Legal Department

MARY K. KEYER
General Attorney

BellSouth Telecommunications, Inc.
150 South Monroe Street
Room 400
Tallahassee, Florida 32301
(404) 335-0729

August 3, 1998

Mrs. Blanca S. Bayó
Director, Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket No. 980733-TL
Special Project No. 980000A - SP

Dear Ms. Bayó:

Enclosed are an original and 15 copies of BellSouth Telecommunications, Inc.'s Responses to the Data Requests served by the Public Service Commission's Division of Communications regarding 980000A-Undocketed Special Project and a Notice of Intent to Request Specified Confidential Classification, which we ask that you file in the captioned matter.

A copy of this letter is enclosed. Please mark it to indicate that the original was filed and return the copy to me. Copies have been served to the parties shown on the attached Certificate of Service.

Sincerely,

Mary K Keyer (KR)

Mary K. Keyer

Enclosures

cc: All parties of record
A. M. Lombardo
R. G. Beatty
William J. Ellenberg II (w/o enclosures)

ORIGINAL

BellSouth Telecommunications, Inc.
Undocketed Special Project 980000A-SP
FPSC Staff's 1st Data Requests
Division of Communications
June 19, 1998
Item No. 1

REQUEST:

(a) Please provide a contribution analysis for "voice-grade, flat-rate residential local exchange service," as this term is used in Section 364.02(2), F.S.

(b) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (a).

(c) Please provide a contribution analysis for "voice-grade, flat-rate single-line business local exchange service," as this term is used in Section 364.02(2), F.S.

(d) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (c).

(e) Please provide a contribution analysis for ESSX/Centrex service.

(f) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (e).

(g) Please provide a contribution analysis for PBX trunk service.

(h) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (g).

(i) Please provide a contribution analysis for all multi-line circuit-switched business services other than those indicated in (e) and (g).

(j) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (i).

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RESPONSE:

(a) Attached is the analysis requested based on current revenues and current rates for the recurring portion of the service and 12 month accumulated revenues and current rates for the non-recurring portion of the service.

(b) See attached documents, which are proprietary confidential business information and should not be publicly disclosed and are being produced subject to BellSouth's Notice of Intent.

(c) Attached is the analysis requested based on current revenues and current rates for the recurring portion of the service and 12-month accumulated revenues and current rates for the non-recurring portion of the service. The non-recurring revenues in the attached response are allocated out of the total Flat Business (1FB) non-recurring revenues based on the demand for single-line business lines.

(d) See response to Item (b) above.

(e) The requested analysis is attached and is proprietary confidential business information which should not be publicly disclosed and is being produced subject to BellSouth's Notice of Intent.

(f) See response to Item (b) above.

(g) Attached is the analysis requested based on current revenues and current rates for the recurring portion of the service and 12-month accumulated revenues and current rates for the non-recurring portion of the service.

(h) See response to Item (b) above.

(i) Attached is the analysis requested based on current revenues and current rates for the recurring portion of the service and 12 month accumulated revenues and current rates for the non-recurring

RESPONSE (Cont'd):

portion of the service. The non-recurring revenues in the attached response are allocated out of the total Flat Business (1FB) non-recurring revenues based on the demand for multi-line (with and without Hunting) Business lines.

(j) See response to Item (b) above.

INFORMATION PROVIDED BY: Margaret Thompson, Director
Daonne Caldwell, Director
Steve Bigelow, Director

BellSouth Telecommunications, Inc.
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Attachment 1 of 1

Flat Residence Lines (1FR)

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	675	$ 7.30	$ 47.79	$ (40.49)	$ 59,092	$ 386,849	$ (327,757)	-85%
2	4,599	$ 7.70	$ 58.47	$ (50.77)	$ 424,970	$ 3,227,011	$ (2,802,041)	-87%
3	65,890	$ 8.10	$ 39.63	$ (31.53)	$ 6,404,503	$ 31,334,622	$ (24,930,119)	-80%
4	121,034	$ 8.40	$ 33.51	$ (25.11)	$ 12,200,239	$ 48,670,238	$ (36,469,999)	-75%
5	249,387	$ 8.80	$ 33.16	$ (24.36)	$ 26,335,314	$ 99,236,251	$ (72,900,937)	-73%
6	301,824	$ 9.15	$ 28.72	$ (19.57)	$ 33,140,263	$ 104,020,584	$ (70,880,321)	-68%
7	243,266	$ 9.50	$ 26.93	$ (17.43)	$ 27,732,274	$ 78,613,700	$ (50,881,425)	-65%
8	82,306	$ 9.80	$ 24.18	$ (14.38)	$ 9,679,127	$ 23,881,764	$ (14,202,637)	-59%
9	328,551	$ 10.05	$ 24.82	$ (14.77)	$ 39,623,308	$ 97,855,773	$ (58,232,464)	-60%
10	365,255	$ 10.30	$ 23.87	$ (13.57)	$ 45,145,486	$ 104,623,569	$ (59,478,083)	-57%
11	225,505	$ 10.45	$ 24.23	$ (13.78)	$ 28,278,322	$ 65,567,822	$ (37,289,500)	-57%
12	1,188,462	$ 10.65	$ 21.40	$ (10.75)	$ 151,885,451	$ 305,197,056	$ (153,311,605)	-50%
TOTAL	3,176,753						$ (581,706,890)	

Non-recurring Charges

Ln Conn - 1st	834,114	$ 40.00	$ 53.37	$ (13.37)	$ 33,364,572	$ 44,516,680	$ (11,152,108)	-25%
Ln Conn - Addl	67,256	$ 12.00	$ 19.60	$ (7.60)	$ 807,073	$ 1,318,219	$ (511,146)	-39%
Ln Chg - 1st	143,178	$ 23.00	$ 7.50	$ 15.50	$ 3,293,089	$ 1,073,833	$ 2,219,255	207%
Ln Chg - Addl	2,049	$ 11.00	$ 4.92	$ 6.08	$ 22,538	$ 10,081	$ 12,457	124%
Sec SO Chg	221,565	$ 10.00	$ 6.88	$ 3.12	$ 2,215,652	$ 1,524,368	$ 691,283	45%
Prem Wk - 1st	2,745	$ 25.00	$ 27.09	$ (2.09)	$ 68,619	$ 74,355	$ (5,737)	-8%
Prem Wk - Add	10,203	$ 9.00	$ 11.68	$ (2.68)	$ 91,825	$ 119,169	$ (27,344)	-23%
TOTAL							$ (8,773,338)	
GRAND TOTAL					$ 420,771,715	$ 1,011,251,944	$ (590,480,229)	-58%

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Flat Single Line Business (1FB)

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	51	$ 19.80	$ 27.12	$ (7.32)	$ 12,001	$ 16,438	$ (4,437)	-27%
2	206	$ 20.80	$ 46.33	$ (25.53)	$ 51,328	$ 114,328	$ (63,000)	-55%
3	2,524	$ 21.90	$ 32.45	$ (10.55)	$ 663,258	$ 982,772	$ (319,514)	-33%
4	5,446	$ 22.90	$ 27.00	$ (4.10)	$ 1,496,630	$ 1,764,586	$ (267,956)	-15%
5	8,683	$ 23.85	$ 29.32	$ (5.47)	$ 2,484,997	$ 3,054,931	$ (569,934)	-19%
6	9,449	$ 24.90	$ 25.10	$ (0.20)	$ 2,823,374	$ 2,846,052	$ (22,678)	-1%
7	8,064	$ 25.75	$ 24.67	$ 1.08	$ 2,491,858	$ 2,387,345	$ 104,513	4%
8	2,208	$ 26.60	$ 23.58	$ 3.02	$ 704,681	$ 624,676	$ 80,005	13%
9	10,592	$ 27.40	$ 23.48	$ 3.92	$ 3,482,732	$ 2,984,473	$ 498,260	17%
10	9,912	$ 28.00	$ 21.59	$ 6.41	$ 3,330,565	$ 2,568,103	$ 762,461	30%
11	6,271	$ 28.60	$ 21.75	$ 6.85	$ 2,152,182	$ 1,636,711	$ 515,470	31%
12	43,936	$ 29.10	$ 20.39	$ 8.71	$ 15,342,407	$ 10,750,229	$ 4,592,177	43%
TOTAL	107,341						$ 5,305,368	

Non-recurring Charges

Ln Conn - 1st	15,308	$ 56.00	$ 88.37	$ (88.37)	$ 857,241	$ 1,352,758	$ (495,516)	-37%
Ln Conn - Addl	-	$ 12.00	$ 46.99	$ 9.01	$ -	$ -	$ -	0%
Ln Chg - 1st	436	$ 38.00	$ 14.04	$ (2.04)	$ 16,566	$ 6,121	$ 10,445	171%
Ln Chg - Addl	-	$ 11.00	$ 9.36	$ 28.64	$ -	$ -	$ -	0%
Sec SO Chg	9,779	$ 19.00	$ 13.20	$ (2.20)	$ 185,804	$ 129,085	$ 56,719	44%
Prem Wk - 1st	87	$ 28.00	$ 27.09	$ (8.09)	$ 2,422	$ 2,343	$ 79	3%
Prem Wk - Add	527	$ 9.00	$ 11.68	$ 16.32	$ 4,743	$ 6,155	$ (1,412)	-23%
TOTAL							$ (429,685)	
GRAND TOTAL					$ 36,102,788	$ 31,227,106	$ 4,875,682	16%

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Flat Trunks with Hunting

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	4	$ 40.06	$ 34.48	$ 5.58	$ 2,151	$ 1,852	$ 300	16%
2	5	$ 42.09	$ 53.69	$ (11.60)	$ 2,525	$ 3,221	$ (696)	-22%
3	678	$ 44.31	$ 39.81	$ 4.50	$ 360,483	$ 323,873	$ 36,610	11%
4	1,229	$ 46.34	$ 34.36	$ 11.98	$ 683,260	$ 506,621	$ 176,639	35%
5	3,096	$ 48.26	$ 36.68	$ 11.58	$ 1,793,177	$ 1,362,904	$ 430,273	32%
6	3,454	$ 50.38	$ 32.46	$ 17.92	$ 2,088,427	$ 1,345,580	$ 742,847	55%
7	3,733	$ 52.11	$ 32.03	$ 20.08	$ 2,334,453	$ 1,434,898	$ 899,555	63%
8	1,507	$ 53.82	$ 30.94	$ 22.88	$ 973,426	$ 559,637	$ 413,849	74%
9	5,466	$ 55.44	$ 30.84	$ 24.60	$ 3,636,605	$ 2,022,960	$ 1,613,645	80%
10	10,348	$ 56.66	$ 28.95	$ 27.71	$ 7,035,974	$ 3,594,978	$ 3,440,996	96%
11	7,008	$ 57.87	$ 29.11	$ 28.76	$ 4,866,799	$ 2,448,117	$ 2,418,682	99%
12	31,756	$ 58.88	$ 27.75	$ 31.13	$ 22,437,846	$ 10,574,902	$ 11,862,944	112%
TOTAL	68,287					$	22,035,644	

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Flat Trunks without Hunting

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	3	$ 33.66	$ 34.38	$ (0.72)	$ 1,060	$ 1,083	$ (23)	-2%
2	-	$ 35.36	$ 53.59	$ (18.23)	$ -	$ -	$ -	0%
3	229	$ 37.23	$ 39.71	$ (2.48)	$ 102,509	$ 109,337	$ (6,828)	-6%
4	311	$ 38.93	$ 34.26	$ 4.67	$ 145,256	$ 127,831	$ 17,425	14%
5	602	$ 40.55	$ 36.58	$ 3.97	$ 293,137	$ 264,438	$ 28,699	11%
6	1,165	$ 42.33	$ 32.36	$ 9.97	$ 591,991	$ 452,559	$ 139,432	31%
7	1,615	$ 43.78	$ 31.93	$ 11.85	$ 848,544	$ 618,867	$ 229,677	37%
8	349	$ 45.22	$ 30.84	$ 14.38	$ 189,438	$ 129,196	$ 60,241	47%
9	1,445	$ 46.58	$ 30.74	$ 15.84	$ 807,534	$ 532,924	$ 274,610	52%
10	3,282	$ 47.60	$ 28.85	$ 18.75	$ 1,874,458	$ 1,136,095	$ 738,363	65%
11	2,045	$ 48.62	$ 29.01	$ 19.61	$ 1,193,153	$ 711,916	$ 481,237	68%
12	8,125	$ 49.47	$ 27.65	$ 21.82	$ 4,823,281	$ 2,695,850	$ 2,127,431	79%
TOTAL							$ 4,090,264	

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Flat Trunks
Non-recurring

Rate Group	Inservice Quantity	on-recurring Charge	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
Ln Conn - 1st	957	$ 56.00	$ 88.37	$ (32.37)	$ 53,598	$ 84,579	$ (30,981)	-37%
Ln Conn - Addl	14,546	$ 12.00	$ 46.99	$ (34.99)	$ 174,555	$ 683,527	$ (508,972)	-74%
Ln Chg - 1st	156	$ 38.00	$ 14.04	$ 23.96	$ 5,928	$ 2,190	$ 3,737	171%
Ln Chg - Addl	727	$ 11.00	$ 9.36	$ 1.64	$ 7,992	$ 6,800	$ 1,191	18%
Sec SO Chg	2,201	$ 19.00	$ 13.20	$ 5.80	$ 41,812	$ 29,049	$ 12,764	44%
Prem Wk - 1st	8	$ 28.00	$ 27.09	$ 0.91	$ 212	$ 205	$ 7	3%
Prem Wk - Add	108	$ 9.00	$ 11.68	$ (2.68)	$ 968	$ 1,256	$ (288)	-23%
TOTAL							$ (522,542)	
GRAND TOTAL					$ 57,370,611	$ 31,767,246	$ 25,603,365	81%

BellSouth Telecommunications, Inc.
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Flat Multi-Line Bus. with Hunting (1FB)

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	27	$ 26.20	$ 27.22	$ (1.02)	$ 8,388	$ 8,715	$ (327)	-4%
2	145	$ 27.53	$ 46.43	$ (18.90)	$ 47,839	$ 80,682	$ (32,843)	-41%
3	5,763	$ 28.98	$ 32.55	$ (3.57)	$ 2,004,014	$ 2,250,886	$ (246,871)	-11%
4	11,816	$ 30.31	$ 27.10	$ 3.21	$ 4,297,603	$ 3,842,463	$ 455,140	12%
5	24,843	$ 31.56	$ 29.42	$ 2.14	$ 9,408,505	$ 8,770,539	$ 637,966	7%
6	31,678	$ 32.95	$ 25.20	$ 7.75	$ 12,525,390	$ 9,579,357	$ 2,946,032	31%
7	30,072	$ 34.08	$ 24.77	$ 9.31	$ 12,298,097	$ 8,938,493	$ 3,359,603	38%
8	10,636	$ 35.20	$ 23.68	$ 11.52	$ 4,492,663	$ 3,022,337	$ 1,470,326	49%
9	46,822	$ 36.26	$ 23.58	$ 12.68	$ 20,373,138	$ 13,248,720	$ 7,124,418	54%
10	65,320	$ 37.06	$ 21.69	$ 15.37	$ 29,049,003	$ 17,001,427	$ 12,047,576	71%
11	44,803	$ 37.85	$ 21.85	$ 16.00	$ 20,349,393	$ 11,747,272	$ 8,602,121	73%
12	237,666	$ 38.51	$ 20.49	$ 18.02	$ 109,830,405	$ 58,437,419	$ 51,392,986	88%
TOTAL	509,589						$ 87,756,129	

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Flat Multi-Line Bus. (1FB) without Hunting

Recurring

Rate Group	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
1	114	$ 19.80	$ 27.12	$ (7.32)	$ 27,062	$ 37,067	$ (10,005)	-27%
2	416	$ 20.80	$ 46.33	$ (25.53)	$ 103,901	$ 231,430	$ (127,529)	-55%
3	10,249	$ 21.90	$ 32.45	$ (10.55)	$ 2,693,346	$ 3,990,826	$ (1,297,480)	-33%
4	19,654	$ 22.90	$ 27.00	$ (4.10)	$ 5,400,823	$ 6,367,783	$ (966,960)	-15%
5	36,257	$ 23.85	$ 29.32	$ (5.47)	$ 10,376,885	$ 12,756,825	$ (2,379,940)	-19%
6	44,066	$ 24.90	$ 25.10	$ (0.20)	$ 13,166,835	$ 13,272,593	$ (105,758)	-1%
7	40,889	$ 25.75	$ 24.67	$ 1.08	$ 12,634,733	$ 12,104,810	$ 529,923	4%
8	14,450	$ 26.60	$ 23.58	$ 3.02	$ 4,612,516	$ 4,088,839	$ 523,677	13%
9	61,504	$ 27.40	$ 23.48	$ 3.92	$ 20,222,401	$ 17,329,269	$ 2,893,132	17%
10	77,908	$ 28.00	$ 21.59	$ 6.41	$ 26,177,177	$ 20,184,473	$ 5,992,704	30%
11	57,272	$ 28.60	$ 21.75	$ 6.85	$ 19,655,864	$ 14,948,079	$ 4,707,786	31%
12	293,517	$ 29.10	$ 20.39	$ 8.71	$ 102,496,057	$ 71,817,684	$ 30,678,373	43%
TOTAL	656,296						$ 40,437,923	

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Flat Multi-Line Business (1FB)

Non-recurring

Rate Group	Inservice Quantity	on-recurring Charge	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution
Ln Conn - 1st	166,459	$ 56.00	$ 88.37	$ (32.37)	$ 9,321,698	$ 14,709,972	$ (5,388,274)	-37%
Ln Conn - Addl	212,158	$ 12.00	$ 46.99	$ (34.99)	$ 2,545,895	$ 9,969,300	$ (7,423,405)	-74%
Ln Chg - 1st	4,741	$ 38.00	$ 14.04	$ 23.96	$ 180,140	$ 66,557	$ 113,583	171%
Ln Chg - Addl	3,542	$ 11.00	$ 9.36	$ 1.64	$ 38,960	$ 33,152	$ 5,809	18%
Sec SO Chg	106,339	$ 19.00	$ 13.20	$ 5.80	$ 2,020,440	$ 1,403,674	$ 616,766	44%
Prem Wk - 1st	941	$ 28.00	$ 27.09	$ 0.91	$ 26,338	$ 25,482	$ 856	3%
Prem Wk - Add	5,730	$ 9.00	$ 11.68	$ (2.68)	$ 51,574	$ 66,931	$ (15,357)	-23%
TOTAL							$ (12,090,023)	
GRAND TOTAL					$ 456,437,085	$ 340,333,056		34%

REQUEST: (a) Please provide a contribution analysis for intrastate switched access charges.

(b) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (a).

RESPONSE: (a) Attached is the analysis requested based on current rates and 12-month accumulated demand.

(b) See response to Item 1(b).

