BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Docket Nos. UE-121697 and UG-121705
Puget Sound Energy, Inc. and NW Energy Coalition
Joint Petition for Approval of a Decoupling Mechanism

Docket Nos. UE-130137 and UG-130138
Puget Sound Energy, Inc. Expedited Rate Filing

PUBLIC COUNSEL DATA REQUEST NO. 089

PUBLIC COUNSEL DATA REQUEST NO. 089:

Re: Dr. Roger A. Morin Rebuttal Testimony, p. 42, ll. 3-5.

What is the risk premium for utilities estimated in the Harris, Marston study?

Response:

The Prefiled Rebuttal Testimony of Dr. Roger A. Morin, Exhibit No. ___(RAM-16T), at page 42, lines 3-8, states as follows:

> A prospective study by Harris, Marston, Mishra, and O'Brien cited in my direct study provides estimates of the *ex ante* expected returns for S&P 500 companies over the period 1983-1998. From that study, the average Market Risk Premium estimate for the overall period is 7.2%, the same as used in my CAPM analysis and higher than the historical Market Risk Premium reported in Morningstar.

Table I (Summary of Risk Premium Differences For DCAPM and GCAPM) on page 56 of R. S. Harris, *et al.*, *Ex Ante Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM*, 32 Financial Management 51-66 (2003), reports a value-weighted average of the estimated *ex ante* risk premia of 7.2% period for the period 1983-1998.

Please see Attachment A to Puget Sound Energy, Inc.'s ("PSE") Response to Public Counsel Data Request No. 089 for a copy of Table I (Summary of Risk Premium Differences For DCAPM and GCAPM) on page 56 of R. S. Harris, *et al.*, *Ex Ante Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM*, 32 Financial Management 51-66 (2003).

PSE's Response to Public Counsel Data Request No. 089   Page 1
Date of Response: January 7, 2015
Person who Prepared the Response: Dr. Roger A. Morin
Witness Knowledgeable About the Response: Dr. Roger A. Morin

ATTACHMENT A to PSE's Response to PUBLIC COUNSEL Data Request No. 089

Ex Ante Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM

Robert S. Harris, Felicia C. Marston, Dev R. Mishra,
and Thomas J. O'Brien*

We estimate ex ante expected returns for a sample of S&P 500 firms over the period 1983-1998. The ex ante estimates show a better overall fit with the domestic version of the single-factor CAPM than with the global version, but the difference is small. This finding has no trend in time and is consistent across groups formed on the basis of relative foreign sales. The findings suggest that for estimating the cost of equity, the choice between the domestic and global CAPM may not be a material issue for many large US firms.

The estimation of a firm's cost of equity capital remains one of the most critical and challenging issues faced by financial managers, analysts, and academicians. Although theory provides several broad approaches, recent survey evidence reports that among large US firms and investors, the capital asset pricing model (CAPM) is by far the most widely used model.

Among the variety of decisions to be made in implementing the CAPM is the choice between a domestic or global index for the market portfolio. Although theory suggests that using a domestic market index is appropriate only for an asset traded in a closed, national market, empirical research has thus far failed to establish whether a global or domestic pricing model performs better with US stocks.

We study the choice between the global and domestic CAPM by examining which of the two models provides the better fit with a sample of *ex ante* expected equity return estimates for large US companies. In contrast to many prior studies that use realized returns, we estimate implied expected returns based on the theory's call for a forward looking measure. The question we ask is whether the domestic or the global version of the single-factor CAPM provides the better fit with the dispersion of the *ex ante* expected return estimates for a sample of S&P 500 equities. Our study period covers 1983 to 1998.

We find that the domestic US CAPM fits the *ex ante* expected return estimates better than does the global CAPM. This result shows no trend over time. We also find that except for a few years in the early 1990s, the better fit of the domestic CAPM holds consistently across subsamples formed on the basis of the relative levels of the firms' foreign sales. However, the difference in fit of the two versions of the CAPM is small.

