Web Appendix

Competition and the Use of Foggy Pricing

Eugenio J. Miravete

Figure 4 illustrates this optimal nonlinear tariff for different values of λ. Figure 4 assumes a marginal cost $c = 1$ and an asymmetric distribution parameter $\lambda = 0$ for "Schedule A," $\lambda = 1$ for "Schedule B," and $\lambda = 2$ for "Schedule C." In all cases I normalize the reservation utility to $\underline{\mathcal{U}} = 0$. The optimality condition (3) translates into all nonlinear tariff schedules in Figure 4 having the same 45 degree slope at the maximum consumption level where the marginal tariff equals the marginal cost of production. Finally, notice that tariffs in Figure 4 do not cross each other as the hazard rate of the distribution is monotonically increasing in λ, *i.e.*, because parameter λ indexes distribution $F(\theta)$ with respect to a hazard rate ordering.

Figure 4: Asymmetry of Information and Curvature of Nonlinear Tariffs

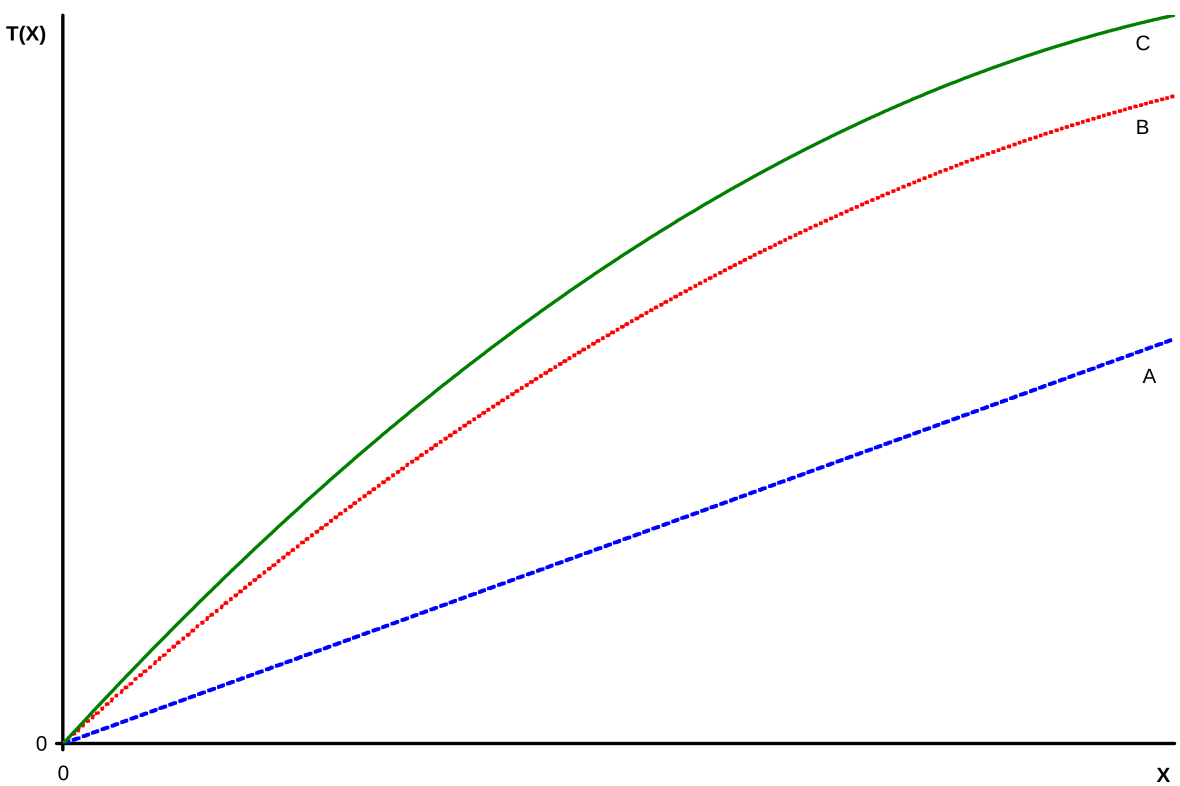

Figure 5: Dynamic Competition Effects on ϕ_0

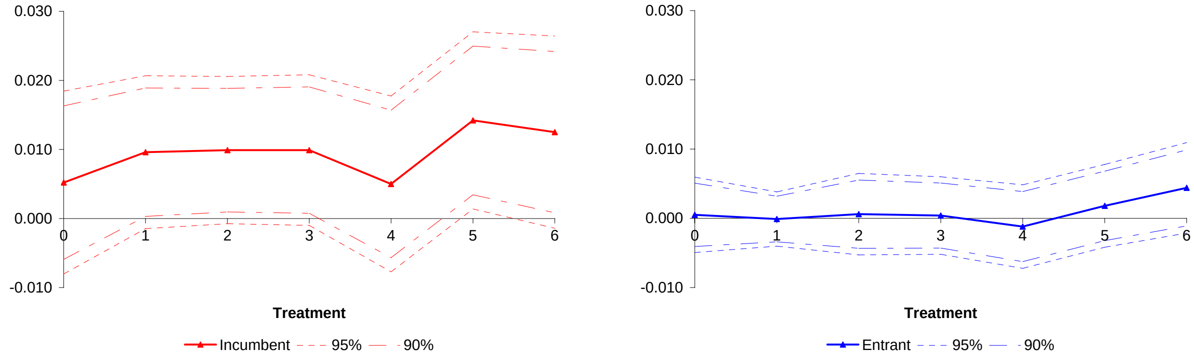

Figure 6: Dynamic Competition Effects on ϕ_1

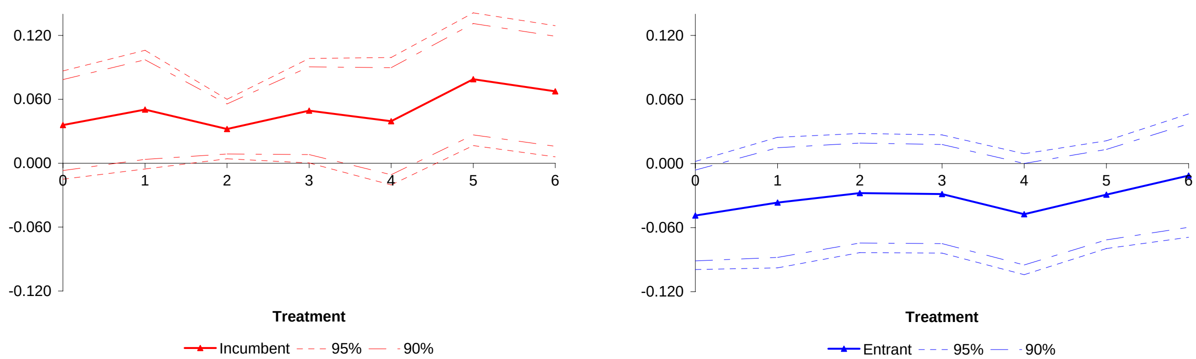

