99				
5-year	4.62	4.72	4.94				
10-year	4.71	4.74	5.06				
10-year (inflation-protected)	2.37	2.39	2.37				
30-year	4.88	4.83	5.17				
30-year Zero	4.85	4.76	5.06				
Mortgage-Backed Securities							
GNMA 6.5%	5.58	5.72	6.01				
FHLMC 6.5% (Gold)	5.80	5.82	6.19				
FNMA 6.5%	5.73	5.74	6.15				
FNMA ARM	5.49	5.62	4.81				
Corporate Bonds							
Financial (10-year) A	5.69	5.52	6.01				
Industrial (25/30-year) A	5.89	5.77	6.28				
Utility (25/30-year) A	6.07	5.77	6.28				
Utility (25/30-year) Baa/BBB	6.21	6.02	6.59				
Foreign Bonds (10-Year)							
Canada	4.24	4.15	4.32				
Germany	4.30	4.10	4.03				
Japan	1.67	1.74	1.95				
United Kingdom	5.13	4.95	4.58				
Preferred Stocks							
Utility A	7.29	7.24	7.25				
Financial A	6.30	6.32	6.37				
Financial Adjustable A	5.52	5.51	5.52				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.24	4.21	4.58				
25-Bond Index (Revs)	4.44	4.53	5.24				
General Obligation Bonds (GOs)							
1-year Aaa	3.60	3.60	3.62				
1-year A	3.70	3.70	3.75				
5-year Aaa	3.63	3.63	3.67				
5-year A	3.74	3.72	3.95				
10-year Aaa	3.76	3.78	4.10				
10-year A	4.26	4.30	4.42				
25/30-year Aaa	4.13	4.08	4.53				
25/30-year A	4.43	4.39	4.79				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.55	4.49	4.65				
Electric AA	4.45	4.48	4.66				
Housing AA	4.63	4.54	4.70				
Hospital AA	4.65	4.55	4.90				
Toll Road Aaa	4.55	4.49	4.77				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/9/07	4/25/07	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1467	1334	133	1554	1617	1655
Borrowed Reserves	71	83	-12	57	122	206
Net Free/Borrowed Reserves	1396	1251	145	1497	1495	1449

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	4/30/07	4/23/07	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1383.3	1367.4	15.9	4.1%	1.2%	0.8%
M2 (M1+savings+small time deposits)	7211.9	7237.3	-25.4	6.6%	7.5%	6.2%

MAY 26, 2006

VALUE LINE SELECTION & OPINION

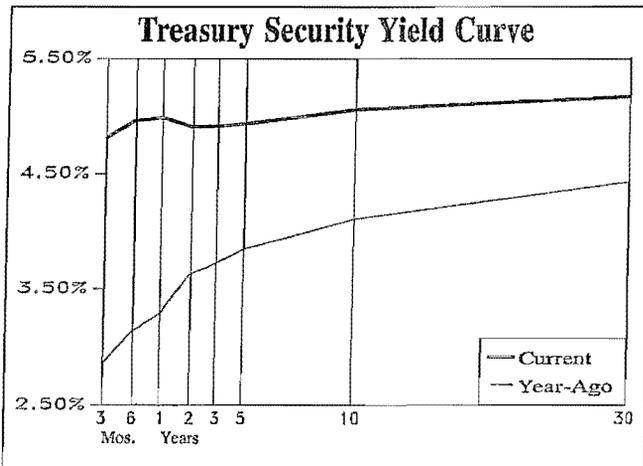
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	9921	10036	10304	10702	11113	11484	11804	12158	12547	12974
Total Consumption	6910	7099	7306	7589	7857	8121	8360	8611	8878	9171
Nonresidential Fixed Investment	1180	1072	1085	1187	1289	1413	1507	1583	1662	1778
Structures	306	254	243	248	253	271	287	296	308	323
Equipment & Software	874	820	847	948	1051	1160	1233	1295	1373	1483
Residential Fixed Investment	448	470	509	562	602	603	562	551	557	573
Exports	1037	1013	1031	1118	1195	1287	1401	1539	1683	1811
Imports	1436	1485	1553	1719	1828	1953	2038	2111	2225	2348
Federal Government	601	643	688	724	740	760	765	772	777	786
State & Local Governments	1179	1216	1223	1228	1246	1254	1279	1296	1321	1339
Gross Domestic Product	10128	10470	10971	11734	12487	13296	13935	14614	15369	16194
Real GDP (2000 Chain Weighted \$)	9891	10049	10321	10756	11135	11520	11865	12233	12637	13079
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.4	1.7	2.0	2.6	2.8	2.8	2.2	2.0	2.1	2.2
CPI-All Urban Consumers	2.8	1.6	2.3	2.7	3.4	2.7	2.4	2.2	2.3	2.5
PPI-Finished Goods	1.9	-1.3	3.2	3.6	4.9	2.0	1.7	1.3	1.5	2.0
Employment Cost Index—Total Comp.	4.1	3.8	4.0	3.9	3.1	3.2	3.4	3.3	3.4	3.5
Productivity	2.2	4.3	3.8	3.4	2.7	2.4	1.8	2.0	2.3	2.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	-3.4	-0.3	0.0	4.1	3.2	4.4	2.7	2.5	2.7	3.0
Factory Operating Rate (%)	75.4	73.5	73.7	76.7	78.9	80.6	80.1	79.5	80.0	80.5
Inventory Change (2000 Chain Weighted \$)	-31.7	15.2	15.4	49.9	25.0	36.0	61.0	75.0	90.0	105.0
Housing Starts (Mill. Units)	1.60	1.71	1.85	1.95	2.07	1.92	1.79	1.75	1.73	1.80
Existing House Sales (Mill. Units)	5.29	5.65	6.17	6.72	7.06	6.54	6.05	6.00	6.05	6.10
Total Light Vehicle Sales (Mill. Units)	17.1	16.8	16.6	16.9	16.9	16.5	16.4	16.7	17.0	17.5
National Unemployment Rate (%)	4.8	5.8	6.0	5.5	5.1	4.7	4.9	4.8	4.7	4.8
Federal Budget Surplus (Unified, FY, \$Bil)	127.3	-157.8	-377.0	-413.0	-318.0	-310.0	-260.0	-315.0	-295.0	-280.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	22.95	24.00	28.60	36.91	50.31	61.50	60.00	56.35	50.75	45.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	3.4	1.6	1.0	1.4	3.1	4.8	4.8	4.6	4.7	4.8
Federal Funds Rate (%)	3.9	1.7	1.1	1.4	3.2	5.0	5.0	4.8	5.0	5.2
10-Year Treasury Note Rate (%)	5.0	4.6	4.0	4.3	4.3	5.0	5.1	5.3	5.4	5.5
Long-Term Treasury Bond Rate (%)	5.5	5.4	5.0	5.1	4.6	5.2	5.3	5.5	5.6	5.8
AAA Corporate Bond Rate (%)	7.1	6.5	5.7	5.6	5.2	6.0	6.1	6.4	6.6	6.6
Prime Rate (%)	6.9	4.7	4.1	4.3	6.2	8.0	8.0	7.8	7.9	8.0
INCOMES										
Personal Income (% Change)	3.5	1.8	3.2	5.9	5.5	6.1	5.5	5.6	5.7	5.8
Real Disp. Inc. (% Change)	1.9	3.1	2.4	3.4	1.5	3.5	3.7	3.7	3.8	3.8
Personal Savings Rate (%)	1.8	2.4	2.1	1.7	-0.4	-0.5	0.3	0.8	1.0	1.2
Corporate Economic Profits (\$Bil)	767.0	886.0	1032.0	1162.0	1352.0	1468.0	1527.0	1603.0	1715.0	1852.0
Yr-to-Yr % Change	-6.2	15.5	16.4	12.6	16.4	8.6	4.0	5.0	7.0	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	0.8	1.6	2.7	4.2	3.5	3.5	3.0	3.1	3.3	3.5
Final Sales	1.6	1.2	2.7	3.9	3.8	3.3	2.8	3.0	3.2	3.4
Total Consumption	2.5	2.7	2.9	3.9	3.5	3.4	2.9	3.0	3.1	3.3
Nonresidential Fixed Investment	-4.2	-9.2	1.2	9.4	8.6	9.7	6.6	5.0	5.0	7.0
Structures	-2.2	-17.0	-4.3	2.2	2.0	7.0	6.1	3.0	4.0	5.0
Equipment & Software	-4.9	-6.2	3.3	11.9	10.9	10.4	6.3	5.0	6.0	8.0
Residential Fixed Investment	0.2	4.9	8.3	10.3	7.1	0.2	-6.9	-2.0	1.0	3.0
Exports	-5.4	-2.3	1.8	8.4	6.9	7.7	8.8	9.9	9.3	7.6
Imports	-2.7	3.4	4.6	10.7	6.3	6.9	4.3	3.6	5.4	5.5
Federal Government	3.8	7.0	7.0	5.2	2.3	2.8	0.6	0.9	0.7	1.1
State & Local Governments	3.1	3.1	0.6	0.4	1.5	0.6	2.0	1.3	1.9	1.4

Selected Yields

	Recent (5/18/06)	3 Months Ago (2/16/06)	Year Ago (5/19/05)		Recent (5/18/06)	3 Months Ago (2/16/06)	Year Ago (5/19/05)
TAXABLE							
Market Rates							
Discount Rate	6.00	5.50	4.00				
Federal Funds	5.00	4.50	3.00				
Prime Rate	8.00	7.50	6.00				
30-day CP (A1/P1)	5.00	4.49	3.02				
3-month LIBOR	5.19	4.77	3.28				
Bank CDs							
6-month	3.06	2.89	2.26				
1-year	3.87	3.46	2.77				
5-year	4.03	3.97	3.80				
U.S. Treasury Securities							
3-month	4.82	4.53	2.86				
6-month	4.96	4.68	3.13				
1-year	4.99	4.70	3.29				
5-year	4.94	4.58	3.85				
10-year	5.06	4.58	4.11				
10-year (inflation-protected)	2.37	2.08	1.64				
30-year	5.17	4.57	4.43				
30-year Zero	5.06	4.62	4.45				
Mortgage-Backed Securities							
GNMA 6.5%	6.01	5.33	4.96				
FHLMC 6.5% (Gold)	6.19	5.88	5.09				
FNMA 6.5%	6.15	5.74	4.86				
FNMA ARM	4.81	4.47	3.48				
Corporate Bonds							
Financial (10-year) A	6.01	5.50	4.89				
Industrial (25/30-year) A	6.28	5.68	5.36				
Utility (25/30-year) A	6.28	5.63	5.25				
Utility (25/30-year) Baa/BBB	6.59	5.98	5.61				
Foreign Bonds (10-Year)							
Canada	4.32	4.19	4.09				
Germany	4.03	3.51	3.35				
Japan	1.95	1.57	1.27				
United Kingdom	4.58	4.17	4.37				
Preferred Stocks							
Utility A	7.25	7.07	6.96				
Financial A	6.37	6.22	5.94				
Financial Adjustable A	5.52	5.52	5.52				



TAX-EXEMPT							
Bond Buyer Indexes							
20-Bond Index (GOs)	4.58	4.42	4.25				
25-Bond Index (Revs)	5.24	5.14	4.81				
General Obligation Bonds (GOs)							
1-year Aaa	3.62	3.26	2.72				
1-year A	3.75	3.38	2.89				
5-year Aaa	3.67	3.50	2.98				
5-year A	3.95	3.78	3.28				
10-year Aaa	4.10	3.86	3.49				
10-year A	4.42	4.17	3.84				
25/30-year Aaa	4.53	4.36	4.30				
25/30-year A	4.79	4.61	4.54				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.65	4.37	4.31				
Electric AA	4.66	4.44	4.44				
Housing AA	4.70	4.63	4.65				
Hospital AA	4.90	4.79	4.48				
Toll Road Aaa	4.77	4.63	4.44				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/10/06	4/26/06	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	2145	1466	679	1678	1694	1730
Borrowed Reserves	156	103	53	160	147	221
Net Free/Borrowed Reserves	1989	1363	626	1518	1547	1509

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/8/06	5/1/06	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1382.8	1388.3	-5.5	-0.1%	3.5%	1.2%
M2 (M1+savings+small time deposits)	6770.9	6794.8	-23.9	2.2%	4.2%	4.4%

MAY 27, 2005

VALUE LINE SELECTION & OPINION

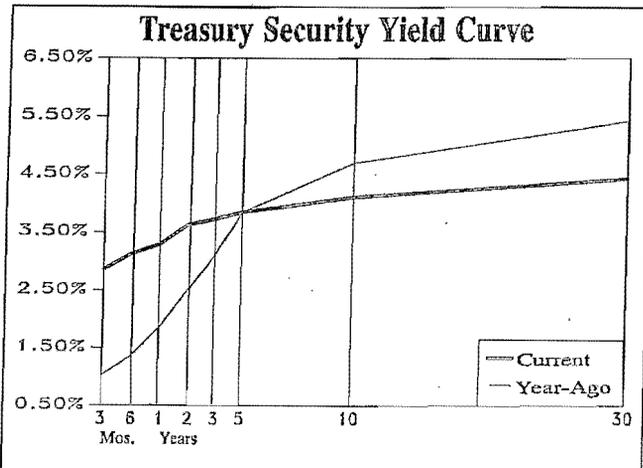
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	9760	9921	10063	10380	10795	11153	11513	11881	12273	12691
Total Consumption	6739	6910	7123	7356	7632	7894	8110	8353	8604	8862
Nonresidential Fixed Investment	1232	1180	1076	1111	1229	1344	1447	1534	1641	1772
Structures	313	306	252	237	241	246	270	280	294	312
Equipment & Software	919	874	826	879	999	1112	1190	1249	1324	1404
Residential Fixed Investment	447	448	470	511	561	591	578	566	578	607
Exports	1096	1037	1012	1032	1120	1191	1282	1412	1547	1676
Imports	1476	1436	1484	1550	1704	1837	1901	1989	2098	2205
Federal Government	579	601	647	690	722	744	760	766	772	778
State & Local Governments	1143	1179	1211	1220	1225	1237	1268	1293	1314	1335
Gross Domestic Product	9817	10128	10487	11004	11735	12443	13103	13789	14578	15437
Real GDP (2000 Chain Weighted \$)	9817	9891	10075	10381	10842	11210	11558	11917	12310	12741
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	2.2	2.4	1.7	1.8	2.2	2.6	2.1	2.1	2.2	2.3
CPI-All Urban Consumers	3.4	2.8	1.6	2.3	2.7	2.8	2.5	2.3	2.4	2.5
PPI-Finished Goods	3.7	2.0	-1.3	3.2	3.6	3.2	2.4	2.0	2.1	2.2
Employment Cost Index—Total Comp.	4.6	4.1	3.8	4.0	3.9	3.3	4.0	4.0	4.0	4.0
Productivity	2.7	2.2	4.9	4.5	4.0	1.8	1.8	2.3	2.4	2.6
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	4.4	-3.4	-0.6	0.0	4.1	2.9	2.4	3.0	3.2	3.3
Factory Operating Rate (%)	81.1	75.4	73.9	73.7	76.7	78.2	78.4	79.0	79.5	80.0
Inventory Change (2000 Chain Weighted \$)	56.5	-31.7	11.8	-0.7	42.4	57.0	45.0	35.0	36.0	50.0
Housing Starts (Mill. Units)	1.57	1.60	1.71	1.85	1.95	2.10	1.86	1.80	1.77	1.80
Existing House Sales (Mill. Units)	5.16	5.29	5.59	6.10	6.72	6.71	6.36	6.10	5.90	6.00
Total Light Vehicle Sales (Mill. Units)	17.4	17.1	16.8	16.6	16.8	16.8	17.0	17.3	17.5	17.7
National Unemployment Rate (%)	4.0	4.8	5.8	6.0	5.5	5.2	5.2	5.2	5.2	5.2
Federal Budget Surplus (Unified, FY, \$Bill)	236.9	127.3	-157.8	-377.0	-413.0	-370.0	-335.0	-325.0	-325.0	-300.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	28.21	22.95	24.00	28.60	36.91	44.35	44.00	42.00	41.00	40.00
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	5.8	3.4	1.6	1.0	1.4	3.2	3.8	3.9	4.1	4.2
Federal Funds Rate (%)	6.2	3.9	1.7	1.1	1.4	3.2	4.0	4.2	4.5	4.7
10-Year Treasury Note Rate (%)	6.0	5.0	4.6	4.0	4.3	4.5	4.8	5.4	5.5	5.7
Long-Term Treasury Bond Rate (%)	5.9	5.5	5.4	5.0	5.1	4.8	5.3	5.9	6.0	6.2
AAA Corporate Bond Rate (%)	7.6	7.1	6.5	5.7	5.6	5.4	5.8	6.5	6.6	6.8
Prime Rate (%)	9.2	6.9	4.7	4.1	4.3	6.1	7.0	7.2	7.5	7.8
INCOMES										
Personal Income (% Change)	8.0	3.5	1.8	3.2	5.6	4.6	5.3	5.3	5.6	5.8
Real Disp. Inc. (% Change)	4.8	1.9	3.1	2.3	3.5	1.6	3.3	3.4	3.5	3.5
Personal Savings Rate (%)	2.4	1.8	2.0	1.4	1.2	0.3	0.8	1.0	1.5	1.5
Corporate Economic Profits (\$Bill)	818.0	767.0	875.0	1021.0	1182.0	1327.0	1384.0	1453.0	1555.0	1679.0
Yr-to-Yr % Change	-3.9	-6.2	14.0	16.8	15.7	12.3	4.3	5.0	7.0	9.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	3.7	0.8	1.9	3.0	4.4	3.4	3.1	3.1	3.3	3.5
Final Sales	3.8	1.6	1.4	3.2	4.0	3.3	3.2	3.2	3.3	3.4
Total Consumption	4.7	2.5	3.1	3.3	3.8	3.4	2.7	3.0	3.0	3.0
Nonresidential Fixed Investment	8.7	-4.2	-8.8	3.3	10.6	9.3	7.7	6.0	7.0	8.0
Structures	6.8	-2.2	-17.6	-5.6	1.4	2.2	9.5	4.0	5.0	6.0
Equipment & Software	9.4	-4.9	-5.5	6.4	13.6	11.3	7.0	5.0	6.0	6.0
Residential Fixed Investment	0.7	0.2	4.9	8.7	9.7	5.3	-2.2	-2.0	2.0	5.0
Exports	8.7	-5.4	-2.4	2.0	8.6	6.4	7.6	10.1	9.6	8.3
Imports	13.2	-2.7	3.3	4.4	9.9	7.8	3.5	4.6	5.5	5.1
Federal Government	0.9	3.8	7.7	6.6	4.7	3.1	2.0	0.8	0.8	0.8
State & Local Governments	2.7	3.1	2.7	0.7	0.4	1.0	2.5	2.0	1.6	1.6

Selected Yields

	Recent (5/19/05)	3 Months Ago (2/17/05)	Year Ago (5/20/04)		Recent (5/19/05)	3 Months Ago (2/17/05)	Year Ago (5/20/04)
TAXABLE							
Market Rates							
Discount Rate	4.00	3.50	2.00	Mortgage-Backed Securities			
Fed Funds (Target)	3.00	2.50	1.00	GNMA 6.5%	4.96	4.35	5.38
Prime Rate	6.00	5.50	4.00	FHLMC 6.5% (Gold)	5.09	4.42	5.48
30-day CP (A1/P1)	3.02	2.51	1.02	FNMA 6.5%	4.86	4.34	5.40
3-month LIBOR	3.28	2.85	1.28	FNMA ARM	3.48	3.22	2.78
Bank CDs							
6-month	2.26	1.79	0.75	Corporate Bonds			
1-year	2.77	2.22	1.11	Financial (10-year) A	4.89	4.91	5.60
5-year	3.80	3.51	3.33	Industrial (25/30-year) A	5.36	5.30	6.27
U.S. Treasury Securities							
3-month	2.86	2.57	1.02	Utility (25/30-year) A	5.25	5.17	6.17
6-month	3.13	2.84	1.35	Utility (25/30-year) Baa/BBB	5.61	5.64	6.66
1-year	3.29	3.05	1.85	Foreign Bonds (10-Year)			
5-year	3.85	3.77	3.84	Canada	4.09	4.20	4.83
10-year	4.11	4.18	4.70	Germany	3.35	3.57	4.33
10-year (inflation-protected)	1.64	1.60	N/A	Japan	1.27	1.41	1.48
30-year	4.43	4.57	5.42	United Kingdom	4.37	4.63	5.16
30-year Zero	4.45	4.63	5.53	Preferred Stocks			
				Utility A	6.96	6.85	6.83
				Financial A	5.94	5.98	6.38
				Financial Adjustable A	5.52	5.33	5.52



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	4.25	4.35	5.13				
25-Bond Index (Revs)	4.81	4.88	5.44				
General Obligation Bonds (GOs)							
1-year Aaa	2.72	2.25	1.52				
1-year A	2.89	2.42	1.67				
5-year Aaa	2.98	2.87	3.25				
5-year A	3.28	3.15	3.56				
10-year Aaa	3.49	3.51	4.11				
10-year A	3.84	3.82	4.46				
25/30-year Aaa	4.30	4.40	5.09				
25/30-year A	4.54	4.61	5.34				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	4.31	4.44	5.29				
Electric AA	4.44	4.45	5.23				
Housing AA	4.65	4.63	5.40				
Hospital AA	4.48	4.68	5.65				
Toll Road Aaa	4.44	4.54	5.33				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/11/05	4/27/05	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1376	1631	-255	1645	1726	1689
Borrowed Reserves	123	94	29	80	91	149
Net Free/Borrowed Reserves	1253	1537	-284	1565	1635	1540

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/9/05	5/2/05	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1359.9	1358.3	1.6	-0.1%	0.8%	2.6%
M2 (M1+savings+small time deposits)	6466.7	6478.8	-12.1	-0.1%	2.5%	3.3%
M3 (M2+large time deposits)	9584.6	9590.3	-5.7	3.4%	4.1%	3.8%

MAY 28, 2004

VALUE LINE SELECTION & OPINION

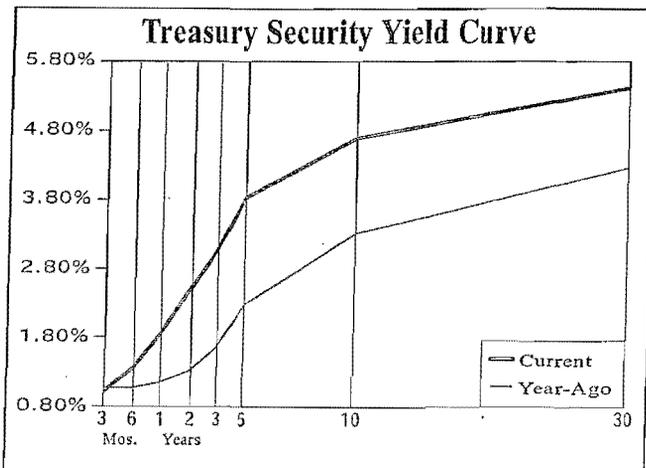
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(2000 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	9404	9760	9901	10077	10395	10847	11237	11630	12014	12434
Total Consumption	6439	6739	6905	7140	7365	7659	7881	8118	8361	8612
Nonresidential Fixed Investment	1133	1232	1177	1093	1126	1239	1352	1460	1562	1671
Construction	293	313	305	249	238	235	248	263	279	298
Equipment & Software	840	919	871	847	894	1002	1085	1161	1248	1348
Residential Fixed Investment	444	447	448	470	505	530	509	499	504	524
Exports	1008	1096	1039	1014	1035	1143	1282	1410	1537	1660
Imports	1304	1476	1437	1485	1544	1658	1748	1844	1946	2024
Federal Government	574	579	600	648	704	747	757	761	765	768
State & Local Governments	1113	1143	1168	1189	1195	1199	1234	1259	1284	1303
Gross Domestic Product	9268	9817	10101	10481	10988	11709	12327	12970	13680	14478
Real GDP (2000 Chain Weighted \$)	9470	9817	9867	10083	10398	10874	11271	11677	12085	12532
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	1.4	2.2	2.4	1.5	1.7	2.1	1.6	1.7	1.8	2.0
CPI-All Urban Consumers	2.2	3.4	2.8	1.6	2.3	2.8	2.1	2.3	2.4	2.5
PPI-Finished Goods	1.8	3.7	2.0	-1.3	3.2	2.8	1.5	1.3	1.5	1.8
Employment Cost Index—Total	3.2	4.6	4.1	3.8	4.0	3.6	3.6	3.5	3.7	4.0
Productivity	2.8	2.7	2.2	4.9	4.4	3.0	2.0	2.1	2.3	2.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	4.4	4.4	-3.4	-0.6	0.3	5.7	4.9	4.5	4.0	4.5
Factory Operating Rate (%)	81.4	81.1	75.4	73.9	73.4	76.5	78.5	79.0	79.5	80.0
Nonfarm Inven. Chg. (2000 Chain Weighted \$)	71.5	57.8	-36.3	9.3	0.5	30.0	48.8	45.0	40.0	40.0
Housing Starts (Mill. Units)	1.65	1.57	1.60	1.71	1.85	1.92	1.75	1.65	1.68	1.70
Existing House Sales (Mill. Units)	5.19	5.16	5.29	5.60	6.10	6.16	5.83	5.70	5.75	5.80
Total Light Vehicle Sales (Mill. Units)	16.9	17.4	17.1	16.8	16.6	17.1	17.5	17.3	17.4	17.5
National Unemployment Rate (%)	4.2	4.0	4.8	5.8	6.0	5.5	5.5	5.4	5.3	5.3
Federal Budget Surplus (Unified, FY, \$Bill)	124.4	236.9	127.3	-158.5	-374.2	-475.0	-350.0	-275.0	-250.0	-275.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	17.42	28.21	22.95	24.00	28.60	36.10	33.00	30.50	28.75	27.75
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	4.6	5.8	3.4	1.6	1.0	1.1	2.1	2.5	2.7	3.0
Federal Funds Rate (%)	5.0	6.2	3.9	1.7	1.1	1.3	2.4	3.0	3.2	3.5
10-Year Treasury Note Rate (%)	5.6	6.0	5.0	4.6	4.0	4.6	5.3	5.4	5.6	5.7
Long-Term Treasury Bond Rate	5.9	5.9	5.5	5.4	5.0	5.4	5.9	6.0	6.2	6.3
AAA Corporate Bond Rate (%)	7.0	7.6	7.1	6.5	5.7	6.0	6.5	6.5	6.6	6.8
Prime Rate (%)	8.0	9.2	6.9	4.7	4.1	4.3	5.3	6.0	6.3	6.5
INCOMES										
Personal Income (% Change)	5.1	8.0	3.4	2.3	3.3	5.2	4.6	5.5	5.5	5.5
Real Disp. Inc. (% Change)	3.0	4.8	1.8	3.8	2.6	3.1	2.6	3.2	3.0	3.0
Personal Savings Rate (%)	2.4	2.4	1.7	2.3	2.1	1.5	1.5	2.0	2.3	2.5
Pretax Corporate Profits (\$Bill)	776.0	773.0	694.0	665.0	856.0	1105.0	1266.0	1369.0	1514.0	1665.0
Aftertax Corporate Profits (\$Bill)	517.0	508.0	496.0	550.0	632.0	739.0	836.0	903.0	984.0	1082.0
Yr-to-Yr % Change	10.1	-1.7	-2.5	11.0	14.8	17.1	13.1	8.0	9.0	10.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	4.4	3.7	0.5	-2.2	3.1	4.6	3.7	3.6	3.5	3.7
Final Sales	4.5	3.8	1.4	1.8	3.2	4.3	3.6	3.5	3.3	3.5
Total Consumption	5.1	4.7	2.5	3.4	3.2	4.0	2.9	3.0	3.0	3.0
Nonresidential Fixed Investment	9.2	8.7	-4.5	-7.1	3.0	10.1	9.0	8.0	7.0	7.0
Construction	-0.4	6.8	-2.6	-18.4	-4.6	-1.2	5.5	6.0	6.0	7.0
Equipment & Software	12.7	9.4	-5.2	-2.8	5.5	12.1	8.3	7.0	7.5	8.0
Residential Fixed Investment	6.0	0.7	0.2	4.9	7.5	4.9	-3.9	-2.0	1.0	4.0
Exports	4.3	8.7	-5.2	-2.4	2.0	10.4	12.2	10.0	9.0	8.0
Imports	11.5	13.2	-2.6	3.3	4.0	7.4	5.5	5.5	5.5	4.0
Federal Government	2.2	0.9	3.6	8.0	8.7	6.1	1.4	0.5	0.5	0.5
State & Local Governments	4.7	2.7	2.2	1.8	0.5	0.3	2.9	2.0	2.0	1.5

Selected Yields

	Recent (5/20/04)	3 Months Ago (2/19/04)	Year Ago (5/22/03)		Recent (5/20/04)	3 Months Ago (2/19/04)	Year Ago (5/22/03)
TAXABLE							
Market Rates							
Discount Rate	2.00	2.00	2.25				
Federal Funds	1.00	1.00	1.25				
Prime Rate	4.00	4.00	4.25				
30-day CP (A1/P1)	1.02	1.01	1.23				
3-month LIBOR	1.28	1.12	1.28				
Bank CDs							
6-month	0.75	0.72	0.85				
1-year	1.11	0.92	0.95				
5-year	3.33	2.93	2.74				
U.S. Treasury Securities							
3-month	1.02	0.93	1.07				
6-month	1.35	0.99	1.07				
1-year	1.85	1.23	1.15				
5-year	3.84	3.00	2.29				
10-year	4.70	4.03	3.31				
30-year	5.42	4.89	4.26				
30-year Zero	5.53	5.08	4.53				
Mortgage-Backed Securities							
GNMA 6.5%	5.38	3.42	3.46				
FHLMC 6.5% (Gold)	5.48	3.49	2.98				
FNMA 6.5%	5.40	3.41	2.79				
FNMA ARM	2.78	2.86	2.97				
Corporate Bonds							
Financial (10-year) A	5.60	4.98	4.40				
Industrial (25/30-year) A	6.27	5.57	5.22				
Utility (25/30-year) A	6.17	5.60	5.48				
Utility (25/30-year) Baa/BBB	6.66	6.04	6.16				
Foreign Bonds (10-Year)							
Canada	4.83	4.46	4.67				
Germany	4.33	4.12	3.70				
Japan	1.48	1.22	0.57				
United Kingdom	5.16	4.85	4.03				
Preferred Stocks							
Utility A	6.83	6.82	6.83				
Financial A	6.38	5.72	5.90				
Financial Adjustable A	5.52	5.46	5.01				



TAX-EXEMPT

Bond Buyer Indexes			
20-Bond Index (GOs)	5.13	4.50	4.30
25-Bond Index (Revs)	5.44	4.83	4.82
General Obligation Bonds (GOs)			
1-year Aaa	1.52	1.03	0.98
1-year A	1.67	1.20	1.20
5-year Aaa	3.25	2.24	2.05
5-year A	3.56	2.55	2.40
10-year Aaa	4.11	3.33	3.08
10-year A	4.46	3.67	3.47
25/30-year Aaa	5.09	4.47	4.31
25/30-year A	5.34	4.75	4.61
Revenue Bonds (Revs) (25/30-Year)			
Education AA	5.29	4.56	4.35
Electric AA	5.23	4.55	4.34
Housing AA	5.40	4.70	4.50
Hospital AA	5.65	4.90	4.74
Toll Road Aaa	5.33	4.63	4.50

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/12/04	4/28/04	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1518	1637	-119	1782	1682	1857
Borrowed Reserves	99	91	8	63	69	106
Net Free/Borrowed Reserves	1419	1546	-127	1719	1613	1751

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/10/04	5/3/04	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1299.8	1362.5	-62.7	2.7%	2.7%	4.0%
M2 (M1+savings+small time deposits)	6267.3	6274.8	-7.5	11.5%	6.3%	4.6%
M3 (M2+large time deposits)	9172.8	9169.6	3.2	12.6%	8.0%	5.3%

MAY 30, 2003

VALUE LINE SELECTION & OPINION

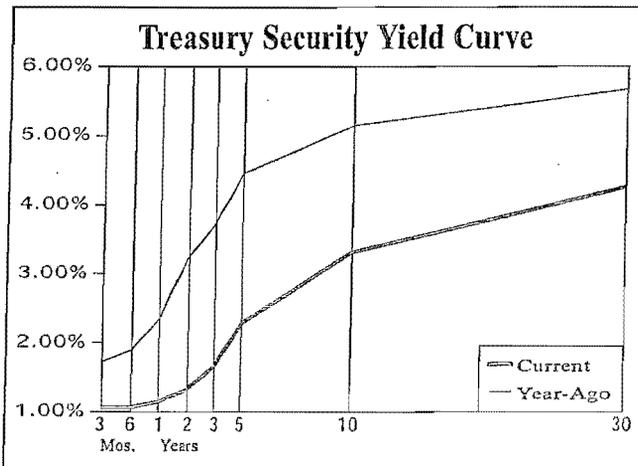
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (1996 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	8432	8794	9121	9258	9424	9639	9980	10329	10711	11118
Total Consumption	5684	5965	6224	6377	6576	6729	6976	7220	7473	7742
Nonresidential Fixed Investment	1136	1228	1324	1255	1183	1192	1284	1400	1498	1588
Construction	262	259	276	271	226	213	222	242	254	264
Equipment & Software	875	976	1056	988	971	1000	1093	1180	1263	1364
Residential Fixed Investment	345	368	372	374	388	401	390	394	400	408
Exports	1002	1036	1137	1076	1059	1086	1201	1306	1409	1516
Imports	1224	1357	1536	1492	1547	1594	1718	1819	1914	2008
Federal Government	525	538	544	571	613	660	689	699	704	713
State & Local Governments	958	1002	1037	1069	1100	1105	1112	1133	1152	1169
Gross Domestic Product	8782	9274	9825	10082	10446	10838	11348	11980	12655	13430
Real GDP (1996 Chain Weighted \$)	8509	8859	9191	9215	9440	9626	9902	10229	10587	10978
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Deflator	1.2	1.4	2.1	2.4	1.1	1.7	1.9	2.0	2.1	2.2
CPI-All Urban Consumers	1.5	2.2	3.4	2.8	1.6	1.7	1.9	2.1	2.3	2.5
PPI-Finished Goods	-0.9	1.8	3.7	2.0	-1.3	2.5	1.6	1.7	1.9	2.0
Employment Cost Index--Total Comp.	3.5	3.2	4.6	4.1	3.8	3.6	3.3	3.1	3.2	3.3
Productivity	2.6	2.4	2.9	1.1	4.8	2.5	3.0	2.5	2.5	2.5
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	6.5	4.9	5.0	-4.1	-1.1	2.3	7.5	7.0	4.0	3.0
Factory Operating Rate (%)	81.9	81.4	81.4	75.6	73.7	74.3	77.6	79.0	80.0	81.0
Nonfarm Inven. Chg. (1996 Chain Weighted \$)	75.0	64.2	67.2	-63.2	4.1	15.2	65.0	50.0	45.0	45.0
Housing Starts (Mill. Units)	1.62	1.65	1.57	1.60	1.71	1.65	1.61	1.62	1.63	1.65
Total Light Vehicle Sales (Mill. Units)	15.5	16.9	17.4	17.1	16.8	16.1	17.0	17.5	17.7	17.8
Unit Car Sales (Mill. Units)	8.1	8.7	8.9	8.4	8.1	7.6	7.9	8.0	8.0	8.0
National Unemployment Rate (%)	4.5	4.2	4.0	4.8	5.8	6.1	6.0	5.7	5.6	5.5
Federal Budget Surplus (Unified, FY, \$ Bill)	69.2	124.4	236.9	127.3	-157.8	-380.0	-400.0	-360.0	-275.0	-200.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	12.58	17.42	28.21	22.96	24.04	26.75	22.00	22.25	23.00	23.75
MONEY AND INTEREST RATES										
3-Month Treasury Bill Rate (%)	4.8	4.6	5.8	3.4	1.6	1.2	1.9	2.6	3.0	3.5
Federal Funds Rate (%)	5.4	5.0	6.2	3.9	1.7	1.1	1.4	3.0	3.5	4.0
10-Year Treasury Note Rate (%)	5.3	5.6	6.0	5.0	4.6	3.8	4.2	5.5	5.7	6.0
30-Year Treasury Bond Rate (%)	5.6	5.9	5.9	5.5	5.4	4.7	5.1	6.2	6.4	6.7
AAA Corporate Bond Rate (%)	6.5	7.0	7.6	7.1	6.5	5.3	5.7	6.7	7.0	7.5
Prime Rate (%)	8.4	8.0	9.2	6.9	4.7	4.2	4.9	6.0	6.5	7.0
INCOMES										
Personal Income (% Change)	7.0	4.9	8.0	3.3	2.8	3.4	4.3	5.0	5.3	5.5
Real Disp. Inc. (% Change)	5.4	2.6	4.8	1.8	4.3	2.4	3.8	3.0	3.0	3.0
Personal Savings Rate (%)	4.8	2.6	2.8	2.3	3.7	4.0	4.3	4.0	3.0	3.0
Pretax Corporate Profits (\$Bill)	721.1	762.0	782.0	670.0	665.0	771.0	698.0	970.0	1037.0	1120.0
Aftertax Corporate Profits (\$Bill)	482.3	514.0	523.0	471.0	452.0	515.0	593.0	640.0	685.0	739.0
Yr-to-Yr % Change	-13.1	6.6	1.7	-10.0	-4.0	14.0	15.0	8.0	7.9	8.9
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	4.3	4.1	3.8	0.3	2.4	2.0	2.9	3.3	3.5	3.7
Final Sales	4.2	4.3	3.7	1.5	1.8	2.3	3.5	3.5	3.7	3.8
Total Consumption	4.8	4.9	4.3	2.5	3.1	2.3	3.7	3.5	3.5	3.6
Nonresidential Fixed Investment	12.5	8.1	7.8	-5.2	-5.7	0.7	7.7	9.0	7.0	6.0
Construction	6.8	-1.3	6.5	-1.7	-16.4	-5.9	4.0	9.0	5.0	4.0
Equipment & Software	14.6	11.5	8.2	-6.4	-1.7	3.0	9.3	8.0	7.0	8.0
Residential Fixed Investment	8.0	6.8	1.1	0.3	3.9	3.4	-2.8	1.0	1.5	2.0
Exports	2.1	3.4	9.7	-5.4	-1.6	2.6	10.6	8.7	7.9	7.6
Imports	11.8	10.8	13.2	-2.9	3.7	3.0	7.8	5.9	5.2	4.9
Federal Government	-0.8	2.4	1.2	4.8	7.5	7.5	4.4	1.4	0.8	1.2
State & Local Governments	3.4	4.6	3.5	3.1	2.9	0.4	0.7	1.8	1.7	1.5

