

was extensive, as evidenced in figure 5-20.

Inbound services showed the same patterns of high and rising margins in California. Interstate switched inbound WATS services generated margins that increased from 45 percent in 1987 to 65 percent by 1994, at a time when concentration in the supply of those services decreased and then leveled off (see figure 5-21). The dispersion in margins among the three large carriers also decreased after 1990, even while AT&T was able to maintain higher margins than MCI and Sprint. Price-cost margins for intrastate WATS inbound service increased for MCI and Sprint from approximately 45 percent in 1988 to 60 percent by 1994 (see figure 5-22). AT&T was able to maintain higher margins than MCI and Sprint, but AT&T's margins also rose, from approximately 63 percent in 1990 to 67 percent of price in 1994. At the same time, AT&T's market share almost halved, from 99 percent in 1986 to 51 percent in 1994, MCI and Sprint's shares respectively rose from two and zero percent in 1987 to 24 and 16 percent in 1994. HHI fell accordingly, from 0.99 in 1986 to 0.34 in 1994.

FIGURE 5-21
INTERSTATE CALIFORNIA-BASED PRICE-COST MARGINS AND
MARKET CONCENTRATION—WATS SWITCHED INBOUND
(100 HOURS PER MONTH)

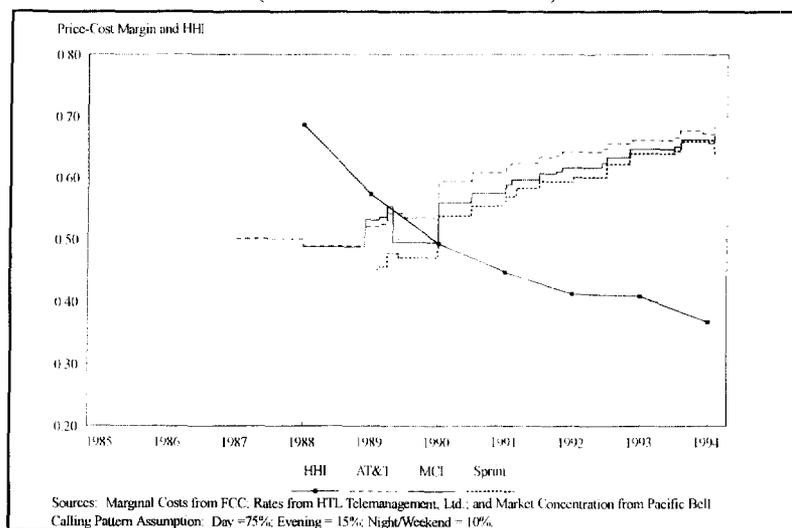
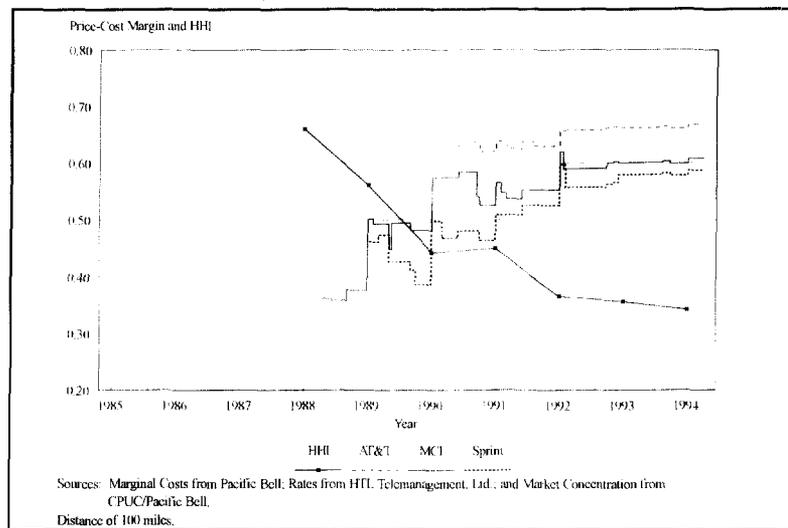


FIGURE 5-22
 CALIFORNIA INTRASTATE PRICE-COST MARGINS AND
 MARKET CONCENTRATION—WATS SWITCHED INBOUND
 (100 HOURS PER MONTH)

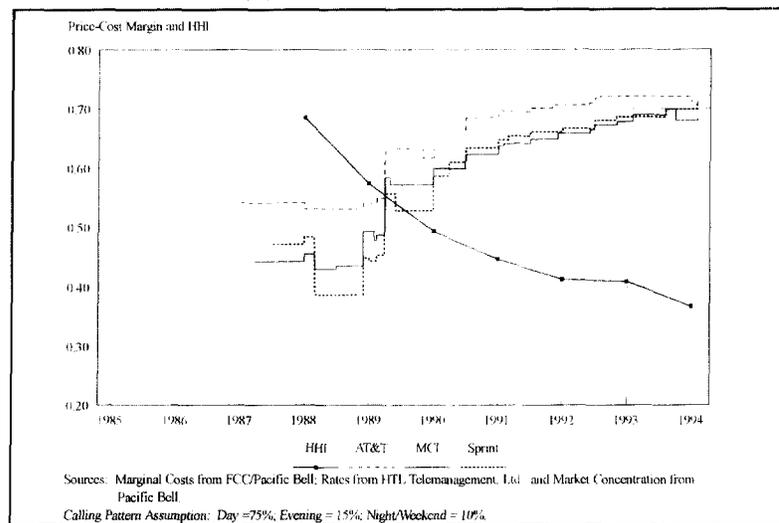


Price-cost margins for both interstate and intrastate inbound switched business services were very high, indeed equal to those on MTS services. Customers for inbound switched service, despite their greater volume of use of the service compared with MTS customer volume, were unable to extract lower prices net of costs from the three large interexchange carriers in California.