INFORMATION PROVIDED BY: Margaret Thompson, Director
Daonne Caldwell, Director
Steve Bigelow, Director

BellSouth Telecommunications, Inc.
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Item No. 2 (a)
Attachment 1 of 1

Intrastate Usage Sensitive Switched Access
Recurring

Service Description (A)	6/97-5/98 Demand (B)	Rate (C)	Annual Revenue (D) = (B*C)	Cost Per Unit (E)	Total Cost (F) = (B*E)	Rate minus Unit Costs (G) = (C - E)	otal Revenues Minus Total Costs (H) = (D-F)	Percent Contribution Per Unit (I) = (G/E)
Common Transport Facility (minute miles)	46,993,107,707	$0.000040	$1,879,724	$0.000020700	$972,757	$0.000019300	$906,967	93.2%
Common Transport Termination (minutes)	1,988,471,245	$0.000360	$715,850	$0.000242900	$483,000	$0.000117100	$232,850	48.2%
Access Tandem Switching MOU	1,605,637,593	$0.000500	$802,819	$0.001154890	$1,854,190	($0.000654800)	($1,051,371)	-56.7%
Local Switching 1 - Premium	31,068,049	$0.008760	$272,156	$0.002500800	$77,695	$0.006259200	$194,461	250.3%
Local Switching 2 - Premium	7,965,829,767	$0.008760	$69,780,669	$0.002500800	$19,920,947	$0.006259200	$49,859,722	250.3%
Local Switching FGs - Transitional	17,683,446	$0.005694	$100,690	$0.002500800	$44,223	$0.003193200	$56,467	127.7%
Total Local Switching (Weighted Avg. Rate)	8,014,581,262	$0.008753	$70,153,514	$0.002500800	$20,042,865	$0.006252435	$50,110,650	250.0%
Total Usage Sensitive Switched Access			$73,551,907		$23,352,812		$50,199,095	215.0%

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Attachment

REQUEST: (a) Please provide a contribution analysis for intraLATA toll (including common line WATS/800-type services).

(b) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (a).

RESPONSE: (a) Attached is the analysis requested based on December 1997 demand and revenue data.

(b) See response to Item 1(b)

INFORMATION PROVIDED BY: Margaret Thompson, Director
Daonne Caldwell, Director
Steve Bigelow, Director

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Attachment 1 of 1

FLORIDA
IntraLata Toll Contribution Analysis
December 1997 Demand and Revenue Data

Service Description	Conversation Minutes Of Use (MOU)	Average Revenue Per MOU	Cost Per MOU	Contribution Per MOU	Annualized Revenue	Annualized Cost	Annual Contribution	Percent Contribution
MTS	29,018,039	$ 0.1296	$0.006106	$ 0.1235	$ 45,144,084	$ 2,126,210	$ 43,017,874	2023%
OCP*	2,791,490	$ 0.2846	$0.006106	$ 0.2785	$ 9,534,033	$ 204,538	$ 9,329,495	4561%
WATS/800	1,955,008	$ 0.1493	$0.006106	$ 0.1432	$ 3,501,701	$ 143,247	$ 3,358,454	2345%
TOTAL	33,764,537				$ 58,179,819	$ 2,473,995	$ 55,705,823	2252%

*The company's mechanized data systems are not currently able to provide a summary of usage and revenue for Saver® Service Aggregated Plan accounts. Therefore, this service has been excluded from the analysis.

REQUEST: (a) Please provide a contribution analysis (separately for residence and business) for each of the following features, whether purchased individually or as a part of a package:

1. 3-Way Calling
2. Call Waiting
3. Call Forwarding Busy Line
4. Call Forwarding Don't Answer
5. Call Return
6. Repeat Dialing
7. Call Selector
8. Preferred Call Forwarding
9. Caller ID Deluxe
10. Custom Code Restrictions

(b) Please provide the cost study and all associated work papers and related documentation, that results in the contribution analysis in (a).

(c) For each of the features listed in (a), please indicate the percent of your access lines (separately for residence and business) equipped with each of these features.

RESPONSE: (a) Attached are the analyses requested based on current revenues and current rates. Business Choice was not included in this analysis due to the newness of this service and the existence of only 1500 lines at this time.

(b) See response to Item 1(b)

RESPONSE (cont'd):

(c) See response to Item 1(b).

INFORMATION PROVIDED BY: Margaret Thompson, Director
Daonne Caldwell, Director
Steve Bigelow, Director

BellSouth Telecommunications, Inc.
Undocketed Special Project 980000A-SP
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Division of Communications
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Attachment 1 of 4

Residence Features
(Non-Packaged)

Feature	Inservice Quantity		Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution	Percent of Lines
3-Way Calling	142,464		$ 3.75	$ 0.6236	$ 3.13	$ 6,410,864	$ 1,066,084	$ 5,344,780	501%	4.48%
Cal Waiting	1,331,004		$ 4.00	$ 0.0082	$ 3.99	$ 63,888,170	$ 130,971	$ 63,757,199	48680%	41.90%
Call Forwarding Busy Line	172,212		$ 1.00	$ 0.0021	$ 1.00	$ 2,066,547	$ 4,340	$ 2,062,208	47519%	5.42%
Call Forwarding Don't Answe	307,894		$ 1.00	$ 0.0041	$ 1.00	$ 3,694,725	$ 15,148	$ 3,679,577	24290%	9.69%
Call Return	239,642		$ 4.00	$ 0.2603	$ 3.74	$ 11,502,836	$ 748,547	$ 10,754,289	1437%	7.54%
Repeat Dialing	4,551		$ 4.00	$ 0.2898	$ 3.71	$ 218,468	$ 15,828	$ 202,640	1280%	0.14%
Call Selector	809		$ 4.00	$ 0.0650	$ 3.94	$ 38,811	$ 631	$ 38,181	6054%	0.03%
Preferred Call Forwarding	317		$ 4.00	$ 0.0362	$ 3.96	$ 15,240	$ 138	$ 15,102	10950%	0.01%
Caller ID Deluxe	523,198		$ 7.50	$ 0.2230	$ 7.28	$ 47,087,794	$ 1,400,077	$ 45,687,717	3263%	16.47%
Custom Code Restrictions	682,888	*	$ 0.30	$ 0.0284	$ 0.27	$ 2,470,959	$ 232,728	$ 2,238,231	962%	21.50%
TOTAL Flat Residence Lines	3,176,753					$ 137,394,414	$ 3,614,492	$ 133,779,922	3701%	

* Due to the wide range of rates charged for these services, an average rate was calculated based on actual revenues and demand.

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Residence Features
(Complete Choice)

Feature	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution	Percent of Lines
CALL FWD VARIABLE	259,637	$ -	$ -	$ -	$ -	N/A	N/A	N/A	33.46%
3 WAY CALLING	662,066	$ -	$ -	$ -	$ -	N/A	N/A	N/A	85.31%
CALL WAITING	300,277	$ -	$ -	$ -	$ -	N/A	N/A	N/A	38.69%
SPEED CALLING (8)	244,724	$ -	$ -	$ -	$ -	N/A	N/A	N/A	31.53%
SPEED CALLING (30)	187,972	$ -	$ -	$ -	$ -	N/A	N/A	N/A	24.22%
CALL FWD BUSY LINE	267,123	$ -	$ -	$ -	$ -	N/A	N/A	N/A	34.42%
CALL FWD D NT ANSWER	102,370	$ -	$ -	$ -	$ -	N/A	N/A	N/A	13.19%
CC CALL FWD BUSY LINE	570	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.07%
CC CALL FWD DONT ANSWER	1,356	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.17%
CFBL-MULTIPATH/CUST CTRL	-	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
CFDA-MULTIPATH/CUST CTRL	2	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
CFV-MULTIPATH/CUST CTRL	2	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
REMOTE ACCESS-CFV	63,489	$ -	$ -	$ -	$ -	N/A	N/A	N/A	8.18%
CALL WAITING DELUXE	462,715	$ -	$ -	$ -	$ -	N/A	N/A	N/A	59.62%
CFDA-RING CONTROL	226,767	$ -	$ -	$ -	$ -	N/A	N/A	N/A	29.22%
CALL RETURN- PER LINE	677,220	$ -	$ -	$ -	$ -	N/A	N/A	N/A	87.26%
REPEAT DIALING- PER LINE	474,101	$ -	$ -	$ -	$ -	N/A	N/A	N/A	61.09%
CALL SELECTOR- PER LINE	147,820	$ -	$ -	$ -	$ -	N/A	N/A	N/A	19.05%
PREF CALL FWD- PER LINE	35,452	$ -	$ -	$ -	$ -	N/A	N/A	N/A	4.57%
CALL BLOCK- PER LINE	457,761	$ -	$ -	$ -	$ -	N/A	N/A	N/A	58.98%
CALL TRACING- PER LINE	306,924	$ -	$ -	$ -	$ -	N/A	N/A	N/A	39.55%
CALLER ID-BASIC- PER LI	5,164	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.67%
CALLER ID-DELUXE-W/ACR	732,533	$ -	$ -	$ -	$ -	N/A	N/A	N/A	94.39%
CALLER ID-DELUXE-W/O ACR	4	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
ANONYMOUS CALL REJECTION	9,204	$ -	$ -	$ -	$ -	N/A	N/A	N/A	1.19%
CUSTOM CODE RESTRICTION	269,259	$ -	$ -	$ -	$ -	N/A	N/A	N/A	34.70%
RM I- ADDL TELE NO	128,166	$ -	$ -	$ -	$ -	N/A	N/A	N/A	16.51%
RM II- 1ST ADDL TELE NO	40,079	$ -	$ -	$ -	$ -	N/A	N/A	N/A	5.16%
AUDIBLE - RESIDENCE	169,799	$ -	$ -	$ -	$ -	N/A	N/A	N/A	21.88%
AUDIBLE/VISUAL-RESIDENCE	148,027	$ -	$ -	$ -	$ -	N/A	N/A	N/A	19.07%
Complete Choice Lines	776,070								

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Residence Features

(Area Plus with Complete Choice)

Feature	Inservice Quantity	Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution	Percent of Lines
CALL FWD VARIABLE	9,553	$ -	$ -	$ -	$ -	N/A	N/A	N/A	29.93%
3 WAY CALLING	28,861	$ -	$ -	$ -	$ -	N/A	N/A	N/A	90.44%
CALL WAITING	11,300	$ -	$ -	$ -	$ -	N/A	N/A	N/A	35.41%
SPEED CALLING (8)	11,222	$ -	$ -	$ -	$ -	N/A	N/A	N/A	35.16%
SPEED CALLING (30)	10,017	$ -	$ -	$ -	$ -	N/A	N/A	N/A	31.39%
CALL FWD BUSY LINE	13,202	$ -	$ -	$ -	$ -	N/A	N/A	N/A	41.37%
CALL FWD DONT ANSWER	4,602	$ -	$ -	$ -	$ -	N/A	N/A	N/A	14.42%
CC CALL FWD BUSY LINE	43	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.13%
CC CALL FWD DONT ANSWER	96	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.30%
CFBL-MULTIPATH/CUST CTRL	-	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
CFDA-MULTIPATH/CUST CTRL	-	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
CFV-MULTIPATH/CUST CTRL	10	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.03%
REMOTE ACCESS-CFV	3,861	$ -	$ -	$ -	$ -	N/A	N/A	N/A	12.10%
CALL WAITING DELUXE	20,164	$ -	$ -	$ -	$ -	N/A	N/A	N/A	63.18%
CFDA-RING CONTROL	11,415	$ -	$ -	$ -	$ -	N/A	N/A	N/A	35.77%
CALL RETURN- PER LINE	29,080	$ -	$ -	$ -	$ -	N/A	N/A	N/A	91.12%
REPEAT DIALING- PER LINE	22,297	$ -	$ -	$ -	$ -	N/A	N/A	N/A	69.87%
CALL SELECTOR- PER LINE	8,123	$ -	$ -	$ -	$ -	N/A	N/A	N/A	25.45%
PREF CALL FWD- PER LINE	1,936	$ -	$ -	$ -	$ -	N/A	N/A	N/A	6.07%
CALL BLOCK- PER LINE	22,008	$ -	$ -	$ -	$ -	N/A	N/A	N/A	68.96%
CALL TRACING- PER LINE	15,645	$ -	$ -	$ -	$ -	N/A	N/A	N/A	49.02%
CALLER ID-BASIC- PER LI	245	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.77%
CALLER ID-DELUXE-W/ACR	30,347	$ -	$ -	$ -	$ -	N/A	N/A	N/A	95.09%
CALLER ID-DELUXE-W/O ACR	-	$ -	$ -	$ -	$ -	N/A	N/A	N/A	0.00%
ANONYMOUS CALL REJECTION	391	$ -	$ -	$ -	$ -	N/A	N/A	N/A	1.23%
CUSTOM CODE RESTRICTION	11,569	$ -	$ -	$ -	$ -	N/A	N/A	N/A	36.25%
RM I- ADDL TELE NO	7,042	$ -	$ -	$ -	$ -	N/A	N/A	N/A	22.07%
RM II- 1ST ADDL TELE NO	2,945	$ -	$ -	$ -	$ -	N/A	N/A	N/A	9.23%
AUDIBLE - RESIDENCE	7,807	$ -	$ -	$ -	$ -	N/A	N/A	N/A	24.46%
AUDIBLE/VISUAL-RESIDENCE	7,672	$ -	$ -	$ -	$ -	N/A	N/A	N/A	24.04%
AP with CC Lines	31,913								

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Business Features
(Non-Packaged)

Feature	Inservice Quantity		Monthly Rate	Monthly Cost per/unit	Monthly Contribution per/unit	Annual Revenue	Annual Cost	Annual Contribution	Percent Contribution	Percent of Lines
3-Way Calling	40,784		$ 4.00	$ 0.8661	$ 3.13	$ 1,957,618	$ 423,873	$ 1,533,745	362%	3.20%
Call Waiting	130,774		$ 5.80	$ 0.0205	$ 5.78	$ 9,101,884	$ 32,170	$ 9,069,714	28193%	10.27%
Call Forwarding Busy Line	64,934		$ 3.25	$ 0.0021	$ 3.25	$ 2,532,410	$ 1,636	$ 2,530,774	154662%	5.10%
Call Forwarding Don't Answe	137,492		$ 3.25	$ 0.0041	$ 3.25	$ 5,362,180	$ 6,765	$ 5,355,416	79168%	10.80%
Call Return	-		$ 5.00	$ 0.3657	$ 4.63	$ -	$ -	$ -	0%	0.00%
Repeat Dialing	2,394		$ 4.50	$ 0.4304	$ 4.07	$ 129,262	$ 12,363	$ 116,899	946%	0.19%
Call Selector	58		$ 4.50	$ 0.0702	$ 4.43	$ 3,159	$ 49	$ 3,109	6310%	0.00%
Preferred Call Forwarding	32		$ 5.00	$ 0.0427	$ 4.96	$ 1,920	$ 16	$ 1,904	11610%	0.00%
Caller ID Deluxe	41,294		$ 9.99	$ 0.3679	$ 9.62	$ 4,950,290	$ 182,303	$ 4,767,987	2615%	3.24%
Custom Code Restrictions	506,403	*	$ 0.43	$ 0.0284	$ 0.40	$ 2,594,121	$ 172,582	$ 2,421,539	1403%	39.77%
TOTAL Flat Business Lines	1,273,226					$ 26,632,845	$ 831,759	$ 25,801,086	3102%	

* Due to the wide range of rates charged for these services, an average rate was calculated based on actual revenues and demand.

REQUEST:

(a) Please provide any studies, reports or analyses conducted by or for your company that concern the relationship between the price and quantity demanded for various services offered by your company. If the company does not have company-specific studies, reports or analyses, but does have studies, reports or analyses that deal with this subject prepared within the past 10 years, please provide such material.

(b) Please provide any reports, studies or analyses conducted by or for your company that concern the consumption patterns of your Florida consumers as it pertains to telecommunications purchases. If the company does not have any company-specific studies or reports, but does have relevant materials prepared within the past five years that discuss the willingness of Florida consumers to pay for various telecommunications products and services.

(c) To the extent not provided in response to (b), please provide any reports, studies, surveys or analyses prepared within the past five years that discuss the ability of Florida consumers to pay for various telecommunications products and services.

(d) To the extent not provided in response to (b), please provide any reports, studies, surveys or analyses prepared within the past five years that discuss the willingness of Florida consumers to pay for various telecommunications products and services.

(e) To the extent not provided in response to (b), please provide any reports, studies, surveys or analyses prepared within the past five years that discuss the relative valuation placed upon various telecommunications products and services by Florida consumers.

RESPONSE (Cont'd):

(f) Please provide any reports, studies or analyses in your possession prepared within the past five years that compare or discuss the relative price levels of residential basic local exchange service in the United States.

(g) Please provide any reports, studies or analyses in your possession prepared within the past five years that compare or otherwise discuss the price paid for typical mixes of telecommunications products and services by residential consumers in different areas of the United States. If known, please indicate the dollar amount associated with each component of the "market basket" of telecommunications goods and services. (E.g., indicate amount typically spent on local service, toll, ancillary services, taxes and other fees, etc.)

RESPONSE:

(a) See the attached documents, some of which are proprietary confidential business information and are being produced subject to BellSouth's Notice of Intent.

(b) See the attached documents, which are proprietary confidential business information and are being produced subject to BellSouth's Notice of Intent.

(c) BellSouth has produced any documents it has in response to Item a, b, d, and f.

(d) See the attached documents

(e) BellSouth has produced any documents it has in response to Item a, b, d, and f.

RESPONSE (Cont'd):

(f) See the attached documents

(g) See the attached documents, _____ which are proprietary confidential business information and are being produced subject to BellSouth's Notice of Intent.

INFORMATION PROVIDED BY: Susan Callaghan, Director
John Garrett, Manager

MEASURING THE IMPACT OF INTRALATA COMPETITION ON THE LOCAL EXCHANGE COMPANIES

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FOR PRESENTATION AT:

13TH ANNUAL CONFERENCE

ADVANCED WORKSHOP IN REGULATION AND PUBLIC UTILITY ECONOMICS
May 25-27, 1994
Newport, Rhode Island

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[*] The ideas expressed in this paper are those of the authors and do not necessarily reflect the opinions, policies, or business plans of BellSouth.

Introduction

A principal issue in Public Service Commissions (PSC) hearings is whether authorization of intraLATA competition is in the public interest. In this case, "monopoly" is a misnomer. Competition already exists within the intraLATA market in the form of resale competition, as well as facilities-based competition in many jurisdictions. The telecommunications marketplace is evolving rapidly. Virtually all parties recognize that the industry is in a state of transition from the ubiquitous regulatory environment of yesterday to the competitive environment of the present and future.

The "public interest" is an amorphous idea driven by a myriad of factors. Some of the factors that are important include natural monopoly theory, the existence of competition, the effect on local exchange rates, ubiquitous service and the availability of reasonably priced long-distance service for all end-users. The most immediate consideration is the effect that intraLATA facilities-based competition will have on the LEC's revenues and their ability to earn a reasonable rate of return.

In this paper, we present a discussion on the formulation of a demand model using a new analytical methodology -- the Econometric **Rank-Ordered Logit Demand Model**, which is designed to assess the effect of introducing competition on the percentage of intraLATA customers captured by alternative toll producers in one of BellSouth states. This econometric model was developed by BellSouth Telecommunications (BST). The results of this model permit us to forecast the share of intraLATA toll customers and revenues captured by BellSouth, AT&T, MCI, Sprint, and resellers under various assumptions about form of competition namely, 10XXX and 1+ competition, and the price charged by each of the carriers.

The paper is organized as follows: the next section reviews the empirical evidence. Section 2 discusses the motivation for and advantages of considering the rank-ordered logit survey/econometric technique in demand models. Section 3 discusses the survey used in the 1992 BellSouth intraLATA long distance users study. The econometric demand model formulation and the demand function specification are discussed in Section 4. The following section describes the empirical results. The final Section analyzes the possible impacts of competition on intraLATA toll services.

1. Review of Empirical Evidence

The literature on telecommunications competition includes discussions of both LEC entry into the interLATA market and IXC entry into the intraLATA market. We will concentrate here on the latter discussion (which has been inconclusive). We will review some of the studies which evaluate the impact of facilities-based entry, or the authorization of such entry, on the intraLATA toll prices and revenues.