Selected Yields

	Recent (5/22/03)	3 Months Ago (2/20/03)	Year Ago (5/23/02)		Recent (5/22/03)	3 Months Ago (2/20/03)	Year Ago (5/23/02)
TAXABLE				Mortgage-Backed Securities			
Market Rates				GNMA 6.5%			
Discount Rate	2.25	2.25	1.25	3.46	4.00	5.94	
Federal Funds	1.25	1.25	1.75	FHLMC 6.5% (Gold)	2.98	3.07	5.69
Prime Rate	4.25	4.25	4.75	FNMA 6.5%	2.79	3.20	5.57
30-day CP (A1/P1)	1.23	1.24	1.75	FNMA ARM	2.97	3.14	3.82
3-month LIBOR	1.28	1.34	1.90	Corporate Bonds			
Bank CDs				Financial (10-year) A			
6-month	0.85	0.94	1.63	4.40	5.11	6.56	
1-year	0.95	1.12	2.03	Industrial (25/30-year) A	5.22	5.87	6.87
5-year	2.74	2.98	4.31	Utility (25/30-year) A	5.48	6.73	7.51
U.S. Treasury Securities				Utility (25/30-year) Baa/BBB			
3-month	1.07	1.18	1.73	6.16	7.26	8.14	
6-month	1.07	1.19	1.89	Foreign Bonds (10-Year)			
1-year	1.15	1.31	2.34	Canada	4.67	4.99	5.61
5-year	2.29	2.83	4.46	Germany	3.70	3.90	5.12
10-year	3.31	3.87	5.15	Japan	0.57	0.86	1.43
30-year	4.26	4.81	5.67	United Kingdom	4.03	4.14	5.01
30-year Zero	4.53	4.85	5.58	Preferred Stocks			
				Utility A	6.83	6.81	6.83
				Financial A	5.90	6.18	6.79
				Financial Adjustable A	5.01	5.01	5.01



TAX-EXEMPT

Bond Buyer Indexes			
20-Bond Index (GOs)	4.30	4.79	5.19
25-Bond Index (Revs)	4.82	5.14	5.55
General Obligation Bonds (GOs)			
1-year Aaa	0.98	1.10	1.80
1-year A	1.20	1.32	2.01
5-year Aaa	2.05	2.53	3.37
5-year A	2.40	2.91	3.66
10-year Aaa	3.08	3.72	4.23
10-year A	3.47	4.15	4.55
25/30-year Aaa	4.31	4.78	5.20
25/30-year A	4.61	5.05	5.44
Revenue Bonds (Revs) (25/30-Year)			
Education AA	4.35	4.97	5.35
Electric AA	4.34	4.84	5.35
Housing AA	4.50	5.05	5.45
Hospital AA	4.74	5.31	5.50
Toll Road Aaa	4.50	5.06	5.30

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/14/03	4/30/03	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1559	1566	-7	1666	1706	1521
Borrowed Reserves	51	29	22	29	76	112
Net Free/Borrowed Reserves	1508	1537	-29	1637	1630	1409

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/12/03	5/5/03	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1248.0	1252.8	-4.8	10.1%	8.3%	6.1%
M2 (M1+savings+small time deposits)	6002.1	5992.6	9.5	9.3%	7.9%	8.1%
M3 (M2+large time deposits)	8684.4	8673.8	10.6	6.0%	6.3%	6.8%

MAY 31, 2002

VALUE LINE SELECTION & OPINION

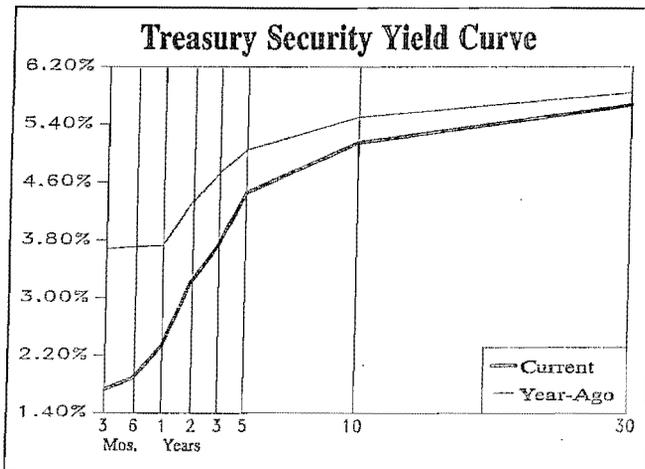
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (1996 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	8095	8432	8792	9167	9377	9564	9906	10263	10642	11036
Total Consumption	5424	5684	5968	6258	6450	6678	6897	7138	7388	7646
Nonresidential Fixed Investment	1009	1136	1229	1351	1308	1243	1355	1450	1558	1683
Construction	245	262	257	273	275	236	256	264	272	280
Equipment & Software	764	875	978	1087	1039	1024	1116	1216	1337	1471
Residential Fixed Investment	320	345	368	371	377	387	383	391	401	413
Exports	981	1002	1035	1133	1082	1038	1102	1204	1301	1405
Imports	1095	1224	1352	1532	1490	1535	1632	1717	1794	1866
Federal Government	530	525	537	546	560	601	627	641	647	654
State & Local Governments	926	958	995	1026	1067	1096	1107	1127	1149	1172
Gross Domestic Product	8318	8782	9269	9873	10208	10621	11210	11847	12545	13289
Real GDP (1996 Chain Weighted \$)	8159	8509	8857	9224	9334	9590	9928	10275	10655	11060
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Price Index (1996 Chain Weighted)	1.9	1.2	1.4	2.3	2.2	1.7	2.5	2.5	2.5	2.6
CPI-All Urban Consumers	2.3	1.5	2.2	3.4	2.8	2.4	2.5	2.6	2.6	2.7
PPI-Finished Goods	0.4	-0.9	1.8	3.7	2.0	1.7	2.1	2.1	2.2	2.2
Employment Cost Index—Total Comp.	3.1	3.5	3.2	4.6	4.1	3.5	3.6	3.3	3.3	3.5
Output per Hour-Nonfarm	1.2	2.6	2.3	3.3	1.8	4.6	3.1	3.5	3.2	3.0
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	6.0	4.3	4.1	4.5	-3.7	4.4	6.5	6.0	5.0	5.0
Capacity Utilization Rate (%)	82.4	81.3	80.5	81.3	75.1	75.0	76.6	77.0	77.5	78.0
Housing Starts (Mill. Units)	1.47	1.62	1.65	1.57	1.61	1.60	1.58	1.62	1.63	1.65
Total Light Vehicle Sales (Mill. Units)	15.1	15.5	16.9	17.4	17.1	16.5	17.0	17.1	17.3	17.3
Unit Car Sales (Mill. Units)	8.3	8.1	8.7	8.9	8.4	8.1	8.1	8.0	8.0	8.0
National Unemployment Rate (%)	4.9	4.5	4.2	4.0	4.8	6.0	5.8	5.5	5.0	5.0
Federal Budget Surplus (Unified, FY, \$Bill)	-22.0	69.2	124.4	236.6	127.0	-90.0	-80.0	-75.0	-45.0	-15.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	19.11	12.58	17.42	28.21	22.96	22.80	21.75	22.25	23.25	24.00
MONEY AND INTEREST RATES										
Annual Money Supply (M2)	4023	4352	4626	4910	5421	5673	5957	6247	6558	6884
Yr-to-Yr % Change (Q4/Q4)	5.8	8.5	6.3	6.1	10.4	4.7	5.0	4.9	5.0	5.0
3-Month Treasury Bill Rate (%)	5.1	4.8	4.6	5.8	3.4	2.0	3.4	3.8	4.2	4.5
Federal Funds Rate (%)	5.5	5.4	5.0	6.2	3.9	1.9	3.2	3.8	4.5	5.0
10-Year Treasury Note Rate (%)	6.4	5.3	5.6	6.0	5.0	5.3	5.9	5.9	6.0	6.2
30-Year Treasury Bond Rate (%)	6.6	5.6	5.9	5.9	5.5	5.7	6.3	6.3	6.4	6.5
AAA Corporate Bond Rate (%)	7.3	6.5	7.0	7.6	7.1	6.9	7.3	7.2	7.2	7.3
Prime Rate (%)	8.4	8.4	8.0	9.2	6.9	4.9	6.1	7.0	8.0	8.5
INCOMES										
Personal Income (% Change)	6.0	7.0	4.7	7.0	4.9	4.8	6.0	5.5	5.3	5.3
Real Disp. Inc. (% Change)	3.1	5.4	2.5	3.5	3.6	4.9	3.4	3.3	3.0	3.0
Personal Savings Rate (%)	4.2	4.7	2.4	1.0	1.6	2.1	2.1	2.0	1.8	1.8
Pretax Corporate Profits (\$Bill)	792.4	721.1	776.0	845.0	699.0	739.0	792.0	847.0	915.0	997.0
Aftertax Corporate Profits (\$Bill)	555.2	482.3	523.0	574.0	483.0	489.0	523.0	559.0	604.0	658.0
Yr-to-Yr % Change	7.5	-13.1	8.5	9.7	-15.9	1.4	6.8	7.0	8.0	9.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	4.4	4.3	4.1	4.1	1.2	2.7	3.5	3.5	3.7	3.8
Final Sales	4.0	4.2	4.6	4.3	2.3	2.0	3.6	3.6	3.7	3.7
Total Consumption	3.6	4.7	5.0	4.9	3.1	3.5	3.3	3.5	3.5	3.5
Nonresidential Fixed Investment	12.2	12.6	10.1	9.9	-3.2	-5.0	9.0	7.0	7.5	8.0
Construction	9.1	7.2	-1.4	6.2	0.9	-14.2	8.6	3.0	3.0	3.0
Equipment & Software	13.3	15.0	14.1	11.1	-4.4	-1.5	9.0	9.0	10.0	10.0
Residential Fixed Investment	2.0	8.3	6.4	0.8	1.5	2.6	-0.9	2.0	2.5	3.0
Exports	12.3	2.3	2.9	9.5	-4.5	-4.1	6.2	9.3	8.0	8.0
Imports	13.7	11.8	10.7	13.4	-2.7	3.0	6.3	5.2	4.5	4.0
Federal Government	-0.4	-0.5	2.5	1.7	2.7	7.3	4.3	2.3	1.0	1.0
State & Local Governments	4.0	3.6	3.8	3.2	4.0	2.7	1.0	1.8	2.0	2.0

Selected Yields

	Recent (5/23/02)	3 Months Ago (2/21/02)	Year Ago (5/24/01)		Recent (5/23/02)	3 Months Ago (2/21/02)	Year Ago (5/24/01)
TAXABLE							
Market Rates							
Discount Rate	1.25	1.25	3.50				
Federal Funds	1.75	1.75	4.00				
Prime Rate	4.75	4.75	7.00				
30-day CP (A1/P1)	1.75	1.75	3.98				
3-month LIBOR	1.90	1.90	4.03				
Bank CDs							
6-month	1.63	1.52	3.41				
1-year	2.03	1.83	3.50				
5-year	4.31	4.10	4.41				
U.S. Treasury Securities							
3-month	1.73	1.75	3.68				
6-month	1.89	1.85	3.71				
1-year	2.34	1.68	3.73				
5-year	4.46	4.16	5.05				
10-year	5.15	4.85	5.50				
30-year	5.67	5.37	5.84				
30-year Zero	5.58	5.60	5.96				
Mortgage-Backed Securities							
GNMA 8%	5.22	5.15	6.74				
FHLMC 8%	4.98	4.98	6.51				
FNMA 8%	5.00	5.07	6.44				
FNMA ARM	3.82	4.22	6.37				
Corporate Bonds							
Financial (10-year) A	6.56	6.38	7.02				
Industrial (25/30-year) A	6.87	6.63	7.36				
Utility (25/30-year) A	7.51	7.12	8.07				
Utility (25/30-year) Baa/BBB	8.14	7.39	8.45				
Foreign Bonds (10-Year)							
Canada	5.31	5.02	5.87				
Germany	5.12	4.98	5.18				
Japan	1.43	1.49	1.29				
United Kingdom	5.01	4.99	5.21				
Preferred Stocks							
Utility A	6.83	6.74	6.37				
Financial A	6.79	6.38	6.57				
Financial Adjustable A	5.01	5.01	4.96				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	5.19	5.10	5.30				
25-Bond Index (Revs)	5.55	5.43	5.65				
General Obligation Bonds (GOs)							
1-year Aaa	1.80	1.58	2.73				
1-year A	2.01	1.79	2.85				
5-year Aaa	3.37	3.40	3.79				
5-year A	3.66	3.68	4.00				
10-year Aaa	4.23	4.15	4.41				
10-year A	4.55	4.44	4.63				
25/30-year Aaa	5.20	5.06	5.29				
25/30-year A	5.44	5.32	5.49				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	5.35	5.20	5.48				
Electric AA	5.35	5.26	5.39				
Housing AA	5.45	5.35	5.65				
Hospital AA	5.50	5.35	5.55				
Toll Road Aaa	5.30	5.29	5.39				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/15/02	5/1/02	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1188	1194	-6	1306	1405	2738
Borrowed Reserves	100	71	29	69	67	383
Net Free/Borrowed Reserves	1088	1123	-35	1237	1338	2355

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/13/02	5/6/02	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1166.7	1171.6	-4.9	-3.2%	1.6%	5.1%
M2 (M1+savings+small time deposits)	5535.3	5517.1	18.2	3.0%	4.9%	7.8%
M3 (M2+large time deposits)	8131.5	8098.4	33.1	4.0%	4.2%	8.3%

JUNE 1, 2001

VALUE LINE SELECTION & OPINION

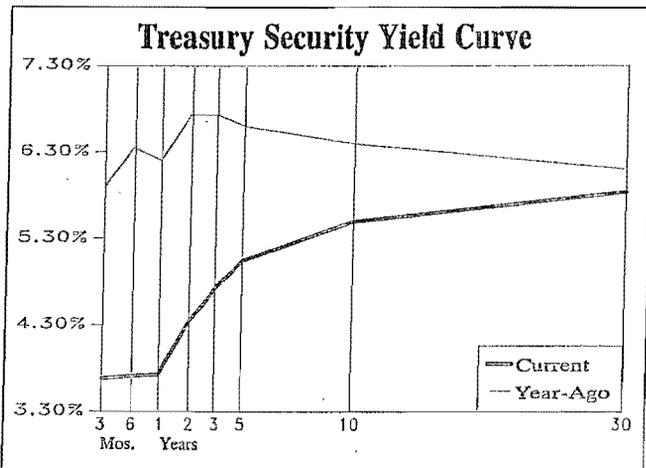
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (1996 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	7783	8095	8435	8827	9251	9471	9681	10001	10341	10703
Total Consumption	5237	5424	5679	5979	6294	6475	6685	6919	7168	7433
Nonresidential Fixed Investment	899	1009	1140	1255	1414	1440	1478	1566	1660	1768
Construction	225	245	263	259	283	307	295	298	301	306
Equipment & Software	674	764	879	1003	1141	1143	1200	1284	1387	1498
Residential Fixed Investment	313	320	346	368	366	355	347	360	375	394
Exports	874	981	1004	1033	1126	1146	1205	1295	1391	1495
Imports	963	1095	1225	1355	1539	1575	1666	1775	1883	1996
Federal Government	532	530	527	540	548	565	579	591	602	612
State & Local Governments	890	926	959	996	1031	1060	1088	1113	1136	1159
Gross Domestic Product	7813	8318	8790	9299	9963	10369	10902	11488	12109	12775
Real GDP (1996 Chain Weighted \$)	7813	8159	8516	8876	9318	9472	9758	10100	10473	10871
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Price Index (1996 Chain Weighted)	2.1	1.9	1.2	1.5	2.1	2.4	2.2	2.2	2.3	2.3
CPI-All Urban Consumers	2.9	2.3	1.6	2.2	3.4	3.0	2.7	2.7	2.7	2.8
PPI-Finished Goods	2.6	0.4	-0.9	1.8	3.7	2.5	1.8	2.0	2.1	2.2
Employment Cost Index--Total Comp.	2.8	3.1	3.5	3.2	4.6	4.5	3.8	3.7	3.5	3.5
Output per Hour-Nonfarm	0.8	1.2	2.8	2.9	4.3	2.0	2.8	3.2	3.2	3.3
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	2.8	6.0	4.3	4.1	5.6	-0.3	2.4	3.3	3.4	3.5
Capacity Utilization Rate (%)	81.5	82.4	80.9	80.5	81.3	77.7	77.4	78.0	79.0	80.0
Housing Starts (Mill. Units)	1.47	1.47	1.62	1.68	1.61	1.54	1.47	1.53	1.57	1.60
Total Light Vehicle Sales (Mill. Units)	15.1	15.1	15.6	16.9	17.4	16.4	16.6	17.0	17.3	17.5
Unit Car Sales (Mill. Units)	8.5	8.3	8.1	8.7	8.8	8.4	8.4	8.5	8.5	8.5
National Unemployment Rate (%)	5.4	4.9	4.5	4.2	4.0	4.7	5.2	5.0	4.9	4.8
Federal Budget Surplus (Unified, FY, \$Bill)	-107.0	-22.0	69.2	158.3	131.4	132.0	135.0	135.0	137.0	139.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	20.69	19.11	12.58	17.42	28.21	26.50	24.75	23.50	22.50	22.00
MONEY AND INTEREST RATES										
Annual Money Supply (M2)	3806	4023	4363	4624	4912	5498	5946	6279	6591	6907
Yr-to-Yr % Change (Q4/Q4)	4.6	5.8	8.5	6.3	6.2	11.9	8.2	5.6	5.0	4.8
3-Month Treasury Bill Rate (%)	5.0	5.1	4.8	4.6	5.8	4.0	3.8	3.9	4.2	4.5
Federal Funds Rate (%)	5.3	5.5	5.4	5.0	6.2	4.2	3.9	4.2	4.7	5.0
10-Year Treasury Note Rate (%)	6.4	6.4	5.3	5.6	6.0	5.1	5.5	5.5	5.6	5.7
30-Year Treasury Bond Rate (%)	6.7	6.6	5.6	5.9	5.9	5.6	5.9	5.9	5.9	6.0
AAA Corporate Bond Rate (%)	7.4	7.3	6.5	7.0	7.7	7.6	7.9	8.0	8.0	8.0
Prime Rate (%)	8.3	8.4	8.4	8.0	9.2	7.2	7.0	7.3	7.5	8.0
INCOMES										
Personal Income (% Change)	5.6	6.0	6.5	5.4	6.3	4.4	4.8	5.7	5.5	5.5
Real Disp. Inc. (% Change)	2.5	3.1	4.8	3.2	2.8	3.0	3.8	4.3	4.2	4.0
Personal Savings Rate (%)	4.8	4.2	4.2	2.2	-0.1	-0.8	-0.2	0.2	0.4	0.4
Pretax Corporate Profits (\$Bill)	726.4	792.4	758.2	823.0	926.0	931.0	1008.0	1079.0	1160.0	1252.0
Aftertax Corporate Profits (\$Bill)	502.7	555.2	513.4	567.0	641.0	622.0	665.0	712.0	765.0	827.0
Yr-to-Yr % Change	9.3	7.5	-2.9	10.4	13.1	-3.1	7.0	7.0	7.5	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	3.6	4.4	4.4	4.2	5.0	1.6	3.0	3.5	3.7	3.8
Final Sales	3.6	4.0	4.2	4.6	4.8	2.4	2.2	3.3	3.4	3.5
Total Consumption	3.2	3.6	4.7	5.3	5.3	2.9	3.2	3.5	3.6	3.7
Nonresidential Fixed Investment	10.0	12.2	13.0	10.1	12.6	1.9	2.6	6.0	6.0	6.5
Construction	7.1	9.1	7.2	-1.4	9.1	8.4	-3.9	1.0	1.2	1.5
Equipment & Software	11.0	13.3	15.0	14.1	13.7	0.2	5.0	7.0	8.0	8.0
Residential Fixed Investment	7.4	2.0	8.3	6.4	-0.5	-3.0	-2.4	4.0	4.0	5.0
Exports	8.2	12.3	2.3	2.9	9.0	1.8	5.1	7.5	7.4	7.5
Imports	8.6	13.7	11.9	10.7	13.5	2.4	5.8	6.5	6.1	6.0
Federal Government	-0.9	-0.4	-0.5	2.5	1.5	3.0	2.6	2.0	1.8	1.7
State & Local Governments	2.3	4.0	3.6	3.8	3.5	2.9	2.6	2.3	2.1	2.0

Selected Yields

	Recent (5/24/01)	3 Months Ago (2/22/01)	Year Ago (5/25/00)		Recent (5/24/01)	3 Months Ago (2/22/01)	Year Ago (5/25/00)
TAXABLE							
Market Rates							
Discount Rate	3.50	5.00	6.00				
Federal Funds	4.00	5.50	6.50				
Prime Rate	7.00	8.50	9.50				
30-day CP (A1/P1)	3.98	5.37	6.48				
3-month LIBOR	4.03	5.35	6.83				
Bank CDs							
6-month	3.41	4.43	5.02				
1-year	3.50	4.47	5.42				
5-year	4.41	4.84	6.00				
U.S. Treasury Securities							
3-month	3.68	4.99	5.90				
6-month	3.71	4.85	6.35				
1-year	3.73	4.73	6.20				
5-year	5.05	4.90	6.60				
10-year	5.50	5.15	6.40				
30-year	5.84	5.52	6.10				
30-year Zero	5.96	5.75	6.14				
Mortgage-Backed Securities							
GNMA 8%	6.74	7.08	8.11				
FHLMC 8%	6.51	6.94	8.24				
FNMA 8%	6.44	6.89	8.23				
FNMA ARM	6.37	6.88	6.57				
Corporate Bonds							
Financial (10-year) A	7.02	6.92	8.33				
Industrial (25/30-year) A	7.36	7.21	8.32				
Utility (25/30-year) A	8.07	7.77	8.41				
Utility (25/30-year) Baa/BBB	8.45	8.07	8.66				
Foreign Bonds (10-Year)							
Canada	5.87	5.40	6.32				
Germany	5.18	4.85	5.31				
Japan	1.29	1.46	1.70				
United Kingdom	5.21	4.99	5.40				
Preferred Stocks							
Utility A	6.37	6.83	6.80				
Financial A	6.57	6.57	6.20				
Financial Adjustable A	4.96	5.01	4.96				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	5.30	5.21	6.01				
25-Bond Index (Revs)	5.65	5.52	6.27				
General Obligation Bonds (GOs)							
1-year Aaa	2.73	3.30	4.55				
1-year A	2.85	3.42	4.75				
5-year Aaa	3.79	3.85	5.08				
5-year A	4.00	4.05	5.35				
10-year Aaa	4.41	4.32	5.35				
10-year A	4.63	4.56	5.64				
25/30-year Aaa	5.29	5.20	5.99				
25/30-year A	5.49	5.44	6.26				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	5.48	5.33	6.14				
Electric AA	5.39	5.31	6.19				
Housing AA	5.65	5.55	6.40				
Hospital AA	5.55	5.60	6.40				
Toll Road Aaa	5.39	5.33	6.32				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	05/16/01	05/02/01	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	892	1216	-324	1305	1281	1186
Borrowed Reserves	346	59	287	97	137	314
Net Free/Borrowed Reserves	546	1157	-611	1209	1144	872

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	05/14/01	05/07/01	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1102.6	1106.7	-4.1	5.1%	3.8%	-0.3%
M2 (M1+savings+small time deposits)	5153.9	5150.6	3.3	10.6%	10.7%	8.4%
M3 (M2+large time deposits)	7493.1	7467.2	25.9	14.0%	14.4%	11.0%

JUNE 2, 2000

VALUE LINE SELECTION & OPINION

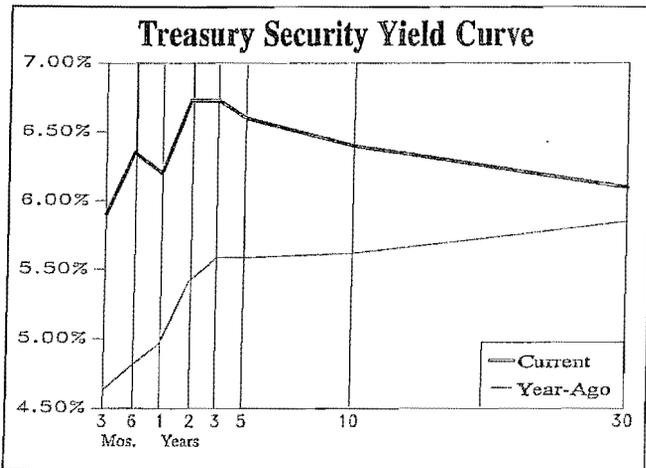
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(1996 CHAIN WEIGHTED \$)										
BILLIONS OF DOLLARS										
Total Consumption	5076	5237	5417	5682	5984	6271	6491	6685	6892	7113
Nonresidential Fixed Investment	818	899	996	1122	1216	1355	1443	1529	1621	1718
Residential Fixed Investment	292	313	321	350	376	371	363	367	374	386
Exports	808	874	983	1005	1042	1113	1197	1303	1421	1541
Imports	887	963	1095	1222	1365	1512	1624	1717	1830	1964
Federal Government	536	532	531	526	541	540	544	542	543	545
State & Local Governments	870	890	923	953	993	1034	1062	1087	1111	1134
Gross Domestic Product	7401	7813	8301	8760	9256	9843	10247	10759	11337	11711
Real GDP (1996 Chain Weighted \$)	7544	7813	8145	8496	8848	9246	9542	9847	10172	10508
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Price Index (1996 Chain Weighted)	2.5	2.1	1.9	1.2	1.4	2.3	1.8	1.8	2.0	2.0
CPI-All Urban Consumers	2.8	2.9	2.3	1.6	2.2	3.1	2.5	2.5	2.6	2.7
PPI-Finished Goods	1.9	2.6	0.4	-0.9	1.8	2.7	1.8	1.8	1.9	2.0
Employment Cost Index—Total Comp.	2.8	2.8	3.1	3.5	3.2	4.8	4.3	4.0	3.8	3.8
Output per Hour-Nonfarm	0.6	0.8	1.2	2.8	3.0	3.3	2.0	2.2	2.2	2.3
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	3.3	2.8	6.0	4.3	3.5	4.5	1.5	2.5	3.0	3.3
Capacity Utilization Rate (%)	83.1	82.1	82.0	80.9	79.8	81.0	79.5	80.0	80.2	80.3
Housing Starts (Mill. Units)	1.36	1.47	1.48	1.62	1.68	1.63	1.55	1.55	1.58	1.60
Total Light Vehicle Sales (Mill. Units)	14.8	15.1	15.1	15.6	16.9	17.8	17.0	16.5	16.5	16.7
Unit Car Sales (Mill. Units)	8.6	8.5	8.2	8.2	8.7	9.1	8.8	8.5	8.5	8.5
U.S. Dollar Exchange Rate (% Change)	-5.7	4.9	8.0	5.0	-2.3	1.7	-2.7	-4.9	-2.2	-1.4
National Unemployment Rate (%)	5.6	5.4	4.9	4.5	4.2	4.0	4.0	4.2	4.3	4.4
Federal Budget Surplus (Unified, FY, \$Bill)	-163.9	-107.0	-22.0	69.2	124.4	163.0	210.0	210.0	270.0	265.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	17.24	20.69	19.11	12.58	17.42	26.55	24.40	23.15	22.75	21.50
MONEY AND INTEREST RATES										
Annual Money Supply (M2)	3638	3806	4023	4363	4627	4854	5072	5316	5587	5872
Yr-to-Yr % Change (Q4/Q4)	3.9	4.6	5.8	8.5	6.1	4.9	4.5	4.8	5.1	5.1
3-Month Treasury Bill Rate (%)	5.5	5.0	5.1	4.8	4.6	6.0	6.2	6.0	5.7	5.5
Federal Funds Rate (%)	5.8	5.3	5.5	5.4	5.0	6.4	6.5	6.4	6.2	6.0
30-Year Treasury Bond Rate (%)	6.9	6.7	6.6	5.6	5.9	6.2	5.9	5.9	5.8	5.8
AAA Corporate Bond Rate (%)	7.6	7.4	7.3	6.5	7.0	7.5	7.2	7.5	7.5	7.5
Prime Rate (%)	8.8	8.3	8.4	8.4	8.0	9.3	9.4	9.3	9.1	9.0
INCOMES										
Personal Income (% Change)	6.3	5.5	5.6	5.9	5.9	6.3	5.8	5.5	5.3	5.3
Real Disp. Inc. (% Change)	3.5	2.9	2.8	4.1	4.0	4.1	4.8	3.5	3.0	3.0
Personal Savings Rate (%)	4.7	4.9	2.1	3.7	2.4	1.0	1.6	1.8	1.5	1.5
Pretax Corporate Profits (\$Bill)	668.4	726.4	795.9	781.9	848.0	973.0	1021.0	1083.0	1158.0	1251.0
Aftertax Corporate Profits (\$Bill)	457.5	502.7	557.6	541.6	589.0	642.0	674.0	715.0	765.0	826.0
Yr-to-Yr % Change	18.3	9.3	7.5	-2.9	8.8	9.0	5.0	6.0	7.0	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	2.7	3.6	4.2	4.3	4.2	4.5	3.2	3.2	3.3	3.3
Final Sales	5.1	5.0	5.2	4.3	4.5	4.0	3.3	3.3	3.3	3.3
Total Consumption	3.0	3.2	3.4	4.9	5.3	4.5	3.5	3.0	3.1	3.2
Nonresidential Fixed Investment	9.8	9.9	10.8	12.7	8.3	11.5	6.5	6.0	6.0	6.0
Construction	4.5	7.1	8.4	4.1	-2.4	6.0	5.5	4.0	3.0	3.0
Equipment & Software	11.6	10.8	12.1	15.8	12.0	12.5	7.0	8.0	8.0	8.0
Residential Fixed Investment	-3.6	7.2	2.6	9.2	7.4	-1.0	-2.0	1.9	2.0	3.0
Exports	10.2	8.2	12.5	2.2	3.8	6.6	7.6	8.8	9.1	8.4
Imports	8.3	8.6	13.7	11.6	11.7	10.7	7.4	5.7	6.6	7.3
Federal Government	-2.7	-0.7	-0.2	-0.9	2.8	-0.1	0.7	-0.4	0.1	0.4
State & Local Governments	2.5	2.3	3.7	3.2	4.2	4.0	2.7	2.4	2.2	2.1

Selected Yields

	Recent (5/25/00)	3 Months Ago (2/24/00)	Year Ago (5/27/99)		Recent (5/25/00)	3 Months Ago (2/24/00)	Year Ago (5/27/99)
TAXABLE				Mortgage-Backed Securities			
Market Rates				GNMA 8%	8.11	8.01	6.94
Discount Rate	6.00	5.25	4.50	FHLMC 8%	8.24	8.03	6.88
Federal Funds	6.50	5.75	4.75	FNMA 8%	8.23	8.00	6.84
Prime Rate	9.50	8.75	7.75	FNMA ARM	6.57	6.55	5.83
30-day CP (A1/P1)	6.48	5.75	4.80	Corporate Bonds			
3-month LIBOR	6.83	6.10	5.07	Financial (10-year) A	8.33	7.68	6.80
Bank CDs				Industrial (25/30-year) A	8.32	7.69	7.16
6-month	5.02	4.97	4.00	Utility (25/30-year) A	8.41	7.95	7.17
1-year	5.42	5.12	4.12	Utility (25/30-year) Baa/BBB	8.66	8.07	7.54
5-year	6.00	6.05	4.57	Foreign Bonds (10-Year)			
U.S. Treasury Securities				Canada	6.32	6.11	5.47
3-month	5.90	5.80	4.63	Germany	5.31	5.40	4.07
6-month	6.35	6.00	4.81	Japan	1.70	1.85	1.50
1-year	6.20	6.20	4.97	United Kingdom	5.40	5.35	4.96
5-year	6.60	6.55	5.59	Preferred Stocks			
10-year	6.40	6.36	5.62	Utility A	6.80	6.80	6.83
30-year	6.10	6.13	5.85	Financial A	6.20	5.94	4.95
30-year Zero	6.14	6.04	5.95	Financial Adjustable A	4.96	5.53	5.01



TAX-EXEMPT

Bond Buyer Indexes			
20-Bond Index (GOs)	6.01	5.94	5.23
25-Bond Index (Revs)	6.27	6.27	5.41
General Obligation Bonds (GOs)			
1-year Aaa	4.55	4.10	3.15
1-year A	4.75	4.25	3.33
5-year Aaa	5.08	4.94	4.00
5-year A	5.35	5.21	4.23
10-year Aaa	5.35	5.23	4.48
10-year A	5.64	5.50	4.75
25/30-year Aaa	5.99	5.90	5.16
25/30-year A	6.26	6.16	5.40
Revenue Bonds (Revs) (25/30-Year)			
Education AA	6.14	6.09	5.42
Electric AA	6.19	6.14	5.31
Housing AA	6.40	6.37	5.45
Hospital AA	6.40	6.45	5.50
Toll Road Aaa	6.32	6.25	5.40

