The Deregulation Penalty: Losses for Consumers and Gains for Sellers

APPENDICES

Appendix A

Sample of Regulated Companies

The regulated sample was developed by reviewing Value Line reports for numerous regulated water, electric and natural gas utility companies that are located in states that have not restructured their electricity markets. Companies that receive a significant percentage of their income from unregulated subsidiaries and companies that have had unusual losses are excluded from the sample. After screening many companies, a sample of twenty-three regulated utility companies was identified. Below is a list of companies included in the regulated sample and their returns on equity. (The regulated sample was updated from the prior reports because various companies have merged and/or changed their business activities.)
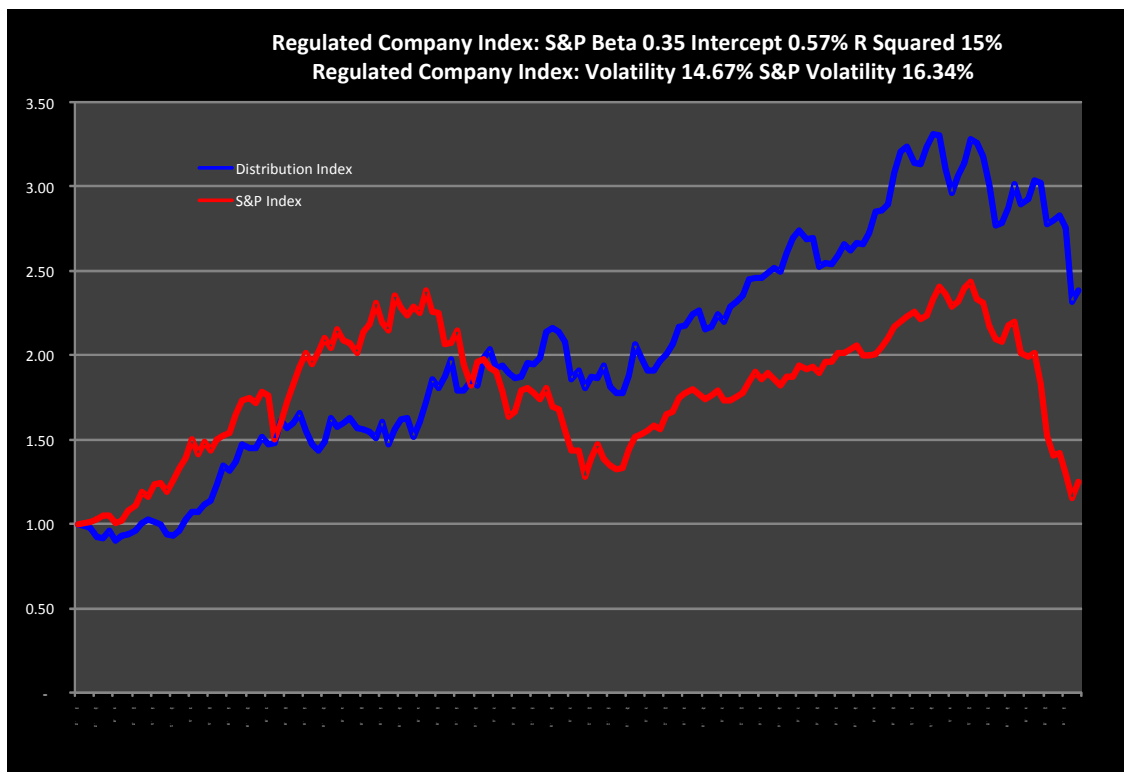
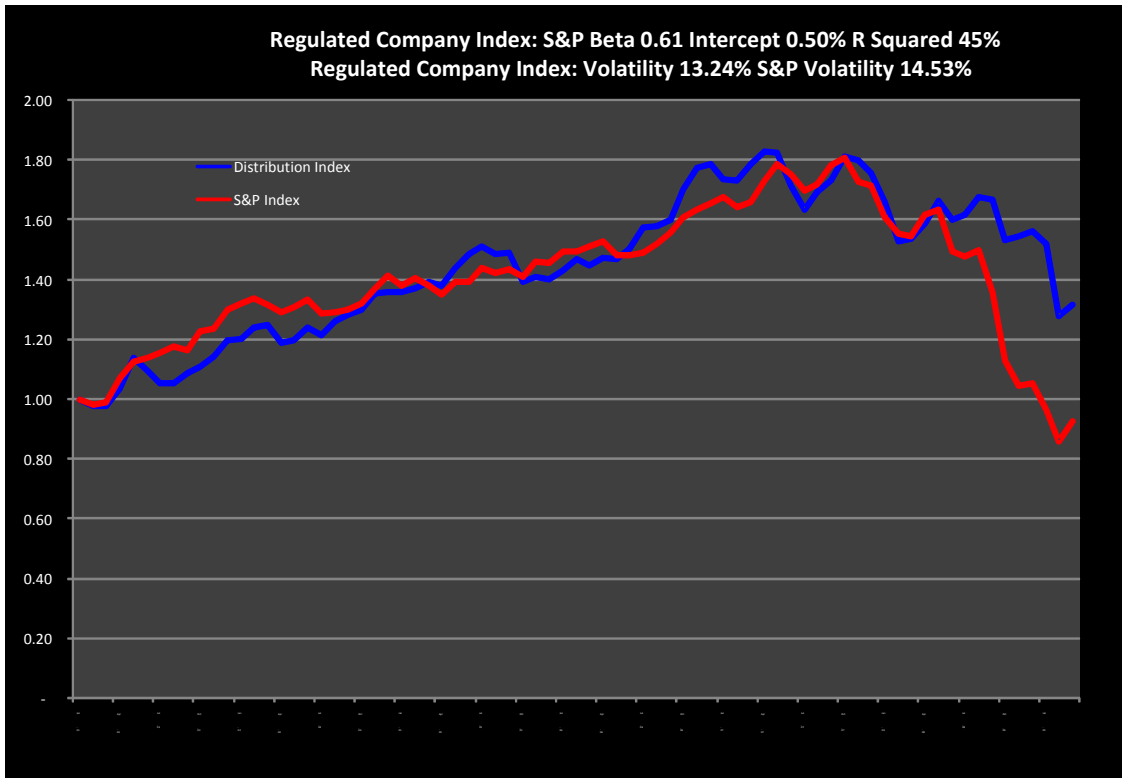| Regulated Company ROE Reported by Value Line									
Company	Ticker	2001	2002	2003	2004	2005	2006	2007	2008
Atmos Energy	ATO	9.60%	10.40%	9.30%	7.60%	8.50%	9.60%	8.70%	8.80%
AGL Resources	AGL	12.30%	14.50%	14.00%	11.00%	12.90%	13.20%	12.70%	12.60%
Amreican States Water	AWR	10.10%	9.50%	5.60%	6.60%	8.50%	8.10%	9.30%	8.00%
Avista Corp	AVA	7.90%	4.50%	6.60%	4.80%	5.90%	8.20%	4.20%	8.00%
CH Enregy Group	CHG	9.80%	7.00%	9.00%	8.40%	8.60%	7.70%	8.00%	6.50%
CLECO Corporation	CNL	14.20%	12.80%	12.20%	11.80%	10.60%	8.30%	7.90%	9.00%
California Water	CWT	7.20%	9.40%	7.80%	8.90%	9.30%	6.80%	8.10%	10.00%
Cent Vermont P.S.	CV	6.00%	9.30%	8.00%	6.50%	0.60%	9.70%	7.90%	8.50%
DTE Energy Co.	DTE	7.20%	13.80%	9.10%	8.00%	10.00%	7.50%	7.70%	7.50%
Duke Energy	DUK						4.10%	7.20%	6.10%
Con Edison	ED	11.80%	11.10%	9.60%	7.70%	9.60%	9.10%	10.30%	12.00%
El Paso Electric	EE	14.60%	6.30%	6.30%	6.30%	6.60%	10.60%	11.20%	11.50%
Empire District	EDE	3.90%	7.80%	7.80%	5.80%	6.00%	8.50%	6.20%	7.50%
Hawaiian Electric	HE	11.40%	11.10%	10.70%	8.80%	9.60%	9.70%	7.10%	7.50%
IDACORP	IDA	13.30%	7.10%	4.40%	7.70%	6.20%	8.90%	6.80%	8.50%
Nisource	NI	6.80%	9.70%	9.30%	8.90%	6.00%	6.30%	6.10%	7.80%
Northeast Utilities	NU	6.20%	6.80%	5.10%	5.00%	4.30%	8.30%	9.40%	9.00%
NW National Gas	NWM	10.00%	8.90%	9.10%	8.90%	9.90%	10.90%	12.50%	11.00%
PEPCO Holdings	POM	11.00%	8.70%	7.90%	7.60%	7.60%	7.00%	7.40%	9.00%
SCANA Corp	SCG	10.00%	11.30%	11.80%	11.90%	11.60%	10.30%	10.60%	11.20%
UIL Holdings	UIL	11.90%	9.10%	6.00%	6.70%	5.80%	9.90%	10.10%	10.30%
Unisource Energy	UNS	14.30%	7.60%	8.40%	7.90%	7.50%	10.60%	8.50%	2.50%
XCEL Energy	XEL	12.50%	3.70%	9.70%	9.90%	9.10%	9.60%	9.00%	9.50%
Average		10.09%	9.11%	8.53%	8.03%	7.94%	8.82%	8.56%	8.80%
Median		10.05%	9.20%	8.70%	7.80%	8.50%	8.90%	8.10%	8.80%

Appendix B

Stock Price Trends

This Appendix presents the overall trends in stock prices for the S&P 500, the Regulated, PJM Core and Merchant Companies. Stock price movements have been dramatic over the past few years for these companies. Because of this volatility, we first present the Regulated Companies and S&P 500 indeces without the Core or Merchant Companies. The next two tables show the stock price over two time periods; beginning in 1996 and in 2003, for the Regulated companies and the S&P 500. The charts show that S&P 500 increased and decreased with the tech and housing bubbles. The utility index continued to increase after the market crash of 2000-2001, but has decreased with the recent financial crisis.