Figure 7: Dynamic Competition Effects on ϕ_2

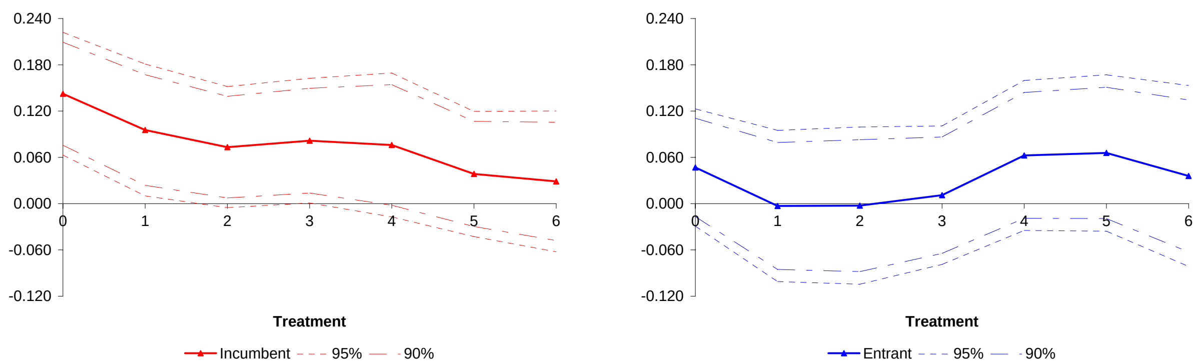

Table 6: Fogginess – Incumbent: Preemption

	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
YEAR92	0.0075	(0.49)	−0.0218	(0.29)	0.1560	(1.32)
TREAT(−6)	−0.0004	(0.07)	0.0179	(0.74)	0.0874	(1.97)
TREAT(−5)	0.0066	(1.01)	0.0314	(1.14)	0.0124	(0.31)
TREAT(−4)	0.0029	(0.44)	0.0255	(0.81)	0.0342	(0.85)
TREAT(−3)	−0.0001	(0.01)	0.0062	(0.20)	0.0438	(0.95)
TREAT(−2)	0.0045	(0.60)	0.0216	(0.59)	0.0044	(0.09)
TREAT(−1)	0.0007	(0.10)	0.0063	(0.18)	0.0413	(0.79)
TREAT(0)	0.0075	(0.77)	0.0533	(1.26)	0.1796	(2.74)
TREAT(+1)	0.0125	(1.36)	0.0696	(1.47)	0.1306	(1.76)
TREAT(+2)	0.0126	(1.32)	0.0822	(1.66)	0.1097	(1.47)
TREAT(+3)	0.0124	(1.24)	0.0685	(1.40)	0.1247	(1.54)
TREAT(+4)	0.0081	(0.75)	0.0614	(1.10)	0.1184	(1.39)
TREAT(+5)	0.0172	(1.53)	0.1018	(1.73)	0.0852	(1.01)
TREAT(≥+6)	0.0159	(1.22)	0.0929	(1.38)	0.0795	(0.79)
AP_{peak}	0.0091	(1.87)	0.0084	(0.21)	0.0175	(0.32)
$\text{AP}_{\text{off-peak}}$	0.0000	(1.04)	0.0000	(0.14)	−0.0004	(3.28)
$DPLRI$/ $Adj. R^2$	0.5977		0.6788		0.6830	
LM(Joint Test)	1.6425	[0.4399]	1.0007	[0.3171]	0.0181	[0.8929]