The last important category of service in California was that in dedicated contracts with large business customers. Margins for interstate inbound WATS utilizing dedicated access, or so-called 800 service, varied substantially across provider firms before 1990. But after 1990 margins moved in unison with AT&T's margin which was consistently higher than those of the other two providers (see figure 5-23). Before 1990, AT&T dominated service offerings with firstcomer advantages in both technology and marketing. But as MCI gained share in significant steps, HHI declined from 0.90 to 0.37 (the equivalent of 2.7 equal-sized firms). With that greatly reduced concentration in supply, supplier price-cost margins increased from 44 percent for MCI, 39 percent for Sprint, and 53 percent for AT&T to approximately 70 percent of price for all three

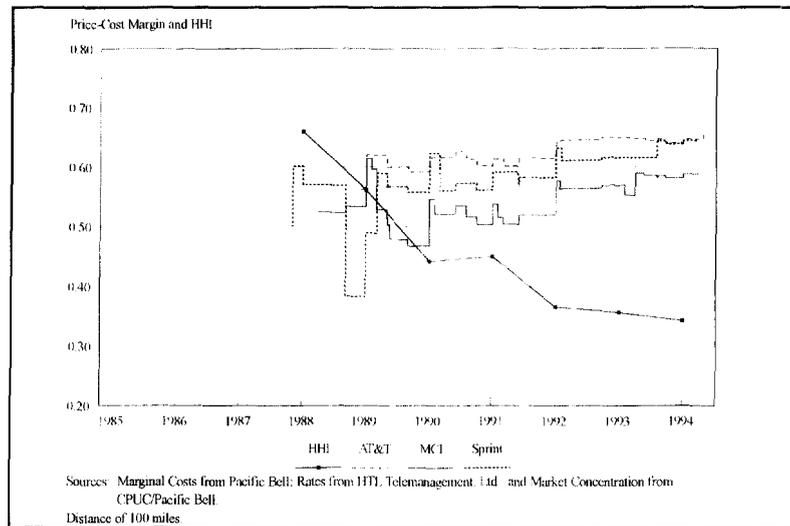
service providers.

FIGURE 5-23
 INTERSTATE CALIFORNIA-BASED PRICE-COST MARGINS AND
 MARKET CONCENTRATION—WATS DEDICATED INBOUND
 (1,000 HOURS PER MONTH)



Price-cost margins for intrastate inbound WATS dedicated contracts exhibited substantial variation among the firms before 1992, especially in comparison with the interstate margins for the same services (see figure 5-24). Price-cost margins increased after 1989 but only by 5 percentage points, with most of the increase occurring after 1992. The important change was that these margins for the three carriers converged: Sprint was able to match AT&T's margin, while MCI's margin remained lower, but by only half the previous difference by 1993. These margins exceeded the MTS margins at that time. Business subscribers to inbound WATS services were as unsuccessful as those for outbound WATS services in securing substantial price discounts net of cost discounts.

FIGURE 5-24
 CALIFORNIA INTRASTATE PRICE-COST MARGINS AND
 MARKET CONCENTRATION—WATS DEDICATED INBOUND
 (1,000 HOURS PER MONTH)



All these price-cost margins have been based on assumed calling patterns representative of a customer located in the 415 area code (San Francisco) making calls to interstate locations in each area code outside California with equal probability. Intrastate calling patterns were for a customer also located in the 415 area but making calls to points 100 miles distant with the same time-of-day usage, mileage distribution, and monthly calling volume as the interstate customer. One could ask whether the observed pattern of rising margins is specific to those calls only. To respond to that query, the time-of-day usage levels can be varied for interstate calls according to the alternatives shown in table 5-9. With respect to mileage distributions, intrastate calls can be assumed to travel 25, 200, or 300 miles, in addition to the base case of 100 miles. Monthly calling volumes can be varied for inbound and outbound WATS services from 25 to 500 hours per month for switched services and from 500 to 5,000 hours per month for dedicated services.