Debating the issue of whether benefits accrue by permitting the

entry of the IXCs into the intraLATA markets, D. M. Ballard[1] states that "Allowing IXCs access to the LATA will provide the same benefits to consumers that they have realized from interstate and interLATA competition" -- however, addressing the issue of why LECs should not be allowed to enter the interexchange market, D. M. Ballard simply cites the consent decree (MFJ) as the main reason.

In testimony filed with the Mississippi Public Service Commission, Kaserman[2] has stated that allowing competitive entry into telecommunications markets in the USA has been highly beneficial, in particular in the interstate and interLATA markets. Further, he claims that the same benefits will be accrued by the intraLATA market if it is open to competition. Also, Kaserman said that "Several economists have estimated the dollar increase in total social welfare that would result from adoption of efficient pricing policies in the telecommunications industry."[3] He cites several studies[4].

These studies seem to be consistent in their findings, but must now be considered antiquated. The Griffin study cited by Kaserman, for example, uses data for 1975. The most recent study reviewed by John Wenders in his The Economics of Telecommunications, also cited by Kaserman, uses data for 1982. The consensus among these studies is that toll services are priced too high relative to local service. The reason that these studies are not longer relevant is that Mississippi toll rates have been continuously reduced since divestiture. Over the same period, SCB's local rates have been remained largely stable. These changes completely undermine the usefulness of these studies. Furthermore, Kaserman cites these studies to indicate the improvements in social welfare that could be anticipated from "competition". Clearly these calculations, alone, are no longer accurate or even indicative of an order of magnitude. One should also note that these estimates of welfare gains include the effects of removing "inefficient" pricing practices such as fixed-rate local service, as well as the any subsidy flows from toll to local services, including interexchange services. Indeed, Kaserman's claim that toll is priced below cost in Mississippi today is not supported by evidence.

Kaserman cites additional evidence to support his claim that intraLATA services are not a natural monopoly. In pages 10-14, Kaserman refers to the reduction in administrative barriers to entry - these are just regulatory barriers - both nationally and in various states, as well as econometric studies of intrastate pricing practices. This casual observation that "entry" has occurred in other states when regulatory barriers to the "provision" of intraLATA services were removed does not bear on whether any of the benefits of competitive market behavior have been observed or would be observed in the RBOCs LATAs. If "entry" is of

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[1] Direct Testimony of D.M. Ballard in Mississippi Docket No. 90-UA-0280, p.3 (Jan. 15, 1991).

[2] Direct Testimony of David L. Kaserman in Mississippi Docket No. 90-UA-0280, pp.7-18.

[3] *Id* at p.8.

[4] These are: Griffin (1982), Mitchell (1978), and Wenders (1987).

the limited type indicated by the parties in the Mississippi proceeding, then the beneficial competitive effects may be nonexistent. The pricing studies, however, are not so easily dismissed.

There are three studies, two by economists at the Federal Trade Commission (FTC) and one Federal Communications Commission study[5]. Both interLATA intrastate AT&T prices and intralata Bell Operating Company (BOC) prices were examined. The FTC economists, Mathios and Rogers, find that states allowing intraLATA entry have lower BOC toll prices than states without entry, especially if the states act to block competition of "illegal" toll calls. However, Mathios and Rogers report a coefficient on the binary for facilities-based competition which has a sign opposite from the expected and insignficant based on a t-test. The FCC study finds that removal of the prohibition on IXC entry is associated with even lower prices on average than merely removing reseller barriers. The BOC prices are on the order of 7 percent to 15 percent lower in states lacking regulatory entry barriers than in states maintaining intraLATA barriers.

These studies use data from the 1985-1987 time frame, casting some doubt on their continued relevance. In addition, the tests are of BOC prices which were still regulated - and tariffed - under conventional rate of return regulation by all but two states as late as May 1989[6]. Thus, the extent to which the BOC toll prices reflect the competitive environment in the LATAs, as opposed to the preferences of regulators, is uncertain at best.

In a recent study, Christopher Klein (1991) tried to improve on the earlier studies. Using data comparable to those used by Mathios and Rogers, Klein obtained BOC toll prices for 37 states for 1987. After assembling these data, Klein concluded that Mathios's and Rogers's regulatory variables were no longer accurate descriptors for state intraLATA policies. Therefore, using the Telecom Publishing Group survey, Klein constructed the additional policy variables that would reflect both the intraLATA entry and price regulations of each state as of 1989.

In an effort to duplicate the Mathios and Rogers regression, Klein finds evidence that restrictions on intraLATA entry are associated either with lower or no different intraLATA toll prices compared to prices in the LATA with no regulatory entry barriers. However, when Klein substituted the new price and entry policy variables for the Mathios and Rogers variables, the results indicate that the lowest LEC toll prices are found in states that allow intraLATA entry, but impose some floor on the prices charged by the entrants. Relative to BOC toll prices in states that allow free entry with no pricing restrictions, prices in states that limited the prices charged by all entrants were 7.2 percent lower and prices in states that limited only the IXCs prices were 15.29 percent lower. Thus, Klein concludes that the form of price regulation employed by the various states has more influence over the resulting BOC toll

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[5] These studies are: Alan Mathios and Robert P. Rogers (1989); Alan Mathios and Robert P. Rogers (1990); and C. Frentrup (1988).

[6] Only Nebraska and Idaho have "deregulated" BOC toll pricing.

prices than does "competition", a result shared by both Taylor in his study of the interstate toll market[7] and Kaestner and Kahn (1990) in their study of the price of intrastate telephone service.

In an empirical study using annual data on 48 states for 1988, 1989, and 1990, Salazar and Collas (1992) estimate a demand equation for BOC intraLATA toll messages. While the work they report is preliminary and ongoing, they focus their efforts on measuring the impact of facilities-based intraLATA competition on BOC's intraLATA toll demand, rather than price as in earlier studies. The results provide some evidence of a reduction in BOC intraLATA volume in states with approved facilities-based intraLATA competition (9.5% reduction by 1990), however, the model lacks dynamics and results must be interpreted as short term.

Reported losses of market share due to authorization of 10XXX facilities-based entry have been generally low. References to such losses can be found in a number of testimonies filed in various jurisdictions. For example, AT&T's intraLATA 10XXX calls were only about 1% of MTS minutes in Pennsylvania and 2% in Maryland[8], where intraLATA competition has occurred since 1987 and 1984, respectively[9].

All of the tracking reports and empirical work associated with measuring the impact of facilities-based competition on intraLATA toll calling volumes, revenues, and prices examine a competitive market where the local exchange company faces competitors' 10XXX dialing plans.

Survey responses of Ohio consumers were recently reported in Ohio to suggest that 43% of residential and 56% of business customers in Ohio would prefer "a single carrier for all of their toll service" over "the current arrangement with one carrier for all of their toll service"[9].

AT&T has documented its interest in enabling its customers to one-stop shop for long distance calling. Blake (1994) suggests the value of one-stop shopping: "With intraLATA competition, customers will be able to combine their interLATA and intraLATA calling with one carrier to maximize their volume discounts".

In the next section, we describe the survey-econometric marketing research we used to assess the impact of (a) brand name, (b) customer loyalty to current the current pre-subscribed interLATA carrier, (c) the necessity of dialing extra digits for 10XXX calling, and (d) a price advantage on consumer choice of intraLATA toll provider.

The study, actually conducted in early 1992, may well be the first available survey-econometric discrete choice study of its kind.

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[7] See William E.Taylor (1991).

[8] Direct Testimony of John W. Blake in New Jersey Docket Nos. TX90060349, TE92111047, and TE93060211 (April 7, 1994).

[9] Direct Testimony of Donna M. Hermerding in Ohio Case No. 93-487-TP-ALT (May 5, 1994).

2. The Rank-Ordered Logit Survey/Econometric Technique in Marketing Science

We use a rank-ordered logit analysis (Beggs, Cardell, and Hausman, 1981; Hausman and Ruud, 1987) in this study to analyze ranked choice data. The rank-ordered logit model offers an alternative approach to conjoint analysis methods widely used in the marketing industry.

Wittink and Cattin (1989) speculate that the average number of conjoint applications approached 400 per year between 1981 and 1985. Since 1985, the number of applications per year have increased as conjoint software has become widely available. In contrast, the use of rank-ordered logit has been limited. Most studies have been proprietary, however, Tardiff (1989) demonstrated the technique in an information services application.

Some authors have compared various conjoint techniques. For example, Agarwal and Green (1991) provide an empirical comparison of results from a self-explicated model and Adaptive Conjoint Analysis (ACA). Leigh, MacKay, and Summers (1984) provide a comparison of various conjoint techniques with the self-explicated model. However, with the increased interest in discrete choice among marketing scientists[10] much work is needed to assess the relative merits of popular conjoint methods and discrete choice methods which incorporate the random utility model of McFadden (1974).

While Louviere (1988, p.96) cautions practitioners in the use of the rank-ordered logit model, the practical benefits of rank-ordered logit led us to choose this technique as the most likely discrete choice alternative to conjoint methods; therefore, we use rank-ordered logit as the preferred discrete choice technique in the application to AIN features for wireless telephone users.

The cautions outlined by Louviere (1988) include the stringency of assumptions that "(a) the multinomial logit choice (MNL) model is a good approximation to the unobserved choices implied by the rankings, (b) the individual is perfectly transitive in the unobserved choice sets implied by the rankings, and (c) the individual is perfectly consistent in his/her ranking behavior in the unobserved choice sets implied by the rankings," and (d) the instability of estimated parameters from models of based on different rank depths (Batsell and Louviere 1991, p.204).

However the attractive practical features of the rank-ordered logit model when estimated from telephone survey data include the (a) the simplicity of the ranking question which reduces possibility of contamination and bias of respondent choices (b) the emphasis placed on the respondents' tradeoffs among attributes -- as would be required in the real world where consumers face budget constraints[11] --, (c) the significant reduction in the cost of market research associated with the

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[10] See Mahotra (1984).

[11] For the importance of budget constraints to experimental design, see Hensher, Barnard, and Truong (1988).

reduction in required number of completed surveys, and (d) the incorporation of the random utility model (Ben-Akiva and Lerman, 1985) -- a standard assumption of discrete choice analysis.

Given its appealing features, we opted to use the rank-ordered logit model as applied to survey data. However, we respected the cautions of Louviere and others regarding the use of ranked data by limiting the number of ranks to only 5.

While we do not provide a direct comparison of rank-ordered logit to conjoint or self-explicated models, we do provide a brief exposition of how the rank-ordered logit survey/econometric procedure compares theoretically to the conjoint and self-explicated methods of analysis.

Our best starting point for comparison of the rank-ordered logit survey/econometric method with conjoint is the hybrid conjoint utility specification (Green, 1984) excluding, for simplicity, the two-factor interaction effects.

$$Y_{i_1 i_2 \ldots i_j,h} = a + b\, U_{i_1 i_2 \ldots i_j,h} + \sum_{j=1}^{J} v_{i_j} \qquad (1)$$

where $Y_{i_1 i_2 \ldots i_j,h}$ = respondent h's ranking or rating response to some full profile description of level i of attributes $1,2,\ldots,J$.

$U_{i_1 i_2 \ldots i_j,h}$ = respondent h's self-explicated utility calculated as the importance weighted average of the respondents self-explicated desirability score for level i of attribute j.

v_{i_j} = the main effect dummy variable for level i of attribute j.

Conjoint practitioners try to improve the accuracy of self-explicated utilities in two ways. First, they scale the self-explicated utilities by estimating the coefficients a and b in the hybrid conjoint utility equation. Second, they test for significance of dummy variables (main effects or interaction effects) in the hybrid utility equation.

The rank-ordered logit model we use for the 1992 intraLATA competition study completely omits the self-explicated utilities from the utility function. Instead the attributes are entered directly as continuous variables. For example,

$$U_{i_1 i_2 \ldots i_J,h} = (\alpha_{i_1 i_2 \ldots i_J} - \alpha_{i'_1 i'_2 \ldots i'_J}) + (\beta_{i_1 i_2 \ldots i_J} - \beta_{i'_1 i'_2 \ldots i'_J}) * INCOME_h + \gamma_1 * X_{i_1} + \ldots + \gamma_J * X_{i_J} + \varepsilon_{i_1 i_2 \ldots i_J,h} \quad (2)$$

where

$U_{i_1 i_2 \ldots i_J,h}$ = household ordinal utility associated with an alternative characterized by the levels i of attributes 1 to J with numeraire alternative characterized by levels i' of attributes 1 to J.

$INCOME_h$ = household income -- only one demographic variable is included here for simplicity of exposition, however, many demographic variables may be included in principle.

X_{i_j} = level i of attribute j

$\varepsilon_{i_1 i_2 \ldots i_J,h}$ = a type I extreme value distributed error term

$(\alpha_{i_1 i_2 \ldots i_J} - \alpha_{i'_1 i'_2 \ldots i'_J})$ = the estimated alternative specific constant for the alternative characterized by levels i of attributes $j=1,\ldots,J$.

$(\beta_{i_1 i_2 \ldots i_J} - \beta_{i'_1 i'_2 \ldots i'_J})$ = the estimated alternative specific socio-economic coefficient for the alternative characterized by levels i of attributes $j=1,\ldots,J$.

Comparison of the popular hybrid conjoint with the rank-ordered logit utility specifications highlights some of the key differences in approach. The hybrid conjoint method relies heavily on self-explicated utilities, yields individual utility functions, and has no basis in a random-utility model[12]. In contrast, the rank-ordered logit model makes no use at all of self-explicated utilities, estimates a household utility function with a systematic or non-random part common to all households within a demographic category, and relies heavily on a random utility theory.

The hybrid conjoint method starts from self-explicated utilities and uses main or interaction effects dummy variables to improve the fit of self-explicated utilities to ranks of alternatives. The coefficients in

[12] See Green, Goldberg, and Montemayor (1981), and Green (1984).

the hybrid conjoint utility equation are either scale factors applied to self-explicated utilities or increments to self-explicated utilities designed to achieve a statistically "best" fit between each respondent's overall rating or ranks of alternatives and corresponding total utilities.

The rank-ordered logit model uses the continuous attribute variables (the discrete choice counterpart to conjoint's main and interaction effects dummy variables) as the starting point of the utility specification with adjustments in intercept made for the various demographic categories.

3. The 1992 IntraLATA Long Distance Users Study

The rank-ordered logit specification has been effectively used for new products or services in several demand studies (Beggs, Cardell, and Hausman, 1981; Goett, McFadden, Woo, and Boese, 1985; Hausman and Ruud, 1987; Tardiff, 1989; and Tardiff, 1991). These studies have used the rank-ordered logit model to predict the demand for new products in an existing market. The method offers a clear advantage over earlier methods by reducing the possibilities for bias embedded in telephone questionnaires and by basing the analysis in solid basic concepts of economic theory.

Our study differs from earlier published studies in its focus on new entrants instead of new products and services. In this case, the new entrants are the interexchange carriers in the intraLATA long distance market.

In order to estimate this demand model we surveyed a stratified sample of BellSouth's residence and business customers. Telephone interviews were conducted between January 23rd and February 13, 1992, by Response Analysis, an independent market research firm. The survey used a telephone-mail-telephone technique and was conducted among a systematic random sample of current intraLATA toll users in one of the states under BST jurisdiction. Four hundred ninety-eight residence customers and three hundred and sixty-seven business customers were contacted.

In the new methodology, survey respondents rank alternative long distance calling options (offered by BellSouth and its competitors) at specific prices. The methodology provides better forecasts of competitor market share by incorporating the tradeoffs that survey respondents make among attributes -- i.e., number of digits required to place a call and prices. Making tradeoffs in purchase decisions is part of basic economic theory which says that consumers compare the utility of various options and make choices within their budget constraints.

Response Analysis, Inc. developed a program to randomly generate, for each respondent, five carrier/price/access options. These five "service package" options were mailed to respondents for use during the follow-up interview. The program was structured to produce a personalized cover letter and a customized set of five carrier/price/access alternatives for each respondent. Respondents were asked to rank each alternative from the

most attractive (most likely to buy) to least attractive (least likely to buy).

Sixteen possible carrier choices were used; BellSouth was always one of the choices for each respondent. In addition, each respondent's package included her/his current interexchange carrier. Five possible price levels were used (5, 10, 15, 20, 25 cents per minute). Three possible access methods (10XXX, one-plus, 10XXX with an autodialer supplied at no cost by the long distance company) were presented to half the sample, two access methods (10XXX and one-plus) were presented to the other half.

Once these data had been collected on our samples of respondents they were econometrically processed to estimate a demand model -- the rank-ordered logit model -- relating each customer's carrier choice to the characteristic of that carrier's offering. Using this econometrically derived model, the likelihood of selecting a particular alternative was related to the price charged, the name of the carrier, and whether or not a 5-digit access code was necessary to access the carrier. Where the choice was BellSouth, the choice was also related to the customer's current level of toll demand. For interexchange carriers, we also identified cases where the carrier was currently the customers pre-selected interLATA toll supplier. For Business customers other than BellSouth, we found a relationship between choice of intraLATA carrier and a variable indicating whether or not the customer currently subscribed to any one of six high volume services offered by AT&T, MCI, and Sprint.

4. The Econometric Demand Model

Rank-Ordered Logit

We use maximum likelihood estimation to estimate the coefficients of a utility function similar to equation (2) above. Following Hausman and Ruud[13], the utility function is

$$V_m = X'_m\beta + u_m \qquad m = 1,\ldots,M \tag{3}$$

where X_m is a Kx1 vector of attributes, β is a Kx1 vector of coefficients (utility weights), and u_m is a randomly distributed disturbance term. In our case, M=5 which is the number of the "service package" options presented to each survey respondent. The logit probability that j is preferred to alternatives $1,\ldots,j-1$ is

$$F_j\left[X_1,\ldots,X_j;\beta\right] = \exp(X'_j\beta)\left[\sum_{i=1}^{j}\exp(X'_i\beta)\right]^{-1}, \qquad j > 1. \tag{4}$$

If the index of the "service package" option ranked mth is r_m, the probability of the rank ordering

$$r=(r_1,\ldots,r_M) \text{ is}$$

$$Pr(r,X,\beta) = \prod_{m=2}^{M} F_m\left[X_{rm},\ldots,X_{rM-m+1};\beta\right], \tag{5}$$

where

$$X = [X_m; m=1,\ldots M]$$

In other words, the probability of a rank ordering of M features is simply the product of M-1 multinomial logit likelihood functions.

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[13] A. Hausman and Paul A. Ruud (1987). "Specifying and Testing Econometric Models for Rank-Ordered Data." *Journal of Econometrics*, 34, pp. 83-109.

The log-likelihood which maximized is the sum of N log-likelihoods for the N respondents.

$$L(\beta) = \sum_{n=1}^{N} \log\left[Pr(r_n, X_n;\beta)\right]$$

$$= \sum_{n=1}^{N} \sum_{m=1}^{M-1} \log\left[F_{M-m+1}\left[X_{rM},\ldots,X_{rm};\beta\right]\right] \qquad (6)$$

The estimated utility weights are those which maximize $L(\beta)$.

The Demand Function

A demand function is specified as follows:

$$S_i = P_i * N \qquad i \in I = (1,\ldots,16) \qquad (7)$$

where

i = an index referencing alternatives 1 through 16
S_i= the number of subscribers to alternative i
I = the set of alternatives 1 through 16 (i is contained in the set I)
N = the number customers for whom alternatives 1 through 16 will be available
P_i= the expected proportion of customers subscribing to alternative i.