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	05/17/00	05/03/00	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	922	1019	-97	1129	1334	1256
Borrowed Reserves	303	276	27	223	259	258
Net Free/Borrowed Reserves	619	743	-124	906	1075	997

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	05/15/00	05/08/00	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1103.1	1093.4	9.7	0.3%	-1.1%	0.4%
M2 (M1+savings+small time deposits)	4753.5	4739.6	13.9	6.5%	5.8%	5.4%
M3 (M2+large time deposits)	6660.1	6636.0	24.1	8.9%	8.9%	8.2%

MAY 28, 1999

VALUE LINE SELECTION & OPINION

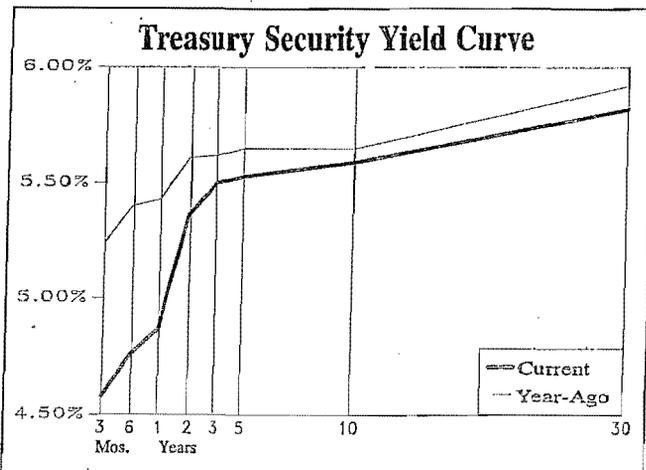
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Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GROSS DOMESTIC PRODUCT AND ITS COMPONENTS										
(1992 CHAIN WEIGHTED \$)										
BILLIONS OF DOLLARS										
Total Consumption	4486	4606	4752	4914	5153	5390	5554	5720	5892	6069
Nonresidential Fixed Investment	648	711	777	859	961	1043	1110	1165	1229	1303
Residential Fixed Investment	267	257	276	283	312	334	323	320	323	330
Exports	712	793	860	970	985	1003	1057	1138	1228	1325
Imports	817	889	971	1106	1223	1334	1407	1467	1546	1662
Federal Government	487	471	466	458	453	464	471	463	458	456
State & Local Governments	766	784	803	827	844	872	897	919	942	964
Gross Domestic Product	6947	7270	7662	8111	8511	8932	9265	9663	10111	10605
Real GDP (1992 Chain Weighted \$)	6611	6762	6995	7270	7552	7843	8024	8225	8447	8684
PRICES AND WAGES-ANNUAL RATES OF CHANGE										
GDP Price Index (1992 Chain Weighted)	2.3	2.5	2.1	1.9	1.0	2.0	2.1	2.1	2.2	2.3
CPI-All Urban Consumers	2.6	2.8	2.9	2.3	1.6	2.8	2.5	2.5	2.6	2.7
PPI-Finished Goods	0.6	1.9	2.6	0.4	-0.9	2.3	1.6	1.6	1.8	2.0
Employment Cost Index—Total Comp.	3.2	2.8	2.8	3.1	3.5	3.5	3.5	3.5	3.5	3.5
Output per Hour-Nonfarm	0.5	0.6	0.8	1.2	2.2	2.3	1.5	1.6	1.7	1.7
PRODUCTION AND OTHER KEY MEASURES										
Industrial Prod. (% Change)	5.8	3.3	2.8	6.0	3.7	2.3	2.5	3.0	3.0	3.0
Capacity Utilization Rate (%)	83.1	83.1	82.1	82.0	80.8	80.3	80.2	80.7	81.3	82.0
Housing Starts (Mill. Units)	1.45	1.36	1.47	1.48	1.62	1.63	1.55	1.50	1.50	1.50
Total Light Vehicle Sales (Mill. Units)	15.0	14.8	15.1	15.1	15.6	15.8	15.4	15.4	15.6	15.8
Unit Car Sales (Mill. Units)	9.0	8.6	8.5	8.2	8.2	8.1	7.8	7.7	7.6	7.6
U.S. Dollar Exchange Rate (% Change)	-1.5	-5.7	4.9	8.0	5.0	-1.0	-2.2	-3.3	-2.6	-1.8
National Unemployment Rate (%)	6.1	5.6	5.4	4.9	4.5	4.3	4.4	4.6	4.7	4.8
Federal Budget Surplus (Unified, FY, \$Bill)	-203.1	-163.9	-107.0	-22.0	70.2	117.0	108.0	90.0	115.0	125.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	15.52	17.24	20.69	19.11	12.66	14.90	16.60	17.25	17.90	18.75
MONEY AND INTEREST RATES										
Annual Money Supply (M2)	3502	3638	3806	4023	4365	4609	4812	5010	5220	5444
Yr-to-Yr % Change (Q4/Q4)	0.6	3.9	4.6	5.8	8.5	5.6	4.4	4.1	4.2	4.3
3-Month Treasury Bill Rate (%)	4.2	5.5	5.0	5.1	4.8	4.6	4.8	4.8	4.8	4.8
Federal Funds Rate (%)	4.2	5.8	5.3	5.5	5.4	4.8	5.0	5.0	5.1	5.2
30-Year Treasury Bond Rate (%)	7.4	6.9	6.7	6.6	5.6	5.6	5.6	5.6	5.7	5.8
AAA Corporate Bond Rate (%)	8.0	7.6	7.4	7.3	6.5	6.1	6.1	6.1	6.2	6.3
Prime Rate (%)	7.1	8.8	8.3	8.4	8.4	7.8	8.0	8.2	8.3	8.5
INCOMES										
Personal Income (% Change)	5.0	6.3	5.5	5.6	5.0	4.9	4.6	4.6	4.6	4.7
Real Disp. Inc. (% Change)	2.4	3.5	2.9	2.8	3.2	3.1	3.3	3.0	3.0	3.0
Personal Savings Rate (%)	3.8	4.7	4.9	2.1	0.5	-0.4	0.3	0.4	0.5	0.6
Pretax Corporate Profits (\$Bill)	531.2	635.6	680.2	734.4	717.8	760.0	798.0	846.0	905.0	977.0
Aftertax Corporate Profits (\$Bill)	335.9	424.6	454.1	488.3	477.7	502.0	527.0	558.0	597.0	645.0
Yr-to-Yr % Change	11.9	26.4	9.3	7.5	-2.2	5.0	5.0	8.0	7.0	8.0
COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE										
Gross Domestic Product	3.5	2.3	3.4	3.9	3.9	3.8	2.3	2.5	2.7	2.8
Final Sales	2.9	2.5	2.8	3.5	4.0	2.7	2.5	2.5	2.6	2.7
Total Consumption	3.3	2.4	2.6	3.4	4.9	4.6	3.0	3.0	3.0	3.0
Nonresidential Fixed Investment	8.0	9.0	9.2	10.7	11.8	8.6	6.4	5.0	5.5	6.0
Construction	1.0	4.3	4.8	7.1	-0.1	1.0	2.5	2.5	3.0	3.5
Durable Equipment	11.0	10.8	10.9	12.1	16.5	12.0	7.0	5.0	6.0	7.0
Residential Fixed Investment	10.1	-3.8	5.9	2.5	10.4	7.0	-3.0	-1.0	1.0	2.0
Exports	8.2	11.1	8.3	12.8	1.5	1.8	5.3	7.7	7.9	7.9
Imports	12.2	8.9	9.1	13.9	10.6	9.1	5.5	4.2	5.4	7.5
Federal Government	-3.8	-3.3	-1.3	-1.6	-1.0	2.4	1.4	-1.6	-1.0	-0.6
State & Local Governments	2.6	2.1	1.6	3.1	2.0	3.3	3.0	2.4	2.5	2.4

Selected Yields

	Recent (5/20/99)	3 Months Ago (2/18/99)	Year Ago (5/21/98)		Recent (5/20/99)	3 Months Ago (2/18/99)	Year Ago (5/21/98)
TAXABLE							
Market Rates							
Discount Rate	4.50	4.50	5.00				
Federal Funds	4.75	4.75	5.50				
Prime Rate	7.75	7.75	8.50				
30-day CP (A1/P1)	4.80	4.80	5.49				
3-month LIBOR	5.05	5.00	5.69				
Bank CDs							
6-month	4.00	3.97	4.45				
1-year	4.09	3.97	4.61				
5-year	4.52	4.19	4.97				
U.S. Treasury Securities							
3-month	4.58	4.52	5.24				
6-month	4.76	4.60	5.40				
1-year	4.87	4.70	5.43				
5-year	5.53	4.95	5.65				
10-year	5.59	5.04	5.65				
30-year	5.82	5.37	5.92				
30-year Zero	6.00	5.46	5.99				
Mortgage-Backed Securities							
GNMA 8%	6.93	6.57	6.93				
FHLMC 8%	6.88	6.49	6.88				
FNMA 8%	6.83	6.38	6.87				
FNMA ARM	5.72	5.70	6.17				
Corporate Bonds							
Financial (10-year) A	6.75	6.19	6.41				
Industrial (25/30-year) A	7.05	6.61	6.80				
Utility (25/30-year) A	7.06	6.55	6.71				
Utility (25/30-year) Baa/BBB	7.46	6.97	7.05				
Foreign Bonds (10-Year)							
Canada	5.38	5.14	5.37				
Germany	4.09	3.92	4.94				
Japan	1.33	1.99	1.55				
United Kingdom	4.98	4.52	5.85				
Preferred Stocks							
Utility A	6.82	6.82	6.83				
Financial A	4.95	4.80	5.14				
Financial Adjustable A	5.01	4.88	4.85				



TAX-EXEMPT

Bond Buyer Indexes							
20-Bond Index (GOs)	5.21	5.01	5.16				
25-Bond Index (Revs)	5.37	5.23	5.42				
General Obligation Bonds (GOs)							
1-year Aaa	3.15	2.95	3.70				
1-year A	3.33	3.10	3.90				
5-year Aaa	3.98	3.70	4.15				
5-year A	4.20	3.90	4.25				
10-year Aaa	4.45	4.13	4.45				
10-year A	4.70	4.35	4.65				
25/30-year Aaa	5.15	4.93	5.08				
25/30-year A	5.36	5.11	5.28				
Revenue Bonds (Revs) (25/30-Year)							
Education AA	5.40	5.11	5.25				
Electric AA	5.28	5.12	5.19				
Housing AA	5.40	5.32	5.38				
Hospital AA	5.47	5.28	5.32				
Toll Road Aaa	5.36	5.18	5.30				

Federal Reserve Data

BANK RESERVES

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

	Recent Levels			Average Levels Over the Last...		
	5/19/99	5/5/99	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1072	1285	-213	1213	1356	1448
Borrowed Reserves	103	223	-120	115	131	177
Net Free/Borrowed Reserves	969	1062	-93	1098	1226	1271

MONEY SUPPLY

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

	Recent Levels			Growth Rates Over the Last...		
	5/10/99	5/3/99	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	1096.4	1116.9	-20.5	4.8%	2.3%	2.0%
M2 (M1+savings+small time deposits)	4500.7	4490.3	10.4	6.3%	6.9%	8.0%
M3 (M2+large time deposits)	6102.7	6091.6	11.1	3.4%	6.3%	8.6%

Data Request OUCC 15

During the last three years, in how many cases has Dr. Avera recommended a return on fair value? Please provide the following information for each case where Dr. Avera has recommended a return on fair value:

- a) Provide the utility name and the jurisdiction where testimony was filed.
- b) The cause number of the case.
- c) The rate of return Dr. Avera recommended.
- d) If Dr. Avera used a methodology different than the one used in the current case to calculate the rate of return on fair value, please explain each methodology.

Objection:

IPL objects to the request on the grounds and to the extent it seeks documents or information that is in the public domain and readily accessible to the OUCC. Subject to and without waiver of the foregoing objections, IPL provides the following response.

Response:

Dr. Avera filed direct and rebuttal testimony on behalf of Indiana Michigan Power Company before the Indiana Utility Regulatory Commission in Cause No. 44075. Dr. Avera's Direct Testimony was filed September 23, 2011 (beyond the 3-year window specified in the question above). His rebuttal testimony was filed on May 25, 2012. Dr. Avera recommended in his Direct Testimony and continued to support a fair return to fair value increment designed to allow the utility to actually earn its allowed return on equity (Avera Verified Rebuttal in Cause 44075 p. 8). In that case, Dr. Avera was not proposing that the net operating income be based on fair return to fair value as in this case (these differences are discussed in Dr. Avera's Direct Testimony in this case in footnote 89 on p. 84). Dr. Avera does use a revised version of the fair value increment approach in this case as one of his checks of reasonableness. As explained on in Dr. Avera's Direct Testimony in this case (pp. 84-85) he adjusted his approach to respond to criticisms of his fair value increment approach in the Final Order in Cause No. 44075 by adjusting the equity return applied to original cost rate base by historical inflation and adjusting the risk-free return applied to the fair value increment by historical inflation.

Data Request OUCC DR 8 - 02

Please list all cases where Dr. Avera has filed testimony on cost of equity during the last three years. For case list the utility name, the jurisdiction, the cause number, the date filed, type of testimony (direct or rebuttal), the cost equity Dr. Avera proposed, the cost of capital Dr. Avera proposed, the fair rate of return Dr. Avera proposed, and the name of any witnesses who filed testimony in response to Dr. Avera's testimony.

Objection:

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. IPL further objects to the Request on the grounds and to the extent it is overly broad and unduly burdensome. IPL further objects to the Request on the grounds and to the extent it solicits documents or information already in the public domain which are accessible to the OUCC. Subject to and without waiver of the foregoing objections, IPL provides the following response.

Response:

See OUCC DR, 8-2 Attachment 1 for a complete list of Dr. Avera's regulatory testimony. He does not maintain a record of recommendations or witnesses filing opposing testimony. Please note that the first entry in each case is the direct testimony with subsequent entries being rebuttal or other answering testimony. The first rebuttal in the three year window requested is in row 349 which is rebuttal in IURC Docket No. 44075. The details of this rebuttal are discussed in the response to OUCC Data Request 1-15.

Details of the recommendations and testimony by other witnesses are available on the respective commission websites.

Data Request OUCC DR 23 - 01

Does Mr. Kelly's RCNLD study adjust for or otherwise recognize improvements in productivity that have occurred over the life of the assets.

- a. If yes, please explain what productivity adjustment(s) was used and show where in his analysis was made.
- b. If no, please explain why not.

Objection:

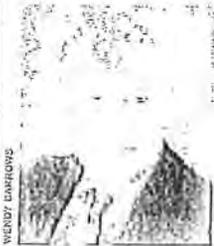
Response:

- a. No, Mr. Kelly did not adjust for improvements in productivity that occurred over the life of the assets.
- b. As discussed in Mr. Kelly's direct testimony at page 10, lines 9-12, the IPL transmission and distribution system is a mature system that would be replaced in a substantially similar manner using similar materials and technology as what is currently in service. Therefore, it was not necessary to apply a productivity offset to the transmission and distribution system assets.

I D E A
exchange

Building the Future From the Past*

BY ROGER G. IBBOTSON



Professor in the
Practice of Finance,
Yale School of
Management

UNTIL THE LAST TWO YEARS, INVESTORS had not seen consecutive negative annual stock market returns since the 1970s. In contrast, during the 1980s and 1990s the market produced its best 20-year performance ever. But neither the last two years nor the last two decades are good predictors of the long run.

A forecast usually begins by comparing the expected return on stocks with that of a low-risk asset, such as U.S. government bonds. This differ-

ence is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

Generally, the best way to get a sense of what the future may bring is to look at the past. After all, the past is our primary source of data. But, as you already know from recent market results, the stock market is quite

volatile. The only way to get a good representation is to look back over a long period of time, so that the ups and downs of the market tend to cancel out and we get a reasonable average.

The compound average annual nominal rate of return (including inflation) for common stocks was 10.7 percent over the period 1926–2001. This return exceeded long-term U.S. Treasury yields by over 5 percent per year. That difference was the historical equity risk premium—the amount of extra return investors got over the last three-quarters of a century for invest-

ing in stocks rather than bonds.

But looking at historical stock returns relative to bond income is not the whole picture. The bull market of the 1980s and 1990s had so much of an impact on stock prices that the price of stocks in the S&P 500® Index is almost 30 times the earnings of the same companies. This contrasts with a price/earnings (P/E) ratio closer to 10 back in the 1970s—and only

about 14 over the whole 76 years. This growth in the P/E ratio is not expected to repeat in the future. Thus, to a certain extent, the stock market has outrun the underlying real earnings power of corporations.

A long-term forecast should not extrapolate the separation of the P/E ratio indefinitely. But today's high P/E ratios are not necessarily going to soon revert to historical levels, because the prices reflect the future outlook of investors—all those people and institutions that hold, buy, or sell stocks. In fact, if today's P/E ratio is higher than in the past, it has to mean one of three things: The price is now unrealistically high, people are willing to accept a much lower expected return for the

Measuring Equity Risk

risk of stocks, or the market is optimistic that the earnings per share growth of corporations will be higher than it was in the past.

In fact, I believe in the market's optimism. Earnings per share will grow at faster rates for two reasons. First, corporations are paying out lower dividends and retaining more earnings. These extra retained earnings are reinvested back into firms. If the money is used productively, extra growth can be achieved.

continued on page 12

I D E A

exchange

Stock Returns for a New Century*

BY JOHN Y. CAMPBELL



Professor of Applied
Economics,
Harvard University

WHAT RETURNS SHOULD INVESTORS expect the U.S. stock market to deliver on average during this century? Does the experience of the last century provide a reliable guide to the future?

Perhaps the simplest way to try to forecast future returns is to use some average of past realized returns, but there are serious difficulties with this approach. Stock returns are so variable that even an average measured over a century is an unreliable guide to the true long-term average. Also, if the expected future stock return is not constant, but changes over time, it can have a perverse

have happened during the long bull market of the 1980s and 1990s.

An alternative approach is to forecast future returns using valuation ratios—ratios of stock prices to accounting measures of value, such as dividends or earnings.

One variant of this approach, known as the Gordon growth model, breaks returns into income

consistent with average realized returns. For instance, from 1871–2001, the average dividend/price ratio was just under 5 percent, while the average real growth rate was just over 2 percent, adding to about 7 percent, which is the long-term compound average realized stock return in real terms, that is, correcting for inflation. The average earnings/price ratio was also close to 7 percent.

But current valuation ratios are wildly different from historical averages, reflecting the unprecedented 20-year bull market that ended about two years ago. The dividend/price ratio, for example, has fallen dramatically to about 1.5 percent. In part, this may be due to a shift in corporate financial policy away from paying dividends and toward repurchasing shares. One way to correct for this is to add repurchases to conventional dividends, but this still implies a dividend/price ratio of only about 2.5 percent. The earnings/price ratio has also declined. In the short term, this ratio may be affected by temporary cyclical fluctuations in earnings. But even correcting for this, the earnings/price ratio is about half its long-term historical average.

The implications of current valuations for future returns depend on

continued on page 12

« Premium

effect on the average realized return: Consider what happens if the expected future stock return declines—perhaps because investors have become more comfortable with equity (stock) market risk and require a smaller compensation for bearing it. Investors' willingness to reduce their equity risk premium itself tends to drive up the price of stocks, causing an increase in realized returns. Thus, at precisely the wrong time, when the expected future stock return is declining, the average of past stock returns will actually increase. This may well

(the dividend/price ratio) and capital gains (the long-term average growth rate of dividends). Return is estimated by the dividend/price ratio plus the dividend growth rate. Another variant argues that stock returns come from corporate earnings: Earnings that are paid out generate income, while earnings that are reinvested generate growth. In the long run, both components of earnings are equally valuable and thus return should equal the earnings/price ratio.

Over long periods of time, these formulas have given results that are

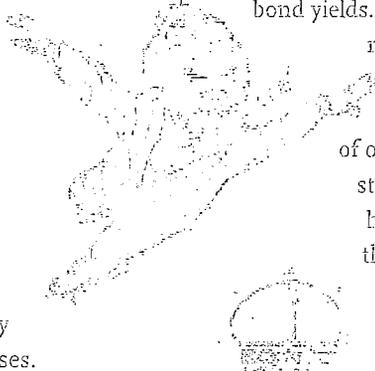
*Ibbotson's and Campbell's columns refer to returns on the S&P 500® Index, in nominal terms and real (inflation-adjusted) terms respectively.

exchange

Building the Future From the Past continued from page 10

Second, investors are rationally willing to pay high prices for current earnings when they think future earnings will grow. The evidence demonstrates that over time investors who buy when the market's P/E ratios are high do just about as well as those who buy when the market's P/E ratios are low.

Stocks are predicted to outperform bonds in the future, but not by further P/E ratio increases.



Instead, stocks will tend to participate with the overall U.S. economy and earnings per share growth. My forecast for stocks is somewhat less than 4 percent in excess of long-term bond yields. Applying this premium to recent bond yields gives a long-term forecast of over 9 percent for the stock market. It is high, but lower than the historical stock market return. But, of course, there is no free lunch. The

reason stocks are expected to outperform bonds is that they are riskier than bonds. Although stocks belong in most people's portfolios, the smart investor will still want to diversify across different types of stocks, as well as across bonds and other asset classes. ❧



To learn more about Ibbotson's research, go to <http://mba.yale.edu/faculty/professors/ibbotson.htm>.

Stock Returns for a New Century continued from page 11

whether the market has reached a new steady state, in which current valuations will persist, or whether these valuations are the result of some transitory phenomenon.

If current valuations represent a new steady state, they imply a substantial decline in the equity returns that can be expected in the future. The future expected stock return might be 3.5 percent to 4.5 percent, rather than the historical average of 7 percent. This would allow for only a very modest equity premium relative to Treasury bills or inflation-indexed Treasury bonds, which currently offer a safe 3.5 percent real yield.

If current valuations are transitory, it matters critically what happens to restore traditional valuation ratios. Rapid earnings and dividend growth could restore traditional valuations without any decline in stock prices. While this is always a possibility, it would be historically unprecedented. The U.S. stock market has an extremely poor record of predicting

long-term earnings and dividend growth. Historically, stock prices have increased relative to earnings during decades of rapid earnings growth, such as the 1920s, 1960s, and 1990s, as if the stock market anticipates that rapid earnings growth will continue in the next decade. But there is no systematic tendency for a profitable decade to be followed by a second profitable decade. The 1920s, for example, were followed by the 1930s, and the 1960s by the 1970s. Thus, stock market optimism often fails to be justified by subsequent earnings growth.

A second possibility is that stock prices will decline or stagnate until traditional valuations are restored. This has occurred at various times in the past after periods of unusually high stock prices, notably in the 1900s, 1910s, 1930s, and 1970s. This would imply extremely low and perhaps even negative returns during the adjustment period and then higher returns afterward.

It is too soon to tell which of these

views is correct, and I believe it is sensible to put some weight on each. That is, I expect valuation ratios to return part way but not fully to traditional levels, with the adjustment coming primarily from stock prices rather than earnings growth. A rough guess for the long-term stock return, after the adjustment process is complete, might be a compound average real equity return of 5.0 percent to 5.5 percent, corresponding to an equity premium of 1.5 percent to 2.0 percent. ❧



To learn more about Campbell's research, go to <http://post.economics.harvard.edu/faculty/campbell/campbell.html>.

"Idea Exchange" is a forum for presenting alternative views on topics of interest to readers of *Investment Forum*. The ideas expressed in these columns are those of the authors, who are experts in their field, and unaffiliated with TIAA-CREF. Their opinions are based on their research and do not necessarily represent the position of TIAA-CREF. The research relies in part upon past performance, which we can't guarantee will be replicated. Forecasts cannot accurately predict future results.

Data Request OUCC 16

On page 81 of his direct testimony Dr. Avera states as follows:
The IURC has consistently applied the utility's WACC adjusted for historical inflation to the fair value rate base. The historical inflation rate of 2.4% has been taken from the Ibbotson publication referenced in past IURC decisions. 86

According to footnote 86 Dr. Avera calculates an average inflation rate over the last 14 years. What is the basis for Dr. Avera's use of a 14 year average to calculate historical inflation? Please provide any calculations relied on by Dr. Avera to determine that a 14 year average was reasonable?

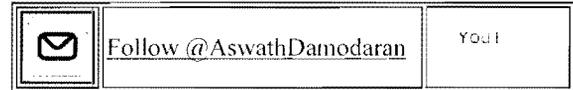
Objection:

Response:

Dr. Avera noted that the IURC used an inflation rate of 2.43% in its February 13, 2013 Final Order in Indiana Michigan Power Company (Final Order Cause No. 44075, p. 48). As described in footnote 86 on page 81 of his direct testimony, Dr. Avera reviewed the historical inflation rates displayed on the referenced page of Ibbotson (Table C7, page 6 of 6 provided as Avera WP 16). He reasoned that the IURC Order would have referred to historical inflation rates ending in 2011 because the Ibbotson 2012 numbers would not have been available for consideration in a decision published on February 13, 2013 (the publication generally is distributed late in February for the prior year). The inflation rates through 2011 that average 2.4% were from 14 to 17 years (for periods beginning 1995 through 1998 through 2011). Dr. Avera further noted that the central tendency of inflation rates for periods beginning in 1989 through 2001 (and continuing through 2013) appeared to be 2.4%. This observation was consistent with a hand calculation of the average value of the inflation rates displayed on the last row of panel a of Table C-7 (page 6 of 6) reflecting inflation rates through 2013) of the page for the periods beginning between 1989 and 2001. As this calculation was done on a hand calculator, no documentation was made of this calculation. Based on his review of the inflation rates through 2011 likely incorporated into the February 13, 2013 Final Order in Cause No. 44075 and average inflation rates through 2013, Dr. Avera determined that the 2.4% inflation rate, which was associated with a 14-year horizon ending in 2011 and a 14-year horizon in ending in 2013 was a reasonable representation of historical inflation. The reasonableness of this value was also confirmed by reference to expected inflation as noted in Dr. Avera's Direct Testimony in footnote 86 on p. 81.



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My name is Aswath Damodaran and I teach corporate finance and valuation at the Stern School of Business at New York University. I describe myself as a teacher first, who also happens to love untangling the puzzles of corporate finance and valuation, and writing about my experiences. As a result of my activities, I happen to be at the intersection of three businesses, education, publishing and financial services, that are all big, inefficiently run and deserve to be disrupted. I may not have the power to change the status quo in any of these businesses, but I can stir the pot, and this website is my attempt to do so.

Broadly speaking, the website is broken down into four sections. The first, [teaching](#), includes all of my classes, starting with the MBA classes that I teach at Stern and including the shorter (2 to 3-day) executive sessions I have on corporate finance and valuation. You will find not only the material for the classes (lecture notes, quizzes) but also webcasts of the classes that you can access on different forums. I also have classes specifically tailored to an online audience on valuation, corporate finance and investment philosophies. The second, [writing](#), includes links to almost everything I have written and continue to write, starting with my books and extending to my practitioner papers (on equity risk premiums, cash flows and other things valuation-related). The third, [data](#), contains the annual updates that I provide on industry averages, for US and global companies, on both corporate finance and valuation metrics (including multiples). It is also where I provide my estimates of equity risk premiums and costs of capital. The fourth, [tools](#), incorporates the spreadsheets that I have developed over time to value and analyze companies and short in-practice webcasts on how to analyze companies.

I have been told that my website is ugly and I apologize for its clunky look and feel. While some of you have offered to make it look better for me (and I thank you for your kindness), I need to be able to tweak, modify and adapt the website as I go along and to do that, I have to work with what I know about website design (which is not much). You can try the search engine below and if that does not work, try this [guide to the site](#).



Implied Equity Risk Premium Update

Implied ERP on June 1, 2015= 5.74% (Trailing 12 month cash yield); 6.10% (Normalized cash flow); 5.21% (Net cash yield)

Implied ERP in previous month = 5.80% (Trailing 12 month cash yield); 6.17% (Normalized cash flow); 5.27% (Net cash yield)

Downloadable datasets:

1. [Implied ERP by month for previous months](#)
2. [Implied ERP \(annual\) from 1960 to Current](#)
3. [Spreadsheet to compute current ERP](#)
4. [My annual update paper on ERP](#)

Other Updates

Teaching: Corporate Finance and Valuation classes for Spring 2015 start on February 2, 2015 and go through May 11, 2015. Check teaching for details.

Writing: Paper on [valuing Tesla \[with Brad Cornell\]](#) won readers' award (Bernstein-Levy) in Journal of Portfolio Management. Download the latest version of my annual equity risk premium update by [clicking here](#).

Data: The latest overall data update was on January 5, 2015. Check under data for downloads and links.

Tools: Check under tools for additions to spreadsheets and webcast. uValue is available at the iTunes store.

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Equity Risk Premium QUARTERLY

January 2015

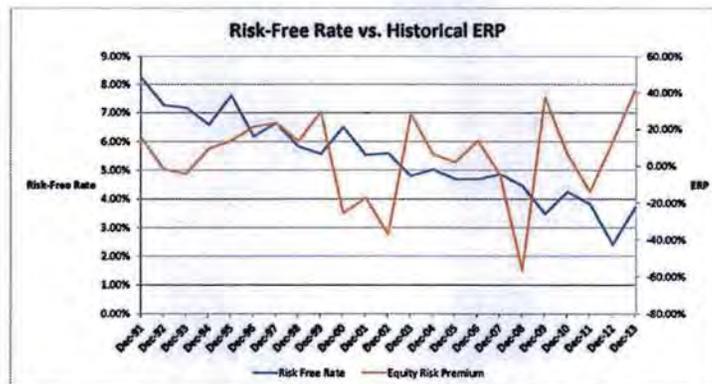
US Equity Risk Premium

The equity risk premium ("ERP") is the extra return over the expected yield on risk-free securities that investors expect to receive from an investment in a diversified portfolio of common stocks.¹ It can also be thought to measure what investors demand over and above the risk-free rate for investing in equities as a class or the market price for taking on average equity risk.²

In recent years, US risk-free rates have reached levels near historic lows due to the perceived low risk of US treasuries relative to the sovereign debt of other developed nations. Additionally, the Federal Reserve and other Central Banks around the world have undertaken quantitative easing and other efforts to lower interest rates in response to economic conditions. This past quarter, the Federal Reserve announced it would conclude its asset purchase program; however, it will continue to maintain its existing bond holdings and reinvest principal payments. This effort, along with the current lending rate policy, will help maintain accommodative financial conditions. As a result, the capital asset pricing model ("CAPM"), which utilizes the ERP to calculate a cost of equity, has implied a below-average cost of equity

when the market may have exhibited higher risk. Yields on US Treasury bonds, which were being manipulated by government intervention, were the primary driver for the implied below-average cost of equity. In the past year, US Treasury yields have been declining after returning to normal levels for a brief period of time late in 2013. Several reasons have been cited for the decline in US Treasury rates, most notably the shift from EU sovereign debt to US Treasuries, geopolitical unrest, pension funds protecting their status and, more recently, a sharp decline in worldwide energy prices. Another factor is the Federal Reserve signaling to the markets that rates may not be raised as previously expected until 2016. Yields on the 20-year US Treasury bond have declined to 2.47% as of December 31, 2014, from 3.08% as of June 30, 2014, and 3.72% as of December 31, 2013. It is too soon to determine whether this pullback trend will last throughout 2015.

Research has shown that the ERP is cyclical during business cycles and that the ERP can fluctuate within its historic range based on current and forecasted economic conditions. The ERP tends



Equity Risk Premium QUARTERLY

to move in the opposite direction of the economy, so when the business cycle is at its peak, the ERP will be at the lower end of its historical range; conversely, during economic troughs, the ERP will be at the higher end of the range.¹ The historical risk-free rate and ERP are presented in the chart on the preceding page.

There is no single universally accepted methodology for estimating the ERP; thus, there is wide diversity in practice among academics and financial advisors with regard to recommended ERP estimates.

American Appraisal researched and analyzed various economic and market factors in order to determine where the current ERP should fall within a range of historical ERP. To determine which indicators were most relevant to the ERP, correlations were calculated for these indicators relative to the historical ERP. Long-term correlations greater than +/- 0.5 were considered meaningful.

Based on our research and analysis, American Appraisal utilizes a 6.0% US ERP combined with the actual risk-free rate as of January 2015, which is consistent with our conclusion for the prior quarter. Additional details of the factors we reviewed follow.

Economic/Market Indicators

The factors determined to display moderate or strong correlations with historical ERPs are the CBOE Volatility Index ("VIX"), Damodaran's implied premium, and Moody's Aaa and Baa 20-year corporate credit spreads. VIX is the ticker symbol for the Chicago Board Options Exchange ("CBOE") Volatility Index, which numerically expresses the market's expectations of 30-day volatility; it is constructed by using the implied volatilities of a wide range of S&P 500 Index options. The results are meant to be forward-looking and are calculated by using both call and put options.



1993-2013 Correlation (20 year):	-0.59
2003-2013 Correlation (10 year):	-0.74

Equity Risk Premium QUARTERLY

The VIX is a widely used measure of market risk and often is referred to as the investor fear gauge. There are three variations of the volatility indexes: (1) the VIX, which tracks the S&P 500; (2) the VXN, which tracks the Nasdaq 100; and (3) the VXD, which tracks the Dow Jones Industrial Average. Damodaran's implied premium, developed by Aswath Damodaran, Professor of Finance at the Stern School of Business at New York University, is a forward-looking approach to calculating an expected ERP. It is based on using current market data to calculate an implied or residualized ERP.³

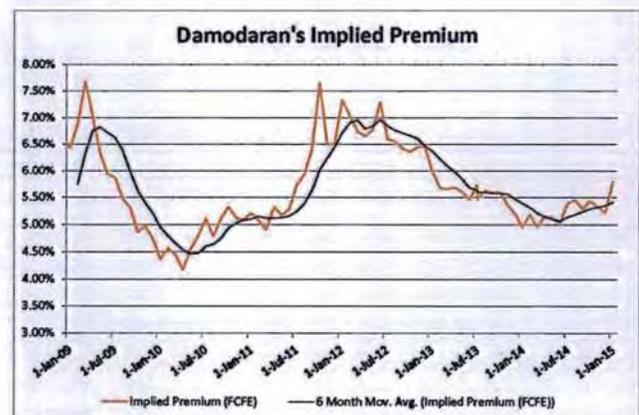
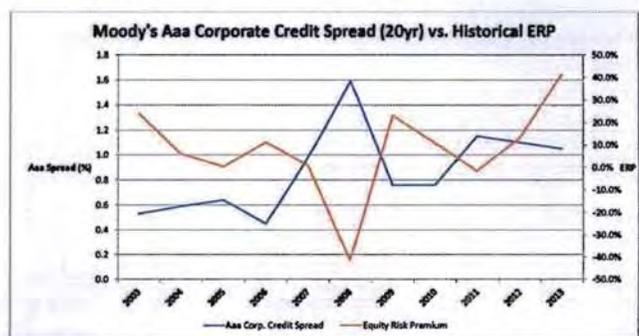
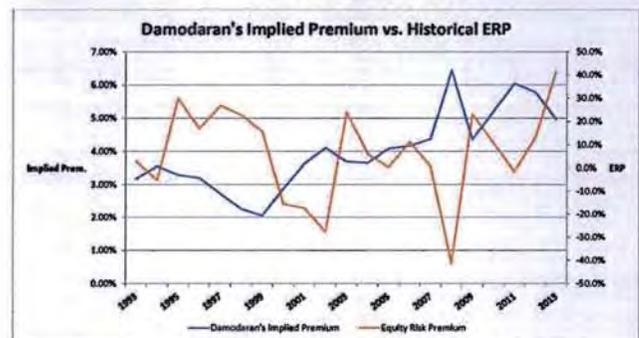
Moody's Aaa corporate credit spreads are calculated based on the difference in Aaa corporate yields vs. US treasuries with similar maturities.