We also find a positive and significant empirical relation between *ex ante* risk premium estimates and systematic risk estimates. Moreover, we find that the *ex ante* risk premium estimates for

Table I. Summary of Risk Premium Differences For DCAPM and GCAPM

The columns show, respectively, the average number of firms per month (#Firms), the value-weighted averages of the estimated *ex ante* risk premia (*Ex Ante*), average domestic beta estimates (β_D), the average domestic market risk premium estimates (RP_D), the average absolute differences between the *ex ante* estimates and those of the DCAPM (*Ex-D*), the average global beta estimates (β_G), the average global market risk premium estimates (RP_G), the average absolute differences between the *ex ante* estimates and those of the GCAPM (*Ex-G*), and the percentage of cases in which the *ex ante* estimate is closer to the DCAPM estimate than to GCAPM estimate (%DCAPM Closer). The numbers in parenthesis are corresponding *t*-statistics.

Year	#Firms	Ex Ante	β_D	RP_D	Ex-D	β_G	RP_G	Ex-G	%DCAPM Closer
1983	285	0.066	0.883	0.075	0.030	0.864	0.077	0.031	0.573(8.489)***
1984	300	0.053	0.915	0.058	0.026	0.897	0.059	0.027	0.581(9.777)***
1985	314	0.057	0.925	0.062	0.026	0.915	0.062	0.028	0.561(7.524)***
1986	320	0.074	0.985	0.075	0.028	0.890	0.084	0.030	0.580(9.931)***
1987	327	0.061	1.024	0.060	0.024	0.941	0.065	0.027	0.618(14.76)***
1988	335	0.064	1.000	0.064	0.024	0.969	0.066	0.026	0.589(11.28)***
1989	352	0.066	0.982	0.067	0.023	0.890	0.073	0.025	0.601(13.08)***
1990	357	0.071	0.972	0.073	0.025	0.797	0.089	0.026	0.531(4.108)***
1991	363	0.075	0.976	0.077	0.027	0.723	0.104	0.027	0.482(-2.409)**
1992	370	0.078	0.990	0.079	0.030	0.723	0.109	0.028	0.440(-8.002)***
1993	374	0.082	1.018	0.080	0.029	0.576	0.142	0.029	0.490(-1.299)
1994	375	0.073	1.038	0.070	0.025	0.576	0.126	0.026	0.515(2.012)**
1995	370	0.077	1.039	0.074	0.028	0.579	0.133	0.031	0.538(5.118)***
1996	379	0.078	1.008	0.077	0.027	0.604	0.129	0.035	0.632(17.83)***
1997	383	0.082	1.005	0.081	0.029	0.650	0.127	0.037	0.616(15.73)***
1998	388	0.092	1.010	0.091	0.031	0.793	0.116	0.035	0.575(7.826)***
Avg.	349	0.072	0.986	0.073	0.027	0.774	0.097	0.029	0.556(28.57)***

***Significant at the 0.01 level.
**Significant at the 0.05 level.

similar results (not reported here) when we use the CRSP Value-Weighted Index instead of the S&P 500 Index for the domestic US market portfolio.

We make two observations about the magnitudes of the market risk premium estimates. First, the global market risk premium estimates are higher than the local US market risk premium estimates. Although this observation may seem counterintuitive, it is a logical consequence of the fact that the global beta of the US market has historically been less than one. (See, for example, Karolyi and Stulz, 2003). Our second observation is that market risk premium estimates are higher than those reported in studies by Claus and Thomas (2001) and Fama and French (2002), but have a similar magnitude to that observed by Kaplan and Ruback (1995) and to the long-term unconditional estimates of Constantinides (2002). Regardless, these estimates should not bias the results in favor of one CAPM version over the other.

When we examine the percentage analysis reported in Table I, we see that with the exception of the three consecutive years from 1991 through 1993, in the majority of the cases the *ex ante* risk premium estimate is closer to the DCAPM estimate than to the GCAPM estimate. Overall, the *ex ante* estimates are closer to the DCAPM estimate 56% of the time. Given the large sample, this percentage is significant in a statistical sense.