For a logit discrete choice model, the formula for the expected proportion of customers subscribing to each alternative is

$$P_i = (1/N) * (P_{i1} +\ldots+ P_{iN}) \qquad (8)$$

where

$$P_{in} = \exp(V_{in}) \Big/ \left[\sum_{j=1}^{N} \exp(V_{jn}) \right] \qquad (9)$$

where

P_{in} = the probability that customer n will choose alternative i

$V_{in} = \beta_1 * X_{1in} + \ldots + \beta_K * X_{Kin}$
(i.e. V is a linear function of attributes and characteristics)

K = the number of attributes and characteristics which significantly influence demand

X_{kin} = the value of the kth attribute or characteristic for alternative i and customer n

5. Results

Econometric models were estimated separately for residential and business customers. The maximum likelihood coefficients are reported in Table 1 and variable definitions in Table 2. A simple heteroscedasticity correction procedure was used to minimize the impact of increased variance of unobserved utility with rank depth. Specifically, the variables of the model were divided by 2 for rank depth 2, by 3 for rank depth 3, and by 4 for rank depth 4. This effectively models the variance of unobserved utility as a linear function of rank depth. While not reported, a non-nested hypothesis test using the adjusted likelihood ratio statistic suggested adopting the heteroscedasticity-corrected model over the equivalent one not corrected for growing variance with rank depth.

The coefficient estimates are consistent with economic theory and this confirms our confidence in the model. For example, the model suggests that demand for intraLATA toll service is a function of price, that, with competition, the LEC's share of intraLATA toll volume is much more vulnerable with 1+ presubscription than with 10XXX access. The model also indicates that residential customers are more likely, everything else equal, to select well-known carriers like BellSouth, AT&T, MCI and Sprint than lesser known resellers (business customers are slightly more likely, everything else equal, to select resellers). Finally, the model reveals that, if they switch, customers are likely to select the carrier they use for interLATA service to handle their intraLATA service.

An additional reason for placing confidence in the results of this model is the care exercised in structuring the survey. In structuring the survey we tried as much as possible to present consumers with real market choices. For example, the respondents always received their current interexchange carrier as one of the alternative carriers in the ranking exercise. The alternatives open to each customer were carefully

described providing assurance that consumers were making rational choices. Additionally, each alternative was associated with a specific service price. This assured that consumers were choosing between realistic alternatives not irrelevant hypotheticals.

Also, rather than asking consumers to simply choose between BellSouth and some amorphous alternative, we used the actual company names of all the long distance companies who recorded greater than 1,000,000 switched access minutes of use per month with BellSouth. These company names were used to randomly generate a series of hypothetical but realistic combinations of carrier choice, price and dialing method. Respondents ranked these from most to least favored.

The survey technique avoids leading the respondent to select a choice favored by the surveyor. Furthermore, different consumers were offered different choices among their alternatives. This also avoids biasing the response and maximizes the number of possible choices examined.

Potential sample respondents were stratified by their level of intraLATA toll demand. This assured the inclusion of relatively high volume customers who may not be numerous but are disproportionately important in projecting market share. Within each size strata the samples surveyed were selected randomly to assure proper representation.

Potentially controversial questions were directed only at subsamples of survey respondents to assure that results were not unduly biased by these questions. For example, one issue which was assumed to govern market share with 10XXX competition is the availability of speed dialers which permit customers to easily and conveniently dial access codes. But, with regard to previous surveys it was argued that by informing respondents about the availability of speed dialers the survey actively encouraged respondents to choose alternative carriers. Consequently, in the current survey, information about speed dialers was provided to only half the sample. In this way we could determine the impact of this information while nevertheless being able to forecast market share when the information is not provided.

Since the information on speed dialers has a relatively modest impact on the outcome and since forecasts based on the model do not include the effect of this information, this information could not have biased the modeling results.

Models were estimated separately for the sample of consumers who were specifically informed about autodialers, and those not given this information. However, since the parameters of the models were quite similar for both groups, the final model used is based on the full sample. For Sprint, (but for none of the other carriers) the presence of a free autodialer in the service offering appeared to decrease the business demand for that carrier. Hence, that effect is included in the final model.

Simulations using the final estimated demand model are summarized separately for residence and business customers in Table 3 which is appended to this document. Table 3 summarizes the percentage of intraLATA

toll customers captured by BellSouth and the other interexchange carriers under several alternative assumptions. Assuming all carriers charge the same price as BellSouth and access to the interexchange carriers requires dialing 10XXX, BellSouth could be expected to remain about XX percent of the residence and XX percent of the business market. Assuming that 1+ presubscription is permitted BellSouth's percentage falls to about XX percent for residence and XX percent for business customers.

Undoubtedly these drastic declines in the percentage of customers retained by the LEC would not occur overnight. Customers are often slow to respond to changes in market circumstances. But, these may well represent the outcome of a competitive intraLATA market which has been in place for several years. In the new situation of facilities-based intraLATA competition, BellSouth retains a significant major share of the intraLATA market, but its competitors make substantial inroads. The other potential competitors -- ATT, MCI, Sprint -- are all well known suppliers of toll service with which most customers already have some contact and it hardly seems surprising that they could capture XXXX of the total market. Of course, with 1+ presubscription the model suggests that these carriers would have a substantial advantage over BellSouth (as they offer the opportunity for one stop shopping for toll service) and, hence, would capture nearly XXXXXXXXXX of the total market.

If BellSouth is restricted by regulations from being competitive on price, however, this situation could become much more critical. To illustrate this we used the demand model to simulate BellSouth market share when the prices charged by its competitors fell below it by 5 cents per minute. Under this circumstance BellSouth's share of the business market fell to XX percent with 10XXX access and XX percent assuming 1+ presubscription for the interexchange carriers. The equivalent residence shares were XX percent with 10XXX access and XX percent with 1+ presubscription.

Table 4 reports a separate analysis conducted more recently with the same respondent data used in the 1992 study. The model coefficients were re-estimated using the Hausman-Ruud (1987) heteroscedasticity correction procedure. Then, relative marketing strength of BST and AT&T were estimated using the model coefficients. A distribution of intraLATA toll calling revenue enabled us to calculate a distribution-weighted average of probabilities of choosing AT&T vs. BST with price parity, with/without the presence of customer loyalty (i.e. the tendency of customers to choose their current pre-subscribed interLATA carrier as the carrier of choice for intraLATA calling), and with various levels of price advantages for BellSouth.

The results in this paper are a preliminary attempt to estimate the effects of recent changes in regulation of the telecommunications market. The telecommunications market is an extremely complex interaction of supply, demand, and political factors, all in an industry with quickly changing technology. As one-plus facilities-based entry takes place in the future, we can then track intraLATA calling revenues to assess the predictive accuracy of the survey-based econometric models. Until then, we must rely on survey-econometric methods like the one used in this study to minimize questionnaire bias and improve the realism of results.

6. Impact of IntraLATA Competition on the LECs

Two basic effects follow from allowing intraLATA toll competition. One is that the introduction of competition will force the price of toll service for both the IXCs and the LECs towards the cost of providing the service. The second effect is the direct loss of LEC toll revenues as the IXCs begin to carry intraLATA toll traffic on their own facilities. In testimonies filed with the state PUCs, IXCs have argued that, although the LECs will lose toll revenues, those revenue losses will be directly offset by additional switched access charge revenues collected from the IXCs. The IXCs have further argued that these offsetting access charge revenues will allow local rates to be unaffected by intraLATA toll competition.

The IXCs' argument must assume that contribution from toll revenues would be replaced by contribution from access charges. This assumption is unrealistic since the savings in incremental costs in moving from toll to access are likely less than the difference between LEC intraLATA toll rates and switched access rates. Further, the LEC toll traffic lost to the IXCs would not be replaced solely with switched access because it is more economical to avoid usage-sensitive access charges and serve some customers through flat-rated special access or through complete facilities-bypass of the LEC by direct connection to the customer's premises.

Furthermore, the intense competition in the special access market drives the price of special access down making bypass of LEC toll even more economical. For example, New York Telephone was granted a price decrease for special access DS-1 circuits from $1062 for a 2 mile inter-office line in 1987 to $744 for the same line in 1989[14]. The FCC decision in 1991 which proposed collocation for special access will allow IXCs to further reduce the rates for their high- and medium-volume toll services.

Another flaw in the IXC's argument that contribution from access charge revenues would replace contribution from lost LEC toll revenue is the assumption that switched access charges will remain at current levels. Past experience in other proceedings indicate that competition will force switched access charges down towards their true cost. It is, therefore, likely that intraLATA transmission competition will put downward pressure on switched access rates.

To the extent that access charges are reduced, the contribution currently provided by access charges will be reduced. This in itself will unavoidably require changes in either local or LEC toll rates.

Another effect of intraLATA toll competition will be to force LEC

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[14] Jerry Hausman, Timothy Tardiff, and Harold Ware, "Competition in Telecommunications for Large Users in New York," in *Telecommunication in a Competitive Environment*, Proceedings of the Third Biennial Telecommunications Conference, National Economic Research Associates, Inc., April 1989, pp. 1-19.

toll rates towards cost. This phenomenon will have several secondary effects. The LEC toll rates were set to recover a total statewide aggregation of all LEC toll costs and to provide a substantial contribution towards local service. Because LEC toll rates are averaged statewide, the rates charged for a particular route are not directly related to the costs involved in providing toll service on that route. This creates the situation where revenues generated on high-density, low cost urban toll routes substantially subsidize the low density high cost rural toll routes.

If intraLATA toll competition is allowed, it is natural and inevitable that the IXCs would choose to compete on those high-density, low cost toll routes which offer the greatest potential for profitability. Once a toll route is subject to competition from one or more IXCs, each competitor seeks to acquire market share by reducing prices for that high-density route below the LEC's uniform average toll rates. In order to allow the LECs to effectively compete with the IXCs on any given toll route, the LECs must respond to competition by lowering their own companies' toll rates. It is clear that if full intraLATA toll competition is to develop, the implementation of LEC-specific and route (i.e. high-density vs. low-density) specific LEC toll rates will be required.

Since competition tends to drive prices toward cost, a further fallout from intraLATA toll competition would be a decline in some toll rates and an increase in some other LEC toll rates. On those high-density toll routes where uniform average rates generate revenues in excess of costs, competition would drive those rates down. The decline in revenues that results from the declining rates would reduce the subsidy that that route provides to other routes (low-density)where the costs exceed the existing revenues generated by uniform average LEC toll rates. This loss in revenue would force the rates on the high cost routes to go up in order to recover the costs on that route. Because of this phenomenon, on some low-volume, high-cost routes there is a very real potential that the traffic levels on that route will never generate sufficient revenues to cover the costs. Without the subsidies currently received from high-volume, low-cost routes, it appears that competition may ultimately force the abandonment of unprofitable toll routes or, worse still, require increases in local rates to subsidize these unprofitable toll routes in order to maintain universal toll service.

One issue raised repeatedly is the benefits that would accrue to consumers from intraLATA transmission competition. In general, it is stated that competitive markets can offer four benefits to society: they are superior in the production of those goods and services most in demand by consumers; they offer a greater opportunity for the introduction of new services; they reduce the societal resources allocated to regulatory processes and procedures; and competition results in the efficient use of resources so that societal benefits are maximized. In a truly competitive market these benefits will accrue. However, in a truly competitive environment each IXC and LEC would be competing on an equal basis with relatively easy entry and exit for each competitor. To the extent that there is not a truly competitive market, these benefits lose their "luster." The IXCs are not hamstrung with the responsibilities for universal toll and local service which regulation imposes on the LECs.

This alone eliminates any semblance or possibility for "true" competition. As discussed earlier, competitive entry by the IXCs would be directed at lucrative high-volume toll routes and specific large- or medium-volume toll users. The same effects described above in relation to local, toll and access services will occur. Toll rates for some consumers will go down, local rates for all consumers will ultimately go up, and access charges are likely to be forced down.

Taking into consideration the effects that intraLATA facility-based competition will have on the general body of ratepayers, is apparent that the only beneficiaries of intraLATA facility-based competition will be large-volume toll users and the IXCs who serve them. The benefits received by these large toll users will come at the expense of the overwhelming majority of telephone consumers who would pay higher local rates but would not have sufficient toll call volumes to take advantage of the lower toll rates. More importantly, those consumers who are served by high cost toll routes would pay higher toll rates as well as higher local rates, due to de-averaging of toll rates.

Another issue raised by the IXCs was whether the IXCs could provide intraLATA toll service through their own facilities more efficiently than the LECs, either for current toll traffic or for future toll traffic growth. As stated earlier, the provision of telecommunication service requires substantial investment in fixed plant. This investment, coupled with the relatively low operating and maintenance costs associated with transmission facilities, creates significant economies of scale which favor a monopoly environment. This is particularly true on an intraLATA basis since the toll routes are predominantly short haul and produce less revenue per unit than longer haul interLATA routes.

The economies of scale realized by the LECs' intraLATA transmission networks generally allow them to handle existing and future intraLATA toll traffic. This is true because it is less costly to add capacity to an existing transmission facility than to completely duplicate the LECs' facilities. From a broad public interest view, such duplication is uneconomic and inefficient. Economies of scale are important because benefits to society are maximized when they are fully realized.

If facilities based, intraLATA competition is allowed, the capital investment required to establish new IXC POPs will place enormous economic pressure on IXCs to target only those high-density routes which promise the greatest market share and hence the most profit potential. Once an IXC has located at other than the toll center/access tandem, the efficiencies of the existing toll network configuration are lost with respect to the IXC, and the general body of ratepayers will not have comparable access to that carrier. Furthermore, once an IXC locates at other than the toll center/access tandem, it becomes most efficient for an IXC to place its POPs as close to its largest customers as possible. This further aggravates the "cream skimming" problem and encourages complete bypass of the LEC by large toll users who will be the marketing targets of the IXCs.

In summary, there is virtually no evidence to support the claim that the many benefits of competition would be realized in the intraLATA toll market following a policy of unrestricted entry and no price regulation.

In fact, the available evidence on whether the LEC LATAs are natural monopolies or not is inconclusive. Consequently, there is no compelling reason to move toward further deregulation of the intraLATA telecommunications markets - that is, toward 1+ and 0+ entry by the IXCs or resellers. Therefore, this means that the limited entry sought by the IXCs (provided through direct or special access arrangements and 10XXX switched access) must be justified by the customer convenience of "one-stop shopping" for both inter- and intraLATA telecommunications services. This convenience, however, is universally available today through resellers.

Epilogue

Economists like to feel they are experts and as such are able to affect the course of policy. Telecommunications constitutes an unusual market in that at least one segment of its regulatory structure has actually listened to the recommendations of the economic profession -- cable deregulation. But this is an unusual occurrence; more often economists bewail the lack of attention their advice is accorded and the perceived failings of the regulatory process that appear to deviate from the goals that economists posit for regulators.

In other industries and regulatory settings, this divergence between what economists think that regulators ought to be doing and what regulators actually do has lead to a focus on the positive theory of regulation (Stigler 1971)[15]. But perhaps owing to economists' success in affecting the regulatory process, at least at the federal level, economists have not spent a great deal of time studying why telecommunications regulation looks as it does.

This omission is important, for much of the resistance of state regulators to implementing the movement toward competition that their federal counterparts have decreed stems from the rather different sets of objectives of the state regulators. State regulators, more so than federal, are required to consider goals such as universal service even if they impact adversely the efficiency norms so dear to economists. Much of state regulatory policy is clearly distributional in character. When economists ask that regulators adopt policies that clearly conflict with the goals that regulators seek to further, the result is that the advice appears irrelevant at best.

There are a number of signs that despite initial success in affecting telecommunications policy, economists once again risk irrelevance because of their devotion to prescribing policies as opposed to analyzing policies in place. For example, at the intraLATA level, economists on all sides continuously prescribe competition as a solution. Few have analyzed the impact of intraLATA competition already in place.

Now is the time to empirically evaluate the roles of brand loyalty

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[15] George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics, Vol. No. 2, (Spring 1971) pp. 3-21.

and price in a competitive intraLATA long distance market. This study offers some theoretical arguments leading to a priori expectations for the impact of facilities-based intraLATA competition. More importantly, the study offers a strong preliminary empirical investigation into the consequences of authorizing facilities-based one-plus competition at the intraLATA level.

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APPENDIX A

Documentation of Variables Added During SAS Processing

Element Name	Description of Element
USE_CODE	1 = REVENUE < $500 2 = REVENUE > $500
SAMPMETH	SAMPLING METHOD 1 = 2 DIALING METHODS POSSIBLE 2 = 3 DIALING METHODS POSSIBLE
PRIME CARRIER	CURRENT CARRIER Codes: 01 = AT&T 02 = MCI including Telecom USA (Southern Net) 03 = SPRINT (US TELECOM) 04 = Southern Bell 05 = ATC 06 = Allnet Communications 07 = BTI 08 = Cable & Wireless Communications 09 = Delta 10 = Long Distance America 11 = LDDS (Long Distance Discount Service) 12 = Lite Telecom Corp. including Charter Network and Afford-a-Call 13 = Metromedia (ITT, USTS) 14 = ITI 15 = Touch-1 16 = US Fiberline
CARR1 CARR2 CARR3 CARR4 CARR5	RANKING CARD 1 CARRIER COMPANY RANKING CARD 2 CARRIER COMPANY RANKING CARD 3 CARRIER COMPANY RANKING CARD 4 CARRIER COMPANY RANKING CARD 5 CARRIER COMPANY CARR1 IS ALWAYS 5 (BELL) FOR CARR2 THROUGH CARR5, THE CODES RANGE FROM 1 TO 5 1 = ATT, 2 = MCI, 3 = SPRINT, 4 = OTHER, 5 = BELL If CARR1 is 4 (Other), there will be a code for the other carrier in Element RC2_OTH; for n=2 through 5, if CARRn = 4, there will be a value in RCn_OTH

Element Name	Description of Element
RC2_OTH	OTHER CARRIER FOR RANKING CARD 2
RC3_OTH	OTHER CARRIER FOR RANKING CARD 3
RC4_OTH	OTHER CARRIER FOR RANKING CARD 4
RC5_OTH	OTHER CARRIER FOR RANKING CARD 5 Codes for RC2_OTH through RC5_OTH (OTHER CARRIER CODES) : 05 = ATC 06 = Allnet Communications 07 = BTI 08 = Cable & Wireless Communications 09 = Delta 10 = Long Distance America 11 = LDDS (Long Distance Discount Service) 12 = Lite Telecom Corp. including Charter Network and Afford-a-Call 13 = Metromedia (ITT, USTS) 14 = ITI 15 = Touch-1 16 = US Fiberline
RCARD1	CELL # OF RANKING CARD 1 (Choice F)
RCARD2	CELL # OF RANKING CARD 2 (Choice G)
RCARD3	CELL # OF RANKING CARD 3 (Choice H)
RCARD4	CELL # OF RANKING CARD 4 (Choice M)
RCARD5	CELL # OF RANKING CARD 5 (Choice R)

Information Regarding Ranking Card Cell Numbers:

What the cell number means for RCARDS 1 to 5 depends on which sampling method was used for the case. If SAMPMETH = 1 then the cell number ranges from 1 to 45. If SAMPMETH = 2, then the cell number ranges from 1 to 65. (See the ranking card cell matrix below for details.)