Marginal effects evaluated at the sample mean of regressors and absolute, heteroskedastic-consistent t-statistics are reported in parentheses. $DPLRI$ is the Poisson-deviance pseudo-R^2 of Cameron and Windmeijer (1996). LM is the regression-based, heteroskedastic-robust Lagrange multiplier test of endogeneity of Wooldridge (1997) for the case of the Poisson $PMLE$ and the regression-based, heteroskedastic-robust Lagrange multiplier test of endogeneity of Wooldridge (1995) for linear regressions. LM is asymptotically distributed as a χ^2 with 2 degrees of freedom under the null hypothesis of joint exogeneityof AP_{peak} and $\text{AP}_{\text{off-peak}}$. The corresponding p-values are shown in brackets. Sample includes 1004 observations.

Figure 8: Preemptive Effects on ϕ_2

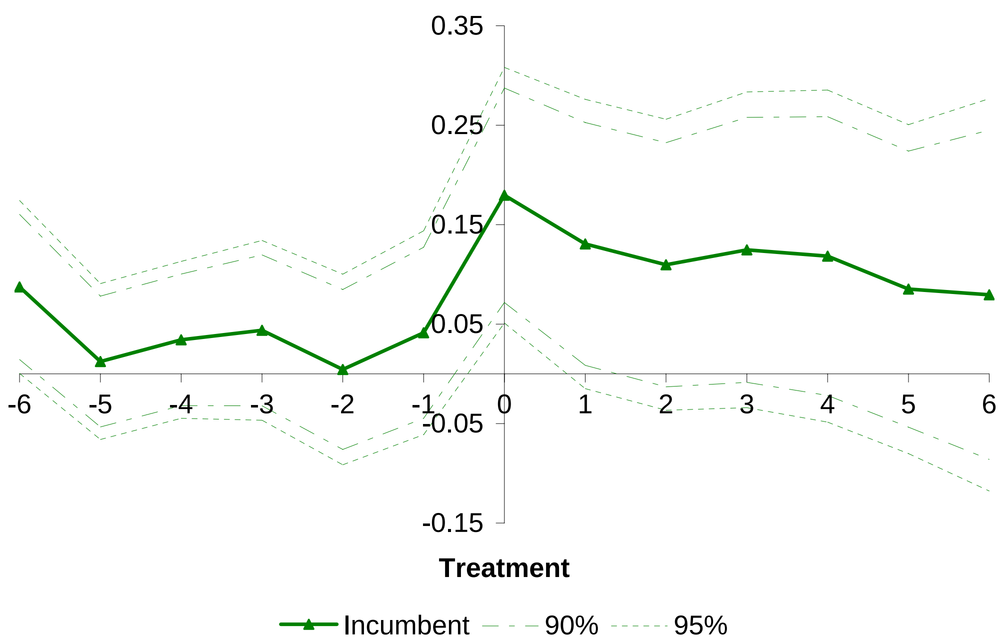

Table 7: Instrumental Regressions

	Table 4				Table 5				Table 6			
	AP_{peak}		$AP_{off-peak}$		AP_{peak}		$AP_{off-peak}$		AP_{peak}		$AP_{off-peak}$	
YEAR92	−0.0033	(0.03)	12.7393	(1.27)	0.1482	(0.59)	5.4098	(1.18)				
DUOPOLY	0.0814	(1.25)	1.7590	(0.32)	−0.0134	(0.08)	−4.6994	(1.71)				
AVGLEAD	0.0210	(1.01)	2.2249	(1.62)	−0.0083	(0.24)	2.4152	(1.02)				
AVGSHAREFOGGY	−0.1946	(0.93)	2.6614	(0.05)	−0.3389	(0.49)	−33.1562	(0.95)				
AVGCOMPLEXITY	−0.0356	(0.47)	−40.6930	(1.33)	−0.1685	(0.56)	−12.8090	(1.06)				
Adj. R^2	0.1546		0.4909		0.3688		0.4620					
LM (Joint Test)	2.5883	[0.2741]	2.8212	[0.2440]	0.5457	[0.7612]	3.3668	[0.1857]				
YEAR92	−0.0480	(0.33)	30.1987	(2.26)	0.4672	(1.35)	6.5568	(1.18)	0.1551	(0.80)	22.5585	(1.37)
TREAT(−6)									−0.0264	(0.33)	9.9510	(1.21)
TREAT(−5)									−0.0408	(0.55)	9.4008	(1.28)
TREAT(−4)									−0.0508	(0.58)	8.6012	(1.28)
TREAT(−3)									−0.0465	(0.49)	7.5132	(1.07)
TREAT(−2)									−0.3636	(1.11)	5.3284	(0.76)
TREAT(−1)									−0.0616	(0.58)	4.7728	(0.59)
TREAT(0)	0.0224	(0.30)	−7.7382	(0.89)	−0.1945	(0.98)	−5.5946	(1.32)	−0.1002	(0.76)	−0.1934	(0.02)
TREAT(+1)	0.1822	(2.14)	7.2494	(0.66)	0.0677	(0.24)	−3.9223	(1.37)	0.0819	(0.66)	14.3184	(1.11)
TREAT(+2)	0.1988	(1.92)	6.5287	(0.50)	0.1091	(0.40)	−4.0705	(1.37)	0.0803	(0.56)	13.5652	(0.90)