All of the stock prices are taken from the adjusted stock prices on the Finance.Yahoo!.com website. The adjusted prices account for dividends paid and stock splits.
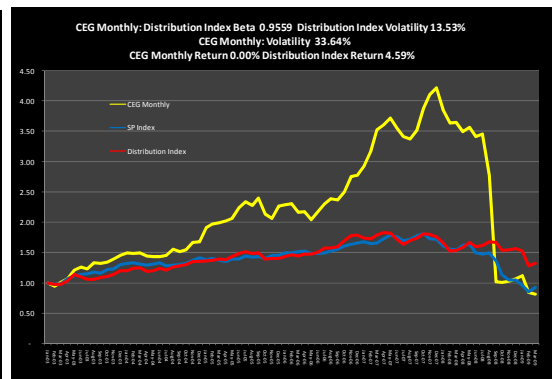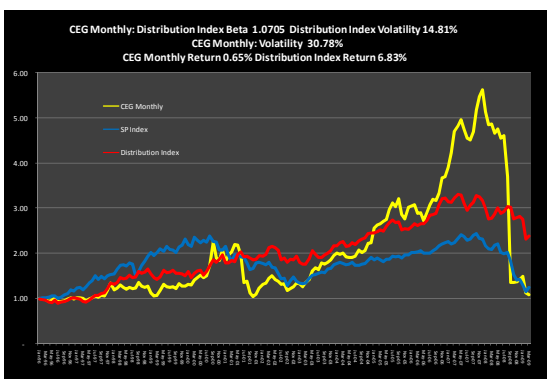

Regulated Company Index: S&P Beta 0.35 Intercept 0.57% R Squared 15%
Regulated Company Index: Volatility 14.67% S&P Volatility 16.34%

Regulated Company Index: S&P Beta 0.61 Intercept 0.50% R Squared 45%
Regulated Company Index: Volatility 13.24% S&P Volatility 14.53%

Note: The "beta" indicates the volatility of the stock price relative to the overall market. A beta greater than one indicates that the stock is more volatile than the market, and therefore riskier but also has the possibility of higher returns.

Individual Core Company Stock Price Trends

Constellation Energy: This Company experienced the most dramatic decline in stock prices. The stock price graphs for Constellation that begin in 1993 and 2003 demonstrate the dramatic decline in stock price that occurred for the company after the Lehman Brothers collapse in September 2008. Adjusting for dividends, the stock price has fallen to the level that existed in 1997. This means that if an investor bought shares in 1997 and pocketed all of the dividends, he would have earned nothing.

CEG Monthly: Distribution Index Beta 1.0705 Distribution Index Volatility 14.81%
CEG Monthly: Volatility 30.78%
CEG Monthly Return 0.65% Distribution Index Return 6.83%

CEG Monthly: Distribution Index Beta 0.9559 Distribution Index Volatility 13.53%
CEG Monthly: Volatility 33.64%
CEG Monthly Return 0.00% Distribution Index Return 4.59%

Exelon: The graphs below show that Exelon stock price fell dramatically as did Constellation stock price. Exelon's stock price fell together with oil prices as shown on the graph below. The adjusted stock price of Exelon has fallen to the level of October 2005, meaning that if you invested in Exelon in October 2005 and kept all of the dividends, you would have not earned or lost money. Over the period since 1993, Exelon earned a rate of return of 12.49% which is almost double the 6.83% return earned by the distribution companies and much higher than the S&P 500 return of only 1.7%. Over the period from 2003 to the present the returns are similar for Exelon and lower for the Regulated Companies and for the S&P 500.
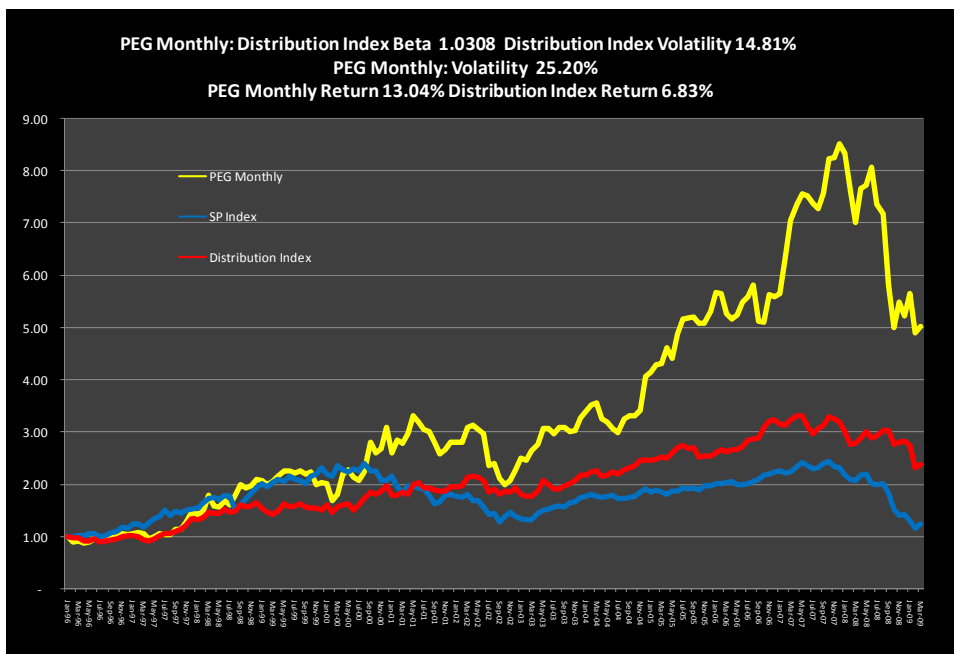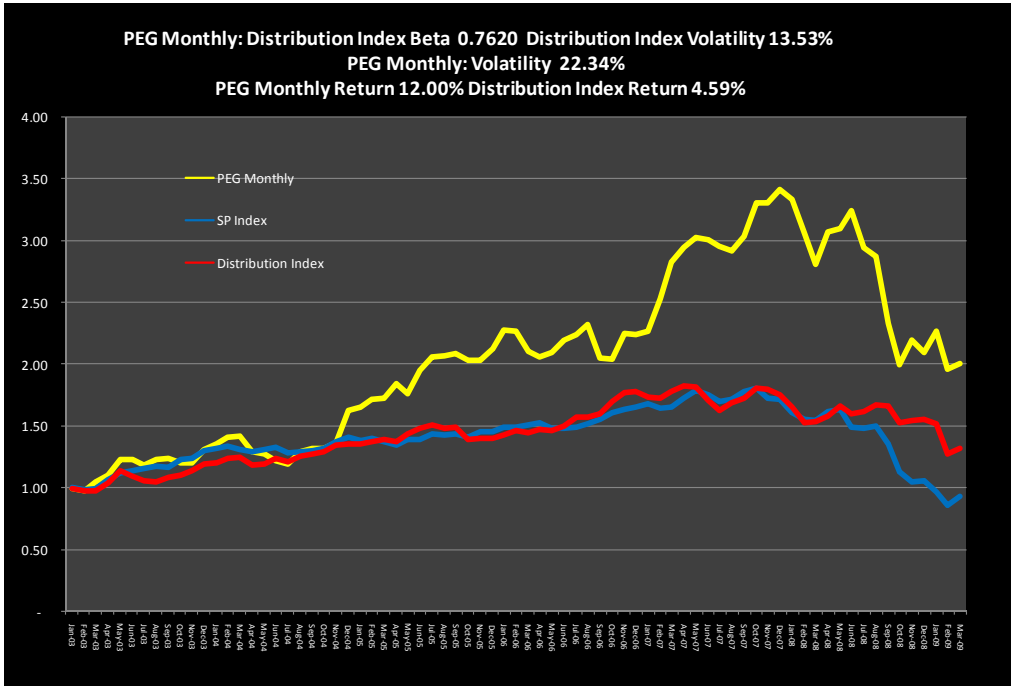

