

**Response of Dr. Lee L. Selwyn to the
“Expert Report of Dr. James A. Vander Weide
Regarding Dr. Selwyn’s response to Bench Request No. 3”**

**Docket No. UT-023003
June 18, 2004**

The above-referenced expert report filed by Verizon Northwest (“Verizon”) on June 11, 2004 (“Verizon Report”) sets forth a *new* three-part argument, claiming that inclusion of Qwest/US West data in my regression analysis produces biased results. Specifically, the Verizon Report contends that the data employed in the regression model:

- (1) are not inclusive of the most recent restatements of Qwest’s financial position;
- (2) are outliers – both for Qwest and for US West; and
- (3) incorrectly include pre-merger US West data instead of pre-merger Qwest data.

Each element of Verizon’s new/revised position is addressed below.

1. Inclusion of restated Qwest/US West financial data would be improper

Verizon’s Report claims (at pages 3-4) that I should have updated my analysis to include the most recent restatements of Qwest financial data. First and foremost, the Commission should be aware that the input data points for Qwest that were included in my analysis reflect the beta values that correspond to the financial data for Qwest *that were available at the time that those beta values were computed and published*. The analysis as filed, therefore, reflects market valuations of Qwest stock using a methodology that is internally consistent.

Furthermore, the Verizon Report and, by extension, Verizon, now argue for *retroactive* revisions to the financial data to reflect *subsequent, after-the-fact* restatements by Qwest, despite the fact that during the hearings Verizon had proposed a considerably different position with respect to the *ex post* revision of financial data as more accurate information subsequently becomes available (Tr., at p. 620 – AT&T cross-examination of Vander Weide):

... it doesn't really matter what earnings actually are after the fact in terms of the cost of equity; it matters what they are forecasted to be. Actual earnings are sometimes higher than forecast and sometimes they're lower than forecast, but what's important is that these are the earnings growth rates that are expected by investors, and my studies have indicated that the IBES forecasts are the growth rates that investors use when they make stock buy and sell decisions. ...

Verizon's new/revised position directly contradicts the core premise of its proposed DCF approach – which holds that investors rely upon the forecasts and data that are available *at the time that they value stocks and make stock purchase and sale decisions*. The retroactive and selective inclusion of certain Qwest restated financial results that the Verizon Report recommends and that Verizon now supports would serve only to pollute the input data and undermine the overall reliability of the regression analysis.

2. Qwest and pre-merger US West data are not “outliers” and are properly included in the regression analysis.

With respect to the claim that the Qwest/US West data are “outliers” that bias the results of the regression analysis, the Commission should not be persuaded by the Verizon Report's speculations, which are based entirely upon a superficial visual representation of the data.¹ In fact, the systematic identification of true outliers is predicated upon well-established econometric methods that are, in turn, grounded in formal objective tests, tests that are nowhere contained in the Verizon Report. Whether the US West/Qwest data points are outliers, therefore, can be objectively determined through a formal quantitative analysis. As set forth below, I have performed this analysis, and have determined that the US West/Qwest data are decidedly *not* outliers and are thus properly and appropriately included in the regression.

Figure 1 below reproduces the scatter plot from the Verizon Report, but includes a calculated trend line, highlighting the obvious linear relationship between Percent non-ILEC Assets and Beta values. With the trend line plotted, it is readily apparent that the US West/Qwest data cannot be characterized as “highly unusual” because the data follows the *expected trend* that Beta values will likely increase with higher values of Percent non-ILEC Assets.

1. Figure 1 of the Verizon Report displays a scatter plot of Beta versus Percent non-ILEC Assets, and suggests that this plot is visually indicative of outlier data points. This graph, which the Verizon Report characterizes as demonstrating “[t]he highly unusual nature” of Qwest data, actually *confirms* the specific relationship that I have hypothesized.