TREAT(+3)	0.2356	(2.26)	6.4513	(0.54)	0.1224	(0.48)	−4.1455	(1.37)	0.1191	(0.82)	13.8442	(1.06)
TREAT(+4)	0.2253	(1.99)	−15.3911	(1.21)	−0.3179	(0.94)	−4.0808	(1.09)	0.0788	(0.50)	−7.5918	(0.71)
TREAT(+5)	0.2176	(2.05)	−15.5677	(1.24)	−0.3105	(0.89)	−4.1684	(1.17)	0.0824	(0.48)	−7.1958	(0.61)
TREAT(≥+6)	0.2183	(1.73)	−17.1922	(1.63)	−0.3424	(1.19)	−5.3253	(1.16)	0.0397	(0.18)	−7.6736	(0.73)
AVGLEAD	0.0065	(0.36)	2.4976	(1.51)	−0.0061	(0.20)	2.3241	(0.98)	0.0004	(0.02)	2.7399	(1.58)
AVGSHAREFOGGY	−0.3707	(1.41)	10.1510	(0.20)	−0.2305	(0.29)	−33.6756	(0.97)	−0.4151	(1.52)	11.7683	(0.22)
AVGCOMPLEXITY	−0.1027	(1.17)	−41.9350	(1.35)	−0.1996	(0.75)	−13.1949	(1.08)	−0.1092	(1.17)	−41.7008	(1.34)
Adj. R^2	0.1520		0.4946		0.3710		0.4583		0.1627		0.4919	
LM (Joint Test)	2.8570	[0.2400]	2.3876	[0.3031]	0.8963	[0.6388]	3.1478	[0.2072]	2.8048	[0.2460]	1.8950	[0.3877]

OLS estimates. Absolute, heteroskedastic-consistent t-statistics are presented in parentheses. All regressions also include time (quarter) and market (city) fixed effects, although these estimates are not reported. *LM* is the regression-based, heteroskedastic-robust overidentification restriction test of Wooldridge (1995). *LM* is asymptotically distributed as a χ^2 distribution with 3 degrees of freedom under the null hypothesis of joint validity of the instruments. Its p-value is shown in brackets.

Table 8: Heterogeneity of Usage Patterns: Alternative Distributions

	INCUMBENT (Table 4)						*ENTRANT* (Table 4)					
DUOPOLY	ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)		ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)	
$\beta(4/21,1)$	0.0069	(1.42)	0.0437	(2.25)	0.1159	(3.42)	−0.0006	(0.27)	−0.0440	(2.12)	0.0261	(0.72)
$\beta(8/21,2)$	0.0069	(1.42)	0.0437	(2.25)	0.1204	(3.67)	−0.0006	(0.27)	−0.0440	(2.12)	0.0004	(0.01)
$\beta(12/21,3)$	0.0069	(1.42)	0.0437	(2.25)	0.1231	(3.77)	−0.0006	(0.27)	−0.0440	(2.12)	−0.0120	(0.34)
$\beta(16/21,4)$	0.0069	(1.42)	0.0437	(2.25)	0.1250	(3.81)	−0.0006	(0.27)	−0.0440	(2.12)	−0.0180	(0.51)
$\beta(20/21,5)$	0.0069	(1.42)	0.0437	(2.25)	0.1264	(3.83)	−0.0006	(0.27)	−0.0440	(2.12)	−0.0212	(0.60)