Economic Indicators

As described previously, the VIX, Damodaran's implied premium, and Moody's Aaa and Baa 20-year corporate credit spreads display meaningful correlations with historical ERPs. Each of the factors is briefly discussed below:

Damodaran's Implied Premium

The six-month moving average trendline suggests that the implied premium has steadily trended down from 7.0% toward 6.0%, and dropped sharply - to slightly below 5% - at the end of 2013. It is now back up near 6% at the end of 2014.



Equity Risk Premium QUARTERLY

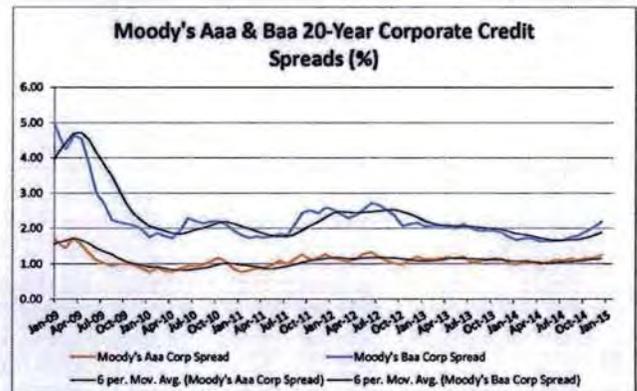
CBOE Volatility Index (VIX)

The VIX appears to be bouncing back from its lows, which approached low double digits, and increased to approximately 17 (long-term average near 20) at the end of September 2014. The VIX has fluctuated considerably over the past few years, spiking to over 40 in 2011. Since the first quarter of 2012, the six-month trendline has dipped down below 20 and is trending toward 15. The index is hovering close to the near-record lows throughout 2014 but toward the end of the year it trended toward 20, reflecting turmoil in the energy markets.



Moody's Aaa and Baa Corporate Credit Spreads (20-year)

In 2012, Aaa and Baa spreads fell, rose, fell, and rose again, while their six-month moving averages remained relatively flat. Since January 2013, corporate credit spreads have remained relatively flat; however, the corporate spreads began to widen slightly over the fourth quarter of 2014.

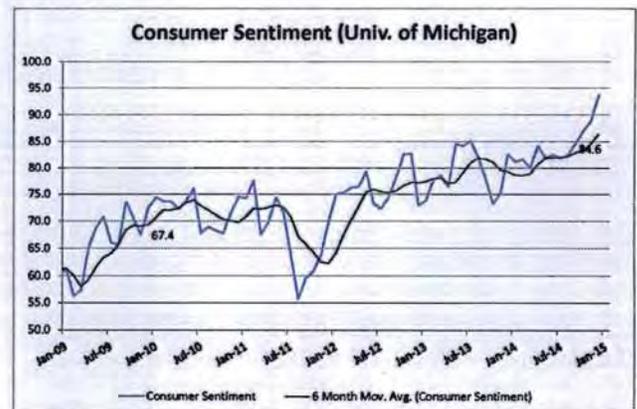


Additional Economic Indicators

In addition to the economic and market factors that display meaningful correlations with historical ERPs, the following economic indicators are monitored on a frequent basis to determine the current status of the US economy and help establish where the current ERP falls within the historical range.

Consumer Sentiment

Consumer sentiment trends, as tracked by the University of Michigan, indicate improving consumer sentiment, which is typically preceded by positive economic trends. The survey has continued to trend toward new highs, with the latest survey posting a result of 93.6.



Equity Risk Premium QUARTERLY

US Real GDP

The six-month moving average trendline for US real GDP indicates a relatively flat economy with slower growth trending above 2.0%. During the first quarter of 2014 the economy contracted at an annual rate of 2.9%. Economists cite much of the contraction to the bad weather that much of the country endured, which affected production, construction, and shipments. Many economists correctly projected improvement in the second quarter of 2014, with an annualized real growth rate of 4.6%. The economic growth observed in Q2 continued in Q3 with an annualized real growth rate of 5.0%. This is considered a coincident indicator by economists and is neither leading nor lagging.



Conclusion

As the ERP is cyclical and can fluctuate within its historical range based on current and economic conditions, please consult with your American Appraisal valuation advisor when developing a weighted average cost of capital or, more specifically, the cost of equity for your business.

Visit www.american-appraisal.com for more information.

Sources

¹Shannon Pratt and Roger Grabowski, *Cost of Capital: Applications and Examples*, fourth edition (New York: John Wiley & Sons, 2010), pages 115, 137.

²Aswath Damodaran, "Risk Premiums: Looking backwards and forwards..." (presentation, October 2011).

³Aswath Damodaran, *Equity Risk Premiums (ERP): Determinants, Estimation and Implications - The 2013 Edition* (paper, updated March 2013).

This newsletter is provided for general informational purposes only and is based upon the information available as of the time it was written. This *ERP Quarterly* newsletter is also intended for US-based companies and may not be appropriate for companies with a significant share of revenues originating outside the United States.



cutting through complexity™

Equity Market Risk Premium – Research Summary

2 April 2015

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MRP research summary Introduction – welcome

If you are reading this, it is likely that you are in regular contact with KPMG on the topic of valuations. The goal of this document is to provide a summary to our business partners about our recent observations and conclusions regarding one of the key valuation parameters, the equity market risk premium.

Based on the analysis conducted, we recommend to use an **equity market risk premium of 6.25%** as per 31 March 2015.

Please note that this is a summary document only. Should you require more detailed information on the exact methodologies used to derive the equity market risk premium, please do not hesitate to contact us directly at any time.

With regards,

KPMG Valuations in the Netherlands



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MRP research summary

Introduction – valuation and discount rates

Introduction

The discount rate is an important input parameter to any valuation based on the discounted cash flow methodology ("DCF").

A general DCF model can be expressed by the following formula:

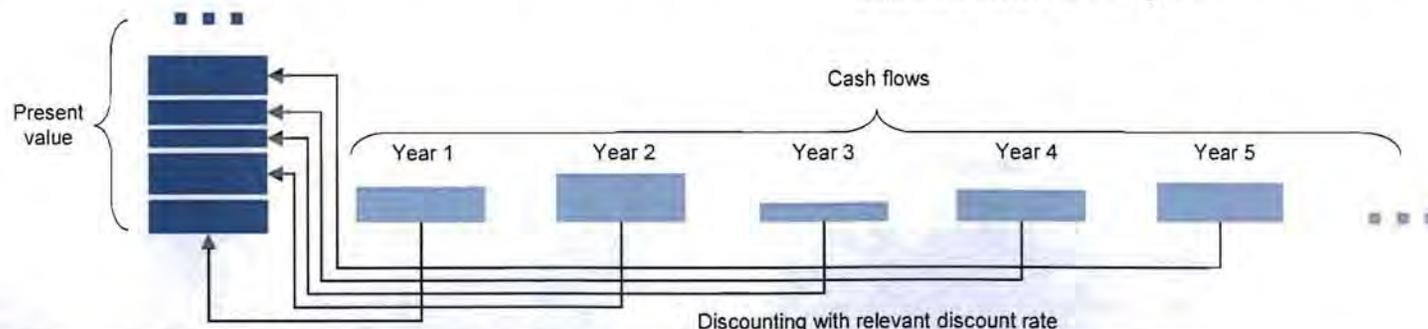
$$\text{Present value} = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \dots = \sum_{t=1}^{\infty} \frac{CF_t}{(1+k)^t}$$

Where

- Present value = value of the analysed asset (e.g. a company)
- CF_t = cash flow that the asset will generate in period t
- k = asset-specific discount rate

It is generally true that, all else equal, a higher discount rate will lead to a lower asset value and vice versa.

In this document, we will specifically focus on the derivation of the cost of equity for company valuations. This discount rate can either be directly applied to equity cash flow forecasts of a company or it can be used in conjunction with the cost of debt and a certain financing structure to derive the weighted average cost of capital ("WACC").



Discount rate derivation

While there are several ways to derive discount rates, the most commonly applied methodology is the 'build-up methodology' based on the Capital Asset Pricing Model ("CAPM"). This methodology builds up the discount rate by summation of several asset-related risk components in order to derive a return at which investors are willing to invest in this asset (e.g. a company).

The build-up of the cost of equity ("k") of a company can be expressed as:

$$k = r_{fr} + \beta \times MRP + \alpha$$

Where

- k = required return on equity
- r_{fr} = risk-free rate
- β = a company's systematic risk
- MRP = market or equity risk premium
- α = asset-specific risk factors

The function and derivation of the individual discount rate parameters are briefly discussed on the following slide.

MRP research summary

Introduction – discount rate parameters

Risk-free rate

The risk-free rate forms the basis for any discount rate estimation using the build-up methodology. As the name implies, this rate should not take into account any risk factors. Thus, it should only include two general components:

- The time value of money; and
- Inflation.

Since there are no investments that are truly risk-free, the risk-free rate is commonly approximated by reference to the yield on long-term debt instruments issued by presumably financially healthy governments (e.g. AAA-rated government bonds with a maturity of 30 years).

Beta

Beta measures how the returns of a certain company behave in relation to the returns of the relevant market benchmark.

- A beta greater than 1.0 means that the share price of a company is more volatile than the general market and therefore investors will require a higher return as compensation for this volatility; and
- A beta smaller than 1.0 means that the share price of a company is less volatile than the general market and therefore investors will require a lower return.

It is important to note that for the overall market, beta will by definition always be 1.0, since the sum of all returns of individual stocks equals the overall return of the market, and therefore, the two are perfectly correlated.

Alpha

Alpha is an asset-specific adjustment factor that may need to be applied for a number of different reasons. If a financial forecast does not account for certain operational risks, it may be appropriate to include a forecast risk premium. Other examples of alpha adjustments are size premia, illiquidity premia, etc.

Equity market risk premium

The equity market risk premium ("MRP") is the average return that investors require over the risk-free rate for accepting the higher variability in returns that are common for equity investments.

As previously discussed, the beta of the overall market is 1.0. Since alpha only relates to company-specific adjustments, it can be omitted if considering the overall market. As such, the general formula for the cost of equity is simplified if the overall market is considered:

$$k = rfr + \beta \times MRP + \alpha$$



$$k = rfr + 1.0 \times MRP + 0.0$$



$$k = rfr + MRP$$

As the final formula shows, the required return for the overall market is defined entirely by the risk-free rate and the equity market risk premium.

The remainder of this document will focus on movements in the equity market risk premium as a result of the financial crisis and the appropriate adjustments to derive valuation outcomes that are in line with other valuation-relevant market observations.

MRP research summary

Development of discount rates

Recent developments

As stated earlier, the equity market risk premium can be seen as the difference between the implied equity returns and the risk-free rate. In the upper graph the interest rate movements for a number of highly developed markets are displayed. It can be observed that risk-free rates have been decreasing since September 2013, particularly in the last three months.

The lower graph shows the movement in the implied equity returns for a number of major equity markets over time. As can be seen, required equity returns exhibited a similar decreasing trend since the start of 2014. However, in recent months the decrease in implied equity returns has been relatively lower than the decrease in risk-free rates.

Impact of government policy

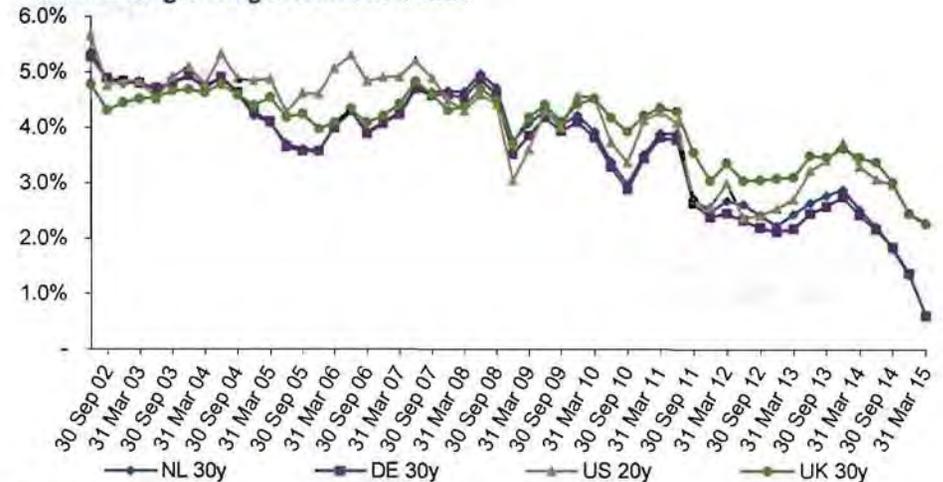
As can be observed in the upper graph, there has been a significant decrease in risk-free rates over the past twelve months. This is mainly associated with government policies of quantitative easing, which effectively increased the price of government bonds, thus reducing their yield. Another effect was an increase in the volatility of implied equity returns, which is often associated with higher risk.

Comparison to pre-crisis levels

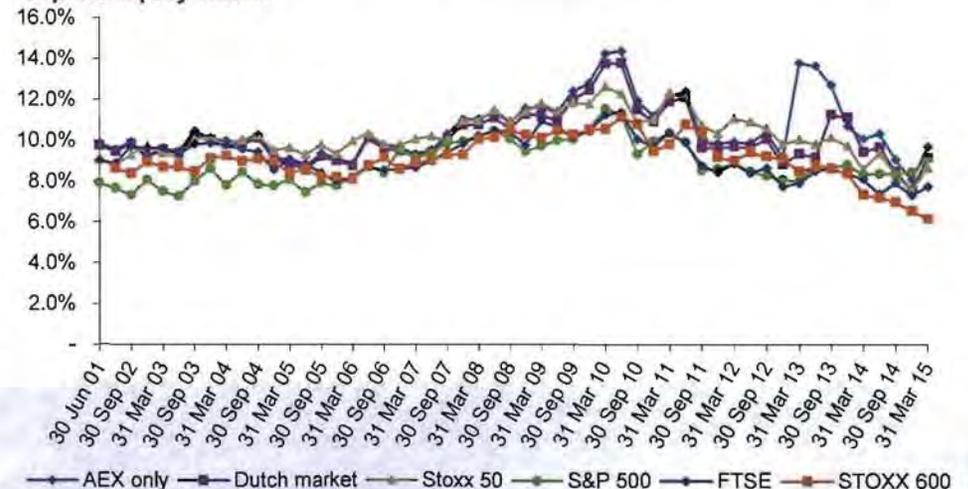
The spread between the implied equity returns and the risk-free rates was comparatively lower in the period before the crisis as compared to more recent times. A possible explanation is that before the crisis the perceived market risk was lower, as demonstrated by relatively more stable expected equity returns and higher government bond yields.

Other evidence for a higher equity market risk premium compared to pre-crisis levels can be found in yields on government bonds having been lower than expected inflation rates at certain points in time. This implies that the risk aversion of investors has increased ('flight to safety'), accepting zero or negative real returns in order to protect against significant capital loss.

Yield on long-term government bonds



Implied equity return



MRP research summary

Measurement of the equity market risk premium – methodologies

Quantification

In order to quantify the change in the equity market risk premium, a number of methodologies can be applied.

Historical observation methodology

This methodology assumes that the expected equity market risk premium can be derived by studying historical equity returns.

While this methodology is well established and theoretically sound, it does not allow for the incorporation of the most recent market developments:

- Depending on the methodology, annual short-term swings (e.g. 1-3 years) may be insignificant in the long-term (e.g. 30 years); and
- If the expected equity market risk premium increases because investors require a higher return, market data will show lower realised returns, and thus a lower historical equity market risk premium would be derived. For this reason, short-term observations based on historical data only are not conclusive.

So while historical research can be important to derive reasonable equity market risk premium ranges, historical observation is not necessarily a robust methodology to determine changes in the equity market risk premium as a result of the financial crisis started in 2008.

Implied equity market risk premium methodology

This methodology derives the equity market risk premium by assessing current income, growth expectations and current prices. The general DCF formula discussed earlier can then be used to solve for the implied discount rate that reconciles these parameters.

Deducting the risk-free rate from this implied discount rate will yield an implied equity market risk premium.

This methodology is also well established and theoretically sound, and it does allow for the incorporation of the most recent market developments.

The implied equity market risk premium methodology is to some extent sensitive to input assumptions and careful consideration must be given to:

- The selection of income proxies (e.g. dividends, buy-backs, cash flow);
- The basis of expected growth rates (e.g. macroeconomic considerations, analyst forecasts); and
- The trade-off between outcome stability and current relevance with regards to certain historical inputs (e.g. dividend yield normalisations, payout ratios).

Other methodologies

There are a number of other prominent methodologies which may lead to additional insights, the most common being:

- The multi-factor model;
- The yield spread build-up; and
- The survey approach.

While each of these methodologies offers some unique advantages, the application of these methodologies involves similar tradeoffs as the ones between the historical and the implied equity market risk premium methodology.

Methodology KPMG

We deem the implied equity market risk premium methodology the most appropriate methodology in order to derive changes in the equity market risk premium as a result of the financial crisis, because it incorporates recent market developments, expectations, and it can be logically deduced from observable market data.

On the following page we present our findings based on the application of the implied equity market risk premium methodology.

MRP research summary

Equity market risk premium: 6.25%

Findings

Based on the application of the implied equity risk premium methodology, we have derived market risk premia for several developed markets for the last 14 years.

Since markets fluctuate on a daily basis and there are some differences between market risk premia in different regions, it is difficult to mathematically derive one single point estimate for a universal equity market risk premium for all developed markets.

Similar to the determination of the input parameters, interpretation of the outcomes of the implied equity market risk premium methodology does require an element of professional judgement.

As mentioned previously, an increase in the market volatility could be observed over the past few months. This increase seems to be partially caused by government interventions, such as the quantitative easing efforts in EU.

Equity market risk premium KPMG NL

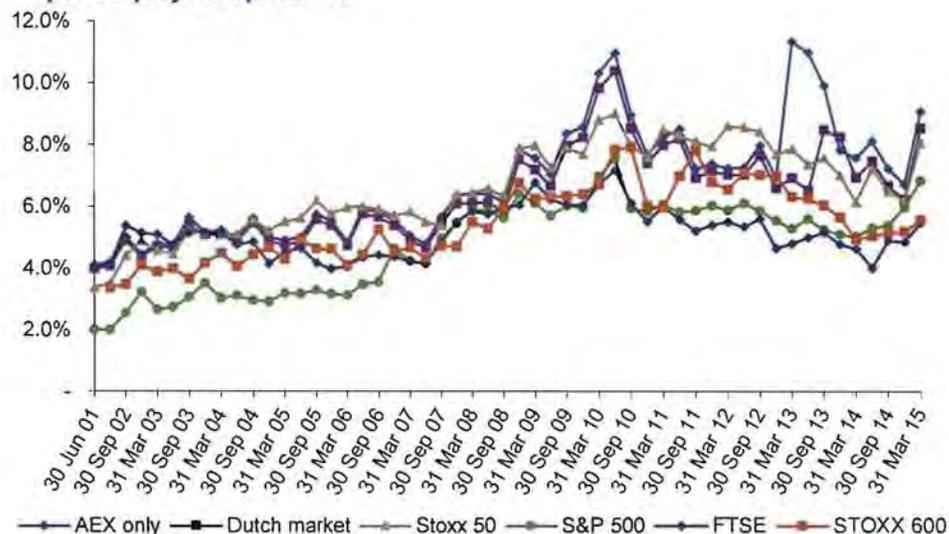
Based on the analyses set out in this report, KPMG Netherlands recommends to use an **equity market risk premium of 6.25%** as per 31 March 2015 (increased from 6.0%).

We note that our estimation is based on information available as at 31 March 2015. Developments in the financial markets after 31 March 2015 can have an impact on the perceived market risk which is not reflected in the MRP estimate as at 31 March 2015. For instance, continuing quantitative easing efforts in EU may lead to further changes in the perceived risk on the market.

As a general comment, we would like to point out that individual input parameters for a discount rate calculation should never be assessed in isolation.

Furthermore, the expected long-term inflation rate in the Eurozone has been decreasing over the past years and this should also be taken into account in the value analysis.

Implied equity risk premium



Cross check

In order to assess the reasonableness of the outcomes of our implied equity market risk premium study, we have considered various other methodologies as previously described. To the extent that these methodologies are valid to derive insights about the current level of the equity market risk premium, these methodologies have confirmed our findings.

The valuation outcomes based on the DCF methodology and a equity market risk premium of 6.25% are much more in line with outcomes of alternative valuation indicators, such as market and transaction multiples as at 31 March 2015.

MRP research summary Appendix

KPMG NL - Historic MRP											
	31 Mar 15	31 Dec 14	30 Sep 14	30 Jun 14	31 Mar 14	31 Dec 13	30 Sep 13	30 Jun 13	31 Mar 13	31 Dec 12	30 Sep 12
KPMG NL MRP estimate	6.25%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.50%	6.50%	6.50%	6.50%



cutting through complexity™

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Duke CFO magazine Global Business Outlook survey - U.S. - Second Quarter, 2015

9. On May 18, 2015 the annual yield on 10-yr treasury bonds was 2.3%. 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:	0.62	8.03	-0.13 - 1.36	2	-50	60	443
Over the next 10 years, I expect the average annual S&P 500 return will be: Expected return:	6.81	5.96	6.26 - 7.36	6	-25	75	453
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:	11.17	9.80	10.25 - 12.08	10	0	100	440
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:	-2.22	10.50	-3.20 - -1.24	0	-45	75	443
Over the next year, I expect the average annual S&P 500 return will be: Expected return:	5.36	4.38	4.95 - 5.76	5	-15	30	453
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:	10.54	7.09	9.88 - 11.20	10	0	75	441

Q and A: Estimating Long-Term Market Returns

By [Michael E. Lind](#) - April 24, 2015

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?

Timing market returns from year to year is difficult, but over a long period of time, research shows that risky asset classes such as U.S. equities can offer a positive risk premium for a patient investor. 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 10 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 tactical asset allocation because it's difficult to accurately estimate long-term returns. The problem is that it's even more 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 2015
Large-cap stocks S&P 500	6.3% compounded annually
Mid-/small-cap stocks Russell 2000	7.1% compounded annually
International stocks MSCI EAFE	6.1% compounded annually
Bonds Barclays U.S. Aggregate	3.3% compounded annually
Cash investments Citigroup 3 Month Treasury	1.8% compounded annually

These estimates are significantly below the historical annual compound returns on large-cap stocks and bonds of 10.5% and 7.9%, respectively, during the 1970-2014 time period. Of course, these are estimates of average returns—in any given 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 1.8%, just shy of two percentage points below the actual inflation rate during the 1970-2014 time period of 4.2%.
- 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 U.S. Treasury bond, which was 2.6% as of December 31, 2014. Keep in mind that no investment is entirely free of risk, but because U.S. Treasuries are generally considered to be the least risky asset class (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 forgo this approach in forming our long-term estimates.

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



Source: Charles Schwab Investment Advisory, Inc. as of 12/31/14.

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

Level 1 starts with the return on large-cap stocks, which was about 10% compounded monthly over the 1926-2014 time period.

Level 2 breaks down the return on large-cap stocks into three primary components: inflation (A), returns derived from capital appreciation adjusted for 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 $A + D + E + C = \text{historical average return}$.

In researching the sources of historical returns for large capitalization stocks as represented by the S&P 500 total return index, we don't expect the growth in the P/E ratio from 1926 to 2014—amounting to a roughly 0.9% 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 1926-2014 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 0.9% 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

Or $A + E + C =$ historical average return

$$3\% + 2.0\% + 4.0\% \approx 9.0\%^2$$

The adjusted historical return of 9.0% 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:

$$\text{ERP} \approx 9.0\% - 5.2\% \approx 3.8\% \text{ (compounded annually)}$$

Therefore, our current risk-free rate of 2.5% + our asset-class premium (ERP) of 3.8% = 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 3.8% as the starting point, and then make adjustments based on the unique risk level for the mid-/small-cap asset class relative to large-cap stocks.

To do this, we estimate the premium of mid/small-cap stocks relative to large-cap stocks from 1926 to 2014, which equals 0.7%. To arrive at our final estimate, we simply add the premium of 0.8% to our large-cap estimate of 3.8%.

This results in a mid/small-cap premium estimate of 4.6%. Add that to our current risk-free rate of 2.5% and we get a long-term return estimate of **7.1%**.

International stocks: Data limitations prevent us from analyzing the sources of historical returns for international stocks. As such, we use the domestic stock market asset-class premium as an anchor in developing the international equity premium.

This approach estimates the international risk premium as measured by the return demanded by investors holding an international stock portfolio. The domestic ERP of 3.8% is multiplied by the historical sensitivity of international market returns (excluding U.S. stocks) to U.S. large-cap stocks. The sensitivity or beta of 0.94 is then multiplied by the domestic ERP of 3.8%, resulting in an international asset premium of 3.6%.

Adding the international asset premium of 3.6% to our risk-free rate of 2.5%, we get a long-term return estimate of **6.1%** for international equities.

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 stable since 1990.

Bonds and cash investments: In 2014, the methodology for estimating the bond asset class premium was changed. With our previous approach, the 20 year Treasury was the baseline estimate to which was added a default premium to reflect the additional amount of compensation an investor requires for holding credit risk. It was measured as historical difference in monthly total returns between the Barclays U.S. Aggregate Bond Index and a government bond maturity-matched to the Barclays U.S. Aggregate Bond Index.

Using historical data to form a forward-looking estimate for bonds is currently problematic, however. With U.S. Treasuries at historically low yields, potentially a secular bottom, significant over-estimation of returns may occur if interest rates rise. Since 1982, interest rates have been falling, allowing bond investors to achieve additional returns in the form of capital gains. Counting on a similar, long, historical trend of falling interest rates may prove to be disappointing for investors.

A more reasonable view of forward returns an investor will receive for holding bonds, even if rates do rise at some time in the future, is captured with yield-to-maturity. Yield-to-maturity is flexible enough to capture the ups and downs of interest rate movements, while avoiding the problem of depending on historical data.

Research shows that yield-to-maturity also provides a better forward-looking indication of total compensation an investor will receive. In the chart below, the yield-to-maturity of the Barclays U.S. Aggregate is plotted from 1976 to 2014 against the next 10 year total returns of the Barclays U.S. Aggregate Index. The ten year forward returns are calculated by annualizing returns of the Barclays U.S. Aggregate Index over the next 10 years. As the chart shows, when the yield-to-maturity today is plotted next to the forward 10 year returns, they tightly track each other.

Barclays U.S. Aggregate Bond Index



Source: Charles Schwab Investment Advisory, Inc.
Data from Barclays Live updated to 12/31/2014.

The foundation of our new method for estimating returns is the yield-to-maturity on the Barclays U.S. Aggregate Bond Index, which was 2.3% as of December 31, 2014.

We do not stop here, however. Our final bond return estimate contains an additional adjustment to reflect the fact that, as of December 31, 2014, the average maturity of the Barclays U.S. Aggregate Index was 7.7 years versus our long-term investment horizon of 20 years.

Investors should receive additional compensation (a horizon premium) for the purchase of longer maturity bonds, so using the yield-to-maturity of the bond index alone under-estimates potential returns. For instance, rolling over three month U.S. Treasury Bills for 20 years will produce less return than buying a 20-year U.S. Treasury bond.

To calculate the horizon premium, we simply subtract the yield-to-maturity of a zero coupon security, matching the modified adjusted duration of the U.S. Barclays Aggregate Bond Index, from the yield-to-maturity of a 20-year zero coupon U.S. Treasury. Modified adjusted duration measures the price sensitivity of bonds to changes in market interest rates, so it provides an excellent way to approximate the additional risk investor assume when purchasing longer maturity bonds. As of December 31, 2014, the modified adjusted duration of the Barclays U.S. Aggregate Bond Index was 5.0.⁴ The yield-to-maturity of the 20 year STRIP was 2.7% and the yield-to-maturity of the 5 year STRIP was 1.7%. To calculate the horizon premium, we take the yield-to-maturity of the 20 year STRIP and subtract the yield-to-maturity of the 5 year STRIP which equals 1.0%. Adding the 15 year horizon premium of 1.0% to the bond index yield-to-maturity of 2.3% produces a final return estimate of 3.3%.

To approximate a cash estimate, we take the greater of the estimated 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, -2.0%⁵) and current risk-free rate (2.5%) is 0.50%, whereas the estimated long-term inflation rate is 1.80%. Therefore, our long-term return estimate for cash investments is 1.80%.

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 U.S. 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 U.S. 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 December 31st, 2014, this approach resulted in a long-term inflation estimate of roughly 1.8% per year for the next 20 years.⁶

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	1926	n/a	n/a
Mid-/small-cap stocks	Russell 2000 Index	1979	CRSP 6-8 Deciles	1926-1978
International stocks	MSCI EAFE (Net of fees)	1970	n/a	n/a
Bonds	Barclays U.S. Aggregate Bond Index	1976	n/a	n/a
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

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 \approx means approximately equals. The decomposition does not exactly equal the total return due to an approximation used to simplify the illustration. Annualized inflation is estimated using the Ibbotson SBBI monthly data inflation index. Annualized dividend return is estimated using the Ibbotson SBBI income return index. Real earnings growth is estimated using Standard & Poor's reported earnings per share for the S&P 500 total return index and then subtracting the annualized inflation as calculated by the Ibbotson SBBI monthly inflation index.

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. Modified adjusted duration is a measurement of how long, in years, it takes for the price of bond to be repaid. STRIP is an acronym for 'separate trading of registered interest and principal securities'. Treasury STRIPS are fixed-income securities sold at a significant discount to face value and pay no interest, maturing at par value.

5. The horizon premium for cash is calculated by subtracting the annualized income returns of 3 month U.S. Treasury bill income from the annualized income returns of 20 year U.S. Treasury bonds from 1970 to 2014.

6. 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.

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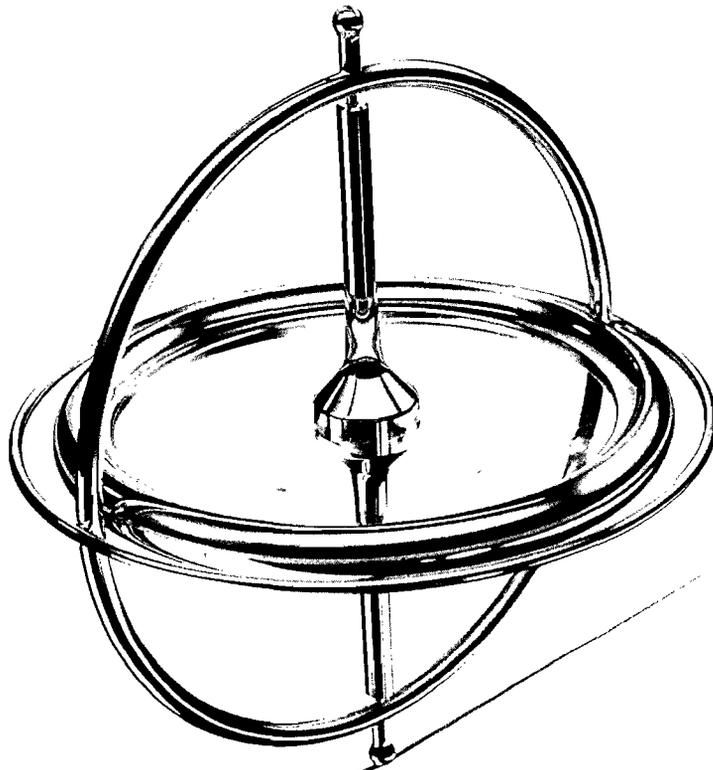
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Long-term capital market return assumptions

2015 Edition | US



J.P. MORGAN ASSET MANAGEMENT LONG-TERM CAPITAL MARKET RETURN

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Long-Term Capital Market Returns Assumptions 2015

Quick reference guide to using the report

Navigating the white paper

SECTION I: THEMATIC ARTICLES

- Analyse long-term market trends across asset classes and the global economy
- Understand the research and other aspects of the concepts underlying our assumptions
- Discuss strategic asset allocation and portfolio construction issues facing long-term investors

SECTION II: RATIONALE ARTICLES

- Understand how we arrive at our assumptions for macroeconomic fundamentals, fixed income, equity, alternatives, foreign exchange, volatilities and correlations.
- Review the key findings of our research and view selected projections

SECTION III: LONG-TERM CAPITAL MARKET RETURN ASSUMPTIONS

- Explore our return and volatility projections for approximately 50 asset classes in USD/EUR/GBP
- Find the cross-asset correlation assumptions for our entire data set

How to use the numbers

OUR ASSUMPTIONS CAN BE USED BY INVESTORS IN SEVERAL WAYS:

- Develop or review a strategic asset allocation
- Understand the available risk and return trade-offs across asset classes and within asset classes across regions
- Make new, and review existing, relative value allocation decisions
- Use the correlation and volatility data to analyse the risk characteristics of a strategic asset allocation

EXAMPLES:

- Investors may want to explore what opportunities exist to diversify their fixed income allocation ahead of a change in central bank monetary policy
- After a period of strong returns in U.S. equities investors may also want to find out what opportunities may exist in other markets
- The assumptions can be used as a key input into an asset allocation model or simulation, such as the MAPS model that is used extensively by the J.P. Morgan Private Bank

THE LONG-TERM CAPITAL MARKET RETURN ASSUMPTIONS WHITE PAPER is a comprehensive and detailed report showcasing J.P. Morgan Asset Management's 10-to 15-year asset class forecasts, as well as the thinking behind the numbers and the key investment themes for institutional investors.

The assumptions are not designed to inform short-term tactical allocation decisions. Our assumptions process is carefully calibrated and constructed to aid investors with strategic asset allocation or policy level decisions over a 10- to 15-year investment horizon.