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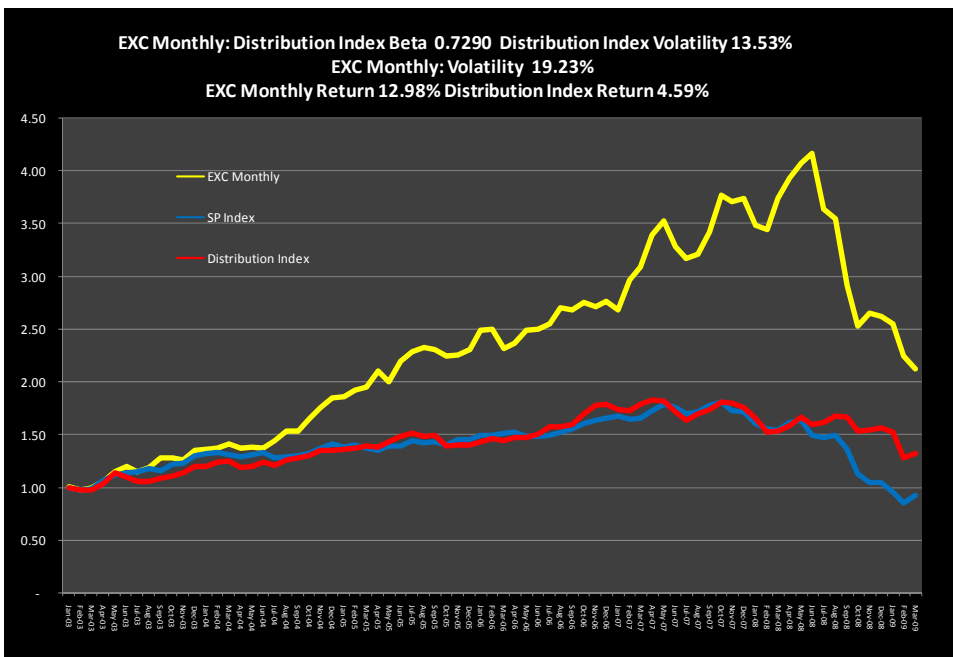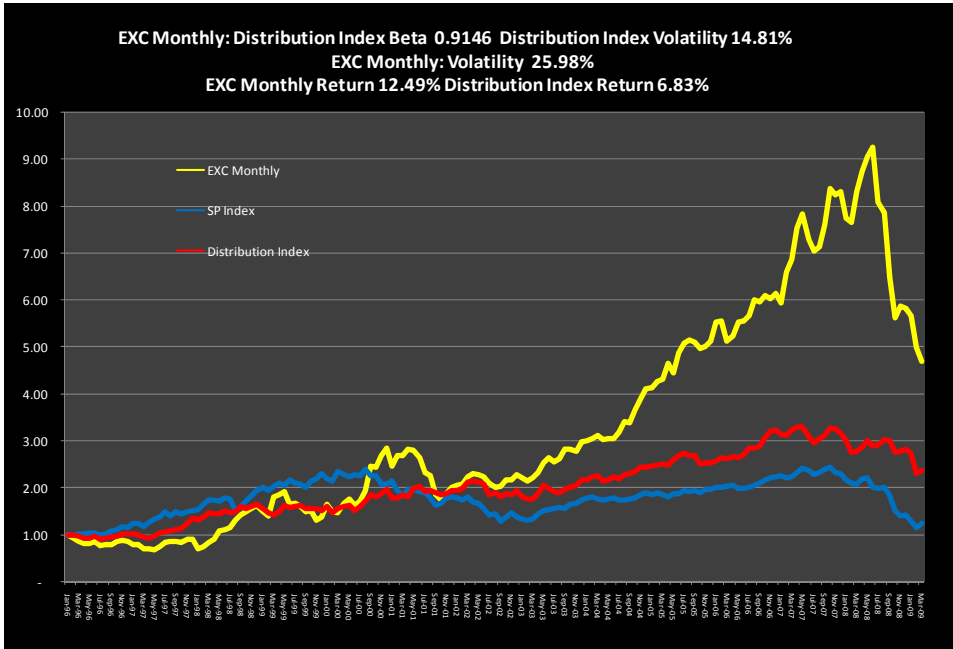
The table below shows that declines in Exelon share price is not fully explained by levels or growth in earnings or cash flow. The numbers in bold are actual and the other numbers are projections from different Value Line reports. In May 2008, the stock price to earnings ratio was 21.3, meaning that investors are willing to pay $21.3 for each dollar of Exelon earnings. By February 2009, the ratio dropped 12.3 even though the expected earnings (according to Value Line) have not declined dramatically. For example, the expected five year earnings growth only fell by .5%, from 9% to 8.5%. The implication of the chart is that investors have lower confidence in the company and are requiring a higher rate or return for the same level of earnings.

Exelon Trends in Value Line Earnings Forecasts and P/E Ratios														
Report Date	P/E	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Five Year Growth
1-Sep-06	18.6	2.20	2.40	2.44	2.75	3.21	3.15	3.35		4.25				7.0%
1-May-08	21.3	2.20	2.40	2.44	2.75	3.21	3.50	4.03	4.15	4.55		6.00		9.0%
1-Nov-08	12.7	2.20	2.40	2.44	2.75	3.21	3.50	4.03	4.05	4.15		5.75		8.0%
1-Feb-09	12.3	2.20	2.40	2.44	2.75	3.21	3.50	4.03	4.10	4.05			6.25	8.5%

Exelon Trends in Value Line Cash Flow Per Share													
Report Date	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Five Year Growth
1-Sep-06	5.06	5.03	5.02	5.68	6.19	6.4	6.75		8.25				6.500%
1-May-08	5.06	5.03	5.02	5.68	6.19	6.71	7.43	7.65	8.15		10		6.500%
1-Nov-08	5.06	5.03	5.02	5.68	6.19	6.71	7.43	7.6	7.75		9.75		6.000%
1-Feb-09	5.06	5.03	5.02	5.68	6.19	6.71	7.43	7.65	8.1			10.5	6.500%

PSEG: The share price trends for PSEG display a similar pattern to Exelon, although the price has not declined as dramatically (Exelon declined by about 45 percent from its high and PSEG declined by about 35 percent.) PSEG's adjusted stock price is approximately the same as it was in October 2006. Over the period since 1993, the return for PSEG of 13.04% is somewhat higher than the Exelon return of 12.49%. PSEG and PPL (presented next) have both experienced declines in P/E ratios similar to Exelon. As pointed out in the discussion on Exelon, declines in this ratio the share price declines may be driven by the perceived risk associated with the future earnings.

PEG Monthly: Distribution Index Beta 1.0308 Distribution Index Volatility 14.81%
PEG Monthly: Volatility 25.20%
PEG Monthly Return 13.04% Distribution Index Return 6.83%

PEG Monthly: Distribution Index Beta 0.7620 Distribution Index Volatility 13.53%
PEG Monthly: Volatility 22.34%
PEG Monthly Return 12.00% Distribution Index Return 4.59%

PPL: PPL declined by about 30%, lower than Exelon's 40% decline. PPL's adjusted stock price is approximately the same as it was in May 2006. Over the period since 1993, the PPL return of 11.34% is somewhat lower than that of Exelon or PSEG, but much higher than the S&P 500 or the Regulated Company return.

PPL Monthly: Distribution Index Beta 0.9534 Distribution Index Volatility 14.81%
PPL Monthly: Volatility 25.29%
PPL Monthly Return 11.34% Distribution Index Return 6.83%

PPL Monthly: Distribution Index Beta 0.7234 Distribution Index Volatility 13.53%
PPL Monthly: Volatility 18.49%
PPL Monthly Return 11.93% Distribution Index Return 4.59%
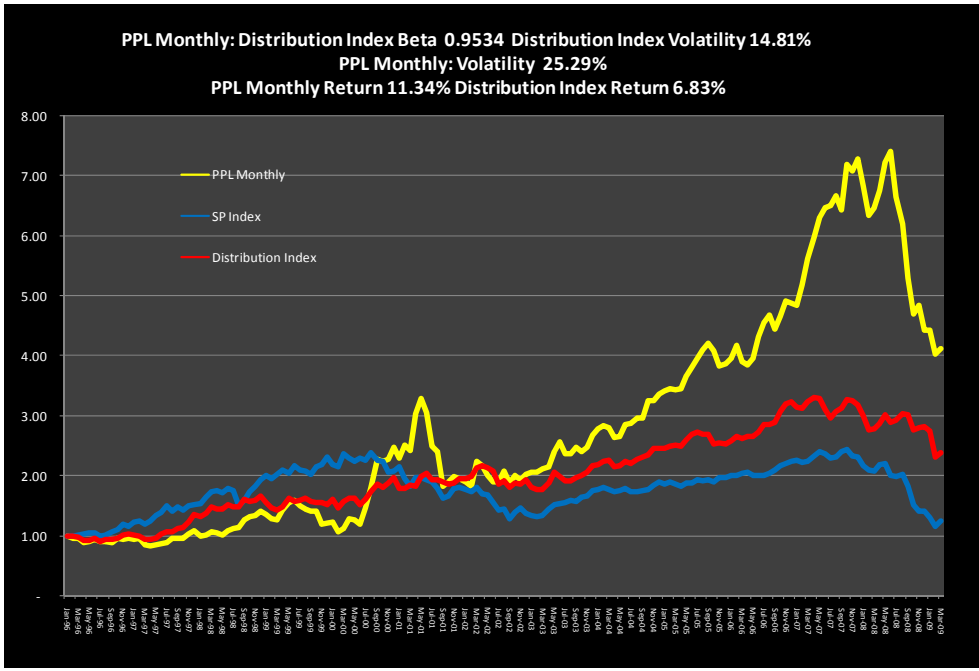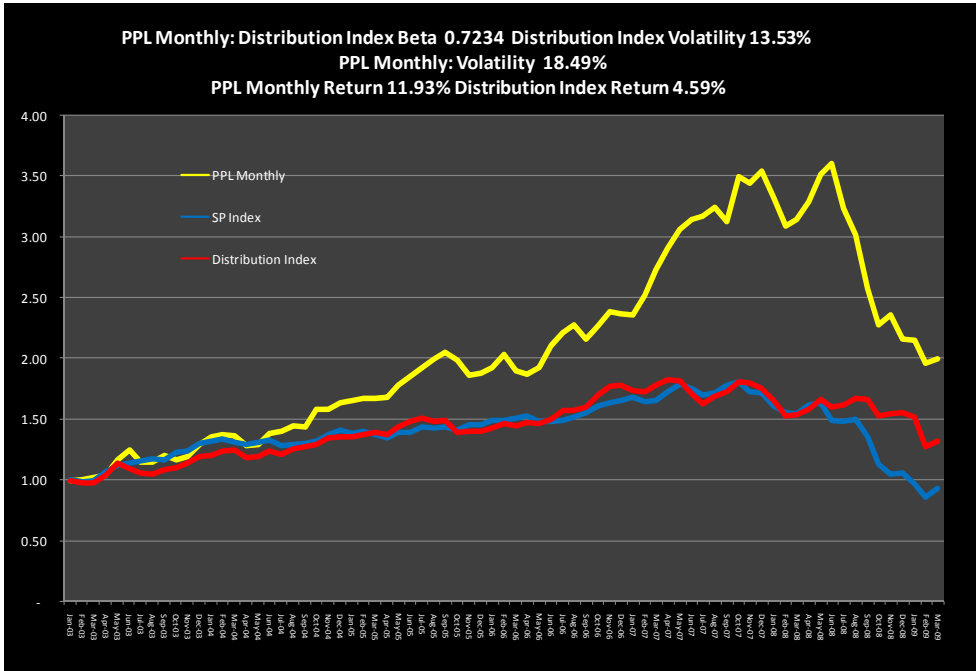
Allegheny: This Company's share price is affected by the failed trading activities that it engaged in during the late 1990's and early 2000's (analogous to the recent Constellation share price decline.) The graphs below show that since 1993 the stock price of AYE has had a wild ride, ultimately resulting in rate of return similar to the overall market.