TABLE 5-9 CALLING PATTERN ASSUMPTIONS FOR SENSITIVITY ANALYSIS				
Time-of-Day Distribution				
Time of Day	Alternative Distributions: Assumption Sets:			
	One	Two	Three	Four
Day	65%	75%	80%	85%
Evening	20%	10%	10%	10%
Night/Weekend	15%	15%	10%	5%

Source: As described in the text

Reestimated prices with all combinations of those assumptions result in a pattern of price-cost margins that does not differ from that derived from the original set of assumptions. Interstate prices calculated according to those alternative time of day calling patterns changed only slightly, so that the price-cost margins increased to and above the 0.5 level over the decade (as shown in appendix 2). Also, those prices did not change as a result of varying the mileage assumptions—at least not enough to change price-cost margins (see appendix 2). Margins were lower because of new mileage assumptions for MTS services, at 25 miles rather than at 200 or 300 miles, from 1985 to 1990. However, all three margin series were in the range of 0.45 to 0.52 by 1994. Finally, prices corresponding to different monthly usage levels did not change enough to cause price-cost margins for WATS services to take on a different pattern over time. Those margins were not different from those for the base-case assumptions either at the beginning or toward the end of the time period.²¹

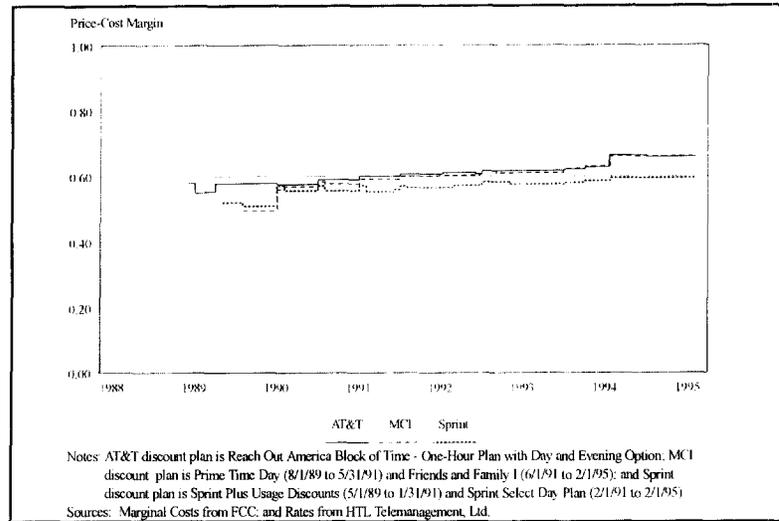
20. Appendix 5-2 contains price-cost margins based on cost estimates provided in testimony by AT&T. See Direct testimony of John Sumpter on Behalf of AT&T Communications of California, Inc., Application of AT&T Comm. of California, Inc. (U 5002 C) for Authority to Provide Intrastate AT&T 800 READYLINE Service. June 18, 1990. AT&T's cost estimates are somewhat higher than the marginal

But discount calling plans in California did offer substantial new options for MTS customers in the 1990s. The plans offered by AT&T, MCI, and Sprint fell into the same three classifications as those for interLATA customers throughout the rest of the country. The largest set of discount plans was based on the customer paying a monthly fee and receiving a block of “free” calling time to be used only during specific time periods, while the second set of plans was based on monthly usage levels. The third set of discount plans, based on who was called, included only MCI’s two plans (Friends & Family I and Friends & Family II) that gave discounts to a specific calling circle of other MCI subscribers.

Price-cost margins based on MTS discount prices for AT&T and MCI remained stable after 1990, while Sprint’s margins increased during that period (see figure 5-25). The approximately 60 percent level of those margins in discount plans compares with the 65 percent level that the carriers earned on provision of standard MTS by 1994 (see figure 5-14). The margins earned by AT&T, MCI, and Sprint in discount MTS calling plans remained stable or increased slightly from 1987 to 1994, even though that period was marked by a substantial decline in market concentration. Increased competitiveness did not emerge, even in the discounting process inherent in those plans. Carriers did not use discount prices to undertake price-cut initiatives to increase their individual market shares given that profit-margins for discount MTS calling plans remained constant or increased from 1987 to 1994. Discount plans did not break down and depart from pricing over time for standard MTS services.

costs used here because they include such nonmarginal expenses as billing, compensation, and marketing. As a result, the price-cost margins are lower. The overall pattern of rising margins in the presence of falling market concentration remains, however.

FIGURE 5-25
 INTERSTATE CALIFORNIA-BASED PRICE-COST MARGINS
 ON DISCOUNT PLANS FOR MTS



Thus neither standard nor discount pricing strategies of the three large carriers made markets in California for long-distance message toll services “competitive” in the post-divestiture decade. The same can be concluded with respect to business services. Large volume business subscribers on discount plans paid prices that generated the same margins as on nondiscount plans.²¹ With respect to tailored discount tariffs, versions of FCC Tariff 12 for the largest business customers, AT&T entered into fewer than 200 contracts that generated revenues accounting for approximately 3 percent of total revenues. These contracts turned out to be no more “competitive” than other plans. In all these markets, as carriers’ shares of sales in various markets equalized, the price-cost margins on those and standard plans in those markets increased.

21. See figures 5-18 and 5-19 for outbound WATS discount price-cost margins, and figures 5-23 and 5-24 for inbound WATS margins on discount plans.

TESTING CHANGES IN PRICE-COST
MARGINS FOR COMPETITIVENESS

A procedure for estimating the extent of interfirm pricing competition can be undertaken based on the estimated price-cost margins in these different residential and business markets nationally and in California. The procedure consists of estimating a linear relationship between margins and concentration holding market-related factors constant. The hypothesis is that price-cost margins for nationwide interLATA services have been determined by the “toughness” of competition as defined by the structure and conduct in these markets (as in the previous chapter). The data comprise 159 observations, at the firm level, on price-cost margins and HHI for AT&T, MCI, and Sprint on MTS, outbound WATS (switched, dedicated, and dedicated with thirty-six-month contracts), inbound WATS (switched inbound and dedicated inbound), and virtual network services. Market shares for each company in each service market have been estimated and binary variables created to identify each market and each carrier.