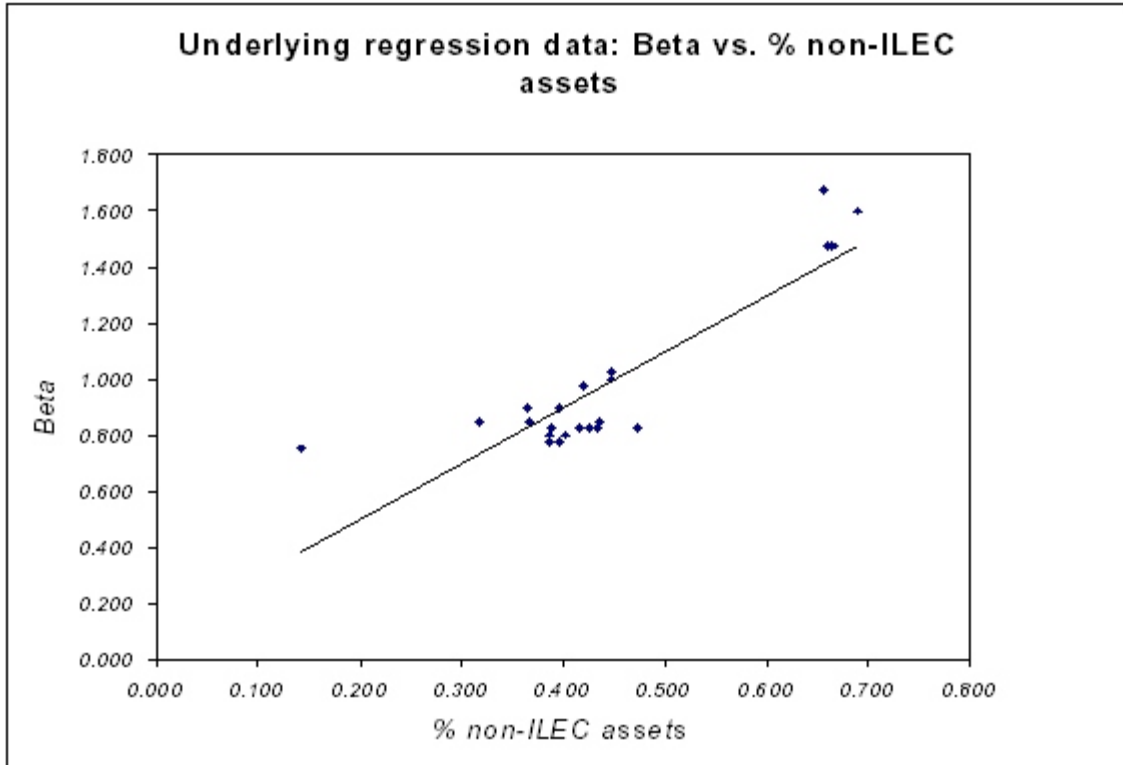


Figure 1. Scatter plot of RBOC Beta values against the Percent non-ILEC Assets, shown with calculated trend line.

The formal, quantitative test for outlier data involves an inspection of the residuals of the data relative to the regression line (i.e., the difference between the estimated value and the observed value of the dependent variable, Beta in this case), and defines an outlier as a data point whose residual is more than three standard deviations from zero (a residual of zero implies that the estimated and observed values are equal).² I have utilized a two-step analysis in performing this test:

- (1) First, I isolated the specific variable that is to be examined, Percent non-ILEC Assets in this case, and developed a two-variable regression equation with Beta as the dependent variable and Percent non-ILEC Assets as the explanatory variable. I calculated the standard deviation of the residuals at 0.147186 and compared this with each of the residuals associated with the US West and Qwest data points. As Table 1 demonstrates, all of the residuals are less than three standard deviations – and in fact most of the residuals are less than one standard deviation from the observed value – confirming that *none* of the US West/Qwest data points are statistical outliers.