AYE Monthly: Distribution Index Beta 1.2559 Distribution Index Volatility 14.81%
AYE Monthly: Volatility 36.67%
AYE Monthly Return 0.84% Distribution Index Return 6.83%

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AYE Monthly: Distribution Index Beta 1.4461 Distribution Index Volatility 13.53%
AYE Monthly: Volatility 33.12%
AYE Monthly Return 18.19% Distribution Index Return 4.59%
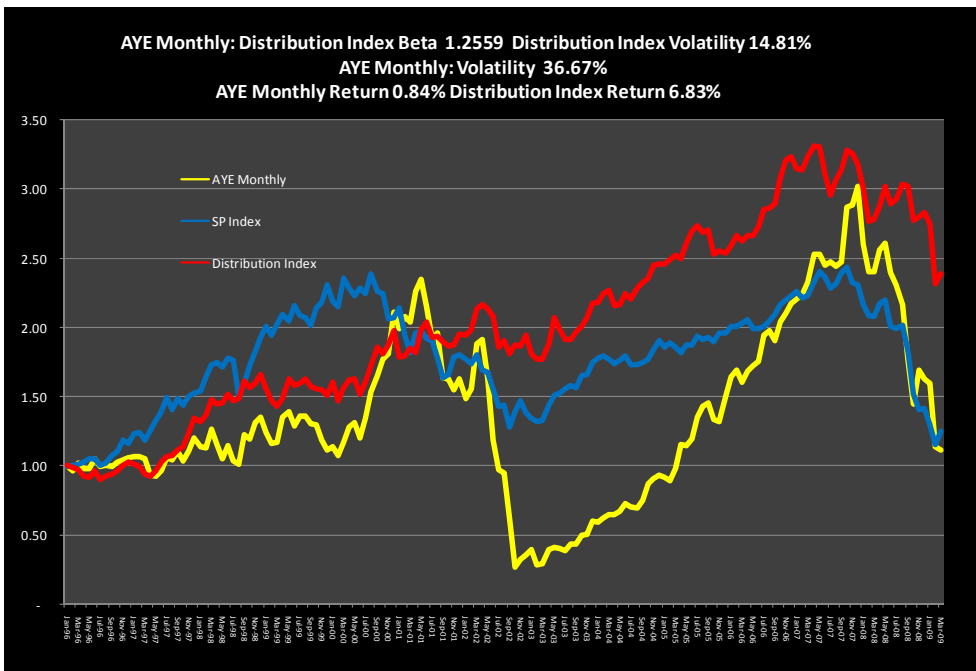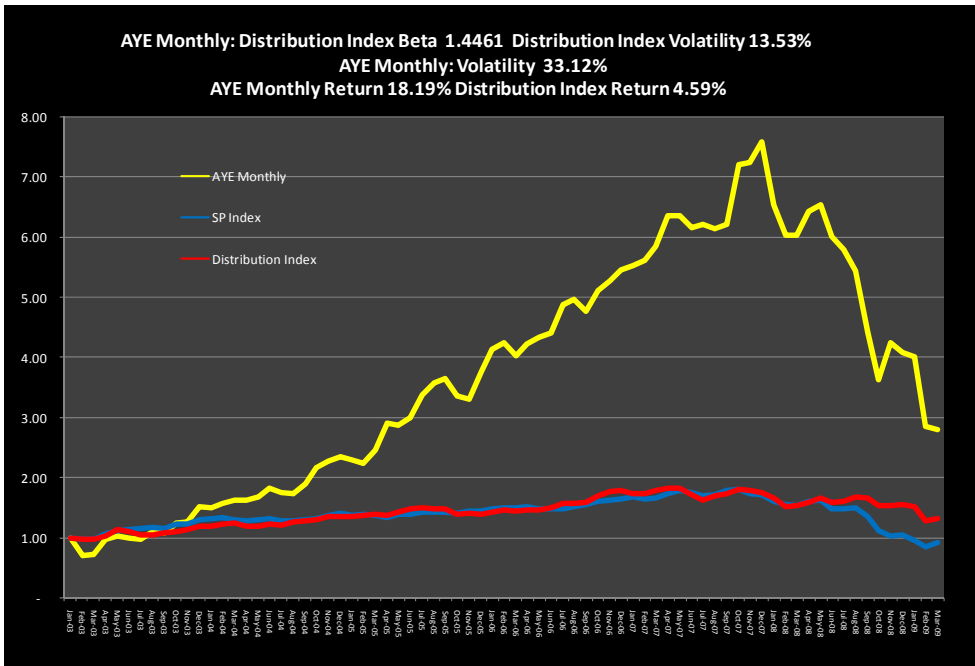
The final graphs show the stock price performance of the three Merchant Companies that have listed shares. The time period for the Merchant Company analysis is driven by the dates when NRG and Mirant emerged from bankruptcy and when Reliant Energy was originally listed. Each of the Merchant Companies has experienced large stock price declines as the overall market and energy prices have fallen. The last chart compares the stock prices of Exelon and NRG who are engaged in a dispute over Exelon's proposed merger.

NRG Monthly: Distribution Index Beta 0.8293 Distribution Index Volatility 13.40%
NRG Monthly: Volatility 31.66%
NRG Monthly Return 9.67% Distribution Index Return 2.73%

MIR Monthly: Distribution Index Beta 1.0069 Distribution Index Volatility 15.45%
MIR Monthly: Volatility 36.47%
MIR Monthly Return 0.00% Distribution Index Return 0.00%

RRI Monthly: Distribution Index Beta 2.3620 Distribution Index Volatility 13.90%
RRI Monthly: Volatility 65.72%
RRI Monthly Return 0.00% Distribution Index Return 2.38%

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NRG Monthly: EXC Monthly Beta 0.8193 EXC Monthly Volatility 19.58%
NRG Monthly: Volatility 29.50%
NRG Monthly Return 8.30% Distribution Index Return 12.98%

NRG Monthly
SP Index
EXC Monthly

Volatility in financial and energy markets over the past year has affected the stock price analysis. The financial crisis has exposed companies that were speculating on energy prices – most notably Constellation Energy and Reliant Energy. In both cases, losses from betting that energy prices would continue to increase (Constellation stated it was "bullish" on energy prices) influenced the stock price as well as the earnings and cash flow. Constellation's results were also affected by paying more than $2 billion for a proposed merger with MidAmerican Energy that did not proceed; a liquidity crisis that occurred after credit rating agencies finally realized that Constellation was engaging in risky trading activities; and losses on large investments in speculative coal transportation and oil production made by the company. Constellation's speculation and hidden risks raised concerns that other PJM Companies were engaging in similar activities and is blamed in part for the decline in stock prices of other PJM companies. In addition to the Constellation problems, the stock prices of Exelon and NRG have been affected by the hostile takeover attempt by Exelon that has been vigorously opposed by NRG. When fighting the merger, NRG has asserted that "Exelon growth is regulatory driven and politician-dependent;" that "Exelon has a traditional utility structure, which means, multi-tiered bureaucracy, committee-driven, engineer-dominated;" and "Exelon management has no discernible entrepreneurial experience."[1]

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[1] NRG Investor Presentation. NRG: Focus on Value, Phoenix, Arizona, David Crane, Chief Executive Officer, November 10, 2008

Appendix C

Discussion of Financial Statistics

This appendix documents the data sources, formulas and theory for different measures of profit used to evaluate restructuring issues in PJM. The rate of return statistics explained below include:

-        Unadjusted return on equity from financial statements
-        Adjusted return on equity
-        Return on invested capital
-        Holding period return
-        Prospective return on equity
-        Cash flow returns

        For each rate of return statistic, the mechanics of computing the ratio are described followed by a review of the advantages and the disadvantages of using the measure in the context of evaluating PJM restructuring. Before discussing the details of the individual profit measures, we describe a couple of general topics applicable to all of the profit measures. These subjects include data sources for computing the profitability ratios and the theory behind using alternative approaches.