The first model is static, implying that margin outcome in any one period did not differ from outcomes in other periods. Price-cost margins are regressed on market HHI, individual market share, the carrier-specific binary variable, and binary variables for individual markets. MTS services for AT&T serve as the “base case” against which the binary variables (0, 1) of other carriers and services were measured.

The second model is dynamic, which implies that a margin outcome in one period affects outcomes in subsequent periods. In the current context, the dynamic model assumes that any year’s price-cost margin influences future price-cost margins. The price-cost margins are regressed on HHI, market share, the carrier-specific binary variable, the market-specific binary variable, and the prior year’s price-cost margin. As in the static model, the MTS service offering of AT&T provides a base case against which other carriers and services are measured.

The market share variable is included in both the static and dynamic model estimations to test for the robustness of the HHI-measured concentration as a determinant of price-cost margins. Prior research by David Ravenscraft suggests that if regressions

based on industry-level data (that is, data in which observations at the level of the firm are aggregated to the industry-level) show a positive relationship between concentration and profitability, that relationship can switch to negative when firm-level market shares are included.²² That possibility can serve as a hypothesis as to behavior in these markets—that AT&T's share, not market-wide HHI, determines price-cost margins.

The inclusion of the prior year's price-cost margins in the dynamic regression tests whether there is persistence in price-cost margins over time. A finding of persistence would be evidence against the hypothesis of emerging competition because it counters the argument that high margins draw entry and generate price-cost discounting initiatives to gain market share.

The estimated regression for the static model is shown in table 5-10. The *R*-square coefficient indicates that over 80 percent of the variance in price-cost margins is explained by that in the independent variables. The coefficient for market share is positive and has a *t*-statistic of 2.34, indicating significance at the 2 percent confidence level so that an increase in a carrier's price-cost margin is associated with an increase in that carrier's share. Contrary to Ravenscraft's findings, the inclusion of firm market shares changes neither the sign nor the significance of the coefficient estimate for the HHI. Pricing margins are inversely related to HHI, the coefficient of which is statistically significant requiring us to reject the hypothesis that long-distance service markets became more competitive as the HHI declined from 1987 to 1994.

To illustrate the pattern established by this equation, consider a service with a price-cost margin of 0.40. An increase in a carrier's market share from 40 percent to 60 percent resulted in an increase in the price-cost margin to 0.41, while a decrease in the HHI from 0.60 to 0.40 resulted in an increase in the price-cost margin from .40 to 0.52. Determinants of change in HHI were clearly much more important in setting margins, as firms became more equal in shares, margins increased

22. . David J. Ravenscraft, *Structure-Profit Relationships at the Line of Business and Industry Level*, 65 REV. ECON. & STAT. 22 (1983).

TABLE 5-10: PRICE-COST MARGINS AS A FUNCTION OF CONCENTRATION, MARKET SHARE, CARRIER, AND TYPE OF SERVICE				
Dependent Variable: Weighted Price-Cost Margin	Parameter Estimate	Standard Error	T for Null Hypothesis: Parameter=0	Significance Level
Explanatory Variables:				
Intercept	1.015	0.032	31.58	0.0001
MCI	-0.017	0.012	-1.35	0.1806
Sprint	-0.021	0.013	-1.63	0.1057
Dedicated Inbound	-0.118	0.015	-7.80	0.0001
Dedicated Outbound	-0.270	0.019	-14.57	0.0001
Dedicated Outbound, Contract	-0.346	0.018	-18.76	0.0001
Switched Inbound	-0.036	0.015	-2.32	0.0215
Switched Outbound	-0.175	0.018	-9.46	0.0001
Virtual Network	-0.326	0.016	-20.86	0.0001
HHI	-0.601	0.048	-12.47	0.0001
Market Share	0.055	0.024	2.34	0.0209
$R^2 = 0.82$ Number of Observations = 159 Source: As described in the text.				

Coefficients for the variables for specific service markets can be interpreted as indicating the level of margins to be associated with each service, holding HHI and market shares fixed. For example, the negative and significant coefficients for the three outbound WATS services (switched, dedicated, and dedicated with thirty-six-month contracts) indicate that the carriers had lower price-cost margins for those services than for MTS.

Such lower margins for outbound WATS relative to MTS can be explained by characteristics of demand—unlike residential and small business customers, large business customers with outbound WATS contracts could economically build private networks, and this ability to self-provide selected long-distance services increases the elasticity of demand for those services. Price-cost margins set in a coordinated set of strategies across companies should be inversely related to the elasticity of demand. The negative value for that binary variable for low price-cost margins supports the tacitly collusive hypothesis.