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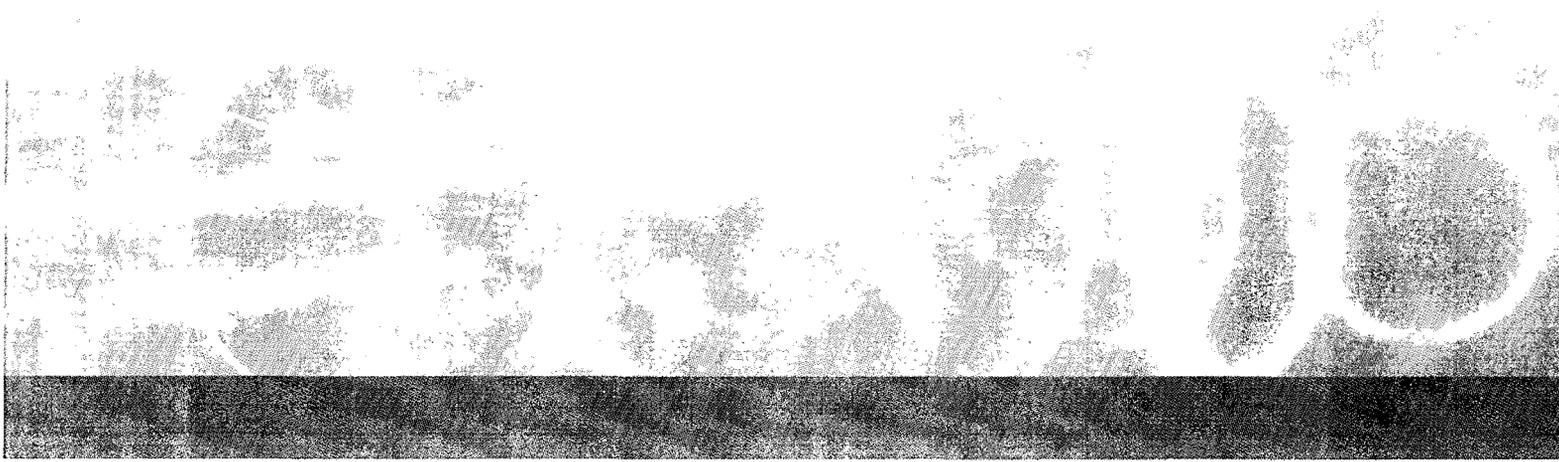
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2015 Long-Term Capital Market Forecasts

White Paper | February 2015

By
The Multi-Asset Strategies and Solutions Team

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Introduction

Voya Investment Management's long-term capital market forecasts provide our estimates of expected returns and volatilities for and correlations among major U.S. and global asset classes 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 six years, our forecast models an explicit process of convergence to a steady-state equilibrium for global economies and financial markets through 2024. 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 responses 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 five years, a number of 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, long-term interest rates have declined substantially, and government debt-to-GDP ratios remain elevated in many countries. Figure 1 shows the 2024 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

	2024 Forecast (%)	Steady-State Value (%)
GDP Growth	1.9	2.5
Inflation (CPI-U)	2.1	2.0
Fed Funds Rate	3.6	3.0
Ten-Year Treasury Yield	4.5	4.2
S&P 500 Earnings Growth	3.3	4.5

Source: Voya Investment Management, Macroeconomic Advisers

In this modeling effort, we have again worked with Macroeconomic Advisers for the United States and relied upon input from Oxford Economics for non-U.S. economies. We believe that cyclical fluctuations are an inevitable aspect of market economies and therefore recognize that the steady-state equilibrium incorporated as the terminal point of our forecast is unlikely ever to be fully attained under real world conditions. Nonetheless, we believe that this 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.

As expected we find that cyclically sensitive assets like equities and the riskiest credit instruments are likely to provide risk-adjusted returns superior to those of most 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 their Sharpe ratios, is more balanced for 2015 and beyond than it was a year ago. This results from the continued strong performance of U.S. equity categories last year and from the decrease in GDP growth expectations and associated terminal sovereign bond yields. More modest growth expectations overall also contribute to the lowest Sharpe ratios since the onset of the post-crisis recovery. On the whole, the world economy and markets have already moved significantly toward more normal conditions, and they are one year closer to reaching steady-state equilibria.

Figure 2. Sharpe Ratios for Major Asset Classes

Index	2015	2014	Change
S&P 500	0.20	0.26	-0.06
MSCI EAFE	0.10	0.15	-0.05
MSCI Emerging Markets	0.26	0.29	-0.03
Ten-Year U.S. Treasury Bond	-0.11	0.03	-0.14
Barclays U.S. Aggregate	-0.04	0.06	-0.1
Barclays Global Aggregate	-0.18	-0.13	-0.05
Barclays U.S. High Yield	0.22	0.26	-0.04
S&P/LSTA Leveraged Loan	0.34	0.35	-0.01
Bloomberg Commodity	0.08	0.03	0.05

Source: Voya Investment Management, Macroeconomic Advisers

Risk-adjusted returns for other developed market assets are in most cases less than those for comparable U.S. assets; our return forecasts can be found in Figure 6 on page 8. For example, we forecast an arithmetic mean return of 6.3% for the S&P 500 Index but 5.0% for the MSCI EAFE Index, and we expect an arithmetic mean return of 2.7% for the Barclays U.S. Aggregate Bond Index but just 0.5% 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 trend economic growth should translate into slower earnings growth. Other developed country bond returns are expected to be lower than U.S. fixed income returns as the process of interest rate normalization should prove slower in Europe and Japan than in the U.S. The quantitative easing (QE) programs promised by European and Japanese central banks should be more significant, and government bond yields in both locations are starting the period from lower levels than U.S. Treasury yields.

By contrast returns for emerging market equities and debt 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 successful on balance, 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

We continue to believe that return forecasts resulting from the combination of a base case forecast with an alternative scenario capture the most important risks facing the world economy and markets over the ten-year interval. As is our practice, the base case forecast assumes gradual convergence to steady-state values for variables such as GDP and its components, inflation and interest rates. In steady-state equilibrium, real GDP grows broadly in line with its potential growth rate, driven by productivity and labor-force growth, inflation consistent with central bank targets and real long-term interest rates consistent with GDP growth. As Figure 1 illustrates, we expect that convergence to equilibrium will be fully complete by 2020, assuming that Federal Reserve policy by then will have returned to historical relationships fully compatible with a long-run economic equilibrium. That is, by 2020 short- and long-term U.S. interest rates should have returned to steady-state values, setting the stage for real GDP growth trending around 2.1% per annum.

The alternative scenario posits that the U.S. economy in fact has entered a lower trend growth phase. We assume that this is largely a function of an aging labor force rather than Robert Gordon's reduced innovation¹ or Lawrence Summers' secular stagnation² hypotheses. Slower growth in the labor force as a result of an aging workforce and less immigration is what drives our alternative scenario. We assume the trend to a lower labor-force participation rate continues longer than in the base case and when combined with a reduction in immigration shaves approximately 0.25% per year from trend GDP. Further, we posit that there can be a reduction of productivity growth brought about by lower total factor productivity³ and lessened capital deepening⁴ in the U.S. economy (the reduced capital deepening assumption falls out of our assumption of slower labor-force growth). Importantly, the assumption of an aging U.S. labor force is supported by recent experience: The prime-working-age cohort of 24–55 has shrunk from 43.4% of the labor force in 2000 to 41.2% in 2010, and the Census Bureau projects a further drop to 38.4% by 2020⁵. The 55+ age cohort is extremely productive, but their productivity growth is not as high as that of younger workers. This explains how innovation can continue, even as the overall productivity growth rate slows. We project the combination of lower total factor productivity and capital deepening to further reduce trend growth by about 0.4%.

¹ Gordon, R. (2012), "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds", NBER Working Paper No. 18315.

² Summers, L. (2014) "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", *Business Economics*, vol. 49, no. 2.

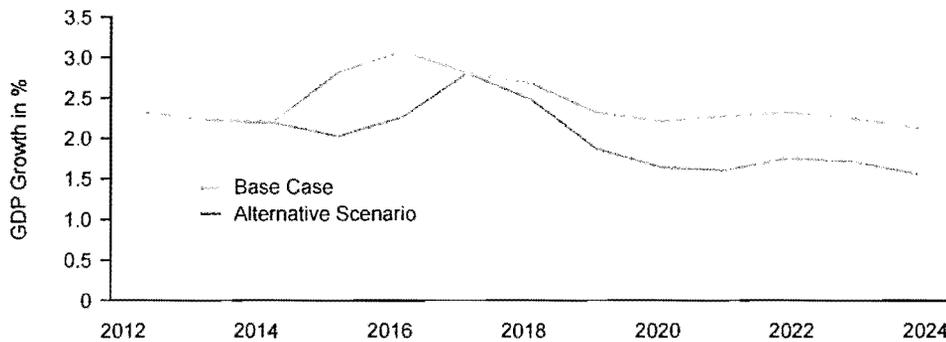
³ Total factor productivity refers to output effects not accounted for by increases in labor and capital, such as that contributed by technological advancements or improvements in human capital.

⁴ Capital deepening reflects an expansion of an economy's ratio of capital to labor.

⁵ Lindsey, B. (2013), "Why Growth Is Getting Harder", Cato Policy Analysis No. 737, Cato Institute.

As Figure 3 indicates, we expect real GDP growth to be reduced by about 0.6% in the alternative scenario to 1.6% per annum in equilibrium. The slower growth assumed in the alternative scenario leads to lower returns in risky assets and lower sovereign yields, in part because the fed funds rate rises to a level 0.5% lower than in the base case. Nominal longer term yields are lower by equal measure, and inflation is not materially different.

Figure 3. U.S. Growth: Base Case and Alternative Scenario



Source: Voya Investment Management, Macroeconomic Advisers

We assign a probability of 70% to the base case and 30% to the alternative scenario. The lower probability for the alternative reflects our confidence that trend growth will remain above 2%. However, we believe that there is a possibility that recent trends toward an aging labor force, reduced labor-force participation and more restrictive immigration could continue and result in a sustained downward step in the U.S. growth rate.

Methodology

We derive return forecasts for asset classes from the blend of base case and alternative economic scenarios. For U.S. bonds, we use the blended scenario interest rate expectations to calculate expected returns for bonds of various 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 spreads, expected default and recovery experience.

For U.S. equities, we estimate earnings and dividends for the S&P 500 Index using the above macroeconomic assumptions. 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, are derived from the S&P 500 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.

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 multivariate outliers in a return distribution, which takes into account not only the deviation of a particular asset class's return from the average, but also the asset class's own volatility and correlation with other asset classes.

We give an example in Figure 4. 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 because, for example, the observed correlation between the two assets is of the opposite sign of what it normally is.⁶ 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 illustrated in Figure 5. Our Markov model performs better in classifying regimes than arbitrary thresholds because such thresholds fail to capture the persistence of regimes and shifts in volatility.

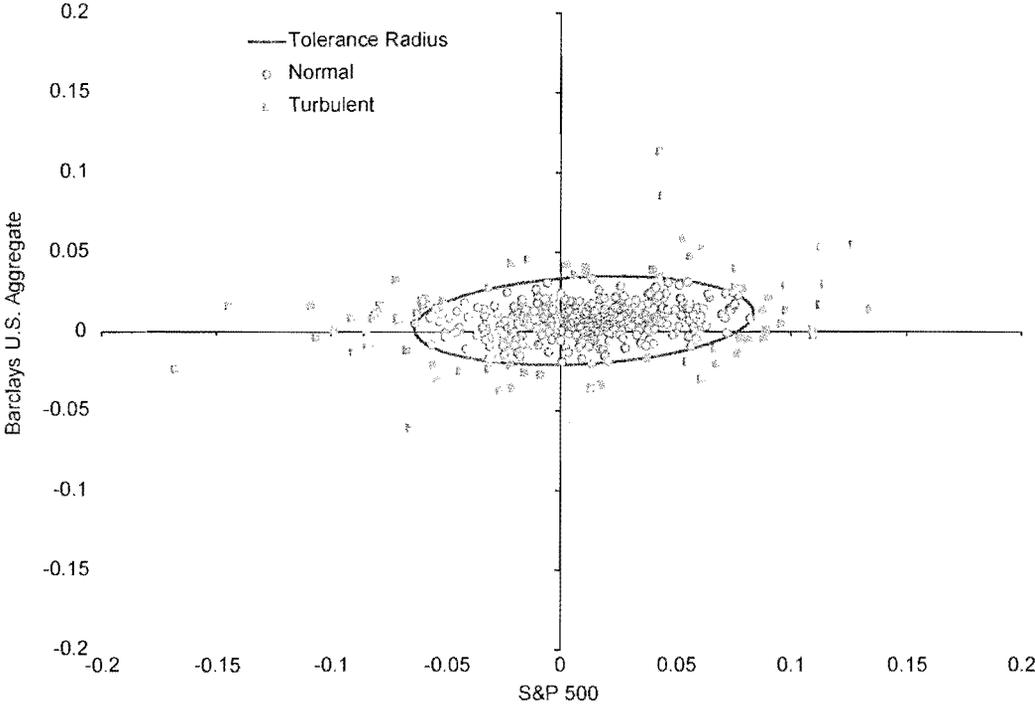
We subsequently estimate a covariance matrix based on periods of normal market performance, and finally we use a procedure to blend these two covariance matrices using weights that allow us to express both views about the likelihood of each regime and differential risk attitudes toward each. The weights we use are 60% "normal" 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 30–40%. From this blended covariance matrix, we then extract the implied correlation matrix and volatilities for each asset class embedded in the covariance matrix.

⁶ Our measure of turbulence is based on the Mahalanobis distance measure defined as follows:

$$d_t = \sqrt{(y_t - \mu)' \Sigma^{-1} (y_t - \mu)}$$

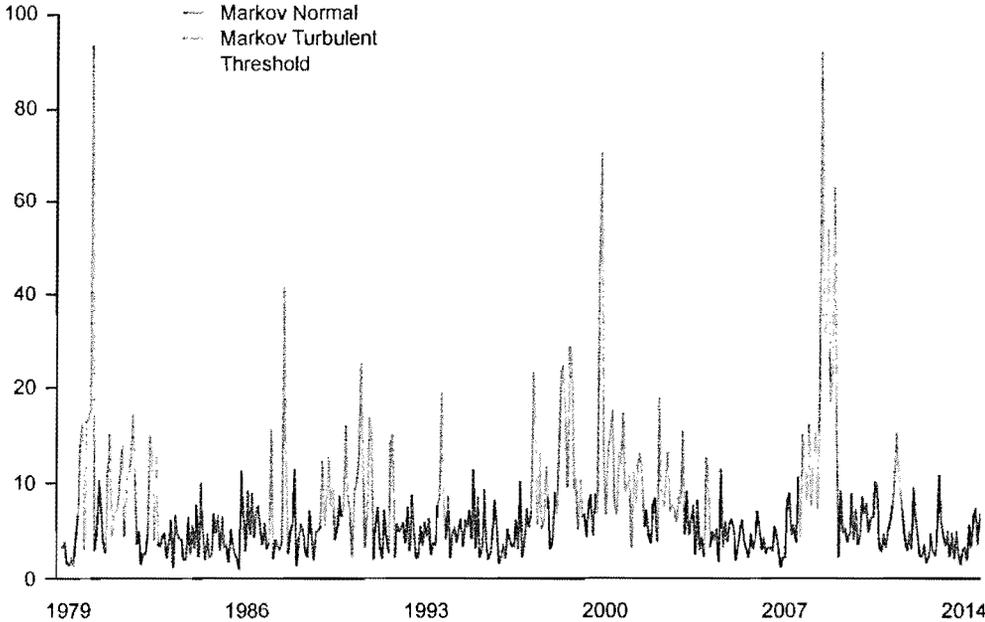
where y is the return vector at time t , μ is the mean vector, and Σ is the covariance matrix.

Figure 4. Normal and Turbulent Regimes in Two-Asset Space



Source: Voya Investment Management

Figure 5. Markov 12-Asset Normal and Turbulent Regimes Over Time



Source: Voya Investment Management

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. Voya Investment Management Ten-Year Returns Forecast

	Expected Returns		Volatility (%)	Skewness	Kurtosis	Sharpe Ratio
	Geometric Mean Return (%)	Arithmetic Mean Return (%)				
Russell Top 200	4.7	6.0	16.5	-0.48	1.07	0.18
S&P 500	5.0	6.3	16.6	-0.51	1.17	0.20
S&P 500 Growth	5.0	6.4	17.3	-0.44	0.71	0.20
S&P 500 Value	4.8	6.2	17.1	-0.54	1.38	0.19
Russell 1000	5.3	6.6	16.8	-0.54	1.23	0.21
Russell 1000 Growth	4.1	5.8	19.1	-0.46	0.77	0.15
Russell 1000 Value	6.2	7.3	16.1	-0.57	1.61	0.26
Russell 1000 Defensive	5.9	6.6	13.0	-0.53	1.30	0.28
Russell 3000	5.2	6.6	17.1	-0.58	1.34	0.21
Russell Midcap	6.3	7.9	18.6	-0.56	1.29	0.26
Russell Midcap Growth	5.0	7.5	22.3	-0.41	0.80	0.20
Russell Midcap Value	7.1	8.4	17.5	-0.51	1.71	0.30
S&P 400	6.8	8.6	19.8	-0.53	1.20	0.28
Russell 2500	5.7	7.8	20.8	-0.61	1.37	0.23
S&P 600	4.3	6.9	22.7	-0.60	1.43	0.17
Russell 2000	4.0	6.7	23.2	-0.59	1.43	0.16
Russell 2000 Growth	1.4	5.2	27.0	-0.41	0.90	0.08
Russell 2000 Value	6.2	8.3	20.9	-0.77	2.26	0.24
MSCI EAFE	3.1	5.0	19.6	-0.30	0.25	0.10
MSCI EAFE Growth	1.7	3.7	20.1	-0.20	0.36	0.04
MSCI EAFE Value	4.3	6.2	19.8	-0.31	0.26	0.16
MSCI EAFE Small Cap	3.3	5.4	20.7	-0.37	0.66	0.12
MSCI World ex U.S.	3.1	5.0	19.6	-0.30	0.25	0.10
MSCI World ex U.S. Small Cap	3.3	5.4	20.7	-0.37	0.66	0.12
MSCI World	4.6	5.9	16.4	-0.61	1.08	0.18
MSCI EM	6.4	10.1	27.5	-0.53	0.85	0.26
MSCI EM Small Cap	5.3	9.7	29.5	-0.37	0.54	0.22
MSCI ACWI ex U.S.	4.1	6.1	20.1	-0.46	0.44	0.15
MSCI ACWI ex U.S. IMI	4.1	6.1	20.2	-0.47	0.51	0.16
MSCI ACWI ex U.S. Small Cap	4.1	6.4	21.5	-0.48	0.85	0.16
MSCI ACWI	5.0	6.4	17.1	-0.64	1.15	0.19
MSCI ACWI IMI	4.9	6.4	17.3	-0.67	1.27	0.19
MSCI ACWI Small Cap	4.5	6.6	20.4	-0.68	1.50	0.17

Chart continues on the next page.

	Expected Returns		Volatility (%)	Skewness	Kurtosis	Sharpe Ratio
	Geometric Mean Return (%)	Arithmetic Mean Return (%)				
Bloomberg Commodity	2.9	4.2	15.7	-0.43	1.70	0.08
CBOE Buy-write	5.0	5.7	12.5	-0.94	3.15	0.21
FTSE EPRA/NAREIT Developed ex U.S.	3.5	6.1	23.0	-0.19	0.70	0.14
FTSE EPRA/NAREIT Developed	4.6	7.0	22.0	-0.34	1.55	0.18
MSCI U.S. REIT	5.3	7.8	22.7	-0.38	3.32	0.21
NCREIF ODCE Private Real Estate	3.8	6.2	20.8	-2.30	18.75	0.14
U.S. Inflation (CPI)	2.0	2.0	2.4	-0.51	2.45	-0.38
Barclays U.S. Aggregate	2.5	2.7	7.1	0.55	4.77	-0.04
Barclays U.S. Universal	2.9	3.1	7.0	0.52	4.61	0.02
Barclays U.S. Government Long	-0.1	0.7	12.4	0.23	0.84	-0.18
Barclays U.S. Gov/MBS	2.2	2.4	6.5	0.63	4.37	-0.08
Barclays U.S. MBS	2.4	2.7	8.1	1.06	10.23	-0.03
Barclays U.S. Municipal	1.9	2.2	7.5	-0.20	5.19	-0.10
Barclays U.S. Aggregate Corporate	3.0	3.4	9.4	0.25	3.69	0.04
Barclays U.S. Corporate Long	2.6	3.2	12.0	0.13	1.95	0.02
Barclays U.S. Liability Benchmark	1.9	2.6	11.7	0.14	2.02	-0.03
Barclays U.S. High Yield	5.1	5.7	12.3	-0.28	3.87	0.22
Credit Suisse Leveraged Loan	6.3	6.5	8.7	-0.85	16.35	0.34
S&P/LSTA Leveraged Loan	6.2	6.5	9.2	-0.42	14.16	0.34
Barclays Global Aggregate ex U.S.	-0.1	0.5	10.7	0.18	0.69	-0.23
Barclays Global Aggregate	1.0	1.3	8.7	0.35	1.90	-0.18
JPMorgan EMBI+	5.3	6.1	13.2	-1.76	11.84	0.22
JPMorgan CEMBI Diversified	5.1	5.9	13.1	-0.19	5.73	0.22
JPMorgan GBI-EM Global Diversified	6.8	7.1	10.8	-0.50	1.14	0.37
Barclays U.S. TIPS	2.3	2.7	9.4	0.31	3.65	-0.02
Barclays 1-3 Yr Aggregate	2.7	2.7	3.9	1.43	12.38	-0.05
Barclays 1-3 Yr Gov/Credit	2.6	2.7	4.1	1.43	12.39	-0.07
Barclays Long Gov/Credit	1.3	2.0	11.7	0.18	1.25	-0.08
U.S. Treasury Bill 3-Month	2.9	2.9	1.1	0.60	0.07	-
U.S. Treasury 2-Year	2.4	2.4	4.2	1.38	11.02	-0.12
U.S. Treasury 5-Year	2.1	2.4	7.1	0.49	3.23	-0.08
U.S. Treasury 10-Year	1.4	1.9	9.6	0.20	0.52	-0.11
U.S. Treasury 30-Year	-0.9	0.2	15.0	0.18	1.43	-0.18
Barclays 2-Year Swap	2.7	2.7	4.4	1.35	10.81	-0.05
Barclays 5-Year Swap	2.3	2.5	7.3	0.45	3.27	-0.05
Barclays 10-Year Swap	1.4	1.9	10.1	0.20	1.08	-0.10
Barclays 30-Year Swap	-1.9	-0.4	17.6	0.53	2.87	-0.19

Source: Voya Investment Management

Figure 7. Correlation Matrix

	S&P 400	S&P 500	S&P 600	MSCI EAFE	MSCI Emerging Markets	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	JPMorgan GBI-EM Global Diversified	U.S. Treasury Bill 3-Month	Bloomberg Commodity	FTSE EPRA NAREIT Developed
S&P 500		0.92	0.84	0.66	0.71	0.21	0.13	0.09	0.23	0.24	0.31	0.31	0.62	0.45	0.23	0.62	0.04	0.26	0.61
S&P 400	0.92		0.94	0.65	0.72	0.21	0.13	0.08	0.24	0.24	0.31	0.31	0.64	0.49	0.24	0.61	0.03	0.32	0.64
S&P 600	0.84	0.94		0.61	0.70	0.15	0.08	0.03	0.17	0.20	0.25	0.26	0.65	0.46	0.18	0.58	0.01	0.30	0.61
MSCI EAFE	0.66	0.65	0.61		0.73	0.18	0.15	0.05	0.20	0.17	0.27	0.28	0.50	0.35	0.34	0.90	0.04	0.32	0.84
MSCI Emerging Markets	0.71	0.72	0.70	0.73		0.14	0.11	0.00	0.20	0.16	0.26	0.27	0.58	0.38	0.22	0.74	0.02	0.37	0.71
Barclays U.S. Aggregate	0.21	0.21	0.15	0.18	0.14		0.91	0.89	0.93	0.76	0.95	0.89	0.30	0.19	0.86	0.21	0.14	-0.02	0.21
Barclays 1-3 Yr Gov/Credit	0.13	0.13	0.08	0.15	0.11	0.91		0.71	0.84	0.69	0.83	0.71	0.19	0.13	0.80	0.15	0.32	-0.02	0.16
Barclays U.S. Government Long	0.09	0.08	0.03	0.05	0.00	0.89	0.71		0.82	0.63	0.81	0.83	0.15	0.02	0.74	0.11	0.04	-0.09	0.11
Barclays U.S. TIPS	0.23	0.24	0.17	0.20	0.20	0.93	0.84	0.82		0.72	0.89	0.83	0.33	0.26	0.83	0.26	0.13	0.10	0.26
Barclays U.S. Municipal	0.24	0.24	0.20	0.17	0.16	0.76	0.69	0.63	0.72		0.75	0.68	0.31	0.29	0.64	0.19	0.03	-0.01	0.23
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		0.97	0.47	0.36	0.82	0.30	0.09	0.07	0.30
Barclays U.S. Corporate Long	0.31	0.31	0.26	0.28	0.27	0.89	0.71	0.83	0.83	0.68	0.97		0.51	0.35	0.77	0.33	0.04	0.06	0.32
Barclays U.S. High Yield	0.62	0.64	0.65	0.50	0.58	0.30	0.19	0.15	0.33	0.31	0.47	0.51		0.76	0.28	0.53	0.00	0.25	0.52
S&P/LSTA Leveraged Loan	0.45	0.49	0.46	0.35	0.38	0.19	0.13	0.02	0.26	0.29	0.36	0.35	0.76		0.16	0.30	0.00	0.22	0.38
Barclays Global Aggregate	0.23	0.24	0.18	0.34	0.22	0.86	0.80	0.74	0.83	0.64	0.82	0.77	0.28	0.16		0.38	0.13	0.12	0.35
JPMorgan GBI-EM Global Diversified	0.62	0.61	0.58	0.90	0.74	0.21	0.15	0.11	0.26	0.19	0.30	0.33	0.53	0.30	0.38		0.02	0.35	0.82
U.S. Treasury Bill 3-Month	0.04	0.03	0.01	0.04	0.02	0.14	0.32	0.04	0.13	0.03	0.09	0.04	0.00	0.00	0.13	0.02		-0.01	0.01
Bloomberg Commodity	0.26	0.32	0.30	0.32	0.37	-0.02	-0.02	-0.09	0.10	-0.01	0.07	0.06	0.25	0.22	0.12	0.35	-0.01		0.31
FTSE EPRA NAREIT Developed	0.61	0.64	0.61	0.84	0.71	0.21	0.16	0.11	0.26	0.23	0.30	0.32	0.52	0.38	0.35	0.82	0.01	0.31	

Source: Voya Investment Management

Appendix: 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 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.⁷ 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. Over a medium-term horizon, negative serial correlation sets in as the growth phase of the cycle is followed by a contraction and then as that contraction is followed by renewed growth.⁸

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 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. Conversely, negative autocorrelation occurs 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.

⁷ Hall, R. (1978), "Stochastic Implications of the Life-Cycle-Permanent Income Hypothesis: Theory and Evidence", *Journal of Political Economy*, vol. 86, pp. 971–988.

⁸ Poterba, J. and Summers, L. (1988), "Mean Reversion in Stock Prices: Evidence and Implications", *Journal of Financial Economics*, 22, pp. 27–60.

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 a random walk are constant, exhibiting zero autocorrelation; realized returns are not predictable. Volatilities and cross correlations among assets are independent of the investment horizon. Thus, the annualized volatility estimated from monthly return data 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 square root of time scaling rule described above 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. So for long investment horizons, the risk/return tradeoff can be very different than that for short investment horizons.

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 1979–2014. We subsequently test the statistical significance of the estimated parameter using the Ljung-Box Q-statistic.⁹ 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.¹⁰ Khandani and Lo 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.¹¹ The theoretical basis is that in a frictionless market, any predictability in asset returns 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.

⁹ 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.

¹⁰ 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 <10%.

¹¹ 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", *Quarterly Journal of Finance*, vol. 1, pp. 205–264.

Since the vast majority of the return series we estimate exhibit serial correlation, we subsequently apply the Geltner unsmoothing process to all series. This process corrects the return series for first-order serial correlation by subtracting the product of the autocorrelation coefficient (ρ) and previous period's return from the current period's return and dividing by $1-\rho$. This transformation has no impact on the arithmetic return, but the geometric mean is impacted since it depends on volatility. This correction is thus important for long-horizon asset allocation problems.

Figure 8 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 7.1% to 6.5%.

Figure 8. Expected Return Autocorrelation Adjustments of S&P 400, MSCI Emerging Markets and Barclays High Yield Indexes

	No Correction for Autocorrelation	Correcting for Autocorrelation Alone	Correcting for Autocorrelation and Applying the Two-State Covariance Process
Arithmetic Return	8.3%	8.3%	8.3%
Standard Deviation	17.1%	18.7%	19.8%
Skewness	-0.76	-0.64	-0.53
Kurtosis	2.58	2.32	1.20
Geometric Return	7.1%	6.8%	6.5%
Arithmetic Return	10.1%	10.1%	10.1%
Standard Deviation	22.0%	26.0%	27.5%
Skewness	-0.70	-0.63	-0.53
Kurtosis	2.13	1.83	0.85
Geometric Return	7.9%	6.9%	6.4%
Arithmetic Return	5.7%	5.7%	5.7%
Standard Deviation	8.2%	11.3%	12.3%
Skewness	-0.95	-0.36	-0.28
Kurtosis	8.88	6.57	3.87
Geometric Return	5.5%	5.2%	5.1%

Source: Voya Investment Management

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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 2013, 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 6% to 8% over the long term and an international equity average return of 8% to 10%. 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.

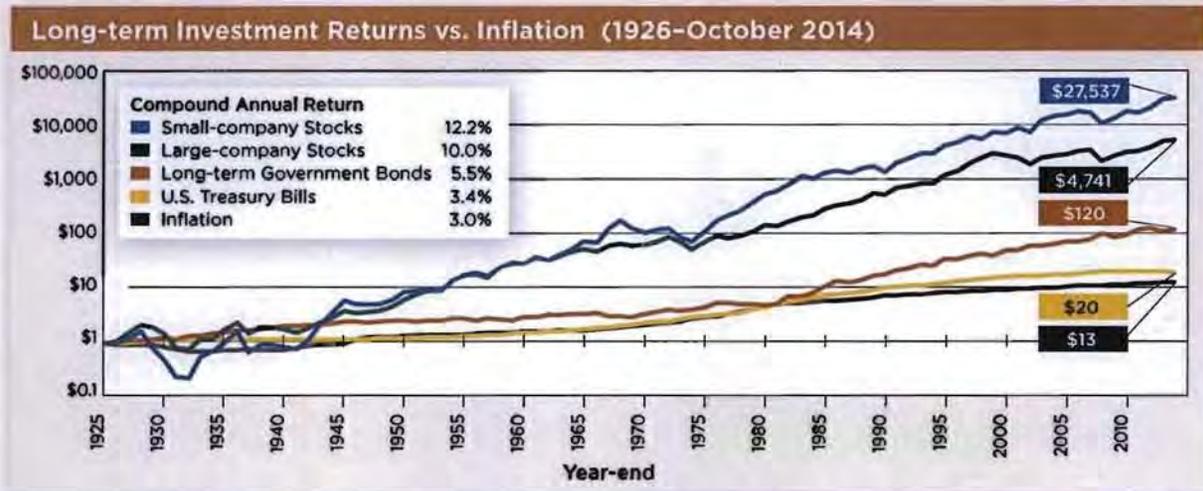
Portfolio Objective	Range of Expected Long-term Portfolio Returns	Standard Deviation
Income Focus	4.0% - 6.0%	5.1%
Balanced toward Income	4.5% - 6.5%	6.6%
Balanced Growth & Income	5.0% - 7.0%	8.7%
Balanced toward Growth	5.5% - 7.5%	10.9%
Growth Focus	6.0% - 8.0%	12.9%
All-equity Focus	6.5% - 8.5%	16.2%

Source: Edward Jones calculations, October 2014. 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. © 2014 Ibbotson. All rights reserved. October 2014. 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. Since 1926, inflation has averaged 3% per year but has ranged from mild deflation to more than 18% inflation. The long-term effects of the 2008 recession are likely to continue 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 adjusted earnings growth rate is 4% to 5%, slightly lower than its historical average due to above-average growth over the past two years.

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 remain below their long-term averages in many countries. Higher returns could 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	4% - 5%	5% - 6%
Long-term equity returns	6% - 8%	8% - 10%

Source: Edward Jones calculations, November 2014.

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, November 2014.

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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Diversification does not guarantee a profit or protect against loss. Dividends may be increased, decreased or eliminated at any point without notice. Past performance is not a guarantee of future results. Special risks are inherent to international investing, including those related to currency fluctuations and foreign political and economic events.

Edward Jones
MAKING SENSE OF INVESTING

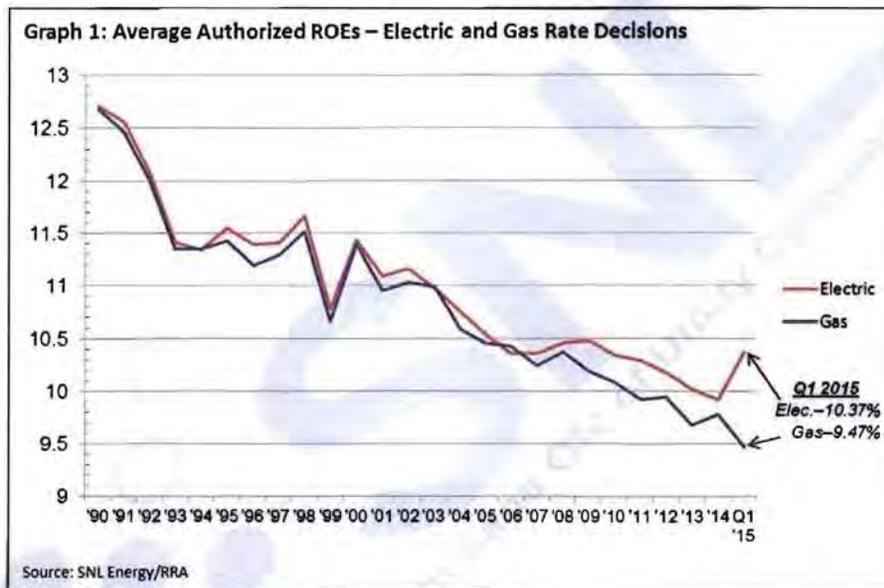


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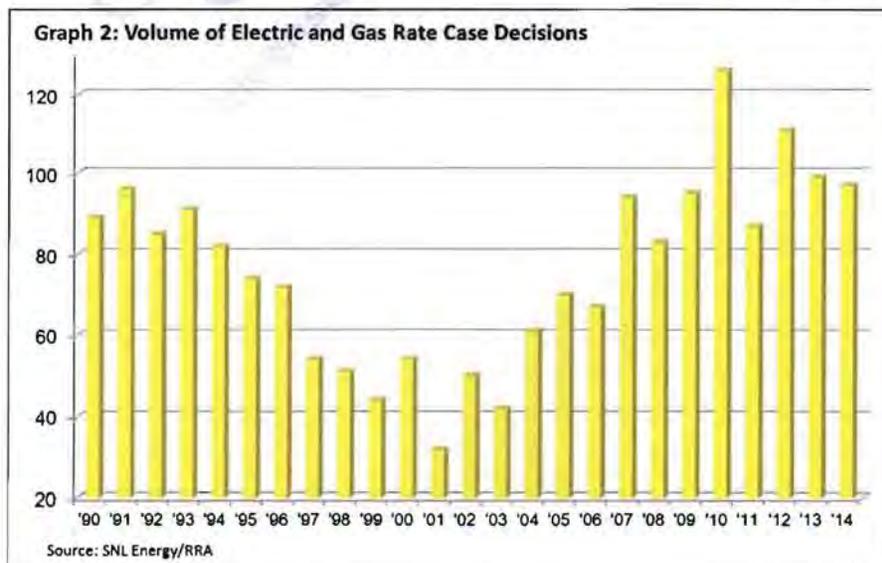
April 13, 2015

MAJOR RATE CASE DECISIONS--January-March 2015

The average return on equity (ROE) authorized electric utilities was 10.37% in the first quarter of 2015, compared to 9.91% in calendar-2014. There were nine electric ROE determinations for the first three months of 2015, versus 38 in all of 2014. We note that the data includes several surcharge/rider generation cases in Virginia that incorporate plant-specific ROE premiums. Virginia statutes authorize the State Corporation Commission to approve ROE premiums of up to 200 basis points for certain generation projects (see the [Virginia Commission Profile](#)). Excluding these Virginia surcharge/rider generation cases from the data, the average authorized electric ROE was 9.67% in the first quarter of 2015 versus 9.76% in 2014. The average ROE authorized gas utilities was 9.47% for the first three months in 2015 compared to 9.78% in calendar-2014. There were three gas cases that included an ROE determination in the **first quarter** of 2015, versus 26 in 2014. The 2014 averages do not include a Feb. 20, 2014 New York Public Service Commission steam rate decision for Consolidated Edison Co. of New York that adopted a 9.3% ROE. (We note that this report utilizes the simple mean for the return averages.)



As shown in **Graph 2** below, after reaching a low in the early-2000s, the number of rate case decisions for energy companies generally increased for the next several years, peaking in 2010 at more than 125 cases.