Also note that on the mailing, ranking card 1 is labelled as choice F. RCARD2 is G; RCARD3 is H; RCARD4 is M; RCARD5 is R. So, if the respondent preferred choice M, they preferred:

RCARD4, CARR4, RC4_OTH (if any), RMETHOD4, AND RPRICE4.

RCARD4 is a cell # which represents all of the information in CARR4, RMETHOD4, and RPRICE4, but not RC4_OTH.

Element Name	Description of Element
RMETHOD1	DIALING METHOD OF RANKING CARD 1
RMETHOD2	DIALING METHOD OF RANKING CARD 2
RMETHOD3	DIALING METHOD OF RANKING CARD 3
RMETHOD4	DIALING METHOD OF RANKING CARD 4
RMETHOD5	DIALING METHOD OF RANKING CARD 5

Information Regarding Dialing Methods:

FOR SAMPMETH = 1, DIALING METHOD CAN BE 1 OR 2
FOR SAMPMETH = 2, DIALING METHOD CAN BE 1, 2, OR 3

THE DIALING METHOD CODES (for RMETHODn, where n = 1 to 5) are:

1 = Dial "1" plus area code and telephone number
2 = Dial "five-digit access number" plus are code and telephone number
3 = Dial "five-digit access number" using an autodialer given to you at no cost by your long distance company, plus area code and telephone number

Element Name	Description of Element
RPRICE1	PRICE FOR RANKING CARD 1
RPRICE2	PRICE FOR RANKING CARD 2
RPRICE3	PRICE FOR RANKING CARD 3
RPRICE4	PRICE FOR RANKING CARD 4
RPRICE5	PRICE FOR RANKING CARD 5

Information Regarding Price Codes:

THE PRICE CODES (for RPRICEn, where n = 1 to 5) are:

1 = 5 cents
2 = 10 cents
3 = 15 cents
4 = 20 cents
5 = 25 cents

Ranking Card Cell Matrix for Sampling Method 1

Cell #	Company	Dialing Method	Price
01	AT&T	1	5 cents
02	AT&T	1	10 cents
03	AT&T	1	15 cents
04	AT&T	1	20 cents
05	AT&T	1	25 cents
06	AT&T	2	5 cents
07	AT&T	2	10 cents
08	AT&T	2	15 cents
09	AT&T	2	20 cents
10	AT&T	2	25 cents
11	MCI	1	5 cents
12	MCI	1	10 cents
13	MCI	1	15 cents
14	MCI	1	20 cents
15	MCI	1	25 cents
16	MCI	2	5 cents
17	MCI	2	10 cents
18	MCI	2	15 cents
19	MCI	2	20 cents
20	MCI	2	25 cents
21	Sprint	1	5 cents
22	Sprint	1	10 cents
23	Sprint	1	15 cents
24	Sprint	1	20 cents
25	Sprint	1	25 cents
26	Sprint	2	5 cents
27	Sprint	2	10 cents
28	Sprint	2	15 cents
29	Sprint	2	20 cents
30	Sprint	2	25 cents
31	Other	1	5 cents
32	Other	1	10 cents
33	Other	1	15 cents
34	Other	1	20 cents
35	Other	1	25 cents
36	Other	2	5 cents
37	Other	2	10 cents
38	Other	2	15 cents
39	Other	2	20 cents
40	Other	2	25 cents

Ranking Card Cell Matrix for Sampling Method 1

Cell #	Company	Dialing Method	Price
41	Bell	1	5 cents
42	Bell	1	10 cents
43	Bell	1	15 cents
44	Bell	1	20 cents
45	Bell	1	25 cents

The Dialing Method Codes are:

1 = Dial "1" plus area code and telephone number
2 = Dial "five-digit access number" plus are code and telephone number
3 = Dial "five-digit access number" using an autodialer given to you at no cost by your long distance company, plus area code and telephone number

Ranking Card Cell Matrix for Sampling Method 2

Cell #	Company	Dialing Method	Price
01	AT&T	1	5 cents
02	AT&T	1	10 cents
03	AT&T	1	15 cents
04	AT&T	1	20 cents
05	AT&T	1	25 cents
06	AT&T	2	5 cents
07	AT&T	2	10 cents
08	AT&T	2	15 cents
09	AT&T	2	20 cents
10	AT&T	2	25 cents
11	MCI	1	5 cents
12	MCI	1	10 cents
13	MCI	1	15 cents
14	MCI	1	20 cents
15	MCI	1	25 cents
16	MCI	2	5 cents
17	MCI	2	10 cents
18	MCI	2	15 cents
19	MCI	2	20 cents
20	MCI	2	25 cents
21	Sprint	1	5 cents
22	Sprint	1	10 cents
23	Sprint	1	15 cents
24	Sprint	1	20 cents
25	Sprint	1	25 cents
26	Sprint	2	5 cents
27	Sprint	2	10 cents
28	Sprint	2	15 cents
29	Sprint	2	20 cents
30	Sprint	2	25 cents
31	Other	1	5 cents
32	Other	1	10 cents
33	Other	1	15 cents
34	Other	1	20 cents
35	Other	1	25 cents
36	Other	2	5 cents
37	Other	2	10 cents
38	Other	2	15 cents
39	Other	2	20 cents
40	Other	2	25 cents

Ranking Card Cell Matrix for Sampling Method 2

Cell #	Company	Dialing Method	Price
41	Bell	1	5 cents
42	Bell	1	10 cents
43	Bell	1	15 cents
44	Bell	1	20 cents
45	Bell	1	25 cents

The Dialing Method Codes are:

1 = Dial "1" plus area code and telephone number
2 = Dial "five-digit access number" plus are code and telephone number
3 = Dial "five-digit access number" using an autodialer given to you at no cost by your long distance company, plus area code and telephone number

APPENDIX B

BUSINESS

1445 cases were kept out of 1445 in file.

DESCRIPTIVE STATISTICS

usecode=1

Variable	Mean	Std Dev	Minimum	Maximum	Valid	Missing
TOLLREV	26.3197	42.2309	1.000	275.250	1445.00	0.00
MEGACOM	0.0484	0.2148	0.000	1.000	1445.00	0.00
PRISM	0.0623	0.2418	0.000	1.000	1445.00	0.00
ULTWATS	0.0208	0.1426	0.000	1.000	1445.00	0.00
ATTSDN	0.0588	0.2354	0.000	1.000	1445.00	0.00
MCIVNET	0.0242	0.1538	0.000	1.000	1445.00	0.00
SPRVPN	0.0069	0.0829	0.000	1.000	1445.00	0.00
RETAIL	0.2907	0.4542	0.000	1.000	1445.00	0.00
MANUF	0.0830	0.2760	0.000	1.000	1445.00	0.00
SERVICE	0.2491	0.4327	0.000	1.000	1445.00	0.00
EMPLOY	55906.85072	29070.5507	1.000	999999.000	1440.00	5.00
LDEXP	2013.8200	11480.5795	1.000	99997.000	1250.00	195.00
ANNREV	610041.84107	22350.9032	7500.000	2000000.000	1195.00	250.00
ATT	0.2720	0.4451	0.000	1.000	1445.00	0.00
MCI	0.1675	0.3735	0.000	1.000	1445.00	0.00
SPRINT	0.1550	0.3620	0.000	1.000	1445.00	0.00
OTHCARR	0.1578	0.3647	0.000	1.000	1445.00	0.00
SBELL	0.2478	0.4319	0.000	1.000	1445.00	0.00
ONEPLUS	0.5689	0.4954	0.000	1.000	1445.00	0.00
ONEXXX	0.3003	0.4586	0.000	1.000	1445.00	0.00
ONEXXX2	0.1308	0.3373	0.000	1.000	1445.00	0.00
PRICE	0.1515	0.0706	0.050	0.250	1445.00	0.00
ONESTOP	0.2837	0.4510	0.000	1.000	1445.00	0.00
RANK	3.0000	1.4147	1.000	5.000	1445.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	1445.00	0.00
SWPMETH	0.4844	0.4999	0.000	1.000	1445.00	0.00
PBX	0.0415	0.1996	0.000	1.000	1445.00	0.00
ESSX	0.0173	0.1304	0.000	1.000	1445.00	0.00
HIGHVOL	0.1799	0.3843	0.000	1.000	1445.00	0.00
TOLLREV	2474.9451	8901.4660	1.000	75762.563	1445.00	0.00

390 cases were kept out of 390 in file.

DESCRIPTIVE STATISTICS

usecode=2

Variable	Mean	Std Dev	Minimum	Maximum	Valid	Missing
TOLLREV	979.3949	819.3743	508.750	5552.000	390.00	0.00
MEGACOM	0.1923	0.3946	0.000	1.000	390.00	0.00
PRISM	0.0641	0.2453	0.000	1.000	390.00	0.00
ULTWATS	0.0513	0.2209	0.000	1.000	390.00	0.00
ATTSDN	0.3333	0.4720	0.000	1.000	390.00	0.00
MCIVNET	0.1410	0.3485	0.000	1.000	390.00	0.00
SPRVPN	0.0128	0.1126	0.000	1.000	390.00	0.00
RETAIL	0.1026	0.3038	0.000	1.000	390.00	0.00
MANUF	0.1795	0.3843	0.000	1.000	390.00	0.00
SERVICE	0.3205	0.4673	0.000	1.000	390.00	0.00
EMPLOY	136133.5658337281.5874		4.000	999999.000	380.00	10.00
LDEXP	7320.7344	13397.4306	200.000	83337.000	320.00	70.00
ANNREV	1764035.0877482712.0772		125000.0002000000.000		285.00	105.00
ATT	0.2718	0.4455	0.000	1.000	390.00	0.00
MCI	0.1872	0.3906	0.000	1.000	390.00	0.00
SPRINT	0.1333	0.3404	0.000	1.000	390.00	0.00
OTHCARR	0.1564	0.3637	0.000	1.000	390.00	0.00
SBELL	0.2513	0.4343	0.000	1.000	390.00	0.00
ONEPLUS	0.5615	0.4968	0.000	1.000	390.00	0.00
ONEXXX	0.2667	0.4428	0.000	1.000	390.00	0.00
ONEXXX2	0.1718	0.3777	0.000	1.000	390.00	0.00
PRICE	0.1517	0.0657	0.050	0.250	390.00	0.00
ONESTOP	0.3179	0.4663	0.000	1.000	390.00	0.00
RANK	3.0000	1.4160	1.000	5.000	390.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	390.00	0.00
SMPMETH	0.4359	0.4965	0.000	1.000	390.00	0.00
PBX	0.6154	0.4871	0.000	1.000	390.00	0.00
ESSX	0.1923	0.3946	0.000	1.000	390.00	0.00
HIGHVOL	0.5769	0.4947	0.000	1.000	390.00	0.00
TOLLREV	1628867.13244328715.3056		258826.56330824704.000		390.00	0.00

680 cases were kept out of 680 in file.

DESCRIPTIVE STATISTICS

usecodeml

Variable	Mean	Std Dev	Minimum	Maximum	Valid	Missing
TOLLREV	37.2017	7.9411	29.370	50.000	680.00	0.00
INCOME	33562.5000	19845.6652	5000.000	75000.000	600.00	80.00
AGEHD	46.0294	13.7450	20.000	80.000	680.00	0.00
HHSIZE	2.9118	1.2755	1.000	7.000	680.00	0.00
AGE65	0.1618	0.4413	0.000	2.000	680.00	0.00
MARITAL	0.7185	0.4501	0.000	1.000	675.00	5.00
EDUC	0.2707	0.4446	0.000	1.000	665.00	15.00
NUMWORK	2.7206	0.9761	1.000	8.000	680.00	0.00
WHITE	0.8519	0.3555	0.000	1.000	675.00	5.00
MALE	0.2941	0.4560	0.000	1.000	680.00	0.00
ATT	0.2868	0.4526	0.000	1.000	680.00	0.00
MCI	0.1529	0.3602	0.000	1.000	680.00	0.00
SPRINT	0.1279	0.3343	0.000	1.000	680.00	0.00
OTHCARR	0.1824	0.3864	0.000	1.000	680.00	0.00
SBELL	0.2500	0.4333	0.000	1.000	680.00	0.00
ONEPLUS	0.5721	0.4951	0.000	1.000	680.00	0.00
ONEXXX	0.3103	0.4630	0.000	1.000	680.00	0.00
ONEXXX2	0.1176	0.3224	0.000	1.000	680.00	0.00
PRICE	0.1570	0.0711	0.050	0.250	680.00	0.00
ONESTOP	0.3088	0.4623	0.000	1.000	680.00	0.00
RANK	3.0000	1.4153	1.000	5.000	680.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	680.00	0.00
SMPMETH	0.5000	0.5004	0.000	1.000	680.00	0.00

440 cases were kept out of 440 in file.

DESCRIPTIVE STATISTICS

usecode=2

Variable	Mean	Std Dev	Minimum	Maximum	# Valid	# Missing
TOLLREV	35.0668	7.8441	29.370	50.000	440.00	0.00
INCOME	41153.8462	22033.8469	5000.000	75000.000	390.00	50.00
AGEHD	43.1818	13.6291	20.000	80.000	440.00	0.00
HHSIZE	3.2209	1.5525	1.000	9.000	430.00	10.00
AGE65	0.1512	0.4710	0.000	2.000	430.00	10.00
MARITAL	0.6591	0.4746	0.000	1.000	440.00	0.00
EDUC	0.4368	0.4966	0.000	1.000	435.00	5.00
NUMWORK	2.6591	1.1680	1.000	8.000	440.00	0.00
WHITE	0.6782	0.4677	0.000	1.000	435.00	5.00
MALE	0.3750	0.4847	0.000	1.000	440.00	0.00
ATT	0.2727	0.4459	0.000	1.000	440.00	0.00
MCI	0.1705	0.3765	0.000	1.000	440.00	0.00
SPRINT	0.1477	0.3552	0.000	1.000	440.00	0.00
OTHCARR	0.1591	0.3662	0.000	1.000	440.00	0.00
SBELL	0.2500	0.4336	0.000	1.000	440.00	0.00
ONEPLUS	0.5659	0.4962	0.000	1.000	440.00	0.00
ONEXXX	0.3068	0.4617	0.000	1.000	440.00	0.00
ONEXXX2	0.1273	0.3337	0.000	1.000	440.00	0.00
PRICE	0.1442	0.0717	0.050	0.250	440.00	0.00
ONESTOP	0.2841	0.4515	0.000	1.000	440.00	0.00
RANK	3.0000	1.4158	1.000	5.000	440.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	440.00	0.00
SMPMETH	0.4545	0.4985	0.000	1.000	440.00	0.00

745 cases were kept out of 745 in file.

DESCRIPTIVE STATISTICS

usecode = 3

Variable	Mean	Std Dev	Minimum	Maximum	# Valid	# Missing
TOLLREV	6.0732	5.8101	0.625	21.870	745.00	0.00
INCOME	29112.9032	19206.7391	5000.000	75000.000	620.00	125.00
AGEHD	46.3087	15.3520	20.000	80.000	745.00	0.00
HHSIZE	2.9664	1.3341	1.000	8.000	745.00	0.00
AGE65	0.2282	0.5463	0.000	2.000	745.00	0.00
MARITAL	0.6913	0.4623	0.000	1.000	745.00	0.00
EDUC	0.2789	0.4488	0.000	1.000	735.00	10.00
NUMWORK	2.4698	0.9943	1.000	8.000	745.00	0.00
WHITE	0.7248	0.4469	0.000	1.000	745.00	0.00
MALE	0.3557	0.4790	0.000	1.000	745.00	0.00
ATT	0.2805	0.4496	0.000	1.000	745.00	0.00
MCI	0.1946	0.3962	0.000	1.000	745.00	0.00
SPRINT	0.1396	0.3468	0.000	1.000	745.00	0.00
OTHCARR	0.1409	0.3482	0.000	1.000	745.00	0.00
SBELL	0.2443	0.4300	0.000	1.000	745.00	0.00
ONEPLUS	0.5664	0.4969	0.000	1.000	745.00	0.00
ONEXXX	0.3195	0.4666	0.000	1.000	745.00	0.00
ONEXXX2	0.1141	0.3181	0.000	1.000	745.00	0.00
PRICE	0.1478	0.0691	0.050	0.250	745.00	0.00
ONESTOP	0.3154	0.4650	0.000	1.000	745.00	0.00
RANK	3.0000	1.4152	1.000	5.000	745.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	745.00	0.00
SMPMETH	0.4430	0.4971	0.000	1.000	745.00	0.00

625 cases were kept out of 625 in file.

DESCRIPTIVE STATISTICS

usecode = 4

Variable	Mean	Std Dev	Minimum	Maximum	# Valid	# Missing
TOLLREV	5.7054	5.1893	0.625	21.870	625.00	0.00
INCOME	43179.6117	20882.1567	5000.000	75000.000	515.00	110.00
AGEHD	46.0000	13.6931	20.000	80.000	625.00	0.00
HHSIZE	2.6560	1.2539	1.000	7.000	625.00	0.00
AGE65	0.2000	0.5064	0.000	2.000	625.00	0.00
MARITAL	0.6179	0.4863	0.000	1.000	615.00	10.00
EDUC	0.3920	0.4886	0.000	1.000	625.00	0.00
NUMWORK	2.4720	0.8913	1.000	6.000	625.00	0.00
WHITE	0.8293	0.3766	0.000	1.000	615.00	10.00
MALE	0.3680	0.4826	0.000	1.000	625.00	0.00
ATT	0.2816	0.4501	0.000	1.000	625.00	0.00
MCI	0.1712	0.3770	0.000	1.000	625.00	0.00
SPRINT	0.1520	0.3593	0.000	1.000	625.00	0.00
OTHCARR	0.1392	0.3464	0.000	1.000	625.00	0.00
SBELL	0.2560	0.4368	0.000	1.000	625.00	0.00
ONEPLUS	0.5616	0.4966	0.000	1.000	625.00	0.00
ONEXXX	0.3136	0.4643	0.000	1.000	625.00	0.00
ONEXXX2	0.1248	0.3308	0.000	1.000	625.00	0.00
PRICE	0.1450	0.0712	0.050	0.250	625.00	0.00
ONESTOP	0.3088	0.4624	0.000	1.000	625.00	0.00
RANK	3.0000	1.4153	1.000	5.000	625.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	625.00	0.00
SMPMETH	0.5040	0.5004	0.000	1.000	625.00	0.00

1445 cases were kept out of 1445 in file.

DESCRIPTIVE STATISTICS

usecode=1

Variable	Mean	Std Dev	Minimum	Maximum	# Valid	# Missing
TOLLREV	26.3197	42.2309	1.000	275.250	1445.00	0.00
MEGACOM	0.0484	0.2148	0.000	1.000	1445.00	0.00
PRISM	0.0623	0.2418	0.000	1.000	1445.00	0.00
ULTWATS	0.0208	0.1426	0.000	1.000	1445.00	0.00
ATTSDN	0.0588	0.2354	0.000	1.000	1445.00	0.00
MCIVNET	0.0242	0.1538	0.000	1.000	1445.00	0.00
SPRVPN	0.0069	0.0829	0.000	1.000	1445.00	0.00
RETAIL	0.2907	0.4542	0.000	1.000	1445.00	0.00
MANUF	0.0830	0.2760	0.000	1.000	1445.00	0.00
SERVICE	0.2491	0.4327	0.000	1.000	1445.00	0.00
EMPLOY	55906.85072290	70.5507	1.000	999999.000	1440.00	5.00
LDEXP	2013.8200	11480.5795	1.000	99997.000	1250.00	195.00
ANNREV	610041.84107223	50.9032	7500.000	2000000.000	1195.00	250.00
ATT	0.2720	0.4451	0.000	1.000	1445.00	0.00
MCI	0.1675	0.3735	0.000	1.000	1445.00	0.00
SPRINT	0.1550	0.3620	0.000	1.000	1445.00	0.00
OTHCARR	0.1578	0.3647	0.000	1.000	1445.00	0.00
SBELL	0.2478	0.4319	0.000	1.000	1445.00	0.00
ONEPLUS	0.5689	0.4954	0.000	1.000	1445.00	0.00
ONEXXX	0.3003	0.4586	0.000	1.000	1445.00	0.00
ONEXXX2	0.1308	0.3373	0.000	1.000	1445.00	0.00
PRICE	0.1515	0.0706	0.050	0.250	1445.00	0.00
ONESTOP	0.2837	0.4510	0.000	1.000	1445.00	0.00
RANK	3.0000	1.4147	1.000	5.000	1445.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	1445.00	0.00
SMPMETH	0.4844	0.4999	0.000	1.000	1445.00	0.00
PBX	0.0415	0.1996	0.000	1.000	1445.00	0.00
ESSX	0.0173	0.1304	0.000	1.000	1445.00	0.00

390 cases were kept out of 390 in file.