Although the coefficients for the inbound WATS services are both significantly negative, their magnitudes are smaller. That may be due to the lack of ability to self-provide inbound services by the large subscribers. But also until recently, the inability of 800 customers to take their 800 numbers with them when changing carriers made it less likely that carriers in the early period would have been able to increase market shares by price discounting even if they wanted to at the initial stage of market development. The negative and significant coefficient for virtual network services is consistent with large business customers having more elastic demands than MTS customers. Coefficients for the carrier-specific binary variables are negative but not significant. The hypothesis that price-cost margins were the same can be disproved for the three large long-distance service providers.

The equation for the dynamic model is shown in table 5-11. The *R*-square of 0.97 indicates that the equation variables explain over 95 percent of the variance in price-cost margins. The variable for the prior year's price-cost margin has a positive and statistically significant coefficient, indicating that there is persistence in margin levels; high price-cost margins in one year has a positive impact on price-cost margins in the next year. That persistence, as indicated, argues against there having been any outbreak of competition in

price-cost margins in the interLATA market in the last decade. The coefficient estimate for the HHI is negative and significant, indicating that price-cost margins increased when concentration declined. However, the inclusion of the prior year's price-cost margins results in a reduction in the magnitude of the effect of the HHI on price-cost margins. Again, that inverse relationship between market concentration and profitability is the opposite of what one would expect if the share-increasing strategies of the smaller long-distance carriers drove down price-cost margins. But the persistence of margins makes the effects of declining concentration on higher margins less pronounced. The inclusion of the prior year's price-cost margin resulted in a significant reduction in the magnitude and the significance of the market share coefficient. Market share is still positive, but it is no longer statistically significant.

TABLE 5-11: PRICE-COST MARGIN AS A FUNCTION OF LAGGED PRICE-COST MARGIN, CONCENTRATION, MARKET SHARE, CARRIER, AND TYPE OF SERVICE				
Dependent Variable: Weighted Price-Cost Margin	Parameter Estimate	Standard Error	T for Null Hypothesis: Parameter=0	Significance Level
Explanatory Variables:				
Intercept	0.180	0.046	3.88	0.0002
Lagged Price-Cost Margin	0.875	0.036	24.54	0.0001
MCI	0.003	0.005	0.62	0.5390
Sprint	0.007	0.005	1.27	0.2074
Dedicated Inbound	-0.002	0.008	-0.19	0.8472
Dedicated Outbound	-0.038	0.016	-2.34	0.0210
Dedicated Outbound, Contract	-0.051	0.018	-2.75	0.0068
Switched Inbound	-0.003	0.007	-0.41	0.6861
Switched Outbound	-0.028	0.014	-2.05	0.0421
Virtual Network	-0.029	0.014	-2.04	0.0438
HHI	-0.150	0.047	-3.18	0.0019
Market Share	0.005	0.011	0.45	0.6521
$R^2 = 0.97$ Number of Observations = 138 Source: As described in the text.				

As was the case in the static regression, the service-specific binary variables are generally negative and significant, indicating that price-cost margins have been lower in business services where demands conceivably have been more elastic.

The direct measure of the extent of firm-cooperative interaction on prices is the component term in price-cost margins due to conjectural variation. This hypothesis developed in the last chapter has focused on carrier margin—that is, $(p - mc)/p = ms(1 + v)/e$, where ms is that carrier's market share and v is the conjectural variation term that approximates that carrier's extent of interfirm price coordination. With $v = 0$, there is no coordination, and price-cost margins depend only on firm shares and the market demand elasticity. With $v < 0$, the initiative generates a response in the opposite direction; changes in sales levels by firms result in price-cost margins being driven down, ultimately to marginal costs as in competitive markets (where $v = -1$ or all output initiatives are matched by other providers with the same magnitude in the opposite direction). But $v > 0$ implies coordinated changes in sales levels in the same direction that increase margins towards monopoly levels (ultimately, where $ms = .50$, then $v = 1$ implies the monopoly price level for the three firms).

From this data base, it is possible to estimate conjectural variation terms for AT&T, MCI, and Sprint.²³ Annual data on prices, marginal costs, and market shares of the individual carriers are taken from sources described earlier in this chapter; what is still needed is an estimate of market demand elasticity. Based on the econometric evidence provided elsewhere, the long-run demand elasticity for MTS is set equal to -0.75 ,²⁴ and for WATS is set at -0.83 . To derive average estimates for

23. . To complete the estimation procedure, we redefine a firm's conjectural variation to equal [(price - marginal cost) (demand elasticity) / (price) (Market share)] minus one. That equation formulation is presented in J. Brander & A. Zhang, *Market Conduct in the Airline Industry: An Empirical Investigation*, 21 RAND J. ECON. 56 (1990).

24. . See LESTER D. TAYLOR, TELECOMMUNICATIONS DEMAND IN THEORY AND PRACTICE ch. 6 (Kluwer Academic Publishers 1994). The WATS demand elasticity is from Davis, B.E., Caccappolo, G.J. and Chaudry, M.A. (Spring 1973), "An Econometric Planning Model for American Telephone and Telegraph Company." *Bell Journal of Economic and Management Science*, Vol. 4, No. 1, pp. 29-56. James M. Griffen & Bruce

interexchange carriers' conjectural variations, individual v are calculated for all domestic MTS, outbound WATS, inbound WATS, and virtual network services offered by the carriers for each year from 1988 to 1994. These computations yield samples of thirty-three observations of v for AT&T and MCI and thirty-two for Sprint.²⁵

Average conjectural variations for each carrier (with 95 percent confidence intervals) are shown in table 5-12.²⁶

TABLE 5-12 CONJECTURAL VARIATIONS FOR AT&T, MCI, AND SPRINT SENSITIVITY RUN TWO		
Carrier	Average	95 Percent Confidence Interval
AT&T	-0.07	(-0.17, 0.02)
MCI	1.91	(1.63, 2.18)
Sprint	2.54	(2.31, 2.78)
Source: As described in the text.		