	INCUMBENT (Table 5)						*ENTRANT* (Table 5)					
YEAR92	ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)		ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)	
$\beta(4/21,1)$	0.0099	(0.82)	−0.0042	(0.08)	0.0188	(2.13)	−0.0066	(1.27)	−0.0534	(1.22)	0.4073	(4.12)
$\beta(8/21,2)$	0.0099	(0.82)	−0.0042	(0.08)	0.1795	(2.04)	−0.0066	(1.27)	−0.0534	(1.22)	0.3800	(3.88)
$\beta(12/21,3)$	0.0099	(0.82)	−0.0042	(0.08)	0.1816	(2.07)	−0.0066	(1.27)	−0.0534	(1.22)	0.3786	(3.83)
$\beta(16/21,4)$	0.0099	(0.82)	−0.0042	(0.08)	0.1828	(2.08)	−0.0066	(1.27)	−0.0534	(1.22)	0.3831	(3.84)
$\beta(20/21,5)$	0.0099	(0.82)	−0.0042	(0.08)	0.1836	(2.08)	−0.0066	(1.27)	−0.0534	(1.22)	0.3884	(3.87)
TREAT(0)	ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)		ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)	
$\beta(4/21,1)$	0.0052	(0.77)	0.0358	(1.38)	0.1425	(3.51)	0.0005	(0.18)	−0.0486	(1.88)	0.0469	(1.21)
$\beta(8/21,2)$	0.0052	(0.77)	0.0358	(1.38)	0.1500	(3.68)	0.0005	(0.18)	−0.0486	(1.88)	0.0136	(0.35)
$\beta(12/21,3)$	0.0052	(0.77)	0.0358	(1.38)	0.1536	(3.73)	0.0005	(0.18)	−0.0486	(1.88)	−0.0005	(0.01)
$\beta(16/21,4)$	0.0052	(0.77)	0.0358	(1.38)	0.1557	(3.76)	0.0005	(0.18)	−0.0486	(1.88)	−0.0064	(0.16)
$\beta(20/21,5)$	0.0052	(0.77)	0.0358	(1.38)	0.1572	(3.77)	0.0005	(0.18)	−0.0486	(1.88)	−0.0091	(0.23)
TREAT(+1)	ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)		ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)	
$\beta(4/21,1)$	0.0096	(1.70)	0.0503	(1.77)	0.0955	(2.19)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0030	(0.06)
$\beta(8/21,2)$	0.0096	(1.70)	0.0503	(1.77)	0.0961	(2.31)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0265	(0.57)
$\beta(12/21,3)$	0.0096	(1.70)	0.0503	(1.77)	0.0976	(2.36)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0384	(0.82)
$\beta(16/21,4)$	0.0096	(1.70)	0.0503	(1.77)	0.0992	(2.40)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0446	(0.95)
$\beta(20/21,5)$	0.0096	(1.70)	0.0503	(1.77)	0.1007	(2.42)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0481	(1.03)
TREAT($\geq$+6)	ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)		ϕ_0 (*PMLE*)		ϕ_1 (*OLS*)		ϕ_2 (*OLS*)	
$\beta(4/21,1)$	0.0125	(1.76)	0.0675	(2.15)	0.0289	(0.62)	0.0044	(1.32)	−0.0112	(0.38)	0.0359	(0.60)
$\beta(8/21,2)$	0.0125	(1.76)	0.0675	(2.15)	0.0312	(0.68)	0.0044	(1.32)	−0.0112	(0.38)	0.0168	(0.28)
$\beta(12/21,3)$	0.0125	(1.76)	0.0675	(2.15)	0.0330	(0.72)	0.0044	(1.32)	−0.0112	(0.38)	0.0081	(0.13)
$\beta(16/21,4)$	0.0125	(1.76)	0.0675	(2.15)	0.0352	(0.76)	0.0044	(1.32)	−0.0112	(0.38)	0.0040	(0.07)
$\beta(20/21,5)$	0.0125	(1.76)	0.0675	(2.15)	0.0370	(0.80)	0.0044	(1.32)	−0.0112	(0.38)	0.0021	(0.03)

Marginal effects evaluated at the sample mean of regressors for samples with alternative assumed distributions of usage in the absence of uncertainty, *i.e.*, for $\sigma = 0$. Absolute, heteroskedasticy-consistent t-statistics are reported in parentheses. DUOPOLY refers to the regression with a single average treatment effect, while the remaining variables refer to the regression that includes dynamic treatments.

Table 9: Fogginess and Uncertainty: Dominated and Non-Dominated Tariff Options

	INCUMBENT (Table 4)						*ENTRANT* (Table 4)					
DUOPOLY	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)		ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
$\sigma = 0.00\mu$	0.0069	(1.42)	0.0437	(2.25)	0.1159	(3.42)	−0.0006	(0.27)	−0.0440	(2.12)	0.0261	(0.72)
$\sigma = 0.10\mu$	0.0063	(1.33)	0.0323	(1.57)	0.1283	(3.83)	−0.0002	(0.10)	−0.0382	(1.87)	0.0051	(0.14)
$\sigma = 0.25\mu$	0.0059	(1.24)	0.0313	(1.51)	0.1355	(4.05)	−0.0002	(0.09)	−0.0375	(1.85)	0.0006	(0.02)
$\sigma = 0.50\mu$	0.0066	(1.37)	0.0324	(1.57)	0.1318	(3.80)	−0.0006	(0.29)	−0.0401	(2.04)	0.0235	(0.66)
$\sigma = 1.00\mu$	0.0103	(2.07)	0.0397	(2.00)	0.1099	(3.11)	−0.0016	(1.11)	−0.0292	(1.52)	0.0137	(0.38)
$\sigma = 1.50\mu$	0.0054	(1.54)	0.0298	(1.62)	0.1280	(3.57)	−0.0019	(0.87)	−0.0222	(1.12)	0.0257	(0.72)
$\sigma = 2.25\mu$	0.0045	(1.30)	0.0276	(1.50)	0.1339	(4.16)	−0.0004	(0.10)	−0.0253	(1.20)	0.0031	(0.09)
$\sigma = 3.00\mu$	0.0134	(1.36)	0.0330	(1.80)	0.1267	(4.04)	0.0061	(0.93)	−0.0152	(0.70)	−0.0528	(1.49)
$\sigma = \sigma^\star$	0.0040	(1.45)	0.0317	(1.60)	0.1229	(3.47)	−0.0028	(1.12)	−0.0301	(1.32)	0.0421	(1.15)