2. See, e.g., Younger, Mary Sue, *A First Course in Linear Regression*, (Boston: Duxbury Press, 1985), at 265-268.

Table 1 Analysis of the US West/Qwest Residuals Two-Variable Model Standard Deviation of Residuals = 0.147186					
US West/Qwest Observation	Beta (observed)	Beta (predicted by regression)	Residual	Standard Deviations from zero	Outlier?
1	0.750	0.370	0.380	2.582	No
2	1.600	1.462	0.138	0.938	No
3	1.475	1.412	0.063	0.425	No
4	1.475	1.404	0.071	0.480	No
5	1.675	1.395	0.280	1.902	No

- (2) Having established in step (1) that the US West/Qwest data points are not outliers, I then examined whether the full multivariable regression model (Model 1A that I had presented, as corrected, in my Response to Bench Request No. 3) provides accurate estimates of those US West/Qwest data points. I calculated the standard deviation of the residuals for this model at 0.048826, and then performed the same type of comparison of the US West/Qwest residuals with that standard deviation. These results, presented in Table 2 below, demonstrate that the model is correctly specified and that the US West/Qwest data points – four of whose residuals are less than 1.0 standard deviation and one is barely above 1.0 standard deviation – are being accurately estimated by the model and are clearly not outliers.

Table 2 Analysis of the US West/Qwest Residuals Multi-Variable Model (Model 1A) Standard Deviation of Residuals = 0.048826					
US West/Qwest Observation	Beta (observed)	Beta (predicted by regression)	Residual	Standard Deviations from zero	Outlier?
1	0.750	0.769	-0.019	-0.393	No
2	1.600	1.564	0.036	0.746	No
3	1.475	1.516	-0.041	-0.834	No
4	1.475	1.501	-0.026	-0.526	No
5	1.675	1.626	0.049	1.008	No

Using this objective test, I have established that *none* of the US West/Qwest data points in my dataset are outliers. However, even if they are, it would still be appropriate – indeed, *essential* – to include them in the regression. As one econometrics textbook explains:

If one value is extremely different from all the others, its effect can be considerable. ... This is not to say that we automatically discard all outliers. On the contrary, the more information we have, the more accurate our description of the relationship. *If it cannot be established that an outlier is the result of an error in data collection, then we have to live with this extreme observation and try to discover what it is telling us.*³

In this case, however, the US West/Qwest data points that I have used in my regression analysis are not outliers, they conform to the hypothesized relationship, and they contain relevant, factual information and, as such, *must not be excluded*. In fact, to exclude these data as suggested by Verizon’s Report would constitute “data mining” and would surely produce erroneous and misleading results.

3. Pre-merger Qwest data are not relevant to an analysis of *RBOC* conduct and risk.

Finally, the notion that pre-merger US West should have been replaced by pre-merger Qwest in my regression dataset is irreconcilable with the facts surrounding the Qwest/US West merger and should therefore be rejected outright by the Commission. Prior to its acquisition of US West in 2000, *Qwest was not a Regional Bell*, and Qwest had no ILEC assets. The fact that Qwest was the surviving entity after the merger is of no consequence, because the analysis needed to focus upon US West before the merger and upon the *neo-US West* (by whatever name it had adopted) following the merger.⁴

The analysis is constructed to demonstrate the effects of several variables – and, in particular, diversification into non-ILEC lines of business – *of the Regional Bells*. Post-merger Qwest’s beta correctly accounts for the large non-ILEC component of post-merger Qwest that was not present in pre-merger US West. The regression model measures the effect of facilities-based competition, financial leverage, and diversification into non-ILEC businesses upon the RBOCs’ beta values over time. Both US West before the merger and the combined company, Qwest, after the merger controlled the same Bell Operating Companies in the same 14-state region. The difference between the two entities was the degree of investment in *non-ILEC* businesses, which is directly captured by the “Percent Non-ILEC Assets” variable in the regression analysis, and by the two entities’ levels of debt in their respective capital structures.

3. *Id.*, at 267-268, emphasis supplied.

4. The fact that, technically, Qwest acquired US West, rather than the other way around, does not affect the post-merger structure of the combined companies or the share of its assets being devoted to non-ILEC businesses.

Indeed, this non-ILEC investment (in pre-merger Qwest's assets) by post-merger Qwest/US West is no different than the similar non-ILEC investments made by the other RBOCS in such areas as wireless, cable television, and offshore ventures.