L. Egan, *Demand System Estimation in the Presence of Multi-Block Tariffs: A Telecommunications Example*, REVIEW OF ECONOMICS AND STATISTICS, Vol. 67, No. 3, 520-524.

25. . For example, one observation is for AT&T's provision of MTS in 1988, while a second observation is for provision of virtual network services in 1988, and so forth.

26. . Additional computations were undertaken based on the assumption that MCI and Sprint non-access costs at the margin were twice those of AT&T. The average levels of v decreased by 0.23 and 0.29 for MCI and Sprint, respectively. Computations were made assuming that MTS and WATS price elasticities were the same. Those resulted in decreases of v of 0.12, 0.37, and 0.39 for AT&T, MCI, and Sprint respectively. If both extreme assumptions were to hold, the estimate of average v for AT&T would still not differ from zero, nor for MCI and Sprint would it be less than one.

The AT&T estimated v indicates a minimal response in MCI and Sprint sales levels in particular products; specifically the hypothesis of no response ($v = 0$) cannot be rejected. MCI and Sprint conjectural responses to changes in sales levels are large and positive however. AT&T's conjectural variation implies that if it were to decrease its sales level, MCI and Sprint would increase their combined sales levels by 0.07 of that level. The conjectural term is negative, and therefore not collusive, and is too small to indicate that AT&T would expect a competitive response. But conjectural terms for both MCI and Sprint imply that any restriction in the sales of one of them would be more than responded to by a larger restriction from rivals. MCI's conjectural variation indicates that if it were to decrease its sales level, it could anticipate that AT&T and Sprint would decrease their combined sales by 1.53 times that level, resulting in a commensurately higher market price than could be achieved by single firm restriction.

Together, these estimates of conjectural variation imply that AT&T acts to restrict supply and increase its price assuming the supply of the other two large carriers is fixed. The other two large carriers use that condition to decrease their sales levels by disproportionate amounts, implying that they seek even higher prices. Their coordination takes levels of price-cost margins towards higher levels than would result from independent price setting.

PRICE-COST MARGINS ON SERVICES IN INTERNATIONAL MARKETS

The potentially most profitable markets, given the opportunity to set non-competitive prices, would have been those for outbound services from the United States to the major foreign capitals. The distance and densities are large so that marginal costs should have been lower than on many domestic services. Prices set collectively on calls to the largest cities the farthest from New York City, using non-competitive mileage factors, would generate high profits.

Carriers' prices per minute for standard international and discount international MTS and WATS services have been estimated from Commission tariffs for AT&T, MCI and Sprint for the 1990s. Prices for representative outbound international calls from the United States depend on (1) local time in the foreign country receiving the call with respect to U.S. Eastern Standard Time ("EST") and (2) the specification of the

destination country. Carriers have had in place three price categories: standard, discount, and economy from most to least expensive. An example of the pricing categories for calls from the United States to the United Kingdom appears in table 5-13; if local time in the United States is between 7 A.M. and 1 P.M. EST, then an outbound call to the United Kingdom is charged according to the standard time rate. Because of the five-hour time difference between the U.S. East Coast and the United Kingdom, a call made during the standard period arrives between 12 M. and 6 P.M. local time in the United Kingdom. The other extreme is local time after midnight in the United States, when calls reach London in the morning at the lowest or economy rate.

TABLE 5-13 PRICING CATEGORIES FOR CALLS FROM THE UNITED STATES TO THE UNITED KINGDOM			
	Standard	Discount	Economy
Local time in Eastern Standard Time Zone	7 A.M. to 1 P.M.	1 P.M. to 6 P.M.	6 P.M. to 7 A.M.
Local time in United Kingdom	12 M. to 6 P.M.	6 P.M. to 11 P.M.	11 P.M. to 12 M.
Source: As explained in the text.			

For each of eight foreign countries, assumptions have been made regarding the percentage of IMTS and IWATS calls in each of the three price categories,²⁷ based on consideration of the likely times in which residential customers would make MTS calls and business customers would make WATS calls. For example, for standard and discount MTS from the United States to the United Kingdom, calls have been assumed to be distributed so that 30 percent were made during the standard period, 50 percent during the discount period, and 20 percent during the economy period. Two further assumptions as to the percentage of calls

27. . Details of the calling-pattern assumptions are shown in tables 5A3-1 and 5A3-2 of appendix 5-3.

during the three time periods have been made for each type of service for each of the eight country pairs.²⁸ Prices for discount services are assumed to vary according to the number of minutes per call with discounts for more minutes of use. Prices for MTS discount plans have been estimated assuming a monthly usage level of fifty minutes of international calls.²⁹ WATS prices have been based on an assumed usage level of 200 hours per month.³⁰