DESCRIPTIVE STATISTICS

usecode=2

Variable	Mean	Std Dev	Minimum	Maximum	# Valid	# Missing
TOLLREV	979.3949	819.3743	508.750	5552.000	390.00	0.00
MEGACOM	0.1923	0.3946	0.000	1.000	390.00	0.00
PRISM	0.0641	0.2453	0.000	1.000	390.00	0.00
ULTWATS	0.0513	0.2209	0.000	1.000	390.00	0.00
ATTSDN	0.3333	0.4720	0.000	1.000	390.00	0.00
MCIVNET	0.1410	0.3485	0.000	1.000	390.00	0.00
SPRVPN	0.0128	0.1126	0.000	1.000	390.00	0.00
RETAIL	0.1026	0.3038	0.000	1.000	390.00	0.00
MANUF	0.1795	0.3843	0.000	1.000	390.00	0.00
SERVICE	0.3205	0.4673	0.000	1.000	390.00	0.00
EMPLOY	136133.5668337261.5874		4.000	999999.000	380.00	10.00
LDEXP	7320.7344	13397.4306	200.000	83337.000	320.00	70.00
ANNREV	1764035.0877482712.0772		125000.0002000000.000		285.00	105.0
ATT	0.2718	0.4455	0.000	1.000	390.00	0.00
MCI	0.1872	0.3906	0.000	1.000	390.00	0.00
SPRINT	0.1333	0.3404	0.000	1.000	390.00	0.00
OTHCARR	0.1564	0.3637	0.000	1.000	390.00	0.00
SBELL	0.2513	0.4343	0.000	1.000	390.00	0.00
ONEPLUS	0.5615	0.4968	0.000	1.000	390.00	0.00
ONEXXX	0.2667	0.4428	0.000	1.000	390.00	0.00
ONEXXX2	0.1718	0.3777	0.000	1.000	390.00	0.00
PRICE	0.1517	0.0657	0.050	0.250	390.00	0.00
ONESTOP	0.3179	0.4663	0.000	1.000	390.00	0.00
RANK	3.0000	1.4160	1.000	5.000	390.00	0.00
NIJ	5.0000	0.0000	5.000	5.000	390.00	0.00
SWPMETH	0.4359	0.4965	0.000	1.000	390.00	0.00
PBX	0.6154	0.4871	0.000	1.000	390.00	0.00
ESSX	0.1923	0.3946	0.000	1.000	390.00	0.00

THE IMPACT OF INTRALATA COMPETITION ON THE LOCAL EXCHANGE CARRIERS: A NATIONAL DEMAND EQUATION FOR INTRALATA TOLL SERVICE

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Introduction

A principal issue in Public Service Commissions (PSC) hearings is whether authorization of intraLATA competition is in the public interest. In this case, "monopoly" is a misnomer. Competition already exists within the intraLATA market in the form of resale competition, as well as facilities-based competition in many jurisdictions. The telecommunications marketplace is evolving rapidly. Virtually all parties recognize that the industry is in a state of transition from the ubiquitous regulatory environment of yesterday to the competitive environment of the present and future.

The "public interest" is an amorphous idea driven by a myriad of factors. Some of the factors that are important include natural monopoly theory, the existence of competition, the effect on local exchange rates, ubiquitous service and the availability of reasonably priced long-distance service for all end-users. The most immediate consideration is the effect that intraLATA facilities-based competition will have on the LEC's revenues and their ability to earn a reasonable rate of return.

In this paper, we present a discussion on the formulation of a state-level pooled cross-sectional time series (CS-TS) econometric model of intrastate intraLATA toll service demand which was developed by BellSouth Telecommunications (BST) in conjunction with National Economic Research Associates (NERA) which can be used to assess the impact that competition has had in the intraLATA toll service market.[1]

This model currently represents the best available national information on consumer response in the intraLATA market. Work in this area is ongoing. The econometric work isolated a difference in intraLATA toll demand between states with facilities-based competition and those without.

The paper is organized as follows: the next section reviews the empirical evidence. Section 2 discusses the motivation for and advantages of considering the pooling of cross-sectional and time-series data in demand models. The theoretical underpinnings of the econometric model formulation and the model specification are discussed in Section 3. The data inputs and sources are discussed in Section 4. The following section describes the empirical results. The final Section analyzes the possible impacts of competition on intraLATA toll services.

1. Review of Empirical Evidence

The literature on telecommunications competition includes discussions of both LEC entry into the interLATA market and IXC entry into the intraLATA market. We will concentrate here on the latter discussion which has been inconclusive.

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[1] The authors acknowledge David Underwood for his invaluable research assistance.

Debating the issue of whether benefits accrue by permitting the entry of the IXCs into the intraLATA markets, D. M. Ballard[2] states that "Allowing IXCs access to the LATA will provide the same benefits to consumers that they have realized from interstate and interLATA competition" -- however, addressing the issue of why LECs should not be allowed to enter the interexchange market, D. M. Ballard simply cites the consent decree (MFJ) as the main reason.

In testimony filed with the Mississippi Public Service Commission, Kaserman[3] has stated that allowing competitive entry into telecommunications markets in the USA has been highly beneficial, in particular in the interstate and interLATA markets. Further, he claims that the same benefits will be accrued by the intraLATA market if it is open to competition. Also, Kaserman said that "Several economists have estimated the dollar increase in total social welfare that would result from adoption of efficient pricing policies in the telecommunications industry."[4] He cites several studies[5].

These studies seem to be consistent in their findings, but must now be considered antiquated. The Griffin study cited by Kaserman, for example, uses data for 1975. The most recent study reviewed by John Wenders in his The Economics of Telecommunications, also cited by Kaserman, uses data for 1982. The consensus among these studies is that toll services are priced too high relative to local service. The reason that these studies are not longer relevant is that Mississippi toll rates have been continuously reduced since divestiture. Over the same period, SCB's local rates have been remained largely stable. These changes completely undermine the usefulness of these studies. Furthermore, Kaserman cites these studies to indicate the improvements in social welfare that could be anticipated from "competition". Clearly these calculations, alone, are no longer accurate or even indicative of an order of magnitude. One should also note that these estimates of welfare gains include the effects of removirg "inefficient" pricing practices such as fixed-rate local service, as well as the any subsidy flows from toll to local services, including interexchange services. Indeed,

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[2] Direct Testimony of D.M. Ballard in *MPSC's Docket re: IntraLATA Competition/Compensation*, Mississippi Docket No. 90-UA-0280, p.3 (Jan. 15, 1991).

[3] Direct Testimony of David L. Kaserman in *MPSC's Docket re: IntraLATA Competition/Compensation*, Mississippi Docket No. 90-UA-0280, pp. 7-16. (Jan. 15, 1991).

[4] *Id* at p. 8.

[5] These are: James H. Griffin, "The Welfare Implications of Externalities and Price Elasticities for Telecommunications Pricing," Review of Economics and Statistics, Vol. 64 (February 1982), pp. 59-66; Bridger M. Mitchell, "Optimal Pricing of Local Telephone Service," American Economic Review, Vol. 68 (Sept. 1978), pp. 517-537; and John T. Wenders, The Economics of Telecommunications: Theory and Policy, Ballinger Publishing Company, Cambridge, Massachusetts, 1987, pp. 78-91.

Kaserman's claim that toll is priced below cost in Mississippi today is not supported by evidence.

Kaserman cites additional evidence to support his claim that intraLATA services are not a natural monopoly. In pages 10-14, Kaserman refers to the reduction in administrative barriers to entry - these are just regulatory barriers - both nationally and in various states, as well as econometric studies of intrastate pricing practices. This casual observation that "entry" has occurred in other states when regulatory barriers to the "provision" of intraLATA services were removed does not bear on whether any of the benefits of competitive market behavior have been observed or would be observed in the RBOCs LATAs. If "entry" is of the limited type indicated by the parties in this proceeding, then the beneficial competitive effects may be nonexistent. The pricing studies, however, are not so easily dismissed.

There are three studies, two by economists at the Federal Trade Commission (FTC) and one Federal Communications Commission study[6]. Both interLATA intrastate AT&T prices and intralata Bell Operating Company (BOC) prices were examined. The FTC economists, Mathios and Rodgers, find that states allowing intraLATA entry have lower BOC toll prices than states without entry, especially if the states act to block competition of "illegal" toll calls. The FCC study finds similar results, but also finds that removal of the prohibition on IXC entry is associated with even lower prices on average than merely removing reseller barriers. The BOC prices are on the order to 7 percent to 15 percent lower in states lacking regulatory entry barriers than in states maintaining intraLATA barriers.

These studies use data from the 1985-1987 time frame, casting some doubt on their continued relevance. In addition, the tests are of BOC prices which were still regulated - and tariffed - under conventional rate of return regulation by all but two states as late as May 1989[7]. Thus, the extent to which the BOC toll prices reflect the competitive environment in the LATAs, as opposed to the preferences of regulators, is uncertain at best.

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[6] These studies are: Alan Mathios and Robert P. Rogers, "The Impact of Alternative Forms of State Regulation of AT&T on Direct Dial Long Distance Telephone Rates," Rand Journal of Economics, Vol. 20 (Autumn), pp. 437-453; Alan Mathios and Robert P. Rogers, "The Impact of State Price and Entry Regulation on Intrastate Long Distance Telephone Rates," Journal of Regulatory Economics, Vol. 2 (March 1990), pp. 53-68; and C. Frentrup, "The Effects of Competition and Regulation on AT&T's Intrastate Toll Prices, and of Competition and Bell Operating Company IntraLATA Toll Prices," FCC Common Carrier Bureau, Industry Analysis Division, June 1988.

[7] Only Nebraska and Idaho have "deregulated" BOC toll pricing; IntraLATA Toll Competition: A Fifty-State Survey, *Telecom Publishing Group, 1989.*

In a recent study, Christopher Klein[8] tried to improve on the earlier studies. Using data comparable to those used by Mathios and Rodgers, Klein obtained BOC toll prices for 37 states for 1987. After assembling these data, Klein concluded that Mathios's and Rodgers's regulatory variables were no longer accurate descriptors for state intraLATA policies. Therefore, using the Telecom Publishing Group survey, Klein constructed the additional policy variables that would reflect both the intraLATA entry and price regulations of each state as of 1989.

In an effort to duplicate the Mathios and Rodgers regression, Klein finds evidence that restrictions on intraLATA entry are associated either with lower or no different intraLATA toll prices compared to prices in the LATA with no regulatory entry barriers. However, when Klein substituted the new price and entry policy variables for the Mathios and Rodgers variables, the results indicate that the lowest LEC toll prices are found in states that allow intraLATA entry, but impose some floor on the prices charged by the entrants. Relative to BOC toll prices in states that allow free entry with no pricing restrictions, prices in states that limited the prices charged by all entrants were 7.2 percent lower and prices in states that limited only the IXCs prices were 15.29 percent lower. Thus, Klein concludes that the form of price regulation employed by the various states has more influence over the resulting BOC toll prices than does "competition", a result shared by Taylor in his study of the interstate toll market[9].

2. Pooling of Cross-Sectional Time-Series Data

In recent years, empirical research in econometrics has been greatly enhanced by the development of databases which contain a wealth of disaggregate demand data, i.e. panel data with observations on various cross-sections, such as firms, consumers, or states over a time-series horizon. Given these available data, the development of pooled cross-sectional time-series econometric models has been greatly expanded[10]. In general, the motivation for pooling cross-sectional and time-series data is related to methodological concerns, such as the lack of sufficient time series and/or the problems associated with

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[8] Testimony of Christopher C. Klein before the Public Service Commission of the State of Tennessee in *Re Applications for Limited IntraLATA Telecommunications Certificates* Docket Nos. 89-11065, 89-11735, 89-12677, January 11, 1991.

[9] William E.Taylor, "Effects of Competitive Entry in the U.S. Interstate Toll Markets," National Economic Research Associates, August 1991.

[10] For example, see Ementa, J., Elements of Econometrics, MacMillan, New York, 1971, pp. 508-517; Judge, G. G., et. al., The Theory and Practice of Econometrics, John Wiley and Sons, New York, 1985, pp. 325-379; Hsiao, Cheng, Analysis of Panel Data, Cambridge University Press,New York, 1986.

multicollinearity. These pooled models, either fixed coefficient or random coefficient pooled models, have proven to aid in the estimation of empirical demand equations and systems, largely due to the fact that they yield a more parsimonious parameterization for econometric models.

The pooling approach offers several advantages over single equation estimation using the time-series data from each cross-section independently, and aggregate equation estimation using the time-series data summed over the cross-sections. First of all, the use of pooled cross-sectional time-series data substantially increases the number of observations available to estimate demand equations. This greatly increases the number of degrees of freedom available to estimate the various demand elasticities. From a statistical perspective, the estimates of demand coefficients from a pooled cross-sectional time-series model are, ceterus paribus, more efficient than those estimated from an aggregate equation or a series of individual single equations. This means that the pooled estimates have a lower variance around them, and are more statistically precise.

In addition, the application of pooled cross-sectional time-series models to demand data helps mitigate multicollinearity between price and income variables, thus enabling the researcher to more accurately discern the separate effects of each of these factors on demand. The reduction in multicollinearity in pooled models stems from the fact that although the degree of collinearity between price and income for individual cross-sectional units may be quite high, there are different rates of economic growth and price levels between the cross-sections. The pooling technique increases the variation between the price and income explanatory variables, and hence helps to minimize the problems associated with multicollinearity in the estimation of demand models.

Further, compared to demand models based on aggregate demand data, pooled cross-sectional time-series demand models suffer less from the potential of aggregation bias, and yield more efficient estimates of the macrocoefficients in a wider variety of cases than aggregate demand models[11]. Finally, pooled models have another advantage in that the estimated elasticities are less susceptible to bad or anomalous data points than either aggregate demand models or models based solely on the data from a single cross-section.

Given the methodological advantages of pooling cross-sectional and time-series data, we applied the fixed coefficient pooling approach in the development of an intraLATA toll demand model. The pooling technique was utilized in an effort to fully exploit the wealth of information contained in the FCC reports, and to yield estimates which would be more reliable.

3. Model Formulation

[11] See Theil, H., Principles of Econometrics, Wiley, New York, 1971.

Standard microeconomic theory states that the quantity demanded of a market good is a function of the price of that good, the prices of all other related goods, and consumer income[12]. In addition, the microeconomic theory of consumer demand states that demand equations are homogeneous of degree zero in prices and income. In other words, if all nominal prices and income change by the same percentage, then consumers have no incentive to alter their consumption bundles. In practice, the homogeneity restriction is captured by specifying empirical demand equations in terms of "real" prices and "real" income. That is, all price and income variables are deflated by a price index that reflects the prices for all other goods and services, generally the Consumer Price Index (CPI).

For the assessment of the impact of competition on intraLATA toll service demand across states, we use data on 48 states of the United States. The reduced form equation we utilize was specified as follows:

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[12] For example, see Henderson, J., and Quandt, R., Microeconomic Theory: A Mathematical Approach, McGraw-Hill, New York, pp. 23-29.

$$\ln Q_{i,t} = b_1 + b_p \ln\left[\frac{PRICEQ_{i,t}}{CPI_t}\right] + b_I \ln\left[\frac{TPI_{i,t}}{CPI_t}\right]$$

$$+ b_{pop} \ln\left[POP_{i,t}\right] + b_{fb} FBENTRY + TARIFFMTS * b_{MTS} * \ln\left[\frac{PRICECMTS_{i,t}/CPI_t}{PRICEQ_{i,t}/CPI_t}\right]$$

$$+ TARIFFW * b_{WATS} * \ln\left[\frac{PRICECW_{i,t}/CPI_t}{PRICEQ_{i,t}/CPI_t}\right] + e_{i,t}$$

where

$i = 1, 2, \ldots, 48$ States

$t = 1988, 1989, 1990$

b_1, b_p, b_I, b_{pop}, b_{fb}, b_{MTS}, b_{WATS} are coefficients to be estimated

$e_{i,t}$ is the error term, and

$e_{i,t} = \rho_i e_{i,t-1} + \omega_{i,t}$ $\qquad$ $\omega_{i,t} \sim N(0, \sigma_i^2)$

4. Data Inputs and Sources

The definitions for all variables are given in Table 1.

TABLE 1.

DEFINITION OF REGRESSION VARIABLES

NAME	DEFINITION	SOURCE
Q	IntraLATA toll messages.	FCC Form M, Schedule S-4, and related BOC monthly reports
PRICEQ	Price index for BOC intraLATA toll.	NARUC -BOCs MTS Rates- CCMI/McGraw Hill DATA-PRO,and State Tariffs.
TPI	Nominal Total Personal Income.	Survey of Current Business (BLS).
FBENTRY	=1 if state allows Facilities-based IntraLATA toll competition. =0 otherwise.	State Telephone Regulation Reports, and Public Utility Commission Orders.
CPI	Consumer Price Index.	BLS.
POP	Population.	U.S. Bureau of the Census.
PRICECMTS	Price index for IXC IntraLATA toll.	CCMI/McGraw Hill DATAPRO, State Tariffs.
PRICECW	Price index for IXC IntraLATA High volume WATS.	CCMI/McGraw Hill DATAPRO, state tariffs.
TARIFFMTS	=1 if IXC intraLATA MTS tariff has been filed with the PUC. =0 otherwise	CCMI/McGraw Hill DATAPRO, state tariffs.
TARIFFW	=1 if IXC intraLATA high-volume WATS tariff has been filed with the PUC =0 otherwise	CCMI/McGraw Hill DATAPRO, state tariffs.

The Dependent Variable

The dependent variable (Q) in the reduced form intraLATA model is the number of BOC intraLATA toll calls (completed) by state for 1988, 1989, and 1990.

The Independent Variables

The independent variables PRICEQ, PRICECMTS, and PRICECW in the reduced form intraLATA model are the BOC and IXC prices of a long distance intraLATA toll telephone call.

The data needed to construct the state-level price indices came from several sources. The information on BOCs MTS and WATSrates was obtained from NARUC "BOC Service Telephone Rates," and State tariff records, and CCMI/McGraw Hill (DATAPRO).