The Theory Behind Using Alternative Financial Measures

        The general idea of computing financial returns is to evaluate the returns earned by investors in a particular company relative to investments in other firms and relative to risks of the investment. In this study it is of particular interest to compare returns earned by investors from selling generation into PJM with returns earned by other utility companies that have remained regulated. A key issue in this analysis is how to use financial data so as to isolate restructuring issues from non-PJM activities engaged by each company.

        Ultimately, investors are concerned only with the cash flow received from an investment relative to the amount of investment made. For example, if a $100 cash investment is made and the investment yields a cash outflow of $110 in one year's time, the rate of return is 10%. If the 10% return is greater than 5% return earned on another similar investment, the profit performance of the company earning 10% is obviously better. The cash flow return from this simple example is not captured in real world financial analysis for a number of reasons, including:

-        investments do not occur at a specific date and the timing of investments can dramatically affect the measured rate of return;
-        cash flow received by an investment comes in the form of both dividends and capital gains rather than a single lump sum payment;
-        earnings, which represent the increase in value to shareholders from holding an investment, are not cash flow.

To consider theoretical issues associated with measuring return, begin with a case in which there with no depreciation and net income is all cash. In this case, the return on equity correctly reflects the weighted average of return to investment as a function of the time the investment was made. The equity balance measures the investment made by equity holders because it is computed using the following:

- Opening Equity Balance
- Plus: Increase in Balance from income
- Less: Dividends Paid
- Plus: New Equity Issues
- Equals: Closing Equity Balance

If all income were paid in dividends, then the equity balance would directly reflect new equity issues made by investors. When dividends are less than income, then amount retained can be considered incremental investment. If economic depreciation is used, the example below illustrates how return on equity correctly measures the true economic rate of return on projects in which the company has invested. Further, the example illustrates how return on equity accounts for the retention of earnings in a firm.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	404	612	824	1,041	1,262	1,487	1,717	1,951	2,190	2,234	2,278	2,324	2,112	1,895
Depreciation		49	106	173	252	343	449	572	714	879	1,071	1,092	1,114	1,136	1,096	1,045
Income		151	298	439	573	698	813	915	1,002	1,072	1,119	1,142	1,164	1,188	1,016	851
Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Cash Flow																
Income	-	151	298	439	573	698	813	915	1,002	1,072	1,119	1,142	1,164	1,188	1,016	851
Plus: Depreciation	-	49	106	173	252	343	449	572	714	879	1,071	1,092	1,114	1,136	1,096	1,045
Less: Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Less: Dividends	-	75	149	219	286	349	407	458	501	536	560	571	582	594	508	425
Net Cash Flow	(1,000)	(895)	(785)	(668)	(544)	(412)	(271)	(119)	44	220	411	420	428	1,730	1,604	1,470
Equity Balance																
Opening Balance	-	1,000	1,971	2,905	3,793	4,623	5,385	6,062	6,639	7,097	7,413	7,561	7,712	7,866	6,730	5,635
Add: Net Income	-	151	298	439	573	698	813	915	1,002	1,072	1,119	1,142	1,164	1,188	1,016	851
Less: Dividends	-	75	149	219	286	349	407	458	501	536	560	571	582	594	508	425
Add: Equity Contribution	1,000	895	785	668	544	412	271	119	(44)	(220)	(411)	(420)	(428)	(1,730)	(1,604)	(1,470)
Add: Accumulated Other Comprehensive Income																
Closing Balance	1,000	1,971	2,905	3,793	4,623	5,385	6,062	6,639	7,097	7,413	7,561	7,712	7,866	6,730	5,635	4,590
Equity in Denominator		1,000	1,971	2,905	3,793	4,623	5,385	6,062	6,639	7,097	7,413	7,561	7,712	7,866	6,730	5,635
Return on Equity		15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%
Equity Cash Flow	(1,000)	(820)	(636)	(449)	(258)	(63)	135	338	545	756	971	990	1,010	2,324	2,112	1,895
Economic Rate of Return	15.10%															
PV Factor for Equity Weighting		1.00	0.87	0.75	0.66	0.57	0.50	0.43	0.37	0.32	0.28	0.25	0.21	0.18	0.16	0.14
PV of Equity		1,000.0	1,712.4	2,192.8	2,487.4	2,634.4	2,665.8	2,607.5	2,481.1	2,304.2	2,091.0	1,853.0	1,642.2	1,455.3	1,081.7	786.8
Sum of PV of Equity		30,463.1														
Weighted Equity Balance		3.28%	5.62%	7.20%	8.17%	8.65%	8.75%	8.56%	8.14%	7.56%	6.86%	6.08%	5.39%	4.78%	3.55%	2.58%
Weighted Average ROE	15.10%															

If a company invests in a portfolio of different projects with different returns, the annual rate of return changes from year, but the weighted average rate of return where weights reflect the present value of equity at the overall rate of return is equal to the internal rate of return. A scenario with a multitude of different projects is shown in the following example.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	404	643	901	1,187	1,498	1,823	2,197	2,628	2,501	2,390	2,890	3,450	3,820	3,175
Depreciation		49	109	156	279	358	480	628	809	1,029	999	834	1,118	1,461	1,761	1,554
Income		151	295	487	621	830	1,018	1,195	1,389	1,599	1,501	1,556	1,772	1,989	2,059	1,621
Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Cash Flow																
Income	-	151	295	487	621	830	1,018	1,195	1,389	1,599	1,501	1,556	1,772	1,989	2,059	1,621
Plus: Depreciation	-	49	109	156	279	358	480	628	809	1,029	999	834	1,118	1,461	1,761	1,554
Less: Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Less: Dividends	-	75	147	243	311	415	509	598	694	800	751	778	886	995	1,029	810
Net Cash Flow	(1,000)	(895)	(784)	(662)	(493)	(332)	(137)	77	331	634	531	369	736	2,456	2,791	2,364
Equity Balance																
Opening Balance	-	1,000	1,971	2,902	3,807	4,611	5,357	6,004	6,525	6,888	7,053	7,273	7,683	7,833	6,372	4,611
Add: Net Income	-	151	295	487	621	830	1,018	1,195	1,389	1,599	1,501	1,556	1,772	1,989	2,059	1,621
Less: Dividends	-	75	147	243	311	415	509	598	694	800	751	778	886	995	1,029	810
Add: Equity Contribution	1,000	895	784	662	493	332	137	(77)	(331)	(634)	(531)	(369)	(736)	(2,456)	(2,791)	(2,364)
Add: Accumulated Other Comprehensive Income																
Closing Balance	1,000	1,971	2,902	3,807	4,611	5,357	6,004	6,525	6,888	7,053	7,273	7,683	7,833	6,372	4,611	3,057
Equity in Denominator		1,000	1,971	2,902	3,807	4,611	5,357	6,004	6,525	6,888	7,053	7,273	7,683	7,833	6,372	4,611
Return on Equity		15.1%	14.9%	16.8%	16.3%	18.0%	19.0%	19.9%	21.3%	23.2%	21.3%	21.4%	23.1%	25.4%	32.3%	35.2%
Equity Cash Flow	(1,000)	(820)	(636)	(419)	(182)	83	372	674	1,026	1,433	1,282	1,147	1,622	3,450	3,820	3,175
Economic Rate of Return	20.19%															
PV Factor for Equity Weighting		1.00	0.83	0.69	0.58	0.48	0.40	0.33	0.28	0.23	0.19	0.16	0.13	0.11	0.09	0.08
PV of Equity		1,000.0	1,639.8	2,008.7	2,192.6	2,209.1	2,135.5	1,991.1	1,800.3	1,581.2	1,347.2	1,155.8	1,015.7	861.6	583.1	351.0
Sum of PV of Equity	22,202.6															
Weighted Equity Balance		4.50%	7.39%	9.05%	9.88%	9.95%	9.62%	8.97%	8.11%	7.12%	6.07%	5.21%	4.57%	3.88%	2.63%	1.58%
Weighted Average ROE	20.19%															

There are many theoretical problems with the standard return on investment even if a company has stable earnings and uncomplicated accounting. When depreciation expense is computed on a straight line basis, when asset write-ups and write-offs occur and when other accounting adjustments are made which change the valuation of assets, the rate of return no longer can be used to compare the rate of return to investors between companies. In the example above, economic depreciation had to be computed for the return to correspond with the accounting return. If straight line depreciation is used rather than economic depreciation, the weighted return on equity no longer equals the economic return as shown on the table below