Since 2010, the number of cases has moderated somewhat but has approximated 100 in three of the last four calendar years. There were 98 electric and gas rate cases resolved in 2014 versus 99 in 2013, 111 in 2012, and 87 back in 2011. There are currently about 50 electric and gas rate cases pending nationwide, indicating a somewhat more modest level of activity in 2015, but this level of activity remains robust when compared to the late-1990s/early-2000s. Increased costs for environmental compliance, generation and delivery infrastructure upgrades and expansion, renewable generation mandates, and employee benefits argue for the continuation of an active rate case agenda over the next few years.

As a result of electric industry restructuring, certain states unbundled electric rates and implemented retail competition for generation. Commissions in those states now have jurisdiction only over the revenue requirement and return parameters for delivery operations (which we footnote in our chronology beginning on page 5), thus complicating historical data comparability. We note that despite the heightened business risk associated with the less-than-robust economy, average authorized ROEs have declined modestly since 2008. We also note the increased utilization of limited issue rider proceedings that allow utilities to recover certain costs outside of a general rate case and that typically incorporate previously-determined return parameters.

The table on page 3 shows the average ROE authorized in major electric and gas rate decisions annually since 1990, and by quarter since 2010, followed by the number of observations in each period. The tables on page 4 indicate the composite electric and gas industry data for all major cases summarized annually since 2001 and by quarter for the past nine quarters. The individual electric and gas cases decided in the first quarter of 2015 are listed on pages 5-6, with the decision date shown first, followed by the company name, the abbreviation for the state issuing the decision, the authorized rate of return (ROR), ROE, and percentage of common equity in the adopted capital structure. Next we indicate the month and year in which the adopted test year ended, whether the commission utilized an average or a year-end rate base, and the amount of the permanent rate change authorized. The dollar amounts represent the permanent rate change ordered at the time decisions were rendered. Fuel adjustment clause rate changes are not reflected in this study.

Please note: Historical data provided in this report may not match data provided on RRA's website due to certain differences in presentation.

Dennis Spurduto

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Average Equity Returns Authorized January 1990 - March 2015

Year	Period	Electric Utilities		Gas Utilities	
		ROE %	(# Cases)	ROE %	(# Cases)
1990	Full Year	12.70	(44)	12.67	(31)
1991	Full Year	12.55	(45)	12.46	(35)
1992	Full Year	12.09	(48)	12.01	(29)
1993	Full Year	11.41	(32)	11.35	(45)
1994	Full Year	11.34	(31)	11.35	(28)
1995	Full Year	11.55	(33)	11.43	(16)
1996	Full Year	11.39	(22)	11.19	(20)
1997	Full Year	11.40	(11)	11.29	(13)
1998	Full Year	11.66	(10)	11.51	(10)
1999	Full Year	10.77	(20)	10.66	(9)
2000	Full Year	11.43	(12)	11.39	(12)
2001	Full Year	11.09	(18)	10.95	(7)
2002	Full Year	11.16	(22)	11.03	(21)
2003	Full Year	10.97	(22)	10.99	(25)
2004	Full Year	10.75	(19)	10.59	(20)
2005	Full Year	10.54	(29)	10.46	(26)
2006	Full Year	10.36	(26)	10.43	(16)
2007	Full Year	10.36	(39)	10.24	(37)
2008	Full Year	10.46	(37)	10.37	(30)
2009	Full Year	10.48	(39)	10.19	(29)
	1st Quarter	10.66	(17)	10.24	(9)
	2nd Quarter	10.08	(14)	9.99	(11)
	3rd Quarter	10.26	(11)	9.93	(4)
	4th Quarter	10.30	(17)	10.09	(12)
2010	Full Year	10.34	(59)	10.08	(37)
	1st Quarter	10.32	(13)	10.10	(5)
	2nd Quarter	10.12	(10)	9.88	(5)
	3rd Quarter	10.36	(8)	9.65	(2)
	4th Quarter	10.34	(11)	9.88	(4)
2011	Full Year	10.29	(42)	9.92	(16)
	1st Quarter	10.84	(12)	9.63	(5)
	2nd Quarter	9.92	(13)	9.83	(8)
	3rd Quarter	9.78	(8)	9.75	(1)
	4th Quarter	10.10	(25)	10.07	(21)
2012	Full Year	10.17	(58)	9.94	(35)
	1st Quarter	10.24	(15)	9.57	(3)
	2nd Quarter	9.84	(7)	9.47	(6)
	3rd Quarter	10.06	(7)	9.60	(1)
	4th Quarter	9.90	(21)	9.83	(11)
2013	Full Year	10.02	(50)	9.68	(21)
	1st Quarter	10.23	(8)	9.54	(6)
	2nd Quarter	9.83	(5)	9.84	(8)
	3rd Quarter	9.87	(12)	9.45	(6)
	4th Quarter	9.78	(13)	10.28	(6)
2014	Full Year	9.91	(38)	9.78	(26)
2015	1st Quarter	10.37	(9)	9.47	(3)

Electric Utilities--Summary Table

	Period	ROR % (# Cases)		ROE % (# Cases)		Eq. as % Cap. Struc. (# Cases)		Amt. \$ Mil. (# Cases)	
2001	Full Year	8.93	(15)	11.09	(18)	47.20	(13)	14.2	(21)
2002	Full Year	8.72	(20)	11.16	(22)	46.27	(19)	-475.4	(24)
2003	Full Year	8.86	(20)	10.97	(22)	49.41	(19)	313.8	(12)
2004	Full Year	8.44	(18)	10.75	(19)	46.84	(17)	1,091.5	(30)
2005	Full Year	8.30	(26)	10.54	(29)	46.73	(27)	1,373.7	(36)
2006	Full Year	8.24	(24)	10.36	(26)	48.67	(23)	1,465.0	(42)
2007	Full Year	8.22	(38)	10.36	(39)	48.01	(37)	1,401.9	(46)
2008	Full Year	8.25	(35)	10.46	(37)	48.41	(33)	2,899.4	(42)
2009	Full Year	8.23	(38)	10.48	(39)	48.61	(37)	4,192.3	(58)
2010	Full Year	7.99	(59)	10.34	(59)	48.45	(54)	5,567.7	(77)
2011	Full Year	8.00	(43)	10.29	(42)	48.26	(42)	2,853.5	(56)
2012	Full Year	7.95	(51)	10.17	(58)	50.55	(52)	3,131.5	(70)
	1st Quarter	7.81	(13)	10.24	(15)	49.02	(13)	765.8	(16)
	2nd Quarter	7.64	(7)	9.84	(7)	50.56	(6)	653.6	(10)
	3rd Quarter	7.86	(8)	10.06	(7)	50.77	(8)	734.4	(11)
	4th Quarter	7.46	(17)	9.90	(21)	48.20	(16)	1,315.8	(25)
2013	Full Year	7.66	(45)	10.02	(50)	49.25	(43)	3,469.6	(62)
	1st Quarter	7.71	(6)	10.23	(8)	51.08	(8)	251.4	(9)
	2nd Quarter	7.81	(3)	9.83	(5)	49.12	(4)	92.5	(6)
	3rd Quarter	7.55	(11)	9.87	(12)	50.12	(11)	651.5	(16)
	4th Quarter	7.61	(12)	9.78	(13)	50.96	(11)	1,039.1	(19)
2014	Full Year	7.63	(32)	9.91	(38)	50.50	(34)	2,034.5	(50)
2015	1st Quarter	7.79	(9)	10.37	(9)	51.91	(9)	222.5	(11)

Gas Utilities--Summary Table

	Period	ROR % (# Cases)		ROE % (# Cases)		Eq. as % Cap. Struc. (# Cases)		Amt. \$ Mil. (# Cases)	
2001	Full Year	8.51	(6)	10.95	(7)	43.96	(5)	114.0	(11)
2002	Full Year	8.80	(20)	11.03	(21)	48.29	(18)	303.6	(26)
2003	Full Year	8.75	(22)	10.99	(25)	49.93	(22)	260.1	(30)
2004	Full Year	8.34	(21)	10.59	(20)	45.90	(20)	303.5	(31)
2005	Full Year	8.25	(29)	10.46	(26)	48.66	(24)	458.4	(34)
2006	Full Year	8.51	(16)	10.43	(16)	47.43	(16)	444.0	(25)
2007	Full Year	8.12	(32)	10.24	(37)	48.37	(30)	813.4	(48)
2008	Full Year	8.48	(30)	10.37	(30)	50.47	(30)	884.8	(41)
2009	Full Year	8.15	(28)	10.19	(29)	48.72	(28)	475.0	(37)
2010	Full Year	7.95	(38)	10.08	(37)	48.56	(38)	816.7	(49)
2011	Full Year	8.09	(18)	9.92	(16)	52.49	(14)	436.3	(31)
2012	Full Year	7.98	(30)	9.94	(35)	51.13	(32)	263.9	(41)
	1st Quarter	7.31	(3)	9.57	(3)	48.80	(3)	39.0	(6)
	2nd Quarter	7.21	(5)	9.47	(6)	51.21	(5)	259.1	(12)
	3rd Quarter	7.53	(1)	9.60	(1)	53.84	(1)	6.1	(3)
	4th Quarter	7.47	(11)	9.83	(11)	50.52	(11)	189.5	(16)
2013	Full Year	7.39	(20)	9.68	(21)	50.60	(20)	493.7	(37)
	1st Quarter	7.67	(6)	9.54	(6)	51.14	(6)	23.5	(9)
	2nd Quarter	7.76	(8)	9.84	(8)	52.12	(8)	62.2	(12)
	3rd Quarter	7.40	(8)	9.45	(6)	49.51	(8)	329.1	(11)
	4th Quarter	7.96	(7)	10.28	(6)	52.35	(7)	115.5	(16)
2014	Full Year	7.69	(29)	9.78	(26)	51.25	(29)	530.3	(48)
2015	1st Quarter	6.41	(2)	9.47	(3)	50.41	(2)	168.7	(9)

ELECTRIC UTILITY DECISIONS

<u>Date</u>	<u>Company (State)</u>	<u>ROR</u> <u>%</u>	<u>ROE</u> <u>%</u>	<u>Common</u> <u>Eq. as %</u> <u>Cap. Str.</u>	<u>Test Year</u> <u>&</u> <u>Rate Base</u>	<u>Amt.</u> <u>\$ Mil.</u>
2014	FULL-YEAR: AVERAGES/TOTAL OBSERVATIONS	7.63 32	9.91 38	50.50 34		2,034.5 50
1/23/15	PacifiCorp (WY)	7.41	9.50	51.43	6/15-A	20.2
2/4/15	Monongahela Power/Potomac Ed. (WV)	--	--	--	12/13	124.3 (B,1)
2/18/15	Virginia Electric and Power (VA)	7.88	11.00	52.03	3/16-A	36.9 (LIR,B,2)
2/24/15	Public Service Co. of Colorado (CO)	7.55	9.83	56.00	12/13-YE	-39.4 (I,B)
3/2/15	Black Hills Power (SD)	7.76	--	--	9/13-A	6.9 (I,B)
3/12/15	Virginia Electric and Power (VA)	8.40	12.00	52.03	3/16-A	-6.4 (LIR,3)
3/12/15	Virginia Electric and Power (VA)	7.88	11.00	52.03	3/16-A	11.4 (LIR,B,4)
3/12/15	Virginia Electric and Power (VA)	7.88	11.00	52.03	3/16-A	5.8 (LIR,5)
3/18/15	Jersey Central Power & Light (NJ)	8.01	9.75	50.00 (Hy)	12/11-YE	-115.0 (D)
3/25/15	PacifiCorp (WA)	7.30	9.50	49.10	12/13-A	9.6
3/26/15	Northern States Power-Minnesota (MN)	--	9.72	52.50	12/14	168.2 (I,Z)
2015	1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.79 9	10.37 9	51.91 9		222.5 11

GAS UTILITY DECISIONS

<u>Date</u>	<u>Company (State)</u>	<u>ROR</u> <u>%</u>	<u>ROE</u> <u>%</u>	<u>Common</u> <u>Eq. as %</u> <u>Cap. Str.</u>	<u>Test Year</u> <u>&</u> <u>Rate Base</u>	<u>Amt.</u> <u>\$ Mil.</u>
2014	FULL-YEAR: AVERAGES/TOTAL OBSERVATIONS	7.69 29	9.78 26	51.25 29		530.3 48
1/13/15	Consumers Energy (MI)	--	10.30	--	12/15	45.0 (I,B)
1/14/15	Indiana Gas (IN)	--	--	--	6/14-YE	5.7 (LIR,6)
1/14/15	Southern Indiana Gas & Electric (IN)	--	--	--	6/14-YE	1.5 (LIR,6)
1/21/15	North Shore Gas (IL)	6.26	9.05	50.48	12/15-A	3.5 (R)
1/21/15	Peoples Gas Light & Coke (IL)	6.56	9.05	50.33	12/15-A	71.1 (R)
1/26/15	Piedmont Natural Gas (NC)	--	--	--	10/14	26.6 (LIR,7)
1/27/15	Atmos Energy (KS)	--	--	--	9/14-YE	0.3 (LIR,8)
1/27/15	Northern States Power-Minnesota (MN)	--	--	--	12/15	14.7 (LIR,9)
1/28/15	Northern Indiana Public Service (IN)	--	--	--	6/14-YE	0.3 (LIR,10)
2015	1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS	6.41 2	9.47 3	50.41 2		168.7 9

FOOTNOTES

- A- Average
 - B- Order followed stipulation or settlement by the parties. Decision particulars not necessarily precedent-setting or specifically adopted by the regulatory body.
 - COC- Case involved only the determination of cost-of-capital parameters.
 - CWIP- Construction work in progress
 - D- Applies to electric delivery only
 - Dc- Date certain rate base valuation
 - E- Estimated
 - F- Return on fair value rate base
 - Hy- Hypothetical capital structure utilized
 - I- Interim rates implemented prior to the issuance of final order, normally under bond and subject to refund.
 - LIR Limited-Issue rider proceeding
 - M- "Make-whole" rate change based on return on equity or overall return authorized in previous case.
 - R- Revised
 - Te- Temporary rates implemented prior to the issuance of final order.
 - U- Double leverage capital structure utilized.
 - W- Case withdrawn
 - YE- Year-end
 - Z- Rate change implemented in multiple steps.
 - * Capital structure includes cost-free items or tax credit balances at the overall rate of return.
- (1) Consolidated rate proceeding for Monongahela Power and Potomac Edison, whose rate schedules were combined.
 - (2) Increase authorized through a surcharge, Rider W, which reflects in rates the investment in the Warren County Power Station and associated transmission facilities. New rates effective 4/1/15. The indicated overall return and capital structure are placeholders pending a 2015 biennial review.
 - (3) This proceeding determines the revenue requirement for Rider B, which is the mechanism through which the company recovers costs associated with its plan to convert the Altavista, Hopewell, and Southampton Power Stations to burn biomass fuels. The indicated overall return and capital structure are placeholders pending a 2015 biennial review.
 - (4) Represents rate increase associated with the company's Rider R proceeding, which is the mechanism through which the company recovers the investment in the Bear Garden generating facility. The indicated overall return and capital structure are placeholders pending a 2015 biennial review.
 - (5) This proceeding determines the revenue requirement for Rider S, which recognizes in rates the company's investment in the Virginia City Hybrid Energy Center. The indicated overall return and capital structure are placeholders pending a 2015 biennial review.
 - (6) Initial proceeding to establish the rates to be charged to customers under the company's "compliance and system improvement adjustment" (CSIA) mechanism.
 - (7) Case involves the company's Integrity Management Rider (IMR), under which it is authorized to track and recover prudently incurred capital investments and associated costs incurred to comply with federal pipeline safety and integrity requirements outside of a general rate case.
 - (8) Case involves an update to the company's gas system reliability surcharge (GSRS) rider.
 - (9) Case represents the company's first filing under its Gas Utility Infrastructure Cost (GUIC) Rider.
 - (10) This is the initial proceeding to establish the rates to be charged to customers under the company's transmission, distribution, and storage system improvement charge (TDSIC) rate adjustment mechanism.

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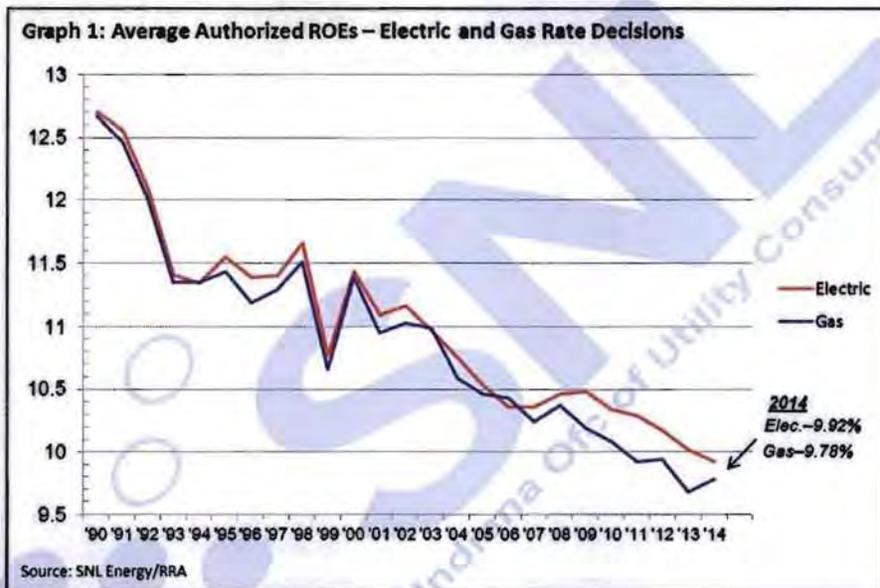


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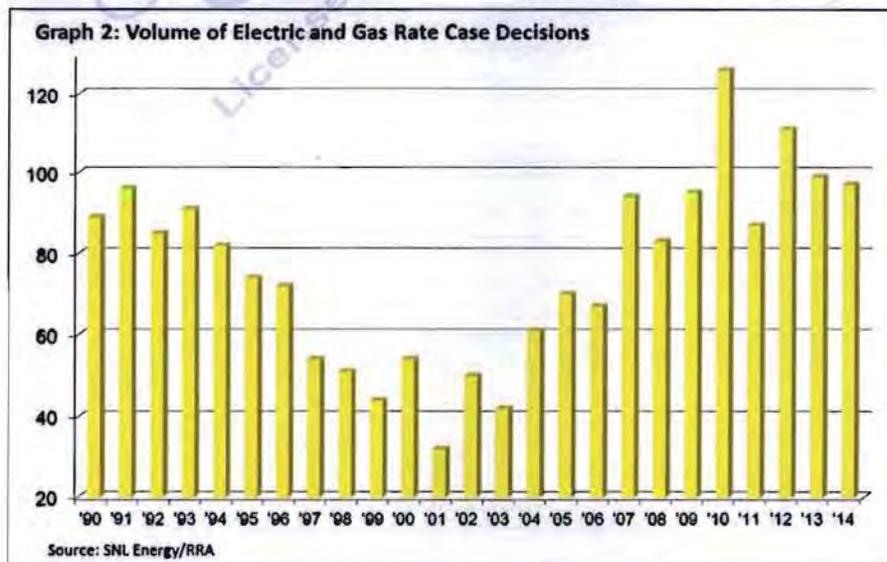
January 15, 2015

MAJOR RATE CASE DECISIONS--CALENDAR 2014

The average return on equity (ROE) authorized electric utilities was 9.92% in 2014, compared to 10.02% in 2013. There were 37 electric ROE determinations in 2014, versus 50 in 2013. We note that the data includes several surcharge/rider generation cases in Virginia that incorporate plant-specific ROE premiums. Virginia statutes authorize the State Corporation Commission to approve ROE premiums of up to 200 basis points for certain generation projects (see the [Virginia Commission Profile](#)). Excluding these Virginia surcharge/rider generation cases from the data, the average authorized electric ROE was 9.76% in 2014 compared to 9.8% in 2013. The average ROE authorized gas utilities was 9.78% in 2014 compared to 9.68% in 2013. There were 26 gas cases that included an ROE determination in 2014, versus 21 in 2013. The 2014 averages do not include a Feb. 20, 2014 New York Public Service Commission steam rate decision for Consolidated Edison Co. of New York that adopted a 9.3% ROE. (We note that this report utilizes the simple mean for the return averages.)



After reaching a low in the early-2000s, the number of rate case decisions for energy companies has generally increased over the last several years, as shown in Graph 2 below. There were 97 electric and gas rate



cases resolved in 2014 versus 99 in 2013, 111 in 2012, and only 32 back in 2001. Increased costs for environmental compliance, generation and delivery infrastructure upgrades and expansion, renewable generation mandates, and employee benefits, argue for the continuation of an active rate case agenda over the next few years.

As a result of electric industry restructuring, certain states unbundled electric rates and implemented retail competition for generation. Commissions in those states now have jurisdiction only over the revenue requirement and return parameters for delivery operations (which we footnote in our chronology beginning on page 5), thus complicating historical data comparability. We also note that despite the heightened business risk associated with the less-than-robust economy, average authorized ROEs have declined modestly since 2008. In fact, some state commissions have cited the economy and customer hardship as factors influencing their equity return authorizations.

The table on page 3 shows the average ROE authorized in major electric and gas rate decisions annually since 1990, and by quarter since 2009, followed by the number of observations in each period. The tables on page 4 show the composite electric and gas industry data for all major cases summarized annually since 2000 and by quarter for the past eight quarters. The individual electric and gas cases decided in 2014 are listed on pages 5-10, with the decision date shown first, followed by the company name, the abbreviation for the state issuing the decision, the authorized rate of return (ROR), ROE, and percentage of common equity in the adopted capital structure. Next we show the month and year in which the adopted test year ended, whether the commission utilized an average or a year-end rate base, and the amount of the permanent rate change authorized. The dollar amounts represent the permanent rate change ordered at the time decisions were rendered. Fuel adjustment clause rate changes are not reflected in this study.

The table below tracks the average equity return authorized for all electric and gas rate cases combined, by year, for the last 25 years. As the table indicates, since 1990 the authorized ROEs have generally trended downward, reflecting the significant decline in interest rates and capital costs that has occurred over this time frame. The combined average equity returns authorized for electric and gas utilities in each of the years 1990 through 2014, and the number of observations for each year are as follows:

1990	12.69%	(75)	2003	10.98%	(47)
1991	12.51	(80)	2004	10.67	(39)
1992	12.06	(77)	2005	10.50	(55)
1993	11.37	(77)	2006	10.39	(42)
1994	11.34	(59)	2007	10.30	(76)
1995	11.51	(49)	2008	10.42	(67)
1996	11.29	(42)	2009	10.36	(68)
1997	11.34	(24)	2010	10.24	(96)
1998	11.59	(20)	2011	10.21	(59)
1999	10.74	(29)	2012	10.08	(93)
2000	11.41	(24)	2013	9.92	(71)
2001	11.05	(25)	2014	9.86	(63)
2002	11.10	(43)			

Please note: Historical data provided in this report may not match data provided on RRA's website due to certain differences in presentation.

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Average Equity Returns Authorized January 1990 - December 2014

Year	Period	Electric Utilities		Gas Utilities	
		ROE %	(# Cases)	ROE %	(# Cases)
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1993	Full Year	11.41	(32)	11.35	(45)
1994	Full Year	11.34	(31)	11.35	(28)
1995	Full Year	11.55	(33)	11.43	(16)
1996	Full Year	11.39	(22)	11.19	(20)
1997	Full Year	11.40	(11)	11.29	(13)
1998	Full Year	11.66	(10)	11.51	(10)
1999	Full Year	10.77	(20)	10.66	(9)
2000	Full Year	11.43	(12)	11.39	(12)
2001	Full Year	11.09	(18)	10.95	(7)
2002	Full Year	11.16	(22)	11.03	(21)
2003	Full Year	10.97	(22)	10.99	(25)
2004	Full Year	10.75	(19)	10.59	(20)
2005	Full Year	10.54	(29)	10.46	(26)
2006	Full Year	10.36	(26)	10.43	(16)
2007	Full Year	10.36	(39)	10.24	(37)
2008	Full Year	10.46	(37)	10.37	(30)
	1st Quarter	10.29	(9)	10.24	(4)
	2nd Quarter	10.55	(10)	10.11	(8)
	3rd Quarter	10.46	(3)	9.88	(2)
	4th Quarter	10.54	(17)	10.27	(15)
2009	Full Year	10.48	(39)	10.19	(29)
	1st Quarter	10.66	(17)	10.24	(9)
	2nd Quarter	10.08	(14)	9.99	(11)
	3rd Quarter	10.26	(11)	9.93	(4)
	4th Quarter	10.30	(17)	10.09	(12)
2010	Full Year	10.34	(59)	10.08	(37)
	1st Quarter	10.32	(13)	10.10	(5)
	2nd Quarter	10.12	(10)	9.88	(5)
	3rd Quarter	10.36	(8)	9.65	(2)
	4th Quarter	10.34	(11)	9.88	(4)
2011	Full Year	10.29	(42)	9.92	(16)
	1st Quarter	10.84	(12)	9.63	(5)
	2nd Quarter	9.92	(13)	9.83	(8)
	3rd Quarter	9.78	(8)	9.75	(1)
	4th Quarter	10.10	(25)	10.07	(21)
2012	Full Year	10.17	(58)	9.94	(35)
	1st Quarter	10.24	(15)	9.57	(3)
	2nd Quarter	9.84	(7)	9.47	(6)
	3rd Quarter	10.06	(7)	9.60	(1)
	4th Quarter	9.90	(21)	9.83	(11)
2013	Full Year	10.02	(50)	9.68	(21)
	1st Quarter	10.23	(8)	9.54	(6)
	2nd Quarter	9.83	(5)	9.84	(8)
	3rd Quarter	9.90	(11)	9.45	(6)
	4th Quarter	9.78	(13)	10.28	(6)
2014	Full Year	9.92	(37)	9.78	(26)

Electric Utilities--Summary Table

	Period	ROR % (# Cases)		ROE % (# Cases)		Eq. as % Cap. Struc. (# Cases)		Amt. \$ Mil. (# Cases)	
2000	Full Year	9.20	(12)	11.43	(12)	48.85	(12)	-291.4	(34)
2001	Full Year	8.93	(15)	11.09	(18)	47.20	(13)	14.2	(21)
2002	Full Year	8.72	(20)	11.16	(22)	46.27	(19)	-475.4	(24)
2003	Full Year	8.86	(20)	10.97	(22)	49.41	(19)	313.8	(12)
2004	Full Year	8.44	(18)	10.75	(19)	46.84	(17)	1,091.5	(30)
2005	Full Year	8.30	(26)	10.54	(29)	46.73	(27)	1,373.7	(36)
2006	Full Year	8.24	(24)	10.36	(26)	48.67	(23)	1,465.0	(42)
2007	Full Year	8.22	(38)	10.36	(39)	48.01	(37)	1,401.9	(46)
2008	Full Year	8.25	(35)	10.46	(37)	48.41	(33)	2,899.4	(42)
2009	Full Year	8.23	(38)	10.48	(39)	48.61	(37)	4,192.3	(58)
2010	Full Year	7.99	(59)	10.34	(59)	48.45	(54)	5,567.7	(77)
2011	Full Year	8.00	(43)	10.29	(42)	48.26	(42)	2,853.5	(56)
2012	Full Year	7.95	(51)	10.17	(58)	50.55	(52)	3,131.5	(70)
	1st Quarter	7.81	(13)	10.24	(15)	49.02	(13)	765.8	(16)
	2nd Quarter	7.64	(7)	9.84	(7)	50.56	(6)	653.6	(10)
	3rd Quarter	7.86	(8)	10.06	(7)	50.77	(8)	734.4	(11)
	4th Quarter	7.46	(17)	9.90	(21)	48.20	(16)	1,315.8	(25)
2013	Full Year	7.66	(45)	10.02	(50)	49.25	(43)	3,469.6	(62)
	1st Quarter	7.71	(6)	10.23	(8)	51.08	(8)	251.4	(9)
	2nd Quarter	7.81	(3)	9.83	(5)	49.12	(4)	92.5	(6)
	3rd Quarter	7.67	(10)	9.90	(11)	50.63	(10)	563.7	(15)
	4th Quarter	7.61	(12)	9.78	(13)	50.96	(11)	1,039.1	(19)
2014	Full Year	7.67	(31)	9.92	(37)	50.67	(33)	1,946.7	(49)

Gas Utilities--Summary Table

	Period	ROR % (# Cases)		ROE % (# Cases)		Eq. as % Cap. Struc. (# Cases)		Amt. \$ Mil. (# Cases)	
2000	Full Year	9.33	(13)	11.39	(12)	48.59	(12)	135.9	(20)
2001	Full Year	8.51	(6)	10.95	(7)	43.96	(5)	114.0	(11)
2002	Full Year	8.80	(20)	11.03	(21)	48.29	(18)	303.6	(26)
2003	Full Year	8.75	(22)	10.99	(25)	49.93	(22)	260.1	(30)
2004	Full Year	8.34	(21)	10.59	(20)	45.90	(20)	303.5	(31)
2005	Full Year	8.25	(29)	10.46	(26)	48.66	(24)	458.4	(34)
2006	Full Year	8.51	(16)	10.43	(16)	47.43	(16)	444.0	(25)
2007	Full Year	8.12	(32)	10.24	(37)	48.37	(30)	813.4	(48)
2008	Full Year	8.48	(30)	10.37	(30)	50.47	(30)	884.8	(41)
2009	Full Year	8.15	(28)	10.19	(29)	48.72	(28)	475.0	(37)
2010	Full Year	7.95	(38)	10.08	(37)	48.56	(38)	816.7	(49)
2011	Full Year	8.09	(18)	9.92	(16)	52.49	(14)	436.3	(31)
2012	Full Year	7.98	(30)	9.94	(35)	51.13	(32)	263.9	(41)
	1st Quarter	7.31	(3)	9.57	(3)	48.80	(3)	39.0	(6)
	2nd Quarter	7.21	(5)	9.47	(6)	51.21	(5)	259.1	(12)
	3rd Quarter	7.53	(1)	9.60	(1)	53.84	(1)	6.1	(3)
	4th Quarter	7.47	(11)	9.83	(11)	50.52	(11)	189.5	(16)
2013	Full Year	7.39	(20)	9.68	(21)	50.60	(20)	493.7	(37)
	1st Quarter	7.67	(6)	9.54	(6)	51.14	(6)	23.5	(9)
	2nd Quarter	7.76	(8)	9.84	(8)	52.12	(8)	62.2	(12)
	3rd Quarter	7.40	(8)	9.45	(6)	49.51	(8)	329.1	(11)
	4th Quarter	7.96	(7)	10.28	(6)	52.35	(7)	115.5	(16)
2014	Full Year	7.69	(29)	9.78	(26)	51.25	(29)	530.3	(48)

ELECTRIC UTILITY DECISIONS

<u>Date</u>	<u>Company (State)</u>	<u>ROR</u> <u>%</u>	<u>ROE</u> <u>%</u>	<u>Common</u> <u>Eq. as %</u> <u>Cap. Str.</u>	<u>Test Year</u> <u>&</u> <u>Rate Base</u>	<u>Amt.</u> <u>\$ Mil.</u>
2/20/14	Consolidated Edison of New York (NY)	7.05	9.20	48.00	12/14-A	-76.2 (D,B,1)
2/26/14	Northern States Power-Minnesota (ND)	7.45	9.75	52.56	--	9.0 (I,B,2)
2/28/14	MidAmerican Energy (IA)	--	--	--	12/12	263.6 (I,B,Z)
2/28/14	Virginia Electric and Power (VA)	7.95	11.00	50.00	3/15	14.8 (3)
3/14/14	Virginia Electric and Power (VA)	--	12.00	50.00	3/15	3.3 (4)
3/14/14	Virginia Electric and Power (VA)	--	11.00	50.00	3/15	-9.0 (5)
3/17/14	Liberty Utilities (EnergyNorth NG) (NH)	7.92	9.55	55.00	12/12-YE	9.8 (D,B,I,6)
3/26/14	Potomac Electric Power (DC)	7.65	9.40	49.19	12/12-A	23.4 (D)
3/26/14	Southwestern Public Service (NM)	8.26	9.96	53.89	12/14-A	12.7
2014	1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.71 6	10.23 8	51.08 8		251.4 9
4/2/14	Delmarva Power & Light (DE)	7.26	9.70	49.22	12/12-A	15.1 (I)
4/23/14	Duquesne Light (PA)	--	--	--	4/15	48.0 (D,B)
5/16/14	Entergy Texas (TX)	--	9.80	--	3/13	18.5 (I,B,7)
5/30/14	Fitchburg Gas & Electric Light (MA)	8.28	9.70	47.78	12/12-YE	5.6 (D)
6/6/14	Wisconsin Power and Light (WI)	7.90 (8)	10.40	50.46	12/15-A	0.0 (8)
6/30/14	Emera Maine (ME)	--	9.55	49.00	12/12	5.3 (D,B,9)
2014	2ND QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.81 3	9.83 5	49.12 4		92.5 6
7/2/14	Potomac Electric Power (MD)	7.61	9.62	49.18	9/13-A	8.8 (D)
7/8/14	Virginia Electric and Power (VA)	7.95	11.00	50.00	8/15-A	41.1 (10)
7/10/14	Entergy Louisiana (LA)	--	9.95	--	--	9.3 (B,Z)
7/17/14	Kansas City Power & Light (KS)	--	--	--	12/11-YE	11.5 (B,11)
7/23/14	Rockland Electric (NJ)	7.83	9.75	50.35	3/14-YE	13.0 (D,B)
7/29/14	Central Maine Power (ME)	7.06	9.45	50.00	12/12-A	24.3 (D,B,12)
7/31/14	Cheyenne Light, Fuel and Power (WY)	7.98	9.90	54.00	6/13-YE	8.4 (B)
8/14/14	Pacific Gas and Electric (CA)	--	--	--	12/14-A	196.0 (13)
8/20/14	Atlantic City Electric (NJ)	7.75	9.75	49.83	12/13-YE	19.0 (D,B)
8/25/14	Green Mountain Power (VT)	7.46	9.60	50.00	9/13-A	-8.8 (B,14)
8/29/14	PacifiCorp (UT)	7.57	9.80	51.43	6/15	54.2 (B,Z)
9/15/14	Florida Public Utilities (FL)	--	10.25	--	9/15	3.8 (I,B)
9/18/14	Avista Corp. (ID)	--	--	--	--	0.0 (B,15)
9/24/14	South Carolina Electric & Gas (SC)	8.53	--	53.52	6/14-YE	66.2 (16)
9/25/14	NorthWestern Corp. (MT)	6.91	9.80	48.00	12/14-A	116.9 (17)
2014	3RD QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.67 10	9.90 11	50.63 10		563.7 15

ELECTRIC UTILITY DECISIONS (continued)