For PRICEQ, we use the 1988 to 1990 rate schedules for MTS and WATS service of the BOCs for 48 states. These BOCs account for the vast majority of the intraLATA toll calls in the United States market. In addition, by focusing only on the BOC rates, we are unlikely to encounter any price differences across states due to differences in the quality of service. IntraLATA toll prices vary by time of day, distance and length (minutes of use) of the call. For example, long distance intraLATA rates are often 20-60 percent lower if made in the evening or on the weekends rather than during daily business hours. Moreover, long distance rates vary according to the distance range into which the call falls. All states categorize distance into bands, each of which commands a different charge. Further, many states differ in the distance bands used. For example, one state may charge one price for 0-7 mile calls, while another state may charge the same price for 0-18 mile calls. Consequently, if the call is 7 miles or less the two states may have the same price, while if it is between 8 and 18 miles the prices may significantly differ.

To obtain prices that meaningfully compared across states, we constructed a "standardized" price for a specific mileage distance and call duration. For MTS, this distance is 25 miles. For the mileage band encompassing a 25 mile call, we construct the price of the initial minute and the price of additional minutes. With this standardized price, we can compute the price of a call for different call durations for each mileage band. This paper focuses on the price of a 4 minute call.

In order to construct the price indices by state, the following methodology was used to price BOC out-WATS. The hourly rate for 25 hours of usage is converted into a per minute rate along with the fixed monthly charge. This combined per minute usage rate is multiplied times the average BellSouth call length obtained from the STARS System. STARS is a 5 percent sample of all calls that are transmitted over the public switched network.

The BOC MTS and WATS indices were then weighted together for each state to construct composite toll service price indices by state. The

weights used were obtained from BellSouth since access to BOCs traffic distributions by state was not available. The price index for IXCs included the price of MTS and high volume WATS services. In this case, we use the price of a 4 minute call of 25 miles band distance for MTS.

Weights for AT&T, U.S. Sprint, and MCI were used to calculate an average intraLATA MTS price.[13] For the high-volume out-WATS service for the IXCs, we calculated a weighted average of the price of a four minute 25 mile call for AT&T's Mecagom service, MCI's Prism 1 service, and U.S. Sprint's UltraWATS service.

The price indices were deflated by the CPI to uphold the homogeneity restriction of consumer demand theory. The Total Personal Income variable was deflated by the CPI, again, to account for homogeneity of degree zero.

To test our hypotheses concerning the impact of facility based competition on intraLATA toll services, we include a dummy variable to account for the type of state entry. The variable assumes a value of zero or one[14] for the states[15] that allow facilities-based carriers to provide intraLATA toll service and zero for all other states: this variable is denoted as FBENTRY.

Table 2 lists means, and standard deviations for all variables for the intraLATA toll service model.

The error terms for each state were assumed to be first-order autocorrelated over time within the states, and heteroskedastic across states (i.e. each state has a different variance). The autocorrelation assumption is standard in econometric models using time-series data, since most economic time-series exhibit similar patterns from one time period to the next. A correction proved difficult to implement for autocorrelation within the individual cross-sections because only three time periods were available which is the absolute minimum number of time periods needed to correct for first order autocorrelation. Concerning the

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[13] Source for weights: 1989 Dataquest Incorp., (September), Table 7: "Estimated 1988 Market Shares Breakdown, U.S. Long Distance Telecommunications Services."

[14] When facilities-based competition was not in place for the entire year, the assigned value was zero if competition had been approved for less than six months, and one otherwise.

[15] The states in the estimation data set which have full facilities-based intraLATA competition for more than 6 months in 1989 are Colorado, Iowa, Idaho, Illinois, Massachusetts, Maryland, Maine, Minnesota, Missouri, Montana, Nebraska, Ohio, Oregon, Pennsylvania, Vermont, Washington, and for more than 6 months in 1987 and 1990 are Colorado, Iowa, Idaho, Illinois, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Vermont, Washington, and West Virginia.

heteroskedasticity assumption, it is not uncommon in cross-sectional data to find heteroskedasticity across the cross-sections, that is the error terms for the various cross-sections may have different variances. A heteroskedasticity correction was made to reflect these uncommon variances.

TABLE 2

DESCRIPTIVE STATISTICS

16

VARIABLE	MEAN	Std Dev	Minimum	Maximum
Q	310052451	717110541	8127472	4949229000
LRPRICEQ	-4.9889824	0.24949101	-5.651208	-4.2227659
LRTPI	8.05415676	1.05030716	4.01084607	8.46357125
LPOPUL	1.17033101	0.98454634	-0.793521	3.39969862
CPI	124.3	5.10751081	118.2	130.7
FBENTRY	0.40277778	0.49045677	0	1
LRATIO1	0.06361477	0.21440316	-0.410584	1.26245891
LRATIO2	-0.1986352	0.29060808	-1.4090262	0.02464501
TPI	90015.3125	104951.567	6549	619381
POPUL	5.09746494	5.38310351	0.4522496	29.9550709
PRICECMTS	0.92522722	0.27224805	0.43293201	1.88798589
PRICECW	0.49918067	0.17019091	0.4267952	0.800000

As stated above, the intraLATA toll service demand model was a pooled cross-sectional time-series model with the cross-sections being the 48 lower states. All variables were pooled, and hence the same for each state. However, the intercept term was estimated differently for each state. The pooling approach was primarily motivated by the methodological advantages discussed above. However, given the nature of the intraLATA toll demand, the pooling approach was also motivated by theoretical reasoning. The pooling approach served as a way to account for any interdependencies between the state-level demands, because the pooled demand elasticities were estimated using the information available on demand from all of the states.

The model was estimated using a statistical software package developed by NECA known as BETAFLEX.

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16 The prefix LR means "natural log of real" value (i.e. value divided by CPI). RATIO1 refers to PRICECMTS/PRICEQ and RATIO2 refers to PRICEW/PRICEQ.

5. Empirical Results

Table 3 displays the results of the reduced-form intraLATA model.

TABLE 3

INTRASTATE INTRALATA TOLL DEMAND MODEL

MODEL:

	T-STATISTICS
-0.221398 * LN(REAL PRICEQ)	-4.4432
-0.035109 * LN(RPRICECMTS/RPRICEQ)	-1.5245
0.141691 * LN(RPRICECW/RPRICEQ)	1.9569
0.957779 * LN(REAL INCOME)	5.7405
0.590378 * LN(POPUL)	2.4368
-0.025766 * FBENTRY	-2.1900
11.166228 * CONSTANT	(N/A)

TEST STATISTICS:

R^2adj.	0.999797
STD. ERROR OF RES.	0.056601
DURBIN WATSON STAT.	1.867061
NUM CROSS	48
NUM OBS	135
DEGS FREEDOM	81
HETEROSKEDASTICITY	CORRECTED

SAMPLE RANGE:

1988 - 1990

The estimation results from the state pooled econometric model were satisfactory from theoretical and statistical perspectives. The pooled own price, income, population, and ratio of IXC to BOC price all had the expected sign. The coefficients were all highly significant at the 95 percent confidence level, except for the estimated coefficient on the natural log of the ratio of intraLATA IXC and BOC MTS prices. The estimated -0.33 own price elasticity for states with approved 10XXX facilities-based intraLATA competition is comparable to the first year price elasticity for intraLATA MTS service of -0.34 that BellSouth has derived from its internal data sources and models of intrastate intraLATA MTS service. The estimated pooled income and population elasticities were quite similar to Taylor's recommended elasticities[17].

Table 4 reports the estimated price coefficients and competitive impacts on BOC intraLATA toll messages resulting from the approval of 10XXX facilities-based competition in the intraLATA market. Columns 2-4 of Table 4 restate the estimated coefficients previously reported in Table 3. Columns 5 and 6 report the average ratios of, respectively, the IXC intraLATA MTS and IXC intraLATA high-volume out-WATS prices to the BOC intraLATA toll price (weighted average of MTS Out-WATS, and 800 Service). The last three columns of Table 4 report the percentage reduction in BOC intraLATA toll messages, other things equal. The competitive impact is the sum of the approval impact and the additional impact -- implied by the estimated national intraLATA toll demand equation -- consequent to the filing of an intraLATA MTS and high-volume WATS tariff by the IXCs.

When interpreting Table 4, keep in mind that the competitors MTS and WATS prices are the prices of a four minute 25 mile call whereas the BOC price is a weighted average of the MTS price of four minute 25 mile call and the out-WATS and 800 Service prices defined differently (see above). Therefore, a price ratio of one does not indicate identical tariffs for BOCs and IXCs.

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[17] See Taylor, L., Telecommunications Demand: A Survey and Critique. Ballinger Publishing Co., Cambridge, MA., 1980, p. 170

TABLE 4

EFFECTS OF INTRALATA COMPETITION

YEAR	FBENTRY PRICECMTS COEFF BFB	PRICECMTS COEFF BPMTS	COEFF BPW	PMTS/ PRICEQ	PRICEW/ PRICEQ	COMPET IMPACT	TARIFF IMPACT	APPROVAL IMPACT
1988	-0.02577	-0.035109	0.141691	1.3038	0.6854	-0.0848	-0.0594	-0.0254
1989	-0.02577	-0.035109	0.141691	1.2057	0.6391	-0.0913	-0.0659	-0.0254
1990	-0.02577	-0.035109	0.141691	1.2776	0.6294	-0.0951	-0.0697	-0.0254
1991	-0.02577	-0.035109	0.141691	1.2776	0.5000	-0.1242	-0.0987	-0.0254
1992	-0.02577	-0.035109	0.141691	1.2776	0.2500	-0.2061	-0.1807	-0.0254

These results indicate that states which allow facilities-based entry into the intraLATA market had approximately 9.5% fewer intrastate intraLATA toll messages per year in 1990 than states that restricted facilities-based competition. This reduction in intraLATA toll messages occurred over and above any changes in messages caused by growth in real income or by changes in the real BOC price of intraLATA toll services and IXC intraLATA MTS and high-volume WATS services. Note that the 9.5% excludes any reduction in demand caused by reseller competition and incidental traffic. Thus facilities-based competition reduces LEC intraLATA toll messages and revenues over and above the reduction associated with reseller competition and incidental unauthorized intraLATA traffic.

The results in this paper are a preliminary attempt to estimate the effects of recent changes in regulation of the telecommunications market. The telecommunications market is an extremely complex interaction of supply, demand, and political factors, all in an industry with quickly changing technology. We encourage further research in examining the role of state and federal regulation in the determination of the demand for intraLATA services.

6. Impact of Competition on IntraLATA Toll Services

Two basic effects follow from allowing intraLATA toll competition. One is that the introduction of competition will force the price of toll service for both the IXCs and the LECs towards the cost of providing the service. The second effect is the direct loss of LEC toll revenues as the IXCs begin to carry intraLATA toll traffic on their own facilities. In testimonies filed with the state PUCs, IXCs have argued that, although the LECs will lose toll revenues, those revenue losses will be directly offset by additional switched access charge revenues collected from the IXCs. The IXCs have further argued that these offsetting access charge revenues will allow local rates to be unaffected by intraLATA toll competition.

The IXCs' argument must assume that contribution from toll revenues would be replaced by contribution from access charges. This assumption is unrealistic since the savings in incremental costs in moving from toll to access are likely less than the difference between LEC intraLATA toll rates and switched access rates. Further, the LEC toll traffic lost to the IXCs would not be replaced solely with switched access because it is more economical to avoid usage-sensitive access charges and serve some customers through flat-rated special access or through complete facilities-bypass of the LEC by direct connection to the customer's premises.

Furthermore, the intense competition in the special access market drives the price of special access down making bypass of LEC toll even more economical. For example, New York Telephone was granted a price decrease for special access DS-1 circuits from $1062 for a 2 mile inter-office line in 1987 to $744 for the same line in 1989[18]. The FCC decision in 1991 which proposed collocation for special access will allow IXCs to further reduce the rates for their high- and medium-volume toll services.

Another flaw in the IXC's argument that contribution from access charge revenues would replace contribution from lost LEC toll revenue is the assumption that switched access charges will remain at current levels. Past experience in other proceedings indicate that competition will force switched access charges down towards their true cost. It is, therefore, likely that intraLATA transmission competition will put downward pressure on switched access rates.

To the extent that access charges are reduced, the contribution currently provided by access charges will be reduced. This in itself will unavoidably require changes in either local or LEC toll rates.

Another effect of intraLATA toll competition will be to force LEC toll rates towards cost. This phenomenon will have several secondary effects. The LEC toll rates were set to recover a total statewide aggregation of all LEC toll costs and to provide a substantial contribution towards local service. Because LEC toll rates are averaged statewide, the rates charged for a particular route are not directly related to the costs involved in providing toll service on that route. This creates the situation where revenues generated on high-density, low cost urban toll routes substantially subsidize the low density high cost rural toll routes.

If intraLATA toll competition is allowed, it is natural and inevitable that the IXCs would choose to compete on those high-density,

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[18] Jerry Hausman, Timothy Tardiff, and Harold Ware, "Competition in Telecommunications for Large Users in New York," in *Telecommunication in a Competitive Environment*, Proceedings of the Third Biennial Telecommunications Conference, National Economic Research Associates, Inc., April 1989, pp. 1-19.

low cost toll routes which offer the greatest potential for profitability. Once a toll route is subject to competition from one or more IXCs, each competitor seeks to acquire market share by reducing prices for that high-density route below the LEC's uniform average toll rates. In order to allow the LECs to effectively compete with the IXCs on any given toll route, the LECs must respond to competition by lowering their own companies' toll rates. It is clear that if full intraLATA toll competition is to develop, the implementation of LEC-specific and route (i.e. high-density vs. low-density) specific LEC toll rates will be required.

Since competition tends to drive prices toward cost, a further fallout from intraLATA toll competition would be a decline in some toll rates and an increase in some other LEC toll rates. On those high-density toll routes where uniform average rates generate revenues in excess of costs, competition would drive those rates down. The decline in revenues that results from the declining rates would reduce the subsidy that that route provides to other routes (low-density)where the costs exceed the existing revenues generated by uniform average LEC toll rates. This loss in revenue would force the rates on the high cost routes to go up in order to recover the costs on that route. Because of this phenomenon, on some low-volume, high-cost routes there is a very real potential that the traffic levels on that route will never generate sufficient revenues to cover the costs. Without the subsidies currently received from high-volume, low-cost routes, **it appears that competition may ultimately force the abandonment of unprofitable toll routes or, worse still, require increases in local rates to subsidize these unprofitable toll routes in order to maintain universal toll service.**

One issue raised repeatedly is the benefits that would accrue to consumers from intraLATA transmission competition. In general, it is stated that competitive markets can offer four benefits to society: they are superior in the production of those goods and services most in demand by consumers; they offer a greater opportunity for the introduction of new services; they reduce the societal resources allocated to regulatory processes and procedures; and competition results in the efficient use of resources so that societal benefits are maximized. In a truly competitive market these benefits will accrue. However, in a truly competitive environment each IXC and LEC would be competing on an equal basis with relatively easy entry and exit for each competitor. To the extent that there is not a truly competitive market, these benefits lose their "luster." The IXCs are not hamstrung with the responsibilities for universal toll and local service which regulation impose on the LECs. This alone eliminates any semblance or possibility for "true" competition. As discussed earlier, competitive entry by the IXCs would be directed at lucrative high-volume toll routes and specific large- or medium-volume toll users. The same effects described above in relation to local, toll and access services will occur. Toll rates for some consumers will go down, local rates for all consumers will ultimately go up, and access charges are likely to be forced down.

Taking into consideration the effects that intraLATA facility competition will have on the general body of ratepayers, is apparent that

the only beneficiaries of intraLATA facility competition will be large-volume toll users and the IXCs who serve them. The benefits received by these large toll users will come at the expense of the overwhelming majority of telephone consumers who would pay higher local rates but would not have sufficient toll call volumes to take advantage of the lower toll rates. More importantly, those consumers who are served by high cost toll routes would pay higher toll rates as well as higher local rates, due to de-averaging of toll rates.

Another issue raised by the IXCs was whether the IXCs could provide intraLATA toll service through their own facilities more efficiently than the LECs, either for current toll traffic or for future toll traffic growth. As stated earlier, the provision of telecommunication service requires substantial investment in fixed plant. This investment, coupled with the relatively low operating and maintenance costs associated with transmission facilities, creates significant economies of scale which favor a monopoly environment. This is particularly true on an intraLATA basis since the toll routes are predominantly short haul and produce less revenue per unit than longer haul interLATA routes.

The economies of scale realized by the LECs' intraLATA transmission networks generally allow them to handle existing and future intraLATA toll traffic. This is true because it is less costly to add capacity to an existing transmission facility than to completely duplicate the LECs' facilities. From a broad public interest view, such duplication is uneconomic and inefficient. Economies of scale are important because benefits to society are maximized when they are fully realized.

If facilities based, intraLATA competition is allowed, the capital investment required to establish new IXC POPs will place enormous economic pressure on IXCs to target only those high-density routes which promise the greatest market share and hence the most profit potential. Once an IXC has located at other than the toll center/access tandem, the efficiencies of the existing toll network configuration are lost with respect to the IXC, and the general body of ratepayers will not have comparable access to that carrier. Furthermore, once an IXC locates at other than the toll center/access tandem, it becomes most efficient for an IXC to place its POPs as close to its largest customers as possible. This further aggravates the "cream skimming" problem and encourages complete bypass of the LEC by large toll users who will be the marketing targets of the IXCs.

In summary, there is virtually no evidence to support the claim that the many benefits of competition would be realized in the intraLATA toll market following a policy of unrestricted entry and no price regulation. In fact, the available evidence on whether the LEC LATAs are natural monopolies or not is inconclusive. Consequently, there is no compelling reason to move toward further deregulation of the intraLATA telecommunications markets - that is, toward 1+ and 0+ entry by the IXCs or resellers. Therefore, this means that the limited entry sought by the IXCs (provided through direct or special access arrangements and 10XXX switched access) must be justified by the customer convenience of "one-stop shopping" for both inter- and intraLATA telecommunications

services. This convenience, however, is universally available today through resellers.

Furthermore, our econometric demand equation indicates that, in states with authorized facilities-based entry into the intraLATA toll market, the primary form of competition continues to be in the form of high-volume services. The model reveals a cross-price elasticity of demand of .142 which measures the percentage change in BOC intraLATA toll messages due to a one percent change in intraLATA high volume WATS prices of IXCs.

In comparison, the model shows IXC intraLATA MTS to be a complementary service with BOC intraLATA MTS -- the cross-price elasticity from our national intraLATA toll demand equation is -.035.

Our empirical results that IXC intraLATA MTS is a weak complementary service and that IXC intraLATA high-volume services are a substitute for BOC intraLATA toll agree with the theoretical argument that IXCs will continue to target the high-volume intraLATA toll routes after authorization of full facilities-based intraLATA toll competition.

Our finding that, in 1990, in states which had authorized facilities-based entry (10XXX) for intraLATA calls, the average BOC had 9.5% fewer intraLATA toll messages as a result of facilities-based entry, must be considered preliminary. Further work must be executed to determine how rapidly the 9.5% increases over time.

Also, the 9.5% reduction in intraLATA toll messages due to facilities-based intraLATA competition must be considered an approximation because of the potential inconsistencies of definition across regions of data supplied to the FCC -- data used to estimate the national intraLATA toll demand equation.

Finally, the short-term historical perspective that the estimated national intraLATA toll demand equation places on the impact of facilities-based intraLATA competition on the BOCs represents the outcome of the IXC and BOC intraLATA strategies up to year end 1990. Strategies may change and the model results must be interpreted appropriately.