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	404	612	824	1,041	1,262	1,487	1,717	1,951	2,190	2,234	2,278	2,324	2,112	1,895
Depreciation		100	202	306	412	520	631	743	858	975	1,095	1,217	1,341	1,368	1,266	1,162
Income		100	202	306	412	520	631	743	858	975	1,095	1,017	937	956	846	733
Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Cash Flow																
Income	-	100	202	306	412	520	631	743	858	975	1,095	1,017	937	956	846	733
Plus: Depreciation	-	100	202	306	412	520	631	743	858	975	1,095	1,217	1,341	1,368	1,266	1,162
Less: Capital Expenditures	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,243	1,268	-	-	-
Less: Dividends	-	50	101	153	206	260	315	372	429	488	547	508	469	478	423	367
Net Cash Flow	(1,000)	(870)	(737)	(602)	(464)	(323)	(180)	(34)	116	268	423	482	542	1,846	1,689	1,529
Equity Balance																
Opening Balance	-	1,000	1,920	2,758	3,514	4,184	4,768	5,263	5,668	5,981	6,201	6,325	6,352	6,279	4,911	3,645
Add: Net Income	-	100	202	306	412	520	631	743	858	975	1,095	1,017	937	956	846	733
Less: Dividends	-	50	101	153	206	260	315	372	429	488	547	508	469	478	423	367
Add: Equity Contribution	1,000	870	737	602	464	323	180	34	(116)	(268)	(423)	(482)	(542)	(1,846)	(1,689)	(1,529)
Add: Accumulated Other Comprehensive Income																
Closing Balance	1,000	1,920	2,758	3,514	4,184	4,768	5,263	5,668	5,981	6,201	6,325	6,352	6,279	4,911	3,645	2,483
Equity in Denominator		1,000	1,920	2,758	3,514	4,184	4,768	5,263	5,668	5,981	6,201	6,325	6,352	6,279	4,911	3,645
Return on Equity		10.0%	10.5%	11.1%	11.7%	12.4%	13.2%	14.1%	15.1%	16.3%	17.7%	16.1%	14.8%	15.2%	17.2%	20.1%
Equity Cash Flow	(1,000)	(820)	(636)	(449)	(258)	(63)	135	338	545	756	971	990	1,010	2,324	2,112	1,895
Economic Rate of Return	15.10%															
PV Factor for Equity Weighting		1.00	0.87	0.75	0.66	0.57	0.50	0.43	0.37	0.32	0.28	0.25	0.21	0.18	0.16	0.14
PV of Equity		1,000.0	1,668.1	2,082.2	2,304.3	2,384.0	2,360.2	2,263.6	2,118.1	1,942.0	1,749.2	1,550.2	1,352.5	1,161.5	789.3	509.0
Sum of PV of Equity	25,294.7															
Weighted Equity Balance		3.95%	6.59%	8.23%	9.11%	9.42%	9.33%	8.95%	8.37%	7.68%	6.92%	6.13%	5.35%	4.59%	3.12%	2.01%
Weighted Average ROE	14.59%															

Problems with the use of accounting measures to measure the true return earned by investors has long been recognized by economists. For example, Fisher and McGowan state: "Many users of accounting rates of return seem well aware that profits to total assets or stockholders equity may not be consistent from firm to firm or industry to industry and may not correspond to the economists' definition of profits. Accounting rates of return, even if properly and consistently measured, provide almost no information about the economic rates of return. Unless depreciation schedules are chosen in a particular way … the accounting rate of return on a particular investment will not in general equal the economic rate of return on that investment in any year."[2]

Using return on investment to measure returns realized by investors who have put money into a company when assets are constructed or purchased is made more difficult because of accounting policies that re-value assets over time. Accounting methods change the value of investments related to derivatives, impairment, foreign currency translation and other factors. Some of these asset write-ups are not recognized on the income statement, but affect the equity balance through accumulated other comprehensive income described later in this appendix. For regulated companies, adjustments to the investment balance are less common because of the premise that the original cost of investments is used as the basis both for setting rates and valuing assets. The example below illustrates problems with measurement of return on equity when asset write-ups and write-downs change the common equity balance.

Data Sources

In analyzing the profit for each company:

- We retrieved SEC 10-K reports for a number of historic years and extracted financial statement and other data. After aggregating the data, we have used the financial statement information to compute a number of financial ratios. A spreadsheet with the financial statement data and the financial ratios was constructed for each company.

- We gathered historic daily stock price, dividend and stock split data. We entered the stock data into a spreadsheet for each company that allows us to construct rates of return earned by shareholders using alternative holding period assumptions.

- We acquired historic and projected data from Value Line and entered the data into a series of spreadsheets.

- We downloaded recent investor analyst presentations that often describe profit outlooks and make comments on prospective profitability from selling generation into PJM.

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[2] Fisher, Franklin, and McGowan, John, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits", The American Economic Review, March, 1983.

-    We gathered prospective earnings estimated by financial analysts from
     Yahoofinance.com.

Return on Equity from Financial Statements

Mechanics

The traditional return on equity is computed from: net income after preferred dividends on the income statement; and the common equity amount on the balance sheet using the following formula.

ROE = _____Net Income to Common Equity_____
        Average of Beginning and Ending Common Equity Balance

In the above formula, net income before cumulative accounting changes and before extraordinary income is used so that the return reflects on-going operations. The formula can also be computed if the numerator and denominator are divided by shares outstanding. Net income divided by the number of shares equals earnings per share and common equity divided by the number of shares provides the book value per share. This means the ROE can also be computed using the formula:

ROE = _____Earnings Per Share_____
        Average of Beginning and Ending Book Value per Share

Advantages

The primary advantage of presenting the return on equity is its traditional use in the electric utility industry, including its dominant role in rate proceedings and its general use in measuring the economic performance of an investment. There is little judgment in making the calculation and it can often be made from data in the financial summary presented in the 10-K of each company. The return on equity can also be directly extracted from sources such as Value Line. (The Value Line return on equity is often not exactly the same as the unadjusted return on equity – for example, the net income used by Value Line excludes write-offs.)

Disadvantages

The return on equity contains theoretical flaws associated with all accounting ratios discussed above in that accounting returns do not measure true economic returns. In addition, the return on equity is affected by capital structure decisions of a company that change the risk to equity investors but have nothing to do with the underlying profit of real assets. For example, the return on equity may be increased from an increase in debt leverage even though nothing has changed in the way the company operates. However, increases in returns that come from greater leverage mean that the risk has

increased. Finally, the return on equity is a historic measure that does not enable the drawing of conclusions with respect to future market developments.

Another problem with measuring the return on equity is that the denominator of the equation is affected by write-offs. For example, if a company incurs a large loss from writing down assets, its equity balance may become very low. The low equity balance means that future returns on equity will be higher than they would be without the write-off. The write-off reduces the return in the write-off period and increases returns in subsequent periods. Similarly, the return on equity can be difficult to interpret after a company experiences losses and has a small amount of equity. An illustration of how write-offs affect the return on equity calculation is shown in the example below – the example is derived from the initial example with a single asset type.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,000	2,000	2,000	1,800	1,600
Depreciation		49	105	170	245	331	430	544	675	826	1,000	1,000	1,000	1,000	951	895
Write-off									4,000							
Reduced Depreciation from Write-off										800	800	800	800	800		
Income		151	295	430	555	669	770	856	(3,075)	1,774	1,800	1,800	1,800	1,800	849	705
Capital Expenditures	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-
Cash Flow																
Income	-	151	295	430	555	669	770	856	(3,075)	1,774	1,800	1,800	1,800	1,800	849	705
Plus: Depreciation	-	49	105	170	245	331	430	544	4,675	26	200	200	200	200	951	895
Less: Capital Expenditures	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-
Less: Dividends	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Cash Flow	(1,000)	(800)	(600)	(400)	(200)	-	200	400	600	800	1,000	1,000	1,000	2,000	1,800	1,600
Equity Balance																
Opening Balance	-	1,000	1,951	2,846	3,675	4,430	5,099	5,669	6,125	2,449	3,423	4,223	5,023	5,823	5,623	4,672
Add: Net Income	-	151	295	430	555	669	770	856	(3,075)	1,774	1,800	1,800	1,800	1,800	849	705
Less: Dividends	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Add: Equity Contribution	1,000	800	600	400	200	-	(200)	(400)	(600)	(800)	(1,000)	(1,000)	(1,000)	(2,000)	(1,800)	(1,600)
Add: Accumulated Other Comprehensive Income																
Closing Balance	1,000	1,951	2,846	3,675	4,430	5,099	5,669	6,125	2,449	3,423	4,223	5,023	5,823	5,623	4,672	3,778
Equity in Denominator		1,000	1,951	2,846	3,675	4,430	5,099	5,669	6,125	2,449	3,423	4,223	5,023	5,823	5,623	4,672
Return on Equity		15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%	-50.2%	72.4%	52.6%	42.6%	35.8%	30.9%	15.1%	15.1%
Equity Cash Flow	(1,000)	(800)	(600)	(400)	(200)	-	200	400	600	800	1,000	1,000	1,000	2,000	1,800	1,600
Economic Rate of Return	15.10%															
PV Factor for Equity Weighting		1.00	0.87	0.75	0.66	0.57	0.50	0.43	0.37	0.32	0.28	0.25	0.21	0.18	0.16	0.14
PV of Equity		1,000.0	1,695.1	2,148.0	2,410.3	2,524.3	2,524.3	2,438.2	2,288.8	795.3	965.6	1,035.0	1,069.6	1,077.3	903.8	652.5
Sum of PV of Equity		24,724.1														
Weighted Equity Balance		4.04%	6.86%	8.69%	9.75%	10.21%	10.21%	9.86%	9.26%	3.22%	3.91%	4.19%	4.33%	4.36%	3.66%	2.64%
Weighted Average ROE	15.10%															

Adjusted Return on Equity

Mechanics

The adjusted return on equity is computed through dividing net income (adjusted for goodwill impairment charges, write-offs and re-structuring charges) by equity (adjusted for goodwill, accumulated write-offs and accumulated other comprehensive income). The adjusted return on equity is demonstrated by the following formula:

Adjusted ROE = $\dfrac{\text{Net Income less write-offs, adjusted depreciation, impairment}}{\text{Average of Adjusted Common Equity Balance}}$

The adjustments to net income and to the equity balance are the same for each company so as to assure consistency in comparing results between companies. Once the adjustments are made, the returns for PJM companies can be reasonably compared to the