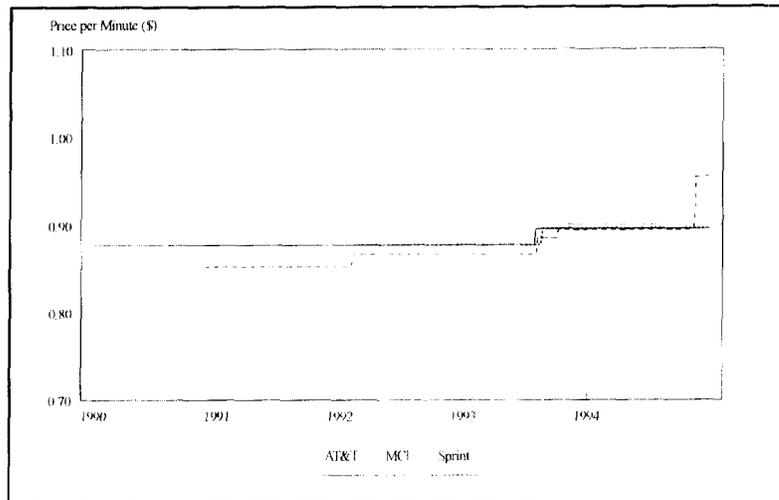
As an example of standard MTS prices, consider the United States to United Kingdom prices shown in figure 5-26. In 1993 prices charged by AT&T, MCI, and Sprint for standard MTS service were essentially identical at \$0.89 per minute. Standard MTS prices for the other country pairs were also identical across the three carriers, with the exceptions of Italy and the Dominican Republic, where prices differed across companies and also increased more rapidly for all three companies.

28. . As shown in appendix 5-3, conclusions regarding the extent of competition in those international markets are not sensitive to those assumptions.

29. . In addition, two other usage levels (30 minutes and 100 minutes per month) were used to calculate the prices of international discount IMTS services (see appendix 5-3).

30. . An alternative usage level of 1,000 hours of JWATS calls per month was also used (see appendix 5-3).

FIGURE 5-26
 STANDARD IMTS INDEX PRICES FOR LONG-DISTANCE CALLS
 FROM UNITED STATES TO UNITED KINGDOM
 (30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



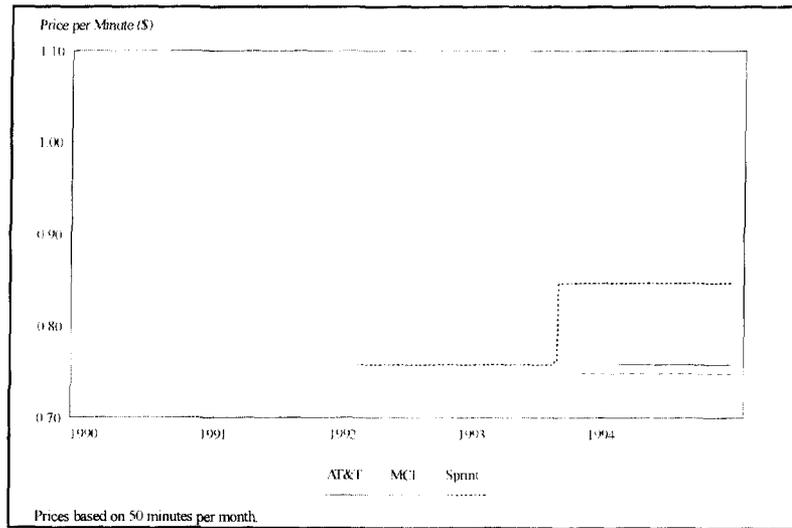
With respect to discount MTS plans, AT&T offered Reach Out-World for international callers in which customers paid a \$3.00 monthly usage charge to be entitled to lower rates on calls to any international direct-dial country during certain times of the day.³¹ MCI offered discounted international rates to its customers through its MCI Friends Around the World AnyTime plan. Participation in that plan also required a \$3.00 monthly fee to be able to use a choice of discount options.³²

31. . The discount MTS plans offered by AT&T, MCI, and Sprint used somewhat different time periods for calculating rates than did their standard plans. For example, the companies considered weekends offpeak in discount but not in standard plans.

32. . Customers could either designate three international phone numbers eligible for a 25 percent discount or select one international country and receive a 20 percent discount for calls to that country. Customers could change the three eligible phone numbers or the country chosen as many times as they wished, but no more than once per monthly billing cycle. Discounts applied to the first \$500 of international calls per month. Usage in excess of \$500 was billed at full international IMTS rates.