As shown in Table 3 below, pre-merger Qwest had a very high beta (in the range of 1.70-1.80), yet it was *not* a highly leveraged firm (its debt represented less than 7% of the capital structure). On the other hand, post-merger Qwest is a highly leveraged firm, with a capital structure that had increased to approximately 31% debt as of March 31, 2001 and 53% debt as of September 30, 2001. Over this same period, post-merger Qwest's beta remained high, hovering in the 1.55-1.40 range. In reality, however, the similarity between pre- and post-merger Qwest's total parent company beta was essentially a coincidence. Prior to the merger, the firm then known as "Qwest" had no ILEC assets at all, and its large investments in fixed-cost transmission assets, together with highly volatile demand for its services, presented a highly risky business model. Following its merger with US West, Qwest instantly became a BOC as expressly defined at 47 U.S.C. § 153(4), even to the point that it was required, as a condition of its merger with US West, to exit the in-region long distance market within the 14-state US West footprint until it had obtained Sec. 271 in-region long distance authority. Post-merger Qwest presented a level of risk that was somewhere between a pure ILEC and a pure third-tier IXC. What kept post-merger Qwest's parent company beta up in roughly the same range as that for pre-merger Qwest was the significant jump in the *debt* component of its capital structure.

Significantly, the US West/Qwest merger did not lead to or cause any distortion in the systematic risk of the *combined* company. In fact, there was actually no change in risk at all (other than that related to leverage) between the average of the separate pre-merger entities and the post-merger combination. Using the respective capital structures of pre-merger US West and of pre- and post-merger Qwest, one can remove the effect of financial leverage and combine the two pre-merger unlevered beta values using a weighted average of the market capitalizations of pre-merger US West and pre-merger Qwest. The result of this calculation, using separate US West and Qwest data for three calendar quarters preceding the merger, yields a weighted average pre-merger unlevered beta for US West and Qwest combined of 1.10. Using three calendar quarters of data for *post-merger* Qwest, we find that the unlevered beta is also calculated at 1.10. The calculations, presented in Table 3, show that the unlevered beta for post-merger Qwest is *exactly the same* as the *weighted average of the separate unlevered betas for pre-merger US West and pre-merger Qwest*. Hence, *the beta for post-merger Qwest correctly recognizes the mix of ILEC and non-ILEC assets in post-merger Qwest's portfolio*. As such, there is no basis for excluding Qwest and US West from the regression analysis, and to do so would be nothing more than self-serving data mining, intended to mislead and obscure the otherwise unassailable conclusion of the regression model.

Table 3						
Estimating a Beta for Post-Merger Qwest						
Company	Date	Levered Beta	Market Cap (\$Billion)	Total Debt (\$Billion)	Income Tax Rate	Unlevered Beta
Pre-Merger US West and Qwest						
Pre-merger US West	3Q99	0.75	27.8	12.7	38.0%	0.59
	4Q99	0.75	36.4	13.1	40.0%	0.62
	1Q00	0.75	37.5	13.1	40.0%	0.62
Average Pre-merger US West		0.75	33.9	13.0	39.5%	0.61
Pre-Merger Qwest	3Q99	1.80	25.4	2.3	40.0%	1.71
	4Q99	1.75	29.9	2.4	40.0%	1.67
	1Q00	1.70	33.1	2.4	40.0%	1.63
Average Pre-merger Qwest		1.75	29.5	2.4	40.0%	1.67
Weighted average beta for Pre-merger Qwest/Pre-merger US West	$(33.9/63.4)*0.61 + (29.5/63.4)*1.67 =$					1.10
Post-Merger Qwest						
Post-merger Qwest	2Q01	1.55	50.0	21.8	40.0%	1.24
	3Q01	1.55	32.3	23.4	40.0%	1.10
	4Q01	1.40	22.1	24.8	55.0%	0.85
Average post-merger Qwest		1.52	34.8	23.3	43.2%	1.10
Notes:	(1) This analysis excludes the quarter prior to the merger and Value Line's first quarter report immediately following the merger so as not to skew the analysis with transactional distortions related to the merger. (2) Value Line capital structure figures represent the quarter prior to the report.					
Source:	Value Line Investment Survey as of October 8, 1999; November 5, 1999; January 7, 2000; February 5, 2000; April 7, 2000; May 5, 2000; July 6, 2001; October 5, 2001; and January 4, 2002.					