Online Appendix: Sales Force Behavior, Pricing Information, and Pricing Decisions

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1 Comparison of Models

The top left graph in Figure 1 plots the frequency of actual price changes and the top right graph in Figure 1 shows the distribution of predicted price changes in the benchmark model. From these histograms, we observe that, while over 56 percent of all transactions have no cost change, the benchmark model severely underpredicts the occurrence of no cost change. This incongruity arises from a methodological challenge. That is, from a statistical point of view, such zero-inflated data cause severe problems because distributional assumptions (such as normality) are violated (see e.g,. Lambert 1992). Linear regression attempts to "smooth-out" the large stick of observed zero price changes and, as a result, severely underpredicts the frequency of zero price changes. Hence, any observations or conclusions on price changes based on such a model could be highly misleading.

Similar to our graphical depiction of the model fit for benchmark models in the top half of Figure 1, we compare the price changes predicted by our two-stage model with the observed price changes. The result is given in the bottom half of Figure 1. The bottom right panel shows the distribution of the observed price changes, while the bottom left panel plots the predicted price changes in the two-stage model. The benchmark model severely underpredicts the frequency of zero price changes; the distribution of predictions under the two-stage model closely resembles that of the actual distribution. Although the distribution of the predictions generated by the two-stage model closely resembles that of the actual price changes, the distributions are, as expected, not identical. The second stage of our model operates on the predicted values of the first stage, where

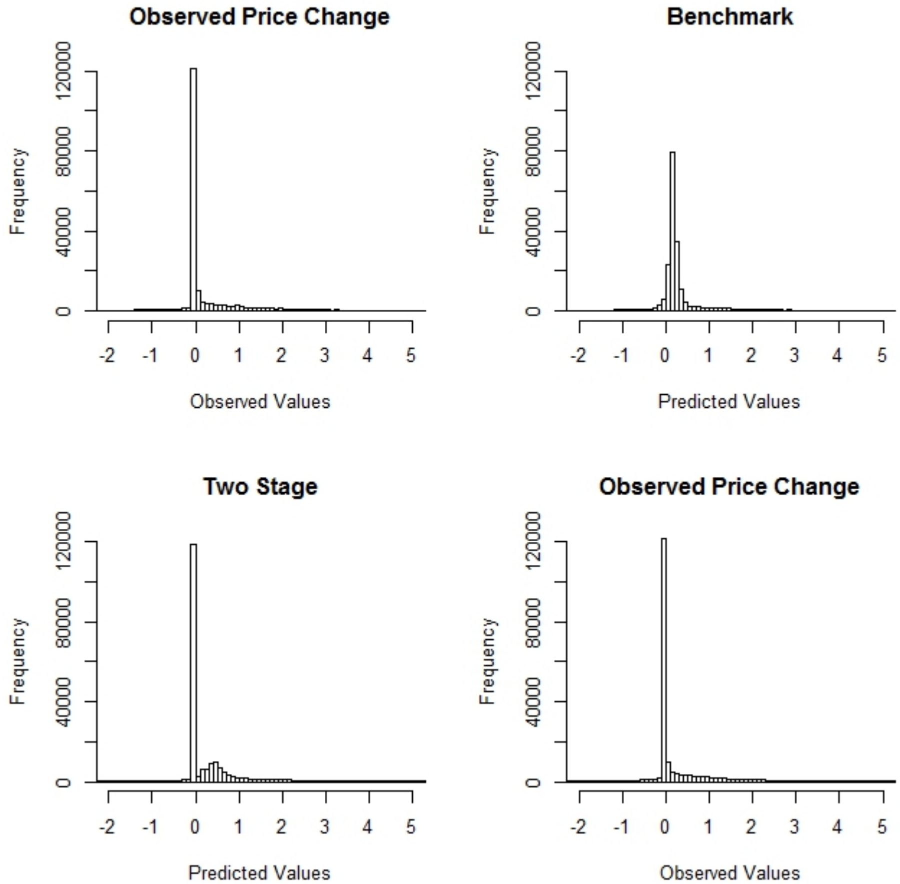

Figure 1: Distribution of observed and predicted price changes under Single and Two-stage Models

a prediction of 0.5 or more is taken as a price change. Since the logit model may predict the value of a very small price change as zero, small discrepancies between actual and modeled price changes are to be expected. All in all, Figure 1 provides encouraging evidence that our two-stage model is a reasonable model for pricing decision behavior.

Table 1 reports the results from our two-stage model, as well as our benchmark (single regression) model; we report the adjusted-R^2 for Stage 2 and the benchmark model and the pseudo-R^2 for the Stage 1 model.

Table 1: Benchmark versus Two-Stage Models

	Benchmark	Two-Stage Model	
		Stage 1	Stage 2
Intercept	0.1124	-0.4883	0.2897
	(0.0089)	(0.0152)	(0.0195)
Cost.Inc	0.9183	2.2320	0.8189
	(0.0027)	(0.0196)	(0.0045)
Cost.Dec	-0.6210	0.4993	-0.7430
	(0.0033)	(0.0108)	(0.0051)
$Cost.Inc^2$	0.0002	-0.0068	0.0002
	(0.0000)	(0.0001)	(0.0000)
$Cost.Dec^2$	-0.0021	-0.0019	-0.0015
	(0.0000)	(0.0001)	(0.0000)
RPC.Inc	0.0537	-0.0443	0.1479
	(0.0011)	(0.0033)	(0.0026)
RPC.Dec	-0.9426	0.4458	-0.9571
	(0.0025)	(0.0183)	(0.0037)
Frac	0.1720	-0.1826	0.3302
	(0.0159)	(0.0267)	(0.0331)
CO	-0.0411	0.5640	-0.1976
	(0.0062)	(0.0104)	(0.0128)
T	0.0005	-0.0050	0.0014
	(0.0001)	(0.0002)	(0.0003)
N.Cust	*0.0004*	0.0027	*0.0003*
	(0.0004)	(0.0001)	(0.0009)
N.Item	*0.0000*	-0.0008	*0.0000*
	(0.0000)	(0.0000)	(0.0001)
N.New.RPC	-0.0052	-0.0122	-0.0106
	(0.0004)	(0.0000)	(0.0009)
# obs	207942	207942	90596
BIC	711335	237700	373190
Pseudo or Adjusted R^2	0.79	0.39	0.81
St.Dev RE	0.11	0.70	0.48

(Note: Standard errors in parentheses, italicized numbers indicated significance levels greater than 0.1, all other numbers significant at levels less than 0.01.)