Epilogue

Economists like to feel they are experts and as such are able to affect the course of policy. Telecommunications constitutes an unusual market in that at least one segment of its regulatory structure has actually listened to the recommendations of the economic profession -- cable deregulation. But this is an unusual occurrence; more often economists bewail the lack of attention their advice is accorded and the perceived failings of the regulatory process that appear to deviate from the goals that economists posit for regulators.

In other industries and regulatory settings, this divergence between what economists think that regulators ought to be doing and what regulators actually do has lead to a focus on the positive theory of regulation (Stigler 1971)[19]. But perhaps owing to economists' success in affecting the regulatory process, at least at the federal level, economists have not spent a great deal of time studying why telecommunications regulation looks as it does.

This omission is important, for much of the resistance of state regulators to implementing the movement toward competition that their federal counterparts have decreed stems from the rather different sets of objectives of the state regulators. State regulators, more so than federal, are required to consider goals such as universal service even if they impact adversely the efficiency norms so dear to economists. Much of state regulatory policy is clearly distributional in character. When economists ask that regulators adopt policies that clearly conflict with the goals that regulators seek to further, the result is that the advice appears irrelevant at best.

There are a number of signs that despite initial success in affecting telecommunications policy, economists once again risk irrelevance because of their devotion to prescribing policies as opposed to analyzing policies in place. For example, at the intraLATA level, economists on all sides continuously prescribe competition as a solution. Few have analyzed the impact of intraLATA competition already in place.

However, the time has come to empirically analyze intraLATA competition which has been in place in many states for several years. This study offers some theoretical arguments leading to a priori expectations for the impact of facilities-based intraLATA competition. More importantly, the study offers a strong preliminary empirical investigation into the consequences of authorizing facilities-based competition at the intraLATA level.

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[19] George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics, Vol. No. 2, (Spring 1971) pp. 3-21.

FLORIDA RESIDENCE INTRASTATE INTRALATA MTS PER ACCESS LINE DEMAND MODEL

MODEL:

	T-STATISTICS
LN(MTS DEMAND PER ACCESS LINE) = -5.9381	-1.3865
-0.592323 * LN(REAL PRICE)$_{-1}$	-10.7953
-0.013210 * LN(REAL INTERLATA PRICE)$_{-1}$	-3.8319
-0.220297 * LN(REAL INTERSTATE PRICE)$_{-1}$	-3.2161
+1.183325 * LN(REAL INCOME PER HOUSEHOLD)$_{-1}$	+3.0671
+0.074999 * FIRST QUARTER SEASONAL	+8.7167
-0.023045 * SECOND QUARTER SEASONAL	-2.6774
-0.061809 * THIRD QUARTER SEASONAL	-7.2226

ELASTICITIES:

	FIRST YEAR	LONG RUN
OWN PRICE	-0.4442	-0.5923
INTERLATA PRICE	-0.0099	-0.0132
INTERSTATE PRICE	-0.1652	-0.2203
INCOME PER HOUSEHOLD	+0.8875	+1.1833

SAMPLE RANGE:

1980 FIRST QUARTER - 1988 THIRD QUARTER

10-1989

FLORIDA RESIDENCE INTRASTATE INTRALATA MTS PER ACCESS LINE DEMAND MODEL

VARIABLE DEFINITIONS:

MTS DEMAND PER ACCESS LINE: Quarterly sum of Florida (SB only) intraLATA residence MTS revenues, deflated by nominal own price index divided by Florida (SB only) residence access lines.

REAL PRICE$_{-1}$: Laspeyres price index for Florida intrastate intraLATA residence MTS (SB only), federal excise tax included, deflated by the U.S. consumer price index, lagged one quarter.

REAL INTERLATA PRICE$_{-1}$: Laspeyres price index for Florida intrastate interLATA residence MTS, federal excise tax included, deflated by the U.S. consumer price index, lagged one quarter.

REAL INTERSTATE PRICE$_{-1}$: Laspeyres price index for U.S. interstate MTS, federal excise tax included, deflated by the U.S. consumer price index, lagged one quarter.

REAL INCOME PER HOUSEHOLD$_{-1}$: Four quarter moving average of Florida personal income deflated by the Florida personal income deflator, divided by the number of Florida households, lagged one quarter.

TEST STATISTICS:

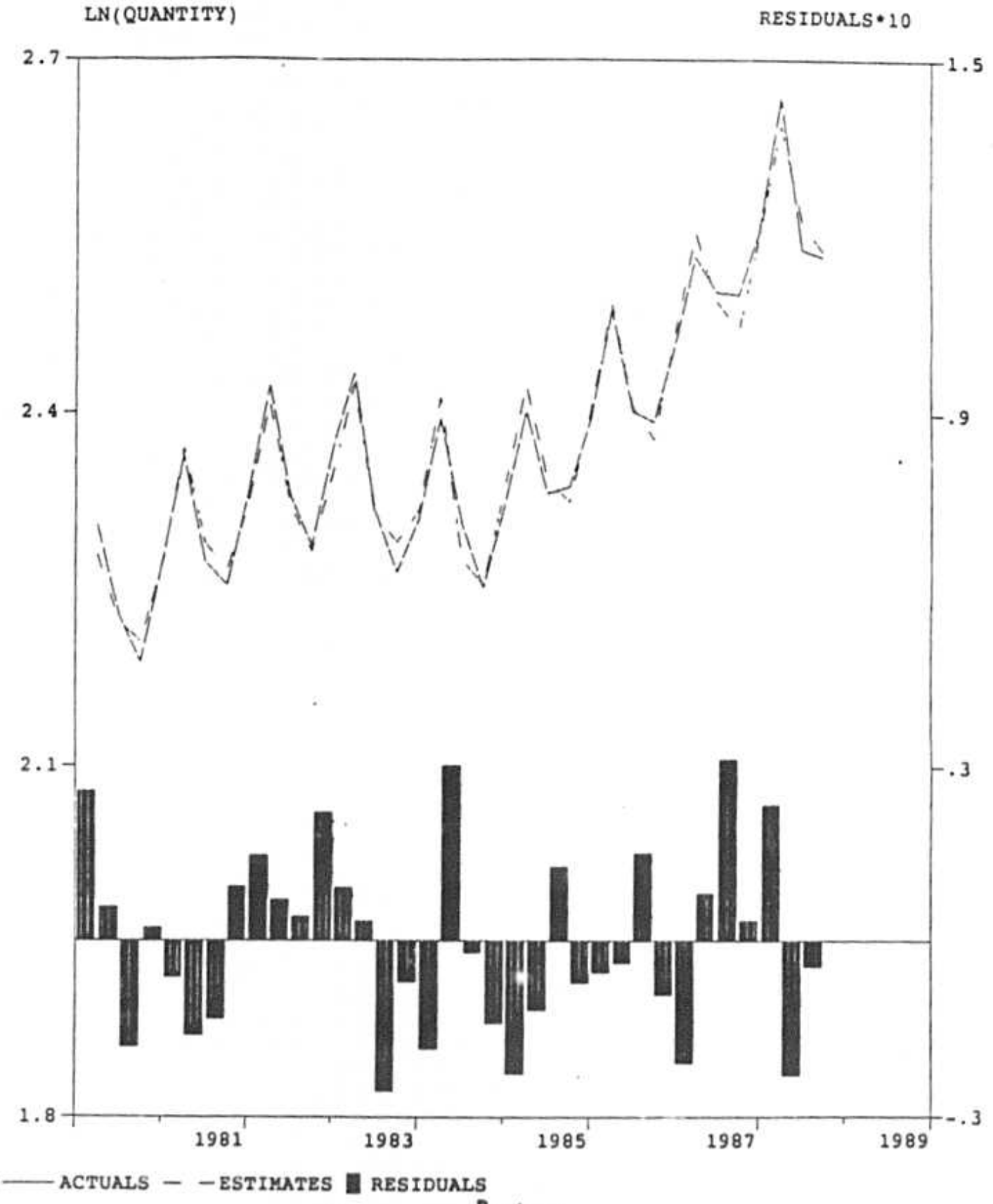
.98 = R-SQUARED

187.12 = F-STATISTIC (7,27)
H_0: $\beta_1 = \beta_2 = \ldots \beta_n = 0$
Reject at 95% level

1.77 = DURBIN-WATSON
H_0: No 1st order autocorrelation
Cannot reject at the 95% level

2.80 = BREUSCH-PAGAN
H_0: No heteroskedasticity
Cannot reject at the 95% level

FLORIDA RESIDENCE MTS PER ACCESS LINE



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SAMPLE RANGE:

1980 FIRST QUARTER - 1988 THIRD QUARTER

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FLORIDA RESIDENCE INTRASTATE INTRALATA MTS
PER ACCESS LINE DEMAND MODEL

VARIABLE DEFINITIONS:

MTS DEMAND PER ACCESS LINE: Quarterly sum of Florida (SB only) intraLATA residence MTS revenues, deflated by nominal own price index divided by Florida (SB only) residence access lines.

REAL PRICE$_{-1}$: Laspeyres price index for Florida intrastate intraLATA residence MTS (SB only), federal excise tax included, deflated by the U.S. consumer price index, lagged one quarter.

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REAL INTERSTATE PRICE$_{-1}$: Laspeyres price index for U.S. interstate MTS, federal excise tax included, deflated by the U.S. consumer price index, lagged one quarter.

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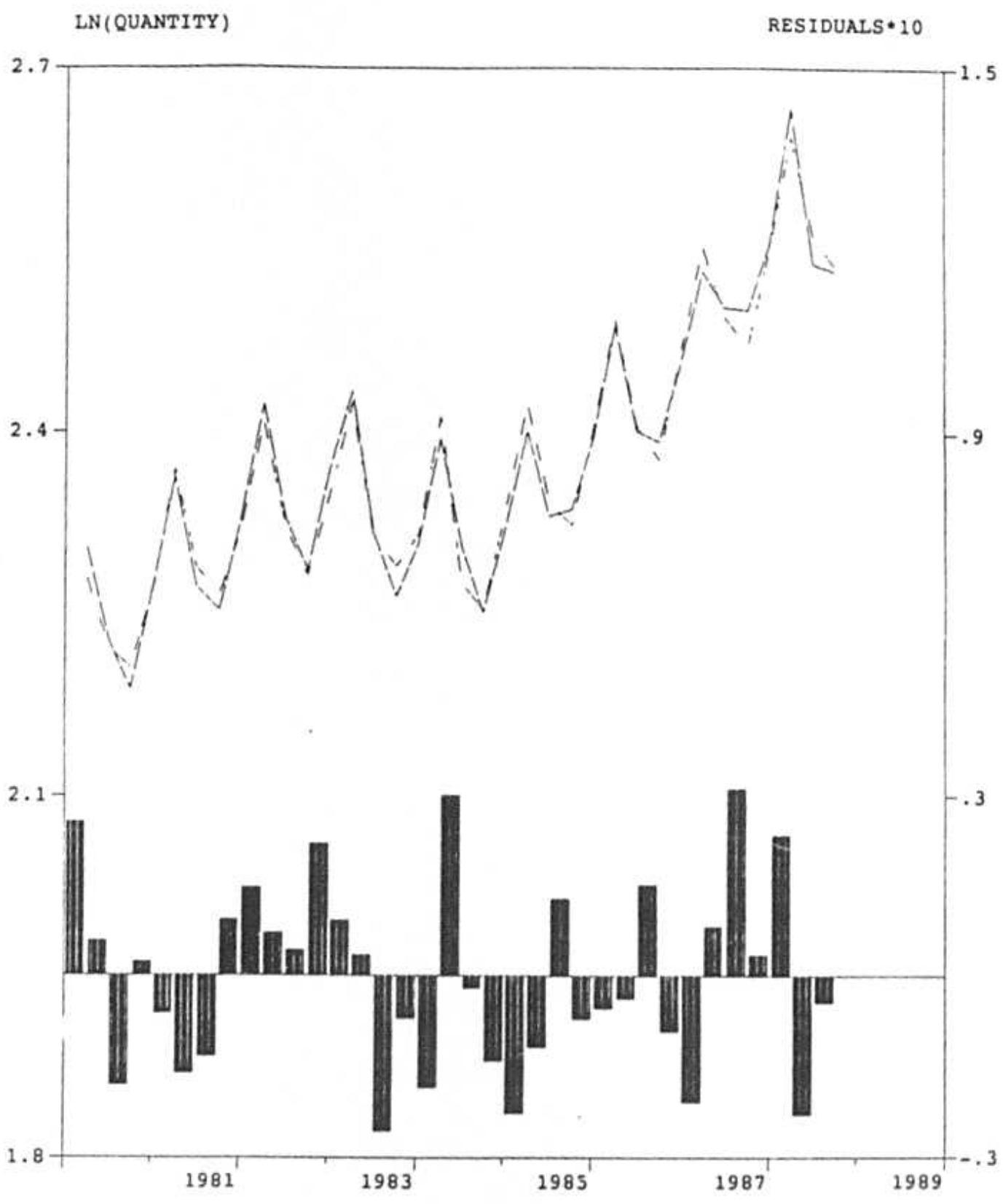
Cannot reject at the 95% level

FLORIDA RESIDENCE MTS PER ACCESS LINE



BellSouth Telecommunications, Inc.
Undocketed Special Project 980000A-SP
FPSC Staff 1st Data Request
Dated June 19, 1998
Item 5f
Attachment

NOTE:

The rate comparisons were obtained directly from CCMI (Center for Communications Management Information, Rockville Maryland) "Guide to Networking Solutions.

Flat Rate Residence - Rate by Rate Groups

Rate Groups	Alabama	Florida	Georgia	Kentucky	Louisiana	Mississippi	North Carolina	South Carolina	Texas	Arizona	Arkansas	Colorado	Conn.	Delaware	DC	Southern Idaho	Northern Idaho	Illinois*	Indiana	Iowa
01	$14.60	$7.50		$12.17	$10.97	$14.79	$9.94	$15.70	$7.55	$15.18	$12.11	$14.93	$10.53	$11.00	$14.60	$11.52	$8.47	$2.15	$9.85	$11.05
02	$14.95	$7.70	$12.50	$13.02	$11.10	$15.15	$10.20	$14.15	$8.50	$15.18	$13.51	$19.85	$11.55	$11.65		$17.02	$9.97	$5.53	$11.11	$12.05
03	$15.30	$8.10		$13.69	$11.39	$15.50	$10.47	$14.60	$9.05	$15.18	$14.91		$12.53					$9.00	$15.17	$13.05
04	$15.65	$8.40		$14.54	$11.60	$15.85	$10.72	$15.05	$11.85		$16.31		$13.55							
05	$15.94	$8.80	$14.50	$17.55	$11.81	$16.20	$11.03	$15.50	$12.15				$14.55							
06	$16.30	$9.18			$12.02	$16.55	$11.34	$15.95												
07		$9.50	$14.85		$12.25	$16.90	$1 66	$16.40												
08		$9.80			$12.45	$17.25	$11.92													
09		$10.05			$12.64	$17.60	$12.19													
10		$10.50			$12.64	$17.95	$12.51													
11		$10.45			$12.64	$18.30														
12		$10.65	$17.45		$12.64	$18.66														
13					$12.64	$19.01														
14					$12.64															
15																				
16																				
17					$12.64															

Rate Groups		Kansas	Maine	Mary-land**	Mass	Mich-igan***		Minn	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Dakota	Ohio**	Penn ****	Virginia
01	1	$8.95	$10.51	$6.11	$6.94	$42.00	TC	$15.53	$7.55	$14.60	$16.35	$10.75	$10.88	$6.75	$11.26	$6.60	$10.88		$4.58	$5.51
02	2	$9.40	$11.75	$7.96	$6.94	$42.00	Out	$15.96	$9.10	$14.60			$11.09	$7.45	$12.91		$12.01	$9.25	$4.88	$5.12
03	3	$9.80	$12.12		$6.94	$42.00			$10.10				$11.55	$7.95	$14.54		$15.19	$9.25	$5.28	$5.89
04	4	$10.05	$12.55		$6.94				$11.40				$11.55	$8.19	$16.16			$9.25	$5.68	$ 7
05	5-5A	$10.70	$12.96						$11.55				$11.79							$6.91
06	5B	$11.45	$13.81						$11.85				$12.08							$7.64
07	6-6A	$11.00							$12.50				$12.57							$8.59
08	6B	$11.80											$12.64							$9.55
09	7	$11.55											$12.94							
10	7A	$11.65						TC=					$15.25							
11	7B	$12.15						Twin					$15.52							
12	8	$12.05						Cities					$15.85							
13	8A	$12.80											$14.10							
14	8B	$13.00						Out=					$14.39							
15	8C	$17.65						Outstate					$14.68							
16	Abilene	$10.10											$14.98							
17	Dekota	$10.95											$15.52							
18	Paola	$10.55											$15.67							
19													$16.01							
20													$16.36							
21													$16.71							

*Usage Based - Monthly recurring
** Message/Measured - Monthly recurring
*** Call Plan Unlimited
****Dial Tone w/Usage Option

Rate Groups	West Virginia**	Wisconsin **
01	$6.00	$5.40
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		

*Usage Based - Monthly recurring
** Message/Measured - Monthly recurring
*** Call Plan Unlimited
****Dial Tone w/Usage Option

Residential
Flat Rate Comparison

		Line		PBX		
		High	Low	High	Low	
Alabama	BellSouth	$16.30	$14.60			$5.00
Florida	BellSouth	$10.65	$7.30			$3.65-$5.33
Georgia	BellSouth	$17.45	$12.50			$5.00
Kentucky	BellSouth	$17.55	$12.17			
Louisiana	BellSouth	$12.64	$10.97			$5.00
Mississippi	BellSouth	$19.01	$14.79			
North Carolina	BellSouth	$12.51	$9.94			$5.22-$6.51
South Carolina	BellSouth	$16.40	$13.70			$6.85-$8.20
Tennessee	BellSouth	$12.15	$7.55			
Arizona	US West	$13.18	$13.18			$8.00
Arkansas	Southwestern Bell	$16.31	$12.11			$2.00
Colorado	US West	$19.85	$14.93			$4.09
Connecticut	SNET	$14.53	$10.53			
Delaware	Bell Atlantic	$11.65	$11.00			
District of Colombia	Bell Atlantic	$14.60	$14.60	$14.60	$14.60	
Hawaii	GTE					
Northern Idaho	US West	$9.97	$8.47			$4.75
Southern Idaho	US West	$17.02	$11.52			
Indiana	Ameritech	$13.17	$9.85			
Iowa	US West	$13.05	$11.05	$13.05	$11.05	$5.80
Kansas	Southwestern Bell	$17.65	$8.95	$20.05	$12.80	$1.75
Maine	NYNEX	$13.81	$10.51	$13.81	$10.51	
Massachusetts	NYNEX	$6.94	$6.94			
Michigan	Ameritech	$42.00	$42.00			
Minnesota	US West	$15.53	$13.96	$17.85	$16.05	
Missouri	Southwestern Bell	$12.50	$7.55	$19.40	$11.70	
Montana	US West	$14.60	$14.60			
Nebraska	US West	$16.35	$16.35			$8.45
Nevada	Nevada Bell	$10.75	$10.75	$25.00	$25.00	$0.50
New Hampshire	NYNEX	$16.71	$10.88	$16.71	$10.88	
New Jersey	Bell Atlantic	$8.19	$6.75	$8.89	$7.40	
New York	NYNEX	$6.60	$6.60	$6.60	$6.60	
North Dakota	US West	$13.19	$10.88	$16.50	$13.60	
Pennsylvania	Bell Atlantic	$14.68	$8.43			
South Dakota	US West	$38.40	$27.25			
Virginia	Bell Atlantic	$9.33	$3.51	$9.33	$3.51	