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returns experienced by regulated companies. The adjustments and the rational for the adjustments to goodwill, write-offs, and accumulated other comprehensive income are described below:

Goodwill

Goodwill is recorded on the asset side of the balance sheet when an acquisition is made to account for paying more than the initial investment made by investors in the assets. With multiple acquisitions, the return on equity is not comparable between a company that is the subject of multiple mergers and a company that has not been involved in mergers and acquisitions even if operations are identical. In the ratemaking process, goodwill is not included in the basis for setting rates because rates should not increase by virtue of paying more than the original cost of the investment. To the extent that goodwill exists on the balance sheet, the equity balance is increased relative to the amount of equity that would exist if investments had been recorded at the original amount of the investment. The returns on equity allowed by regulators and cost of capital are set on the basis of assets that do not include goodwill. In the example below, a premium is paid for assets and the return on equity declines because of the added amounts paid for assets.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	400	600	800	1,000	1,200	1,200	1,200	1,200	1,200	1,000	800	600	400	200
Depreciation		49	105	170	245	331	430	495	570	656	755	669	570	456	325	174
Income		151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Capital Expenditures	1,000	1,000	1,000	3,000	1,000	1,000	-	-	-	-	-	-	-	-	-	-
Cash Flow																
Income	-	151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Plus: Depreciation	-	49	105	170	245	331	430	495	570	656	755	669	570	456	325	174
Less: Capital Expenditures	1,000	1,000	1,000	3,000	1,000	1,000	-	-	-	-	-	-	-	-	-	-
Less: Dividends	-	75	147	215	277	334	385	352	315	272	223	166	115	72	38	13
Net Cash Flow	(1,000)	(875)	(747)	(2,615)	(477)	(334)	815	848	885	928	977	834	685	528	362	187
Equity Balance																
Opening Balance	-	1,000	1,951	2,846	5,675	6,430	7,099	6,669	6,174	5,604	4,948	4,193	3,524	2,954	2,498	2,174
Add: Net Income	-	151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Less: Dividends	-	75	147	215	277	334	385	352	315	272	223	166	115	72	38	13
Add: Equity Contribution	1,000	875	747	2,615	477	334	(815)	(848)	(885)	(928)	(977)	(834)	(685)	(528)	(362)	(187)
Add: Accumulated Other Comprehensive Income																
Closing Balance	1,000	1,951	2,846	5,675	6,430	7,099	6,669	6,174	5,604	4,948	4,193	3,524	2,954	2,498	2,174	2,000
Equity in Denominator		1,000	1,951	2,846	5,675	6,430	7,099	6,669	6,174	5,604	4,948	4,193	3,524	2,954	2,498	2,174
Return on Equity		15.1%	15.1%	15.1%	9.8%	10.4%	10.8%	10.6%	10.2%	9.7%	9.0%	7.9%	6.5%	4.9%	3.0%	1.2%
Equity Cash Flow	(1,000)	(800)	(600)	(2,400)	(200)	-	1,200	1,200	1,200	1,200	1,200	1,000	800	600	400	200
Economic Rate of Return	**8.42%**															
PV Factor for Equity Weighting		1.00	0.92	0.85	0.78	0.72	0.67	0.62	0.57	0.52	0.48	0.45	0.41	0.38	0.35	0.32
PV of Equity		1,000.0	1,799.5	2,420.8	4,453.3	4,653.9	4,739.1	4,106.3	3,506.3	2,935.6	2,390.8	1,868.7	1,448.7	1,120.1	873.7	701.2
Sum of PV of Equity	41,667.2															
Weighted Equity Balance		2.40%	4.32%	5.81%	10.69%	11.17%	11.37%	9.85%	8.42%	7.05%	5.74%	4.48%	3.48%	2.69%	2.10%	1.68%
Weighted Average ROE	**9.23%**															

Write-offs

Some of the PJM companies wrote down their generating plants after re-structuring when they changed accounting methods and re-valued assets that could not be supported without regulatory support. These write-offs would not have occurred if the companies generation segment would have continued to be regulated. Large write-offs occurred for ComEd, PECO, PSEG and other companies. The difference between regulated accounting and non-regulated accounting is explained in the following statement in FPL's 10-K.

Management believes it is unlikely there will be any state actions to restructure the retail electric industry in Florida in the near future. If the basis of regulation for some or all of FPL's business changes from cost-based regulation, existing regulatory assets and liabilities would be written off unless regulators specify an alternative means of recovery or refund. Further, other aspects of the business, such as generation assets and long-term power purchase commitments, would need to be reviewed to assess their recoverability in a changed regulatory environment.

To make the return on investment comparable between PJM companies and regulated companies, the amount of write-off is added to the equity balance. Once the write-off (net of tax) is added back, the depreciation expense should also be adjusted because the depreciation expense would have been greater if the write-off did not occur.

Accumulated Other Comprehensive Income

PJM companies record some direct changes in their equity balance that are not reflected in the income statement. Results of increases or decreases in the equity balance are recorded as accumulated other comprehensive income. Items that cause accumulated other comprehensive income to increase or decrease include changes in the value of derivatives used to hedge cash flow, unrealized gains and losses on investments, and foreign translation adjustments. The manner in which changes in the value of derivatives are recorded on the balance sheet is explained in a 10-K report for one of the PJM companies as follows:

> SFAS No. 133 requires us to record all derivatives on the balance sheet at fair value with changes in the fair value resulting from fluctuations in the underlying commodity prices immediately recognized in earnings, unless the derivative qualifies for hedge accounting treatment. Changes in the fair value of a derivative that is highly effective as, and is designated as and qualifies as a cash flow hedge, are deferred in accumulated other comprehensive income and are recognized into earnings as the hedged transactions occur."

The accumulated other comprehensive income is generally minor or non-existent for regulated companies. Balances of accumulated other comprehensive income do not represent money directly put into a company by investors or indirectly by money invested from not paying income as dividends. As shown in the supplemental materials for Dominion, the company excludes accumulated other comprehensive income when it computes return on investment. The example below illustrates how accumulated other comprehensive income can affect the return on equity.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenues		200	400	600	800	1,000	1,200	1,200	1,200	1,200	1,200	1,000	800	600	400	200
Depreciation		49	105	170	245	331	430	495	570	656	755	669	570	456	325	174
Income		151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Capital Expenditures	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-	-	-	-	-	-	-	-
Cash Flow																	
Income	-	151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Plus: Depreciation	-	49	105	170	245	331	430	495	570	656	755	669	570	456	325	174
Less: Capital Expenditures	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-	-	-	-	-	-	-	-
Less: Dividends	-	75	147	215	277	334	385	352	315	272	223	166	115	72	38	13
Net Cash Flow	(1,000)	(875)	(747)	(615)	(477)	(334)	815	848	885	928	977	834	685	528	362	187
Equity Balance																	
Opening Balance	-	1,000	1,951	2,846	4,675	7,430	7,599	5,669	4,174	3,604	2,948	2,193	1,524	954	498	174
Add: Net Income	-	151	295	430	555	669	770	705	630	544	445	331	230	144	75	26
Less: Dividends	-	75	147	215	277	334	385	352	315	272	223	166	115	72	38	13
Add: Equity Contribution	1,000	875	747	615	477	334	(815)	(848)	(885)	(928)	(977)	(834)	(685)	(528)	(362)	(187)
Add: Accumulated Other Comprehensive Income	-	-	-	1,000	2,000	(500)	(1,500)	(1,000)	-	-	-	-	-	-	-	-
Closing Balance	1,000	1,951	2,846	4,675	7,430	7,599	5,669	4,174	3,604	2,948	2,193	1,524	954	498	174	0
Equity in Denominator		1,000	1,951	2,846	4,675	7,430	7,599	5,669	4,174	3,604	2,948	2,193	1,524	954	498	174
Return on Equity		**15.1%**	**15.1%**	**15.1%**	**11.9%**	**9.0%**	**10.1%**	**12.4%**	**15.1%**	**15.1%**	**15.1%**	**15.1%**	**15.1%**	**15.1%**	**15.1%**	**15.1%**
Equity Cash Flow	(1,000)	(800)	(600)	(400)	(200)	-	1,200	1,200	1,200	1,200	1,200	1,000	800	600	400	200
Economic Rate of Return	**15.10%**																
PV Factor for Equity Weighting		1.00	0.87	0.75	0.66	0.57	0.50	0.43	0.37	0.32	0.28	0.25	0.21	0.18	0.16	0.14
PV of Equity		1,000.0	1,695.1	2,148.0	3,066.1	4,233.7	3,761.9	2,438.2	1,559.7	1,170.1	831.6	537.5	324.6	176.6	80.1	24.3
Sum of PV of Equity		23,047.3															
Weighted Equity Balance		4.34%	7.35%	9.32%	13.30%	18.37%	16.32%	10.58%	6.77%	5.08%	3.61%	2.33%	1.41%	0.77%	0.35%	0.11%
Weighted Average ROE	**12.46%**																

Income Adjustments

Income adjustments for computing the adjusted ROE include non-recurring items that would not reflect on-going operations. In setting rates using an administered return on equity, the process does not include write-offs for changes in accounting method, impairment of goodwill, losses from discontinued operations and other items.

Advantages

Advantages of the adjusted return on equity are that it makes the return on equity of PJM companies more comparable to regulated companies. Through measuring profit from on-going operations and removing goodwill, write-offs and accumulated other comprehensive income, the adjusted return on equity incorporates the investment made by original investors. As with the unadjusted return on equity, the return on equity is an intuitive ratio that can be compared to the return on equity granted to regulated companies. The historic adjusted return on equity is used assess whether PJM Companies have recovered their stranded investment.