	INCUMBENT (Table 5)						*ENTRANT* (Table 5)					
YEAR92	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)		ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
$\sigma = 0.00\mu$	0.0099	(0.82)	−0.0042	(0.08)	0.0188	(2.13)	−0.0066	(1.27)	−0.0534	(1.22)	0.4073	(4.12)
$\sigma = 0.10\mu$	0.0126	(1.03)	0.0305	(0.54)	0.1598	(1.80)	−0.0063	(1.17)	−0.0387	(0.77)	0.4125	(4.05)
$\sigma = 0.25\mu$	0.0115	(0.94)	0.0270	(0.47)	0.1543	(3.88)	−0.0062	(1.15)	−0.0370	(0.74)	0.4223	(4.20)
$\sigma = 0.50\mu$	0.0113	(0.94)	0.0267	(0.46)	0.1874	(2.00)	−0.0037	(0.79)	−0.0198	(0.40)	0.3646	(3.47)
$\sigma = 1.00\mu$	0.0021	(0.18)	0.0040	(0.07)	0.2393	(2.69)	−0.0021	(0.67)	−0.0221	(0.42)	0.3919	(3.60)
$\sigma = 1.50\mu$	0.0061	(0.68)	0.0265	(0.45)	0.2190	(2.48)	−0.0034	(0.71)	−0.0274	(0.55)	0.3840	(3.50)
$\sigma = 2.25\mu$	0.0061	(0.68)	0.0207	(0.37)	0.1840	(2.16)	−0.0118	(1.38)	−0.0493	(1.01)	0.4827	(4.74)
$\sigma = 3.00\mu$	0.0216	(0.85)	0.0256	(0.46)	0.1380	(1.67)	−0.0154	(1.06)	−0.0315	(0.63)	0.4493	(4.50)
$\sigma = \sigma^\star$	0.0015	(0.24)	−0.0032	(0.06)	0.1570	(1.88)	−0.0073	(1.55)	−0.0574	(1.44)	0.3502	(3.44)
TREAT(0)	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)		ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
$\sigma = 0.00\mu$	0.0052	(0.77)	0.0358	(1.38)	0.1425	(3.51)	0.0005	(0.18)	−0.0486	(1.88)	0.0469	(1.21)
$\sigma = 0.10\mu$	0.0057	(0.88)	0.0285	(1.07)	0.1465	(3.68)	0.0012	(0.41)	−0.0404	(1.56)	0.0238	(0.62)
$\sigma = 0.25\mu$	0.0052	(0.80)	0.0278	(1.04)	0.1238	(2.76)	0.0011	(0.37)	−0.0408	(1.58)	0.0248	(0.64)
$\sigma = 0.50\mu$	0.0072	(1.11)	0.0344	(1.31)	0.1375	(3.35)	0.0007	(0.24)	−0.0418	(1.68)	0.0477	(1.21)
$\sigma = 1.00\mu$	0.0106	(1.56)	0.0395	(1.56)	0.1180	(2.90)	−0.0009	(0.51)	−0.0359	(1.43)	0.0472	(1.15)
$\sigma = 1.50\mu$	0.0051	(1.11)	0.0283	(1.20)	0.1465	(3.75)	−0.0013	(0.44)	−0.0363	(1.40)	0.0588	(1.43)
$\sigma = 2.25\mu$	0.0034	(0.73)	0.0207	(0.89)	0.1596	(4.46)	0.0015	(0.32)	−0.0367	(1.37)	0.0220	(0.57)
$\sigma = 3.00\mu$	0.0122	(0.94)	0.0274	(1.15)	0.1497	(4.16)	0.0086	(1.02)	−0.0305	(1.11)	−0.0170	(0.44)
$\sigma = \sigma^\star$	0.0040	(1.05)	0.0295	(1.08)	0.1508	(3.34)	−0.0028	(0.89)	−0.0402	(1.42)	0.0672	(1.56)