<u>Date</u>	<u>Company (State)</u>	<u>ROR</u> <u>%</u>	<u>ROE</u> <u>%</u>	<u>Common</u> <u>Eq. as %</u> <u>Cap. Str.</u>	<u>Test Year</u> <u>&</u> <u>Rate Base</u>	<u>Amt.</u> <u>\$ Mil.</u>
10/9/14	Nevada Power (NV)	8.09	9.80	48.17	12/13	0.0 (B)
11/6/14	MidAmerican Energy (IL)	7.14	9.56	51.73	12/12-YE	16.4 (R)
11/6/14	Wisconsin Public Service (WI)	8.39	10.20	50.28	12/15-A	24.6
11/12/14	Potomac Electric Power (DC)	--	--	--	--	4.7 (18)
11/14/14	Wisconsin Electric Power (WI)	8.60	10.20	51.90	12/15-A	15.4
11/25/14	Avista Corp. (WA)	--	--	--	6/13	7.0 (B)
11/26/14	Appalachian Power (VA)	--	9.70	--	12/13	0.0
11/26/14	Madison Gas and Electric (WI)	7.96	10.20	58.96	12/15-A	15.4
12/4/14	Portland General Electric (OR)	7.56	9.68	50.00	12/15-A	44.3 (B)
12/10/14	Ameren Illinois (IL)	8.08	9.25	51.00 (Hy)	12/13-YE	200.6 (D)
12/10/14	Commonwealth Edison (IL)	7.06	9.25	45.77	12/13-YE	232.8 (D)
12/11/14	Entergy Mississippi (MS)	7.51	10.07	--	12/15-A	177.7 (B)
12/12/14	Baltimore Gas and Electric (MD)	--	--	--	8/14	22.0 (B)
12/12/14	Northern States Power-Wisconsin (WI)	--	10.20	52.54	12/15	14.2
12/18/14	Arizona Public Service (AZ)	6.09 (F)	--	--	--	57.1 (19)
12/17/14	Connecticut Light and Power (CT)	7.31	9.17	50.38	12/13-A	134.1 (20)
12/18/14	Black Hills Colorado Electric (CO)	7.55	9.83	49.83	12/13-A	9.2
12/18/14	Georgia Power (GP)	--	--	--	12/15	26.6 (21)
12/18/14	Southwestern Public Service (TX)	--	--	--	6/13	37.0 (B)
2014	4TH QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.61 12	9.78 13	50.96 11		1,039.1 19
2014	FULL-YEAR: AVERAGES/TOTAL OBSERVATIONS	7.67 31	9.92 37	50.67 33		1,946.7 49

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GAS UTILITY DECISIONS

<u>Date</u>	<u>Company (State)</u>	<u>ROR %</u>	<u>ROE %</u>	<u>Common Eq. as % Cap. Str.</u>	<u>Test Year & Rate Base</u>	<u>Amt. \$ Mil.</u>
1/21/14	Avista Corp. (OR)	7.47	9.65	48.00	12/14-A	5.6 (B,Z)
1/22/14	Connecticut Natural Gas (CT)	7.88	9.18	52.52	12/12-A	7.3 (R)
1/28/14	Atmos Energy (KS)	--	--	--	9/13-YE	1.2 (22)
1/29/14	Baltimore Gas and Electric (MD)	--	--	--	12/18-A	34.1 (Z,23)
1/31/14	Columbia Gas of Maryland (MD)	--	--	--	--	-- (24)
2/20/14	Consolidated Edison of New York (NY)	7.10	9.30	48.00	12/14-A	-54.6 (B,25)
2/21/14	Questar Gas (UT)	7.64	9.85	52.07	12/14-A	7.6 (B)
2/28/14	Bay State Gas (MA)	7.83	9.55	53.68	12/12-YE	19.3
3/16/14	Atmos Energy (CO)	8.07	9.72	52.57	12/12-A	1.3 (I,B)
3/19/14	Missouri Gas Energy (MO)	--	--	--	9/13-YE	1.7 (26)
2014	1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.67	9.54	51.14		23.5
		6	6	6		9
4/2/14	Laclede Gas (MO)	--	--	--	12/13-YE	7.0 (26)
4/21/14	Northern Utilities (NH)	8.28	9.50	51.76	12/12-YE	4.6 (I,B,27)
4/22/14	Atmos Energy (KY)	7.71	9.80	49.16	11/14-A	8.6 (I)
4/23/14	Missouri Gas Energy (MO)	--	--	--	4/13	7.8 (B)
5/8/14	CenterPoint Energy Resources (MN)	7.42	9.59	52.60	9/14-A	32.9 (I)
5/8/14	National Fuel Gas Distribution (NY)	7.56	9.10	48.00	9/14-A	-3.6 (B,28)
5/15/14	Delta Natural Gas (KY)	--	--	--	12/13-YE	1.1 (29)
6/4/14	Washington Gas Light (MD)	--	--	--	9/14-A	1.7 (23)
6/6/14	Wisconsin Power and Light (WI)	7.90 (30)	10.40	50.46	12/15-A	-5.0 (30)
6/12/14	Southwest Gas (So. California) (CA)	6.83	10.10	55.00	12/14-A	1.9
6/12/14	Southwest Gas (No. California) (CA)	8.18	10.10	55.00	12/14-A	2.5
6/12/14	Southwest Gas (So. Lake Tahoe) (CA)	8.18	10.10	55.00	12/14-A	2.7
2014	2ND QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.76	9.84	52.12		62.2
		8	8	8		12
7/3/14	CenterPoint Energy Resources (OK)	8.64	--	50.00	12/13-YE	0.3 (B,31)
7/7/2014	SourceGas Arkansas (AR)	5.71	9.30	41.60 *	9/13-YE	13.8 (B)
7/25/14	Arkansas Oklahoma Gas (AR)	6.18	9.30	39.94 *	12/13-YE	4.2 (B)
7/31/14	Cheyenne Light, Fuel and Power (WY)	7.98	9.90	54.00	6/13-YE	0.8 (B)
8/5/14	Oklahoma Natural Gas (OK)	8.54	--	55.30	12/13-YE	13.7 (B,32)
8/14/14	Pacific Gas and Electric (CA)	--	--	--	12/14-A	264.0 (33)
8/18/14	Columbia Gas of Maryland (MD)	--	--	--	12/14	0.4 (34)
9/4/14	Atmos Energy (KS)	7.75	9.10 (35)	53.00	9/13-YE	4.3 (B,35)
9/18/14	Avista Corp. (ID)	--	--	--	--	0.0 (B,15)
9/24/14	Minnesota Energy Resources (MN)	7.30	9.35	50.31	12/14-A	7.6 (I)
9/30/14	South Jersey Gas (NJ)	7.10	9.75	51.90	6/14-YE	20.0 (B)
2014	3RD QUARTER: AVERAGES/TOTAL OBSERVATIONS	7.40	9.45	49.51		329.1
		8	6	8		11

GAS UTILITY DECISIONS (continued)

<u>Date</u>	<u>Company (State)</u>	<u>ROR</u> <u>%</u>	<u>ROE</u> <u>%</u>	<u>Common</u> <u>Eq. as %</u> <u>Cap. Str.</u>	<u>Test Year</u> <u>&</u> <u>Rate Base</u>	<u>Amt.</u> <u>\$ Mil.</u>
10/7/14	Black Hills Kansas Gas Utility (KS)	--	--	--	4/14-YE	0.6 (22)
10/8/14	Missouri Gas Energy (MO)	--	--	--	6/14-YE	2.0 (26)
10/10/14	Atmos Energy (KY)	--	--	--	9/15-YE	4.4 (29)
10/15/14	Laclede Gas (MO)	--	--	--	6/14-YE	2.8 (B,26)
10/15/14	South Carolina Electric & Gas (SC)	8.13	--	53.52	3/14-YE	-2.6 (M)
10/29/14	Summit Natural Gas of Missouri (MO)	7.54	10.80	57.00	9/13-YE	7.1
11/6/14	Wisconsin Public Service (WI)	7.95	10.20	50.28	12/15-A	-15.4
11/13/14	Columbia Gas of Pennsylvania (PA)	--	--	--	12/15	32.5 (B)
11/14/14	Wisconsin Electric Power (WI)	8.60	10.20	51.90	12/15-A	-10.7
11/14/14	Wisconsin Gas (WI)	8.36	10.30	48.91	12/15-A	38.5 (Z)
11/25/14	Kansas Gas Service (KS)	--	--	--	6/14-YE	3.5 (22)
11/25/14	Avista Corp. (WA)	--	--	--	6/13	8.5 (B)
11/26/14	Madison Gas and Electric (WI)	7.98	10.20	58.96	12/15-A	-3.8
12/5/14	Liberty Utilities (Midstates NG) (MO)	7.16	10.00	45.89	9/13-YE	4.9
12/12/14	Baltimore Gas and Electric (MD)	--	--	--	8/14	38.0 (B)
12/16/14	Black Hills Kansas Gas Utility (KS)	--	--	--	12/13	5.2 (B)
2014	4TH QUARTER: AVERAGES/TOTAL	7.96	10.28	52.35		115.5
	OBSERVATIONS	7	6	7		16
2014	FULL-YEAR: AVERAGES/TOTAL	7.69	9.78	51.25		530.3
	OBSERVATIONS	29	26	29		48



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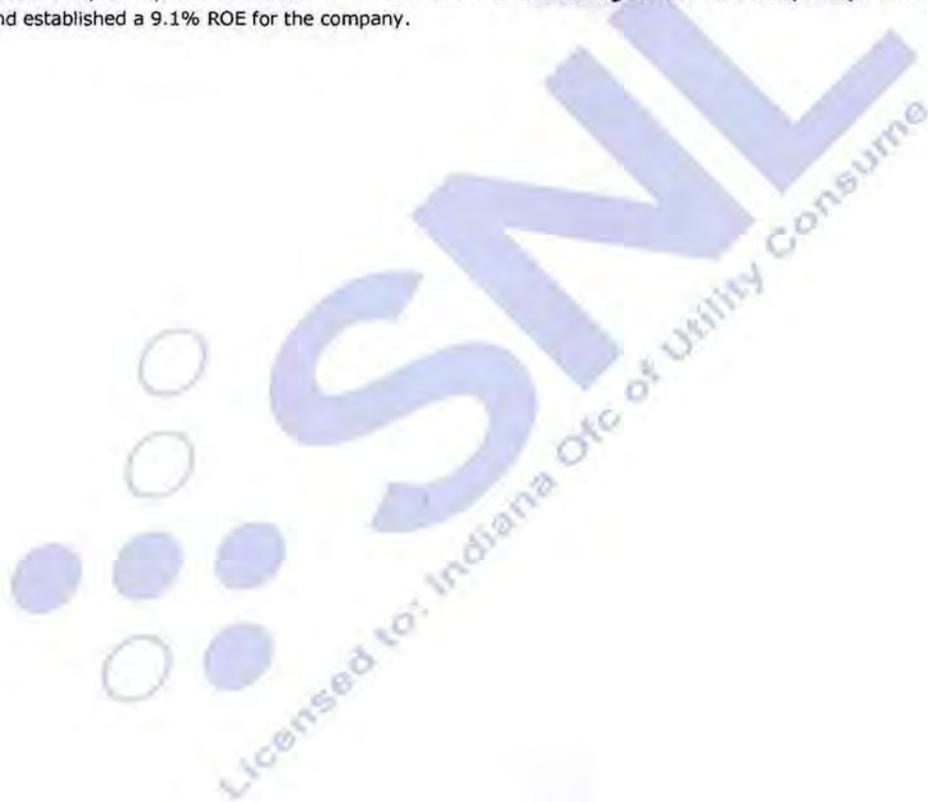
FOOTNOTES

- A- Average
 - B- Order followed stipulation or settlement by the parties. Decision particulars not necessarily precedent-setting or specifically adopted by the regulatory body.
 - COC- Case involved only the determination of cost-of-capital parameters.
 - CWIP- Construction work in progress
 - D- Applies to electric delivery only
 - DcT Date certain rate base valuation
 - E- Estimated
 - F- Return on fair value rate base
 - Hy- Hypothetical capital structure utilized
 - I- Interim rates implemented prior to the issuance of final order, normally under bond and subject to refund.
 - M- "Make-whole" rate change based on return on equity or overall return authorized in previous case.
 - R- Revised
 - Te- Temporary rates implemented prior to the issuance of final order.
 - U- Double leverage capital structure utilized.
 - W- Case withdrawn
 - YE- Year-end
 - Z- Rate change implemented in multiple steps.
 - * Capital structure includes cost-free items or tax credit balances at the overall rate of return.
- (1) Approved joint proposal (stipulation) includes two-year rate plan that specifies a second-year \$124 million revenue requirement increase.
 - (2) Approved settlement includes a four-year electric rate plan. In addition to the \$9 million first-year rate increase, an incremental \$9.3 million second-step increase based on a 10% ROE is to be implemented in 2014, and an incremental \$10.1 million third-step increase based on a 10% ROE is to be implemented in 2015. Rates are to remain unchanged in 2016 based on a 10.25% ROE.
 - (3) Increase authorized through a surcharge, Rider W, which reflects in rates the investment in the Warren County Power Station and associated transmission facilities.
 - (4) This proceeding determines the revenue requirement for Rider B, which is the mechanism through which the company recovers costs associated with its plan to convert the Altavista, Hopewell, and Southampton Power Stations to burn biomass fuels.
 - (5) This proceeding determines the revenue requirement for Rider S for the year ending 3/31/15. Rider S recognizes the company's investment in the Virginia City Hybrid Energy Center.
 - (6) An additional step increase of about \$1.1 million was authorized to be effective 4/1/14.
 - (7) The rate increase is effective retroactive to 3/31/14.
 - (8) Return on capital. The Commission approved the company's proposal to freeze electric base rates in 2015 and 2016.
 - (9) Settlement and order provide for an additional \$1.2 million increase for the recovery of costs associated with winter 2013 ice and snow storms.
 - (10) Increase authorized through a surcharge, Rider BW, which reflects in rates the investment in the Brunswick County Power Station.
 - (11) "Abbreviated" rate case that addressed only the incremental revenue requirement associated with the installation of emissions-control equipment at a generation plant.
 - (12) Rate increase authorized retroactive to 7/1/14.
 - (13) Rate increase authorized retroactive to 1/1/14. Additional "attrition" increases of \$230 million and \$285 million authorized for 2015 and 2016, respectively.
 - (14) Rate reduction effective 10/1/14.
 - (15) The approved settlement extends the terms of the company's existing rate plan approved in March 2013, for one year through 12/31/15, thereby keeping base electric and gas rates unchanged.
 - (16) Case involves company's request for a cash return on incremental V.C. Summer Units 2 and 3 CWIP and incorporates the 11% ROE that was initially authorized in 2009 for use in Summer CWIP-related proceedings.
 - (17) Case is a limited-issue proceeding associated with the company's purchase of certain hydroelectric facilities.
 - (18) Rate increase is to flow through the company's "undergrounding surcharge" as permitted by law.
 - (19) Rate increase is through a new rider associated with company's acquisition of a 48% share of Four Corners 4 and 5 from another utility. ROR represents return on a fair value rate base.
 - (20) Initial rate increase to be \$130.2 million to elect a one-year, 15-basis-point equity return penalty.
 - (21) Rate increase represents a cash return on incremental 2015 CWIP and a preliminary true-up of the cash return on 2014 CWIP for Plant Vogtle Units 3 and 4 under the company's legislatively-enabled nuclear construction cost recovery tariff.
 - (22) Case represents the company's gas system reliability surcharge rider.
 - (23) Case involves the strategic infrastructure replacement (STRIDE) rider, a surcharge associated with the company's infrastructure replacement program.

FOOTNOTES (continued)

- (24) Company's proposed strategic infrastructure replacement (STRIDE) program and an associated rider were rejected by the Commission.
- (25) Approved joint proposal (stipulation) includes a three-year rate plan that specifies second-year \$38.6 million and third-year \$56.8 million revenue requirement increases.
- (26) Case involves the company's infrastructure system replacement surcharge rider.
- (27) Additional "step increases" of about \$1.4 million to be effective on 5/1/14 and 5/1/15.
- (28) Two-year rate plan adopted. A \$6.1 million revenue requirement increase is to be effective on 10/1/14.
- (29) Case involves the company's pipe replacement program (PRP) rider.
- (30) Return on capital. The Commission approved the company's proposal to reduce gas base rates by \$5 million in 2015 and then freeze base rates in 2016.
- (31) Case involves the company's performance-based ratemaking plan.
- (32) Rate increase authorized pursuant to company's performance-based ratemaking plan.
- (33) Rate increase authorized retroactive to 1/1/14. Additional "attrition" increases of \$94 million and \$87 million authorized for 2015 and 2016, respectively.
- (34) Case involves the company's infrastructure replacement and improvement plan.
- (35) The Commission adopted a partial settlement that had resolved all outstanding issues in the case, except for ROE and two other matters, and established a 9.1% ROE for the company.

Dennis Sperduto



Data Request IG DR 2 - 03

Please provide an accounting of flotation costs incurred by IPL for each of the last 10 years. If any such costs have been incurred, please provide the amount of the associated issuance.

Objection:

Response:

No such costs have been incurred. Dr. Avera discusses IPL's flotation costs for ratemaking purposes.

Data Request IG DR 2 - 04

Please provide an accounting of flotation costs charged or allocated to IPL by its parent or affiliates for each of the last 10 years. If any such costs have been charged or allocated, please provide the amount of the associated issuance and the date on which such charge/allocation was recorded by IPL.

Objection:

Response:

No such costs have been charged or allocated. Dr. Avera discusses IPL's flotation costs for ratemaking purposes.

Data Request OUCC 14

Please provide a copy of the document Dr. Avera relies upon when on page 29 of his testimony he refers to the “announced Federal Reserve target of 2 percent or more inflation has bolstered the relevance of fair value as a way to offset the harm done to regulated utilities by original cost regulation under inflation.”

Objection:

Response:

A 2 percent target inflation rate has been a long-standing benchmark underlying the Federal Reserve’s monetary policy, as was recently reaffirmed in the Federal Reserve’s Statement on Longer-Run Goals and Monetary Policy Strategy (Jan. 28, 2014), a copy of which is attached as OUCC DR 1-14 Attachment 1.

Statement on Longer-Run Goals and Monetary Policy Strategy

As amended effective January 28, 2014

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. Communicating this inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant

economic disturbances.

The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, FOMC participants' estimates of the longer-run normal rate of unemployment had a central tendency of 5.2 percent to 5.8 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

Data Request OUCR DR 8 - 01

OUCR Data Request 1-14 asked:

Please provide a copy of the document Dr. Avera relies upon when on page 29 of his testimony he refers to the "announced Federal Reserve target of 2 percent or more inflation has bolstered the relevance of fair value as a way to offset the harm done to regulated utilities by original cost regulation under inflation." **Emphasis added**

In response, Petitioner provided a one-page attachment by the Federal Open Market Committee titled: "Statement on Longer-Run Goals and Monetary Policy Strategy (as amended effective January 28, 2014)."

Please cite the precise language within the provided Federal Open Market Committee document Dr. Avera believes supports his assertion regarding the or more portion of his response to OUCR DR 1-14.

Objection:

Response:

The second paragraph of the provided page notes "Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances." In recent years both the unemployment rate and inflation have drifted away from the indicated long-term goals, with inflation consistently below 2%. In the future, it is also possible that the realized inflation rate will rise above the indicated target. In those times the expectation is that policies will be designed to bring inflation into line using a "balanced approach" as indicated in the penultimate paragraph of the attachment beginning "In setting monetary policy,..." So inherent in having an inflation target of 2% combined with an employment target operating through the gradual and balanced adjustment of monetary policy as contemplated by the policy, it is likely that investors expect inflation to exceed 2% for periods in the future just as it has hovered under 2% in the recent past.

Data Request OUCR DR 22 - 01

In OUCR Data Request 1-14 asked: Please provide a copy of the document Dr. Avera relies upon when on page 29 of his testimony he refers to the "announced Federal Reserve target of 2 percent or more inflation has bolstered the relevance of fair value as a way to offset the harm done to regulated utilities by original cost regulation under inflation." Emphasis added

In response, Petitioner provided a one-page attachment by the Federal Open Market Committee titled: "Statement on Longer-Run Goals and Monetary Policy Strategy (as amended effective January 28, 2014)."

In OUCR DR 8 - 01 referred to the article provided in response to OUCR DR 1-14 and asked, "Please cite the precise language within the provided Federal Open Market Committee document Dr. Avera believes supports his assertion regarding the or more portion of his response to OUCR DR 1-14."

Petitioner provided the following response:

Response:

The second paragraph of the provided page notes "Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances." In recent years both the unemployment rate and inflation have drifted away from the indicated long-term goals, with inflation consistently below 2%. In the future, it is also possible that the realized inflation rate will rise above the indicated target. In those times the expectation is that policies will be designed to bring inflation into line using a "balanced approach" as indicated in the penultimate paragraph of the attachment beginning "In setting monetary policy, ... " So inherent in having an inflation target of 2% combined with an employment target operating through the gradual and balanced adjustment of monetary policy as contemplated by the policy, it is likely that investors expect inflation to exceed 2% for periods in the future just as it has hovered under 2% in the recent past.

Please cite the precise language in the FOMC attachment Dr. Avera relies one to support his claim that the "announced Federal Reserve target of 2 percent or more inflation." Emphasis added. The OUCR is not asking about Dr. Avera's opinion about whether it is likely that investors expect inflation to exceed 2% for periods in the future.

Objection:

Response:

The three specific sentences from the FMOC attachment that support Dr. Avera's statement are:

The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate.

These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision.

However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

Dr. Avera believes when these statements are considered together they support the statement on page 29, lines 16 – 19, of his Direct Testimony, "Third, the announced Federal Reserve target of 2 percent or more inflation has bolstered the relevance of fair value as a way to offset the harm done to regulated utilities by original cost regulation under inflation." This sentence is part of the answer to the question regarding the Indiana Utility Regulatory Commission's goals: "Are there any reasons in addition to maintaining IPL's financial strength during the challenging construction program for the Commission to use the flexibility afforded by fair value ratemaking in this case?" Investors' expectations are relevant to meeting the Commission's regulatory goals with an end result that supports capital attraction, financial integrity, and comparable earnings as discussed at length in Dr. Avera's testimony. Investors understand that the Federal Reserve has a dual mandate to target both inflation and employment. Based on the referenced FOMC statement investors also appreciate that expansionary monetary policy can support increasing employment while also increasing inflation. If employment does not sufficiently respond to expansionary monetary policy then meeting the employment target may result in exceeding the inflation target of 2 percent. As explained in the Federal Reserve document provided in response to OUCC DR 1-14, in attempting to meet its dual mandate the Federal Reserve policy contemplates exceeding the 2% inflation benchmark when necessary to meet employment goals. The cited Federal Reserve discussion also supports the likelihood that monetary policy may overshoot its inflation objective. In response to these conditions, the Federal Reserve states that it would adjust monetary actions to gradually bring inflation down toward the 2% benchmark. Inherent in the Federal Reserve policy cited in the response to OUCC DR 1-14 is the continuing relevance of inflation to investors and hence to the Commission in meeting its regulatory goals as described in the answer to the question in Dr. Avera's Direct Testimony at page 29.

STATE OF INDIANA
BEFORE THE INDIANA UTILITY REGULATORY COMMISSION

PRE-FILED VERIFIED DIRECT TESTIMONY
OF
WILLIAM E. AVERA

William Avera-18

1 in the price of gold and other commodities also attests to investors' heightened
2 concerns over prospective challenges and risks, including the overhanging threat
3 of inflation, a double-dip recession, and renewed economic turmoil.²⁸ With
4 respect to electric utilities, Fitch observed that, "the outlook for the sector would
5 be adversely affected by significantly higher inflation and interest rates."²⁹
6 Moody's recently concluded:

7 Over the past few months, we have been reminded that global financial
8 markets, which are still receiving extraordinary intervention benefits by
9 sovereign governments, are exposed to turmoil. Access to the capital
10 markets could therefore become intermittent, even for safer, more
11 defensive sectors like the power industry.³⁰

12 Uncertainties surrounding economic and capital market conditions heighten the
13 risks faced by electric utilities, which, as described earlier, face a variety of
14 operating and financial challenges.

15 **Q. HOW DO INTEREST RATES ON LONG-TERM BONDS COMPARE WITH**
16 **THOSE PROJECTED FOR THE NEXT FEW YEARS?**

17 A. Table WEA-1 below compares current interest rates on 30-year Treasury bonds,
18 triple-A rated corporate bonds, and double-A rated utility bonds with near-term
19 projections from Value Line, IHS Global Insight, Blue Chip Financial Forecasts
20 ("Blue Chip"), and the EIA:

²⁸ The Indiana economy also remains under stress, with the New York Times reporting, "Large cracks have opened in its economic foundation, a sign of just how severe the downturn remains." Michael Powell and Monica Davey, "The Indiana Exception? Yes, but..." The New York Times (Jun. 23, 2011).

²⁹ Fitch Ratings Ltd., "2011 Outlook: U.S. Utilities, Power, and Gas," *Global Power North America Special Report* (Dec. 20, 2010).

³⁰ Moody's Investors Service, "Regulation Provides Stability As Risks Mount," *Industry Outlook* (Jan. 19, 2011).

William Avera-19

1
2

**TABLE WEA-1
INTEREST RATE TRENDS**

	<u>Current (a)</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
<u>30-Yr. Treasury</u>					
Value Line (b)	4.4%	5.2%	5.5%	5.7%	6.0%
IHS Global Insight (c)	4.4%	4.7%	5.0%	5.1%	6.0%
Blue Chip (d)	4.4%	5.2%	5.2%	5.5%	5.7%
<u>AAA Corporate</u>					
Value Line (b)	5.1%	5.4%	5.8%	6.2%	6.5%
IHS Global Insight (c)	5.1%	5.2%	6.0%	6.2%	6.8%
Blue Chip (d)	5.1%	5.8%	5.9%	6.3%	6.5%
S&P (e)	5.1%	5.3%	5.8%	6.3%	6.7%
<u>AA Utility</u>					
IHS Global Insight (c)	5.2%	5.4%	6.3%	6.4%	7.2%
EIA (f)	5.2%	5.5%	6.4%	7.0%	7.4%

(a) Based on monthly average bond yields for the six-month period Feb. - Jul. 2011 reported at www.credittrends.moodys.com and <http://www.federalreserve.gov/releases/h15/data.htm>.

(b) The Value Line Investment Survey, Forecast for the U.S. Economy (May 27, 2011)

(c) IHS Global Insight, *U.S. Economic Outlook* at 19 (Feb. 2011).

(d) *Blue Chip Financial Forecasts*, Vol. 30, No. 6 (Jun. 1, 2011).

(e) Standard & Poor's Corporation, "U.S. Economic Forecast: It's Not Over Yet," *RatingsDirect* (July 18, 2011).

(f) Energy Information Administration, *Annual Energy Outlook 2011* (April 26, 2011).

3 As evidenced above, there is a clear consensus that the cost of permanent
4 capital will be higher in the 2012-2015 timeframe than it is currently. As a result,
5 current cost of capital estimates are conservative, because they are likely to
6 understate investors' requirements at the time the rates set in this proceeding
7 become effective.

8 **Q. WHAT DO THESE EVENTS IMPLY WITH RESPECT TO THE ROE FOR I&M?**

9 A. No one knows the future of our complex global economy. We know that the
10 financial crisis had been building for a long time, and few predicted that the
11 economy would fall as rapidly as it has, or that corporate bond yields would
12 fluctuate as dramatically as they did. While conditions in the economy and

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>Average 2015-18</u>
10-Yr. Treasury						
Value Line (a)	3.2%	3.7%	4.3%	4.5%		3.9%
IHS Global Insight (b)	3.30%	3.89%	4.49%	4.60%	4.60%	4.1%
EIA (c)	2.90%	3.56%	4.03%	4.16%	4.15%	3.7%
Blue Chip (d)	3.4%	4.1%	4.6%	4.8%		<u>4.2%</u>
						4.0%
30-Yr. Treasury						
Value Line (a)	3.9%	4.4%	4.8%	5.0%		4.5%
IHS Global Insight (b)	4.24%	4.60%	4.75%	4.77%	4.77%	4.6%
Blue Chip (d)	4.3%	4.7%	5.2%	5.5%		<u>4.9%</u>
						4.7%
AAA Corporate						
Value Line (a)	4.5%	5.0%	5.5%	5.8%		
IHS Global Insight (b)	4.77%	5.38%	5.96%	6.05%	6.05%	
Blue Chip (d)	4.9%	5.4%	5.9%	6.2%		
AA Utility						
IHS Global Insight (b)	5.14%	6.03%	6.74%	6.85%	6.85%	
EIA (c)	5.10%	5.75%	6.39%	6.58%	6.60%	

(a) Value Line Investment Survey, Forecast for the U.S. Economy (Aug. 22, 2014)

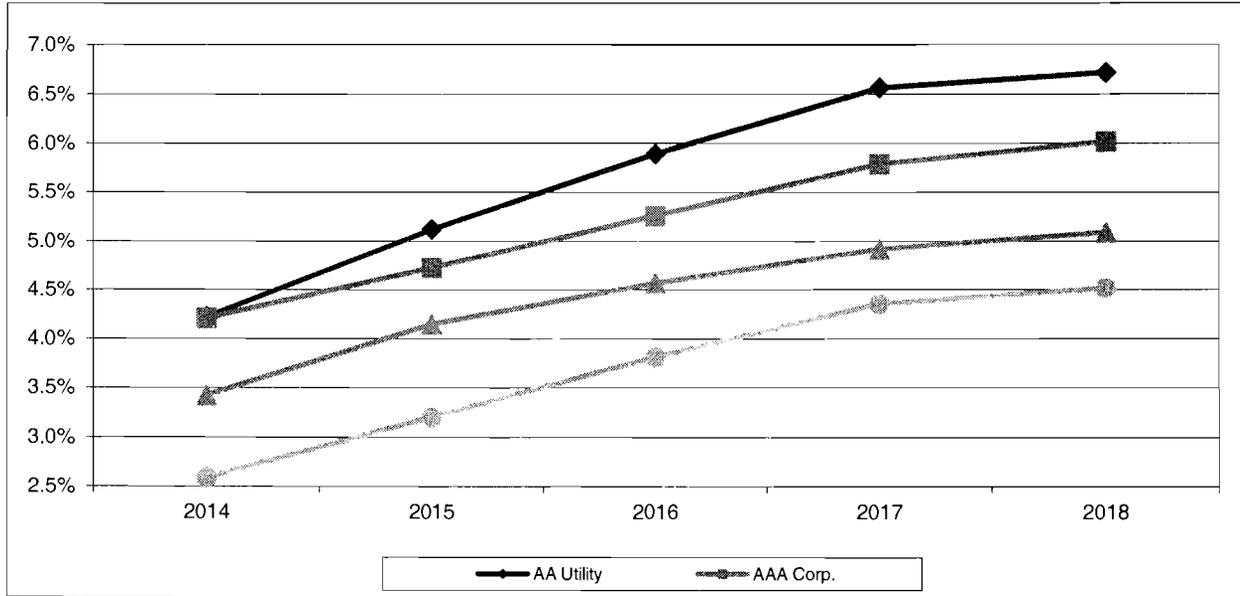
(b) IHS Global Insight, *U.S. Economic Outlook* at 79 (May 2014)

(c) Energy Information Administration, *Annual Energy Outlook 2014* (May 7, 2014)

(d) *Blue Chip Financial Forecasts*, Vol. 32, No. 12 (Dec. 1, 2013)

BLUE CHIP	<u>1-Dec Q4-2013</u>	<u>1-Dec 2018</u>	<u>Chg.</u>
AAA	4.6	6.2	1.6
Baa	5.4	7.1	<u>1.7</u>
			1.65

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
10-Yr. Treasury	2.6%	3.2%	3.8%	4.4%	4.5%
30-Yr. Treasury	3.4%	4.1%	4.6%	4.9%	5.1%
AAA Corporate	4.2%	4.7%	5.3%	5.8%	6.0%
AA Utility	4.2%	5.1%	5.9%	6.6%	6.7%



Source:

Value Line Investment Survey, Forecast for the U.S. Economy (Aug. 22, 2014)

IHS Global Insight, U.S. Economic Outlook at 79 (May 2014)

Energy Information Administration, Annual Energy Outlook 2014 (May 7, 2014)

Blue Chip Financial Forecasts, Vol. 32, No. 12 (Dec. 1, 2013)

**Society of Utility and
Regulatory Financial Analysts**

SUREA
Society of Utility and Regulatory
Financial Analysts

45th Financial Forum

Ratemaking Capital Structure: Holding Company vs. Operating Company

Panel Moderator: Vincent Rea, CRRA
Assistant Treasurer
NiSource Inc.

Fundamental Question Which Arises in Rate Proceedings...

When a utility is a subsidiary of a larger holding company, which capital structure should be referenced for rate-setting purposes?

- The utility's capital structure?
- The holding company or consolidated capital structure?
- A hypothetical capital structure?



Why does the selection of capital structure matter?

- Selection ultimately impacts the *weightings* of the respective cost rates for each form of capital, thus impacting the W.A.C.C. and overall fair rate of return.
- In cases where the holding company or consolidated entity has a lower relative equity capitalization ratio...(1) the equity weighting is lower in the calculation of the W.A.C.C., however...(2) the higher level of leverage/financial risk in the holdco capital structure likely results in a higher cost of both debt and equity capital.

Key Considerations in Determining Which Capital Structure is Most Appropriate?

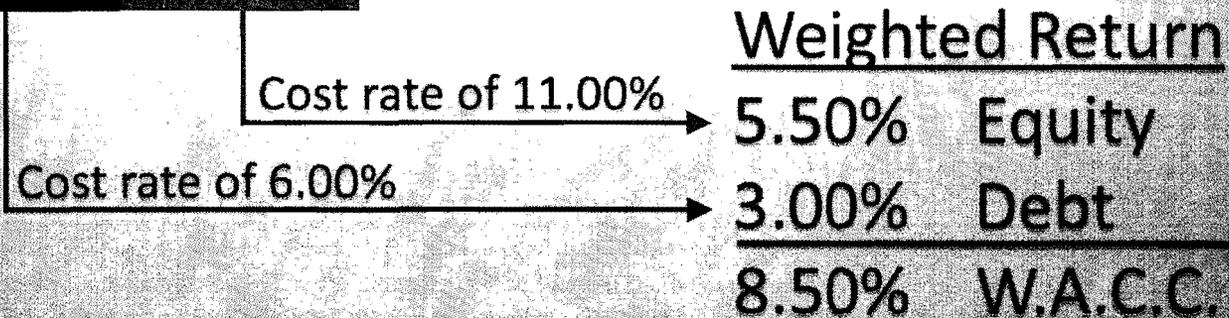
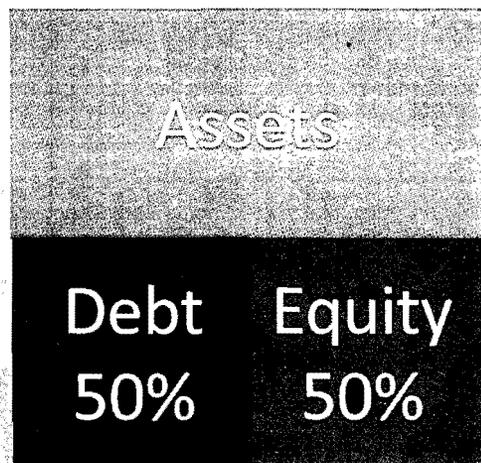
- How does the subject utility's capital structure compare to other "standalone" utilities? Is it "typical" and "proper" as compared to other regulated utilities?
- Does the utility issue its own debt and preferred stock, or does it obtain its debt capital from the parent?
- Is the parent diversified into non-utility businesses?
- In cases where neither the utility or parent company capital structures are appropriate, and would result in an excessive cost of capital, a hypothetical capital structure may be employed.

Arguments in Support of the “Standalone” Capital Structure or “Independent Company” Approach

- Under this approach, the utility’s own capital structure and cost rates are used;
- Cost of equity is “inferred” by evaluating comparable companies with corresponding risks;
- Premise - In determining a utility’s cost of equity, what matters is the business and financial risks corresponding to the subject utility (which is affected by the capital structure itself), not the parent’s funding sources.

“Standalone” or Independent Company Capital Structure Approach

Utility Subsidiary



Arguments in Support of the “Standalone” Capital Structure or “Independent Company” Approach

- Consistent with the Comparable Earnings standard, the utility’s equity return must reflect the risks to which the equity capital is exposed, and the opportunity return forgone with respect to comparable-risk investments.
- The identity of the utility’s shareholders is immaterial in determining the required equity return.