Disadvantages

Disadvantages of the adjusted return on equity are that it is not a conventional measure computed by financial analysts and that it requires adjustments that are subject to some judgment. While the adjusted return on equity corrects some of the interpretation problems with the return on equity, the theoretical difficulties with measuring rate of return from historic financial statements are still present. Further, measurement problems that arise from distortions in the capital structure can distort the comparison of the adjusted return on equity among companies.

Return on Invested Capital

Mechanics

The return on invested capital is computed through dividing the operating income before financing charges by the total invested capital including both debt and equity. Income does not subtract debt servicing charges and invested capital includes both debt and equity. The operating income before financing charges is computed on an after tax basis and it excludes goodwill impairment charges, write-offs and other re-structuring charges. Computation of the return on invested capital is demonstrated by the following formula:

ROIC = $\dfrac{\text{Net Operating Income After-Tax}}{\text{Average of Adjusted Invested Capital}}$

The net operating income after tax is simply computed as the operating income multiplied by one minus the tax rate. For this study, net operating income does not include write-offs, goodwill impairments and other non-recurring items:

NOPLAT = Net operating income x (1-tax rate)

Invested capital begins with adjusted common equity from the adjusted return on equity calculation and minority interest, plus interest bearing short-term and long-term debt, minus surplus cash and interest earning investments. This calculation is summarized in the following formula:

Invested Capital =

Adjusted Equity + Minority Interest + Interest Bearing Debt -

Cash – Interest Earning Investments

Advantages

The advantage of using return on invested capital in the PJM analysis is that it is more rigorous than the return on equity from a theoretical perspective. ROIC is not distorted by the debt leverage of a company and since it is computed using adjusted income and adjusted equity, it does not have the problems of non-recurring charges and investment distortions.

ROIC is advocated by many financial analysts because of the basic notion that value is created when the return on invested capital exceeds the weighted average cost of capital. For example, a well known text on valuation states[3]: "There are two key drivers

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[3] Koller, T., Goedhart, M., Wessells, D., 2005, Valuation Measuring and Managing the Value of Companies, Hoboken, New Jersey, John Wiley & Sons p. 306.

of cash flow that ultimately drive value: the rate at which the company can grow revenues and profits, and its return on invested capital relative to the cost of capital." Exxon Mobil describes the return on invested capital as follows: "The Corporation has consistently applied its ROIC definition for many years and views it as the best measure of historical capital productivity in our capital intensive long-term industry, both to evaluate management's performance and to demonstrate to shareholders that capital has been used wisely over the long term."

An advantage of using the ROIC in this study is the availability of cost of capital data from investment banks on PJM companies. In the Exelon/PSEG merger and the Constellation/FPL merger, a number of investment banks directly estimated the weighted average cost of capital. Investment banks made the following estimates of the cost of capital for PSEG, Exelon, Constellation and FPL, which can be used to assess the ROIC:

Cost of Capital Estimates		
Exelon/PSEG	Low	High
JPMorgan	5.25%	5.75%
Lehman Brothers	5.43%	6.43%
Morgan Stanley	5.50%	6.00%
Constellation/FPL		
Lehman Brothers/FPL	5.18%	6.18%
Lehman Brothers/Constellation	5.57%	6.57%
Morgan Stanley	6.00%	7.00%
Goldman Sachs	5.25%	7.25%
Median WACC	5.43%	6.43%

These weighted average cost of capital figures can be converted into cost of equity data through making assumptions with respect to incremental cost of debt and market-based capital structures. The cost of equity consistent with the weighted average cost of capital data in the above table ranges from 7.5% to 8%.

Disadvantages

Disadvantages of using the return on investment involve problems with making comparisons between PJM companies and regulated companies and general issues with computing rates of return. Unlike the return on equity, the return on invested capital cannot easily be compared to returns granted in regulatory proceedings. Unlike the ROE which is reported in Value Line, a consistent and valid calculation of ROIC is not generally reported by financial analysts. The ROIC has similar problems as the return on equity in that it cannot be interpreted as an economic return.

Prospective Return on Equity

Mechanics

The prospective return on equity is computed from the earnings per share projections for each company. As shown above in the discussion of unadjusted ROE, the return on equity can be computed through dividing the earnings per share divided by the book value per share. Since the earnings per share are given by management guidance or by investment analyst projections, the return on equity can be computed once the projected book value per share is established. Projected book value per share can be computed from the current adjusted book value per share incremented by earnings and reduced by dividends as demonstrated by the following formulas:

Current Book Value per Share = Adjusted Book Equity/Shares Outstanding

Projected Book Value per Share =
        Current Book Value per Share + Earnings per Share – Dividends per Share

Projected Dividend per Share = Earnings per Share x Payout Ratio

Projected ROE = $\dfrac{\text{Projected Earnings per Share}}{\text{Average of Current and Projected Book Value per Share}}$

Advantages

The primary advantage of using the computing prospective return on equity is that effects of prospective issues such as expiring rate caps, termination of bilateral contracts and alternative capacity price mechanisms can be evaluated. Through applying the formulas above, the earnings projections made by company management or investment analysts can be put in a context – the ROE – that allows comparison with regulated companies.

Disadvantages

The disadvantage of computing the prospective ROE is that the calculation is dependent on assumptions concerning dividend payout ratios and that some companies do not provide earnings guidance. Further, as with the other accounting based return measures, the returns do not correspond to true economic returns.

Holding Period Rate of Return

Mechanics

The holding period rate of return is computed from the internal rate of return on cash flows associated with making an investment in a stock. The rate of return is annualized using assumed dates for making an investment. Rates of return on cash flows

are computed through making an internal rate of return calculation on the following cash flows:

Cash Outflow at Start Date: Negative of Stock Price

Intermediate Positive Cash Flows: Dividends

Cash Inflow at Finish Date: Stock Price

A simple example which demonstrates how the holding period rate of return is shown in the table below:

Illustration of Rate of Computing Rate of Return from IRR								
Price	Dividend	Cash	Starting	Opening	Return	Percent	Index	Cash/Index
100		(100)	100	100			1.00	(1.00)
105	5	5	110	100	10	10.0%	1.10	-
120		-	125	100	15	13.6%	1.25	-
114		-	119	100	(6)	-4.8%	1.19	-
113	5	5	123	100	4	3.4%	1.23	-
125		-	135	100	12	9.8%	1.35	-
130	10	140	150	100	15	11.1%	1.50	1.50
	IRR	7.33%					IRR	6.99%

In order to make the calculation of internal rates of return from holding stocks as demonstrated in the table, we have gathered stock price, dividend and stock split data for each company from the yahoo website as follows:

- Daily stock prices (for some companies, the stock prices on a daily basis are available since 1970). The data are available on a non-adjusted basis for the closing price of each day.
- Dividend per share (the dividends per share are already adjusted for stock splits and include the date of the dividend payment).
- Dates of stock splits (the date of the stock split and the ratio used for the split is included for each company).

To adjust the holding period rates of returns for stock splits, stock prices are re-stated into the current per-share currency. For example, say the stock price is $60 today and a 2 for 1 split occurred a year ago. If the stock price was $100 on a date before the stock split, that price in today's per share currency would be $50. Here, the holding period return would be $10 assuming no dividends whereas if the currency correction had not been made, the analysis would incorrectly attribute a negative $40 return ($60 minus $100.) This approach means that closing prices at dates before the stock split are divided by ratio of old shares to new shares:

Adjusted Prior Price = Prior Price x (Old Shares/New Shares)

To compute the holding period rate of return, we have entered the adjusted stock prices into a spreadsheet that accounts for alternative investment dates (i.e., date of original purchase of the share.) Once the initial investment date is selected, we assume the stock is held until the end of the time period and all dividends are received by the investor on the actual date the dividends are paid. Once the time series of adjusted prices is established, the internal rate of the investment that accounts for specific dates is presented.

In the case of Exelon, we measured the rate of return from the perspective of investors before the merger who held shares in different companies. The returns are different because investors in one company received a merger premium while investors in the other company paid the merger premium. Data for the company that was acquired is no longer recorded on the Yahoo website and must be gathered from the SEC 10-K forms that track quarterly stock prices. If the merger was accomplished with a share exchange, calculations of holding period returns from the perspective of investors in the acquired companies must reflect the exchange ratio. In the case of Exelon, the acquired company was named Unicom. Unicom shareholders received .875 shares of Exelon for each share of Unicom they owned. This means that a share of Unicom should be multiplied by 1/.875 to put the share into the same currency as the current share price.

Advantages

The advantages of measuring costs and benefits of PJM policies using the holding period rates of return is that actual economic returns are measured. Further, because the stock price reflects future expected events and dividends measure realized cash flows, the holding period rate of return accounts for both prospective and historic performance.   The holding period return can be computed using alternative beginning and ending periods to evaluate how returns to investors are affected by specific events. For example, the holding period returns over the past three years measure how returns are affected by worldwide increases in energy prices.

Disadvantages

The disadvantages of the holding period return is that it does not reflect the date at which investment was made in the company. To illustrate this imagine an investment in an oil project which was originally made when oil prices were $30/barrel and which has public stock prices. If oil prices fall to $20, increase to $70 and then decline to $50 the holding period return will depend on whether the start date is when oil prices are $30, $20 or $70. The actual return should be measured on the basis of when real investments are made.