TREAT(+1)	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)		ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
$\sigma = 0.00\mu$	0.0096	(1.70)	0.0503	(1.77)	0.0955	(2.19)	−0.0001	(0.05)	−0.0365	(1.17)	−0.0030	(0.06)
$\sigma = 0.10\mu$	0.0072	(1.26)	0.0307	(1.02)	0.1209	(2.71)	0.0001	(0.04)	−0.0321	(1.03)	−0.0244	(0.52)
$\sigma = 0.25\mu$	0.0071	(1.24)	0.0302	(1.01)	0.0795	(1.84)	0.0003	(0.09)	−0.0308	(0.99)	−0.0320	(0.70)
$\sigma = 0.50\mu$	0.0096	(1.79)	0.0273	(0.90)	0.1160	(2.52)	−0.0005	(0.17)	−0.0356	(1.19)	−0.0021	(0.05)
$\sigma = 1.00\mu$	0.0119	(2.07)	0.0642	(2.25)	0.0900	(1.96)	−0.0013	(0.75)	−0.0204	(0.71)	−0.0160	(0.35)
$\sigma = 1.50\mu$	0.0073	(1.80)	0.0453	(1.72)	0.1016	(2.20)	−0.0016	(0.60)	−0.0115	(0.40)	0.0014	(0.03)
$\sigma = 2.25\mu$	0.0065	(1.64)	0.0427	(1.65)	0.1098	(2.40)	0.0004	(0.08)	−0.0147	(0.50)	−0.0253	(0.57)
$\sigma = 3.00\mu$	0.0183	(1.59)	0.0445	(1.67)	0.0980	(2.22)	0.0073	(0.91)	−0.0034	(0.11)	−0.0811	(1.73)
$\sigma = \sigma^\star$	0.0046	(1.28)	0.0370	(1.23)	0.0906	(1.92)	−0.0031	(0.97)	−0.0307	(1.07)	0.0209	(0.46)
TREAT(≥+6)	ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)		ϕ_0 $(PMLE)$		ϕ_1 (OLS)		ϕ_2 (OLS)	
$\sigma = 0.00\mu$	0.0125	(1.76)	0.0675	(2.15)	0.0289	(0.62)	0.0044	(1.32)	−0.0112	(0.38)	0.0359	(0.60)
$\sigma = 0.10\mu$	0.0109	(1.55)	0.0419	(1.19)	0.0523	(1.16)	0.0053	(1.55)	−0.0039	(0.14)	0.0113	(0.20)
$\sigma = 0.25\mu$	0.0108	(1.53)	0.0413	(1.18)	0.0514	(1.13)	0.0023	(0.74)	−0.0067	(0.23)	0.0194	(0.34)
$\sigma = 0.50\mu$	0.0119	(1.70)	0.0496	(1.40)	0.0427	(0.89)	0.0039	(1.27)	−0.0102	(0.38)	0.0623	(1.10)
$\sigma = 1.00\mu$	0.0163	(2.27)	0.0563	(1.68)	0.0089	(0.18)	0.0013	(0.61)	−0.0066	(0.23)	0.0517	(0.93)
$\sigma = 1.50\mu$	0.0067	(1.29)	0.0300	(0.92)	0.0658	(1.27)	0.0028	(0.87)	0.0046	(0.16)	0.0519	(0.93)
$\sigma = 2.25\mu$	0.0055	(1.05)	0.0232	(0.74)	0.0873	(1.81)	0.0101	(1.81)	0.0105	(0.34)	−0.0382	(0.67)
$\sigma = 3.00\mu$	0.0160	(1.03)	0.0240	(0.71)	0.0922	(1.98)	0.0228	(2.38)	0.0202	(0.63)	−0.0658	(1.17)
$\sigma = \sigma^\star$	0.0059	(1.42)	0.0367	(1.27)	0.0738	(1.59)	0.0027	(0.71)	0.0043	(0.15)	0.0948	(1.76)