Referenced publications: Parcell (2010), and Morin (2006)



Arguments for Adopting a “Double-Leverage” Approach

- Double-leverage is said to occur when a utility’s earnings are leveraged at both the utility subsidiary level and at the parent-company level, thus further “magnifying” the ROE from the parent’s perspective;
- Presumption is that the holding company secures some portion of the funds invested in the utility’s common equity from debt sources;
- Proponents of double-leverage adjustments maintain that without such adjustments, holding companies will extract unreasonably high equity returns from rate-payers...Higher ROE’s than those actually authorized by state regulatory commissions.

Forms of Double-Leverage Adjustments

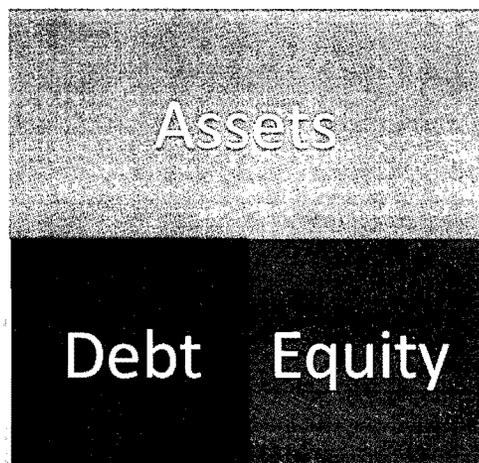
“Traditional” Double-Leverage Approach - Imputes the utility’s cost of equity as the holding company’s W.A.C.C.;

- The utility’s actual capital structure is employed as the rate-setting capital structure;
- Advocates: Seeds (1978), Copeland (1977), Backman and Kirsten (1972)
- Opponents: Fitzpatrick (1977), Lerner (1973), Brennan and Humphreys (1973)
 - Arguments: Parent-to-subsidary capital flows cannot be precisely traced. Equity raised by parent could have very well been contributed down to the utility in the form of equity.

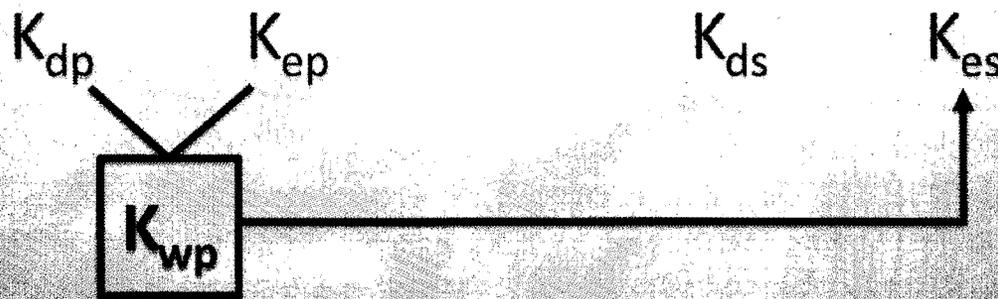
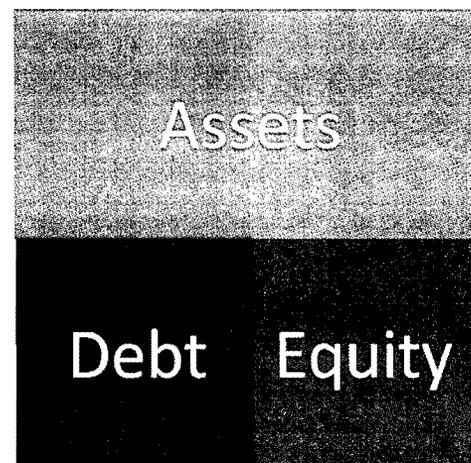


“Traditional” Double-Leverage Approach

Holding Company



Utility Subsidiary





Utility and Holding Company Cost of Capital

<u>Utility Subsidiary</u>	<u>% Weighting</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Debt	50%	6.00%	3.00%
Equity	50%	11.00%	5.50%

8.50% W.A.C.C.

<u>Holding Company</u>	<u>% Weighting</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Debt	60%	5.50%	3.30%
Equity	40%	10.50%	4.20%

7.50% W.A.C.C.



Utility Subsidiary Cost of Capital with “Traditional” Double-Leverage Adjustment

	<u>% Weighting</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Debt – Utility Subsidiary	50%	6.00%	3.00%
Equity – Imputed from the Holdco			
– Debt (60%)	30%	5.50%	1.65%
– Equity (40%)	20%	10.50%	2.10%
			<u>W.A.C.C. = 6.75%</u>

Forms of Double-Leverage Adjustments

“Modified” Double-Leverage Approach – Imputes the utility’s cost of equity for contributed capital only;

- Cost of equity for contributed capital and retained earnings will have different cost rates.
- Cost of equity for contributed capital is imputed based on the parent’s W.A.C.C..
- Cost of equity for retained earnings is estimated based on traditional analyses of comparable companies with corresponding risks.



Forms of Double-Leverage Adjustments

“Consolidated Approach” or Alternative D-L Approach

- Premise is that the consolidated capital structure should be referenced because the holdco and its subsidiaries are financed on an integrated “system-wide” basis.
- Cost rates for debt and preferred stock are based on either consolidated averages or the holding company’s financing costs.
- Cost of equity is estimated based on the traditional approach of evaluating comparable-risk companies.

Arguments Opposing Double-Leverage Adjustments

- Lerner (1973) concluded that equity returns must be based on the risks to which an investor's capital is exposed, not on the investor's source of funds. Lerner's arguments are often viewed as being consistent with the Comparable Earnings and Opportunity Cost standards/concepts established in Hope and Bluefield.
- Imputing the utility's cost of equity from the parent's debt costs ignores the structural risks associated with investments in common equity. All investors in a firm's common equity share the same degree of residual claim risk, or "last in line" status in the event of a financial distress scenario, including liquidation. In other words...equity is equity. Equity is junior capital.
- Thus, imputing the utility's cost of equity from debt sources re-characterizes the benefits associated with common stock investments (by providing debt-like returns), but does not alter the corresponding risks. This essentially violates the core tenets of the risk-return investment principle, as certain equity investors (the parent holding company, in our example) are undercompensated for the risks they bear.



Arguments Opposing Double-Leverage Adjustments

- If a utility's common shares are held by both the parent holding company and non-affiliated public investors, does the utility have two different costs of equity? Both types of investors hold the same class or form of capital. Why should their equity returns be different?
- A double-leverage approach would assign the same cost of equity to all of the holding company's subsidiaries, despite the fact that they are exposed to different risks.
- The parent's W.A.C.C. does not determine the utility's cost of equity; but rather the parent's consolidated W.A.C.C. is a function of the weighted average equity costs of its subsidiaries. Each operating subsidiary has a different risk profile, and therefore a different cost of equity.



Ratemaking Capital Structure by Jurisdiction (examples)

State Jurisdiction	Typical Capital Structure Allowed
Indiana	Standalone / Independent Co.
Kentucky	Hypothetical / Standalone ⁽¹⁾
Massachusetts	Standalone / Independent Co.
Maryland	Standalone / Independent Co.
Ohio	Consolidated Approach ⁽¹⁾
Pennsylvania	Standalone / Independent Co. ⁽¹⁾
Virginia	Consolidated Approach

⁽¹⁾ In instances where a stipulation and settlement agreement applied, the rate-setting capital structure may not have been disclosed in the rate order.

DOUBLE LEVERAGE: *A SEDUCTIVELY DANGEROUS NOTION*

**Rate-making Capital Structure:
Holding Company vs. Operating Company**

Enrique Bacalao

45th Financial Forum

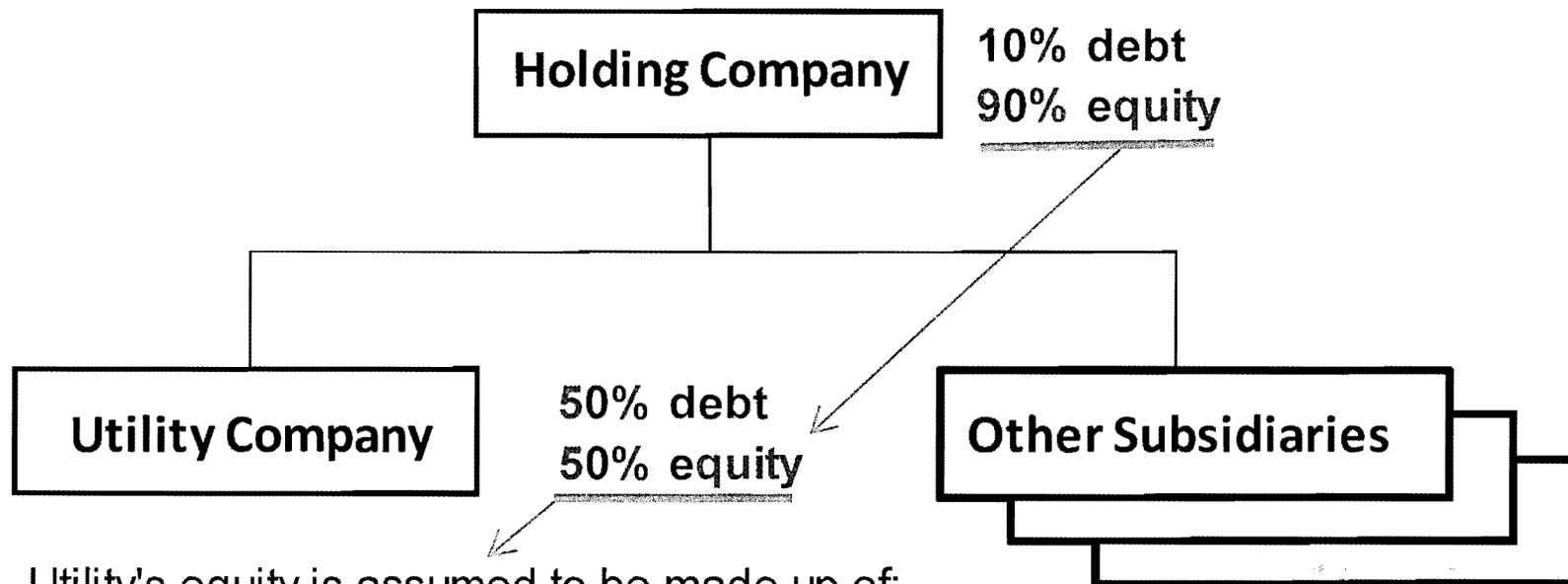
Society of Utility and Regulatory Financial Analysts

April 18, 2013

Hypothetical Capital Structures

- Double leverage can be viewed as a sub-set of the use of hypothetical capital structures in regulatory proceedings.
- **Question:** Under what circumstances might the use of a hypothetical capital structure be appropriate?
- **Suggested answer:** Only when it would render a more accurate reflection of the regulated utility company's marginal cost of capital.
- **Challenge:** This answer requires judgment – it's definitely not an automatic or prescriptive approach.
- **Example:** South Beloit Water Gas and Electric Company

An Example of Double Leverage



Utility's equity is assumed to be made up of:

- 10% debt
- 90% equity

Consequently, the hypothetical capital structure of the utility company as result of double leverage is imputed to be:

- 55% debt
- 45% equity (*being 90% of 50%*)

The Concept of Double Leverage

- Can be imputed to a utility operating company that:
 - Has issued its own debt
 - Is wholly owned by a parent holding company
 - Whose parent holding company has also issued debt

- The term “double leverage”:
 - Initial financial leverage on the earnings for the operating company’s common stock
 - Additional financial leverage on the earnings for the parent holding company’s common stock *to the extent it has borrowed the funds invested in the operating company’s common stock*
 - Imputation could be extended to additional leverage if there are additional levels of corporate ownership in the holding company.

Alternative Imputation Methods

- The parent company's weighted average cost of capital (WACC) determines the operating company's cost of equity
 - Equity contributions and retained earnings are both deemed to have been funded by a blend of parent company equity and debt
 - The parent company's WACC becomes the utility's cost of equity
 - The operating company's debt-to-capital ratio rises as a result

- The parent holding company's WACC determines only part of the operating company's cost of equity
 - The operating company's retained earnings are not adjusted
 - Only the portion of equity that has been contributed by the parent is adjusted to reflect double leverage, as above
 - The operating company's debt-to-capital ratio rises as a result

Double Leverage Assumptions

In order to justify double leverage adjustments:

- The parent holding company must have debt outstanding
- The debt must be deemed to have funded incremental equity investments in the utility operating company
- The business and financial risk profile of the holding company's other subsidiaries are identical to the operating utility company's profile
- The resulting distortion to the operating company's financial leverage does not affect its cost of capital
- Financial analysis (both credit and equity) disregards any difference between operating and holding companies

The Siren Song

- Holding companies that qualify for a double leverage adjustment would enjoy a windfall profit, absent the adjustment (*higher equity rates of return being earned for lower-cost debt funding*)
- Stand-alone utility companies face a higher cost of equity than comparable utility companies owned by a levered holding company (*unfair treatment*)
- These excess earnings, as with any subsidy, distort commercial incentives and capital budgeting decisions (*triggering the white elephant syndrome*)

Fundamental Flaws with the Notion

• Economic concepts violated:

- The return required by an investor is a function of the risk of the investment.
- The cost of equity is therefore the risk-adjusted opportunity cost faced by the marginal investor.
- The cost of equity is not a function of how the investment is funded.
- The cost of equity is based on future expectations, not historical events.

• Practical concepts violated:

- Equity is equity, regardless of its ownership or funding source
- Retained earnings are incorrectly treated:
 - One approach assumes the parent funds retained earnings (*wrong*)
 - The other approach treats equity contributions and retained earnings differently, thus leading to two different costs of equity simultaneously for the same company (*wrong*)

The Nonsense Exposed

If double leverage imputation were accepted as being reasonable, then two otherwise identical utility companies would face different costs of capital if the equity:

- Was funded differently; or
- The ownership of one did not involve a parent holding company while the ownership of the other did; or
- The ownership had to be traced back to each ultimate beneficial owner and the imputed leverage calculated for each company accordingly.

The valuation of those two otherwise identical utility companies would also be different as a result of:

- Variations in ownership
- Variations in the funding of the ownership

Based on Reasonable Assumptions?

The Underpinning Assumptions

- The parent holding company must have debt outstanding
- The debt must be deemed to have funded incremental equity investments in the utility operating company
- The business and financial risk profile of the holding company's other subsidiaries are identical to the operating utility company's profile
- The resulting distortion to the operating company's financial leverage does not affect its cost of capital
- Financial analysis (both credit and equity) disregards any difference between operating and holding companies

Comments and Questions

- What if the parent issued preferred stock instead of debt?
- Requires tracing funds dollar-for-dollar from sources to uses: Quixotic proposition
- Highly unlikely in almost all cases, even if all other operating subsidiaries are also utility companies
- Unreasonable assumption - viewed negatively by credit rating agencies
- Highly unlikely in almost all cases:
 - Structural subordination of parent company debt
 - Differences in business risk profiles between operating and holding companies

The Reality for Utility Holding Companies

- The risk profiles of its subsidiaries sets the risk profile and cost of equity for the holding company, not the other way around.
- The business risk profile of various subsidiary companies is different, leading to individual optimal capital structures
- Consequently, the optimal capital structure of the parent holding company and that of any one of its regulated operating subsidiaries is necessarily different
- Financing at the parent holding company is driven by its own investment requirements, not those of its subsidiaries
 - The investment requirements vary over time among its subsidiaries
 - The mere existence of parental debt does not prove it has been used to fund its equity at a utility operating company subsidiary

The Reality for Utility Operating Companies

- Utility companies must optimize their capital structure to minimize their overall marginal cost of capital, *i.e.*, they should minimize their marginal WACC
- This approach maximizes the value of the utility operating company
- In turn, this maximizes the value of the parent holding company, which tends to be the aggregate of the value of its operating companies
- What rational and informed parent holding company knowingly undermines its own value by sub-optimizing its operating company subsidiary's capital structure?

The Implications of Double Leverage

- Artificially overstates financial leverage
- Distorts the fair return on equity estimates
- Fails to accurately reflect the significance, nature and cost of retained earnings
- Reduces the potential efficiencies of a holding company system for the utility operating company and its customers
- Undermines the regulatory function:
 - *Hope* and *Bluefield* fair rate of return standards
- Creates a disincentive to attract needed capital by systematically under-compensating the investment of that capital.

Conclusions

1. Hypothetical capital structures are justifiable *only* if they more accurately reflect a stand-alone utility company's actual marginal cost of funding
2. Double leverage does not meet that standard
3. Double leverage has serious shortcomings, both conceptual and practical
4. The balance of the professional literature has swung against the validity of the double leverage concept over the past 30 years
5. Double leverage has largely disappeared from modern regulatory practice

HOW PARENT COMPANY LEVERAGE CAUSES THE REALIZED RETURN TO EXCEED THE COST OF CAPITAL

REGULATED SUBSIDIARY			UNREGULATED PARENT COMPANY		
Type of Capital	Amount	Percent of Total	Type of Capital	Amount	Percent of Total
Equity	\$150	60.00%	Equity	\$50	33.33%
Debt	<u>\$100</u>	<u>40.00%</u>	Debt	<u>\$100</u>	<u>66.67%</u>
Total	\$250	100.00%	Total	\$150	100.00%

Assumptions:
 Cost of Debt = 5% (Sub); 6% (Parent)
 Cost of Equity = 10%
 Tax Rate = 35%

Step 1: Calculate SUBSIDIARY overall return.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$150	60.00%	10.00%	6.00%	9.23%
Debt	<u>\$100</u>	<u>40.00%</u>	<u>5.00%</u>	<u>2.00%</u>	<u>2.00%</u>
Total	\$250	100.00%		8.00%	11.23%

Step 2: Apply SUBSIDIARY overall return to PARENT company.

Type of Capital	Amount	Percent of Total	Cost Rate	Wt. Cost Rate	Pre Tax Wt. Cost
Equity	\$50	33.33%	14.10%	4.70%	7.23%
Debt	<u>\$100</u>	<u>66.67%</u>	<u>6.00%</u>	<u>4.00%</u>	<u>4.00%</u>
Total	\$150	100.00%		8.70%	11.23%

ALTHOUGH THE REGULATED SUBSIDIARY IS ALLOWED AND EARNS A 10% ROE, THE PARENT, LEVERAGES THAT RETURN AND REALIZES A 14.5% RETURN ON ITS EQUITY INVESTMENT.

ALSO, THIS ANALYSIS DOES NOT TAKE INTO ACCOUNT THE FACT THAT THE PARENT IS THE TAXPAYER, NOT THE SUBSIDIARY. THE PARENT WILL HAVE GREATER INTEREST EXPENSE AND LOWER TAXES THAN ASSUMED WHEN THE STATUTORY RATE IS APPLIED TO THE SUBSIDIARY TO DEVELOP REVENUE REQUIREMENTS. THIS ASPECT FURTHER ENHANCES THE PARENT'S RETURN.

Data Request OUCC DR 36 - 01

Please answer the following questions based on information shared at a meeting between OUCC employees and IPL employees on Friday afternoon (February 27th) where the Parties discussed Mr. Reed's DCF analysis to estimate the value of IPL's generating assets:

- a. Please define the term "Operating Capacity" as used in Mr. Reed's production plant valuation study.
- b. Please define the term "Planning Capacity" as used in Mr. Reed's production plant valuation study.
- c. To estimate Capacity Revenues, does Mr. Reed use "Operating Capacity" or "Planning Capacity"? Please explain why.
- d. During the Friday meeting, it was explained that the "Capacity Factors %s" in Mr. Reed's analysis is a result and not an input to the analysis. Is this correct? If so, how are the "Capacity Factor %s" calculated? Why does Petitioner believe those "Capacity Factor %s" are reasonable?
- e. During Friday's conversation, it was mentioned that the forecasted capital costs recognized planned/anticipated outages. Please list any outages by plant (when and duration) that IPL currently anticipates will occur over the life of its Generation Valuation Study.
- f. For each planned outage detailed above, has IPL recognized the planned outage in its revenue calculation? If no, why not? If yes, please explain/illustrate how planned outages are recognized in the revenue calculation.
- g. During Friday's conversation, the OUCC recalls that IPL employees (Chad Rogers) indicated the increase in capacity prices was in part driven by constrained capacity. Does the OUCC recall Friday's conversation correctly? If yes, what did Mr. Rogers mean by constrained capacity? If no, what factors are driving the increase in capacity prices?
- h. Please provide a copy (electronic link is ok) of the MISO "Loss of Load Expectations Study" mentioned towards the end of Friday's meeting.

Objection:

IPL objects to the Request on the grounds and to the extent the request seeks information that is confidential, proprietary, competitively-sensitive and/or trade secret. IPL further objects to the Request on the grounds and to the extent it is vague and ambiguous, particularly with respect to the undefined phrase "revenue calculation" in subpart (f). Subject to and without waiver of the foregoing objections, IPL provides the following response.

Response:

- a. The term "Operating Capacity" as used in Mr. Reed's production plant valuation study is the attainable level of generating capacity used for unit operations.
- b. The term "Planning Capacity" as used in Mr. Reed's production plant valuation study reflects the capacity credit in the MISO Resource Adequacy Construct.

- c. The capacity revenue is calculated using the Planning Capacity for each unit. Please see OUCC DR 11-1 Confidential Attachment 1 for an example. The referenced attachment provides an example of how the Ventyx models calculate capacity revenue.
- d. Yes, the capacity factors are a result of unit dispatch derived from Ventyx production costs modeling. The Ventyx model calculates the capacity factors using the projected unit dispatch compared to its operating capacity. The capacity factor calculation is: Unit Generation (GWh) divided by the Unit Operating Capacity (MW) times the Number of hours in month. The capacity factors shown in Mr. Reed's models are from the Ventyx model results.

IPL reviews the Ventyx model calculated Capacity factor % s for reasonableness based on the historical capacity factors of the units and anticipated impacts of unit operating costs and market prices.

- e. See the outage schedule used in the Ventyx model that provides the inputs for Witness Reed's DCF model in OUCC DR 36-1 Confidential Attachment 1.
- f. Yes. The economic modeling in Ventyx recognizes both the unit loss of availability and the maintenance capital and fixed O&M costs associated with unit outages. The costs associated with these outages are then leveled and escalated and included in the fixed costs of the units over their remaining lives.
- g. Yes.

A meeting was conducted informally with OUCC staff to help in the understanding of Witness Reed's DCF model. During the discussion, Mr. Rogers was asked about his opinion concerning the increase in future capacity prices. Mr. Rogers' response was not intended to substitute Witness Dininger's testimony on this subject.

See Witness Dininger's testimony, page 13, lines 12-13, wherein he states, "The cost of capacity is estimated to rise as more coal-fired units are retired in the near future due to the EPA's Mercury Air Toxics Standards ("MATS" Rule) compliance deadline,"

See also the response to OUCC DR 7-4 for a detailed explanation and documentation that supports IPL's reasoning/statement that the cost of capacity is estimated to rise.

- h. The document that was intended to be referenced was the OMS (Organization of MISO States) Survey at:
<https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/SAWG/2014/20140605/20140605%20SAWG%20Item%2003%202014%20OMS-MISO%20Survey%20Update.pdf>

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FEATURE

Time to Give Utility Stocks Another Look

After a 10% pullback, utility stocks are looking attractive again, with total return potential of 8% to 9% a year.

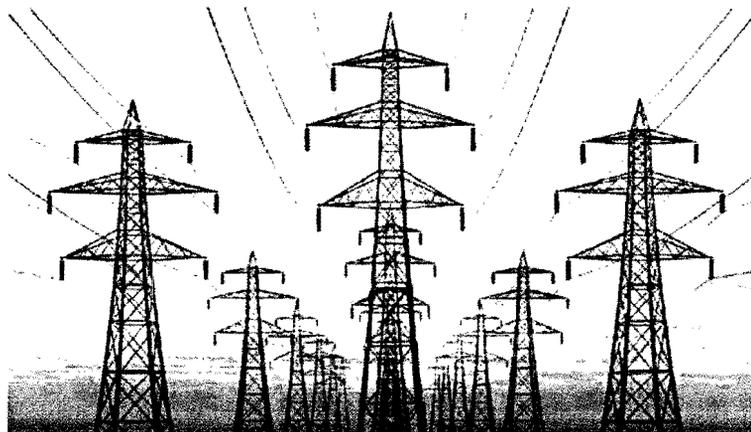
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By **ANDREW BARY**
May 9, 2015

Electric-utility stocks look more appealing after a 10%-plus decline since late January. The selloff comes after a strong 2014 when the group returned 29% and reflects the recent rise in Treasury yields.

Some utility stocks like [Duke Energy](#) (ticker: DUK), [Southern Co.](#) (SO), and [Consolidated Edison](#) (ED) yield more than 4%. Others, like [Edison International](#) (EIX), [PG&E](#) (PCG), and [American Electric Power](#) (AEP) yield less but could produce mid- to high-single-digit growth in earnings per share in coming years.



Power Equation

The eight utilities below feature average dividend yields of 4%. That plus mid- to single-digit earnings growth could translate in to average annual returns of 8% or more.

Company / Ticker	Recent Price	12-Mo. Chg	Earnings Per Share 2015E	Earnings Per Share 2016E	P/E 2015E	P/E 2016E	Dividend Yield
Southern Co. / SO	\$44.23	-1.4%	\$2.84	\$2.93	15.6	15.1	4.9%
Consolidated Edison / ED	61.24	6.0	3.91	4.00	15.7	15.3	4.3
Duke Energy / DUK	76.81	4.1	4.68	4.95	16.4	15.5	4.2
American Electric Power / AEP	65.26	3.3	3.53	3.70	15.6	14.9	3.9
Dominion Resources / D	70.93	-1.8	3.69	3.89	19.2	18.3	3.7
PG&E / PCG	51.77	15.8	2.61	3.72	14.3	13.9	3.5
NextEra Energy / NEE	106.60	1.4	5.65	6.08	17.8	16.6	3.1
Edison International / EIX	60.14	5.3	3.58	3.90	16.8	15.4	2.8

Photo: TebNadi/Stock

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Time to Give Utility Stocks Another Look - Barron's

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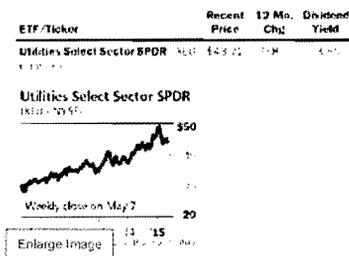
"The relative attraction of utilities has increased in an environment of slower economic growth, when earnings growth is being suppressed by a stronger dollar and energy prices," says Hugh Wynne, a Bernstein utilities analyst. Regulated utilities usually have little overseas exposure and are often insulated from power-price changes. Wynne favors two California utilities, PG&E and Edison International, because of above-average growth and a favorable regulatory environment.

The largest exchange-traded fund in the sector, [Utilities Select Sector SPDR \(XLU\)](#), trades at \$44 and yields 3.5%. It's off 12% from its January high of nearly \$50. Its top holdings are Duke, [NextEra Energy \(NEE\)](#), and [Dominion Resources \(D\)](#).

UTILITIES AREN'T CHEAP, trading for an average 16.4 times estimated 2015 earnings. However, the sector is at a 5% discount to the Standard & Poor's 500 price/earnings ratio based on projected 2015 earnings, compared with an average premium in the past decade of 4%. And while utility stocks got socked Tuesday, falling 2%, the sector has only about half the market's volatility. The stocks also look good relative to Treasuries and utility debt. The 10-year Treasury yields 2.1%.

"Utilities and the overall market may provide the same total return, but one offers a lower-risk package," says Dan Eggers, a Credit Suisse utility analyst. He sees utilities generating an 8% to 9% annual total return in the next few years, which is in line with the historical return of the S&P 500, with less volatility. He's partial to American Electric Power, NextEra, and PG&E.

One utility fan is [Berkshire Hathaway \(BRK.A\)](#) CEO Warren Buffett. Berkshire owns utilities in the Midwest and West Coast and wants more. Buffett likes the ability to earn a decent, predictable return of about 10% on new capital committed to infrastructure.



Many view utilities as a no-growth business given little change in U.S. electricity consumption in recent years. However, earnings growth has averaged 4% annually in the past decade and profits could grow at a similar rate in coming years as utilities upgrade or replace aging transmission lines and power plants. Much of the U.S. utility infrastructure is more than 40 years old.

Edison International, for instance, is replacing 35,000 utility poles every year for \$300 million, but even at that rate, it may take it 40 years to replace them all. Utilities have sought to mitigate rate increases with cost-control efforts. And with electric utility bills averaging about \$100 a month, or less than 2% of household disposable income, there hasn't been a lot of consumer backlash against rate increases given that many American families spend more on cellphones or cable TV.

Eggers sees PG&E ramping up its dividend over the next few years now that it appears to have dealt with financial penalties from a fatal natural-gas explosion at San Bruno in 2010. PG&E's dividend payout rate is 50% based on estimated 2015 earnings, below the group average of 65%. PG&E, at \$52, also trades at a discount to the group at 14 times estimated 2015 profit. Edison International, at \$60, has one of the lowest dividend yields among top utilities, at 2.8%. But its payout could rise at a double-digit rate in coming years, powered by annual earnings gains of 7% or higher. Historically, high-growth, lower-yielding utilities have generated better total returns than low-growth, higher-yielding ones.

American Electric Power, the big Midwestern utility, has refocused on its regulated business. At \$55, it offers a nearly 4% dividend yield and could hike the payout by 5% annually in coming years. NextEra, the former Florida Power & Light, has a business mix that's 60% regulated and 40% wholesale generation, with much of that contracted renewable power. It yields 3.1% and is expected to produce earnings growth of 5% to 8% annually. Southern Co. has one of the highest yields in the group at 4.9%. That reflects a weak earnings outlook, huge cost overruns at a coal-gasification plant in Mississippi, and risk involving two nuclear plants under construction in Georgia.

Consolidated Edison, at \$61, has lagged behind the group, and offers a 4.3% yield. It's spending as much as New York regulators will permit to upgrade its transmission infrastructure.

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There is concern that the growing use of home solar panels will cut into power demand and hurt industry economics. Yet home-generated solar is still under 1% of total power generation nationwide, and the cost of moving off the grid for a single-family home runs tens of thousands of dollars. Utilities are also resisting regulation that benefits homeowners with solar at the expense of other customers.

Electric utilities are underappreciated, with above-average yields and better growth prospects than most investors believe.

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Marek Mscichowski | March 11, 2014



Stocks may appear to be at expensive levels. Looking at **Price to Earnings (P/E) multiples** of equities and comparing them to their historical averages, however, some commentators (namely, former Federal Reserve Chairman Alan Greenspan and NYU professor Aswath Damodaran) have recently pointed to equity risk premiums as another useful metric for valuing stocks. Unlike P/E multiples, equity premiums take interest rates, some currently at historically low levels historically, into account.

The equity premium is the total expected return (including capital growth and dividends) minus the risk-free rate. The total expected return is currently around 8.5%. The ten-year Treasury yield, an estimate of the risk-free rate, is about 3%. Hence, by our rough arithmetic, the equity premium that compensates investors for the added risk of holding corporate equity over theoretically risk-free U.S. government interest payments is currently about 5.5%.

Historically, the equity premium required by investors has averaged in the range of 3% to 7%. So this premium is about average, while interest rates, in some cases, are at historic lows.

The main reason that interest rates are so low is the Federal Reserve's massive asset-buyback program and abnormally low inflation. Through this lens, the elevated high P/E ratios make more sense, as investors search for returns in a low interest-rate environment. However, the Fed lowered the amount of monthly buybacks by \$10 billion, from \$85 billion to \$75 billion, as 2013 came to a close. It then pared another \$10 billion assets in January of this year. The Fed's efforts should eventually increase interest rates, though the timeframe appears to depend on the depth and breadth of an economic recovery. This has lent more urgency to speculation on Fed moves.

If interest rates go up and the required premium stays the same, this will decrease equity prices, all else being equal, as future cash flows are discounted by greater expected total returns. However, Professor Damodaran, who periodically posts his own equity risk premium estimate, argues that over the past decade, estimated returns have circled around the same mean, with equity risk premiums have largely compensated for falling interest rates, which have been in the hands of the Federal Reserve. Still, there are historical precedents for shifts in the total expected return because of either changes in the risk-free rate or equity premiums.

Besides interest rates and required equity premiums, another variable that can affect returns is earnings growth, which ultimately supplies money for returns in the form of dividends and buybacks. In recent years, corporations have been doing well, and the global economy seems to be firming up. Future earnings figures will also affect valuations. Damodaran provides a model (similar to a dividend discount model for a stock) for one to determine the intrinsic value of the S&P 500 Index by providing estimates for the risk-free rate, equity premium, as well as cash returns in the form of buybacks and their assumed growth rates.

What are some possible scenarios and how would they affect investors? Our previous discussion should shed some light. In the worst case scenario, interest rates will grow sharply, while the pace of earnings slow (compared to expectations, at least). This may mean equities are relatively overvalued now. For investors, the best case would be if earnings continue to grow nicely, while interest rates remain subdued. This may mean that the intrinsic value of equities is above the current price. With markets recently reaching all-time highs in some indexes and many stocks trading at premium P/E multiples compared to recent years, looking at the equity risk premium may provide investors with new insights into equity valuation and where stocks can go from here.

Value Line subscribers can compare our total return estimates with current bond yields for an idea of equity risk premium as they differ for each individual stock (In general, riskier stocks require higher premiums). Investors should also focus on our earnings and dividend estimates and projections, when considering if an investment is right for them on a fundamental basis.

At the time of this article's writing, the author did not have positions in any of the companies mentioned.

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Data Request OUCC 02

For calendar years 2014, 2013, 2012, 2011 and 2010, how much in dividends has IPL paid to its parent company?

Objection:

Response:

<i>(\$ in millions)</i>	2014	2013	2012	2011	2010
Dividends to IPALCO	127	90	97	81	112

Cause Nos. 44576/44602

Attachment ERK-35

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Confidential

Cause Nos. 44576/44602

Attachment ERK-36

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Cause Nos. 44576/44602

Attachment ERK-37

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Confidential

Data Request OUCC DR 10 - 03

In response to OUCC data request 1-6 Petitioner asserted as follows:

We use a slightly conservative approach in selecting an EROA that is within the actuary's tolerance level.

Please answer the following questions related to Petitioner's response to OUCC data request question 1-6.

- a) What does Petitioner mean by "conservative approach"?
- b) What was the range of EROAs that are within the actuary's tolerance level?
- c) Does Petitioner agree that a "conservative approach" leads to using a lower EROA? Please explain why or why not.
- d) Does Petitioner agree that using a lower EROA leads to a higher pension expense? Please explain why or why not.
- e) Does Petitioner agree that using a lower EROA leads to a higher overall revenue requirement? Please explain why or why not.

Objection:

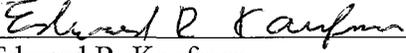
IPL objects to the Request on the grounds and to the extent the request seeks information that is confidential, proprietary, competitively-sensitive and/or trade secret. Subject to and without waiver of the foregoing objections, IPL provides the following response.

Response:

- a) See OUCC DR 10-1 Confidential Attachments 1 and 3.
- b) See OUCC DR 10-1 Confidential Attachments 1 and 3.
- c) Yes. IPL would characterize using a slightly conservative approach as being prudent in this context. See OUCC DR 10-1 Confidential Attachments 1 and 3.
- d) Yes, a lower EROA will produce a higher pension expense based on pension accounting rules.
- e) Yes, because pension expense is included in the revenue requirement.

AFFIRMATION

I affirm, under the penalties for perjury, that the foregoing representations are true.



Edward R. Kaufman
Indiana Office of Utility Consumer Counselor

July 27, 2015
Date

Cause Nos. 44576/44602
Indianapolis Power & Light Company