Marginal effects evaluated at the sample mean of regressors for samples with alternative assumed distributions of usage uncertainty and when telephone usage is distributed according to a beta distribution $\beta(4/21, 1)$ on the 0-1000 monthly minute range. Absolute, heteroskedastic-consistent t-statistics are reported in parentheses.

Table 10: Fogginess and Uncertainty: Measures of Fogginess (Duopoly Phase)

	INCUMBENT						*ENTRANT*					
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Beta(4/21,1)	ϕ_0		ϕ_1		ϕ_2		ϕ_0		ϕ_1		ϕ_2	
$\sigma = 0.00\mu$	1.5893	(1.0526)	0.4078	(0.2219)	0.6886	(0.5704)	1.4960	(1.2336)	0.3722	(0.2633)	0.5894	(0.5968)
$\sigma = 0.10\mu$	1.5624	(1.0708)	0.3697	(0.2287)	0.7310	(0.5736)	1.5079	(1.2527)	0.3742	(0.2648)	0.5925	(0.6141)
$\sigma = 0.25\mu$	1.5566	(1.0711)	0.3950	(0.2282)	0.7358	(0.5690)	1.4941	(1.2411)	0.3697	(0.2624)	0.6079	(0.6093)
$\sigma = 0.50\mu$	1.5374	(1.0755)	0.3889	(0.2287)	0.7570	(0.5689)	1.4289	(1.2412)	0.3488	(0.2497)	0.6755	(0.6005)
$\sigma = 1.00\mu$	1.5624	(1.1009)	0.3931	(0.2294)	0.7356	(0.5254)	1.3458	(1.1067)	0.3356	(0.2353)	0.7693	(0.7682)
$\sigma = 1.50\mu$	1.5029	(1.1234)	0.3724	(0.2291)	0.7900	(0.5317)	1.3656	(1.1021)	0.3407	(0.2338)	0.7632	(0.7722)
$\sigma = 2.25\mu$	1.5413	(1.0879)	0.3849	(0.2179)	0.7402	(0.5000)	1.5119	(1.1878)	0.3787	(0.2552)	0.6044	(0.7032)
$\sigma = 3.00\mu$	1.5413	(1.0664)	0.3860	(0.2139)	0.7173	(0.5120)	1.5613	(1.1962)	0.3917	(0.2577)	0.5535	(0.6832)
$\sigma = \sigma^\star$	1.2080	(1.0896)	0.3092	(0.2450)	0.6452	(0.6411)	1.1282	(1.1090)	0.2875	(0.2513)	0.6121	(0.6938)
Beta(12/21,3)	ϕ_0		ϕ_1		ϕ_2		ϕ_0		ϕ_1		ϕ_2	
$\sigma = 0.00\mu$	1.5893	(1.0526)	0.4078	(0.2219)	0.6943	(0.5992)	1.4960	(1.2336)	0.3722	(0.2633)	0.5503	(0.6413)
$\sigma = 0.10\mu$	1.5624	(1.0708)	0.3697	(0.2287)	0.7247	(0.6047)	1.5079	(1.2527)	0.3742	(0.2648)	0.5435	(0.6377)
$\sigma = 0.25\mu$	1.5566	(1.0711)	0.3950	(0.2282)	0.7287	(0.6001)	1.4941	(1.2411)	0.3697	(0.2624)	0.5590	(0.6350)
$\sigma = 0.50\mu$	1.5374	(1.0755)	0.3889	(0.2287)	0.7500	(0.5997)	1.4289	(1.2412)	0.3488	(0.2497)	0.6275	(0.6347)
$\sigma = 1.00\mu$	1.5624	(1.1009)	0.3931	(0.2294)	0.7280	(0.5557)	1.3458	(1.1067)	0.3356	(0.2353)	0.7243	(0.8222)
$\sigma = 1.50\mu$	1.5029	(1.1234)	0.3724	(0.2291)	0.7866	(0.5771)	1.3656	(1.1021)	0.3407	(0.2338)	0.7077	(0.8218)
$\sigma = 2.25\mu$	1.5413	(1.0879)	0.3849	(0.2179)	0.7432	(0.5513)	1.5119	(1.1878)	0.3787	(0.2552)	0.5584	(0.7424)
$\sigma = 3.00\mu$	1.5413	(1.0664)	0.3860	(0.2139)	0.7081	(0.5685)	1.5613	(1.1962)	0.3917	(0.2577)	0.5326	(0.7158)
Beta(20/21,5)	ϕ_0		ϕ_1		ϕ_2		ϕ_0		ϕ_1		ϕ_2	
$\sigma = 0.00\mu$	1.5893	(1.0526)	0.4078	(0.2219)	0.7118	(0.6203)	1.4960	(1.2336)	0.3722	(0.2633)	0.5646	(0.6734)
$\sigma = 0.10\mu$	1.5624	(1.0708)	0.3697	(0.2287)	0.7401	(0.6245)	1.5079	(1.2527)	0.3742	(0.2648)	0.5555	(0.6640)
$\sigma = 0.25\mu$	1.5566	(1.0711)	0.3950	(0.2282)	0.7442	(0.6205)	1.4941	(1.2411)	0.3697	(0.2624)	0.5723	(0.6637)
$\sigma = 0.50\mu$	1.5374	(1.0755)	0.3889	(0.2287)	0.7653	(0.6202)	1.4289	(1.2412)	0.3488	(0.2497)	0.6427	(0.6648)
$\sigma = 1.00\mu$	1.5624	(1.1009)	0.3931	(0.2294)	0.7424	(0.5754)	1.3458	(1.1067)	0.3356	(0.2353)	0.7379	(0.8479)
$\sigma = 1.50\mu$	1.5029	(1.1234)	0.3724	(0.2291)	0.8023	(0.5908)	1.3656	(1.1021)	0.3407	(0.2338)	0.7154	(0.8443)
$\sigma = 2.25\mu$	1.5413	(1.0879)	0.3849	(0.2179)	0.7598	(0.5734)	1.5119	(1.1878)	0.3787	(0.2552)	0.5726	(0.7615)
$\sigma = 3.00\mu$	1.5413	(1.0664)	0.3860	(0.2139)	0.7227	(0.5932)	1.5613	(1.1962)	0.3917	(0.2577)	0.5586	(0.7315)

Mean and standard deviation of the endogenous variables under alternative hypotheses regarding the distribution of usage and the uncertainty of future usage.