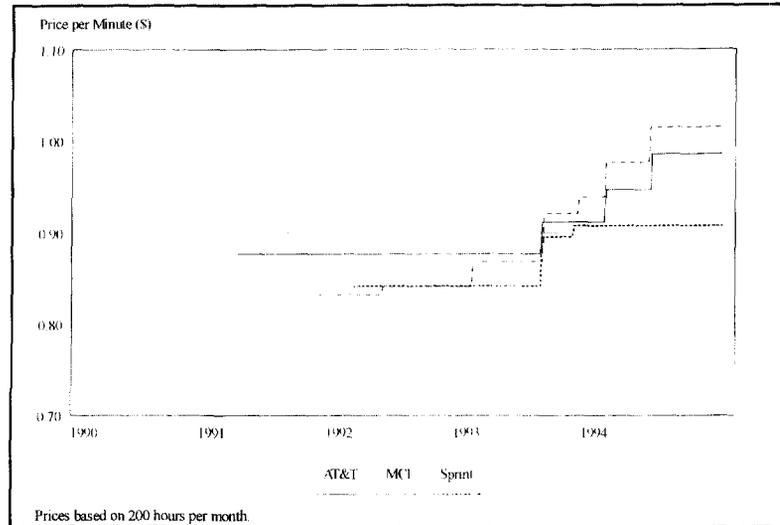
Sprint offered an international plan known as Sprint World that provided discounted rates for calls during offpeak periods, once again for a monthly fee of \$3.00. Those discount prices followed standard prices, given that they were quoted as percentages off standard tariffs (see figures 5-27 and 5-28). The discounts actually offered by the carriers are shown in table 5-14 for 1994; they ranged from 76 percent to 95 percent of standard prices. When one carrier's discount was larger, the others offered larger percentage reductions.³³

FIGURE 5-27
DISCOUNT IMTS INDEX PRICES FOR LONG-DISTANCE CALLS
FROM UNITED STATES TO UNITED KINGDOM
(30% STANDARD, 50% DISCOUNT, AND 20% ECONOMY)



33. . There are two exceptions. Sprint offered a smaller discount for calls to the United Kingdom than did AT&T and MCI, and AT&T offered a smaller discount for calls to Germany than did MCI and Sprint.

FIGURE 5-28
 IWATS INDEX PRICES FOR LONG-DISTANCE CALLS
 FROM UNITED STATES TO UNITED KINGDOM
 (60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)



Given that the discounts were convergent, the prices resulting were almost identical across carriers by the mid-1990s. They also became more similar across country pairs; those pairs in which carriers offered larger discounts were those in which prices for standard services were higher. For example, standard prices for calls to Canada exceeded those for Mexico and the Dominican Republic, but the discounts shown in table 5-14 were larger for Canada than for Mexico and the Dominican Republic.

Country	AT&T	MCI	Sprint
Canada	85	82	88
Mexico	95	93	95
United Kingdom	85	84	95
Germany	90	77	77
France	80	79	81
Italy	80	77	78
Japan	76	76	77
Dominican Republic	88	89	n/a
Source: As explained in the text.			

WATS prices changed over time with MTS prices. For example, for calls to the United Kingdom, all these carriers had similar price changes from 1991 to 1994 (as in figure 5-8). Those price increases exceeded increases in standard and discount MTS prices. Outbound WATS prices increased from \$0.11 to \$0.18 per minute for the United States to the United Kingdom during that period, as they did for the other country pairs.

The next step in estimating carriers' price-cost margins on international services is to determine marginal costs. The marginal costs of outbound U.S. international calls have three components: originating access costs, network transport costs, and settlement costs. Originating access costs are charges of local exchange companies for transporting the call from the customer location to the interexchange carrier point of presence. For example, for a switched call from San Francisco to London, the long-distance carrier must pay an originating access charge to Pacific Telesis for transporting the call from the customer location to the long-distance carrier's point of presence. Network costs are those that the interexchange carrier incurs for transporting the call on its system from the point of presence to the foreign carrier's terminating gateway. For calls from the United States to the United Kingdom, these costs

would be for transport and switching from the San Francisco point of presence to British Telephone's gateway at the midpoint of the Atlantic Ocean. Those costs have been assumed to remain constant at \$0.02 per conversation minute from 1990 to 1994. The third component, international settlement costs, consist of the charges the originating interexchange carrier pays the foreign carrier for transporting and switching the call from the international gateway to the destination location. Settlement costs, which include profit margins for the recipient foreign carrier, have been high and have been decreasing. For example, settlement costs for calls from the United States to the United Kingdom fell from \$0.53 to \$0.305 per minute, or as much as 50 percent,³⁴ over the 1990-1994 period.

In addition to paying settlement costs to foreign carriers for outbound calls, domestic carriers receive settlement payments from foreign carriers for calls terminating in the United States. Under the settlements process, AT&T's or MCI's net settlement costs equal the difference between payments to and from foreign carriers. Assuming that these net settlement payments determine a carrier's marginal costs, then any increase in a carrier's outbound minutes to a particular foreign country, all else constant, could reduce or increase its marginal costs (since inbound traffic minutes are allocated according to outbound market share). Carriers' marginal costs for net and gross settlement payment are shown in table 5-15 for calls from the United States to the United Kingdom. As is apparent, net settlement payments resulted in low and falling marginal costs because of the high relative level and growth in U.S. outbound over inbound traffic.³⁵ Because net settlement payments more accurately represented the cash flow results for the outbound carrier from both outbound and inbound international traffic flows, marginal costs based on net settlement rates were used to calculate price-cost margins.

34. . Those costs represent the amount paid by a U.S. carrier to a foreign carrier for terminating a call originating in the United States. The foreign carrier also pays one-half the accounting rate to U.S. carriers for calls originating in their countries (termed the "accounting rate").

35. . FCC data on net settlement payments were available through 1993. Here 1994 marginal costs were assumed to be equal to 1993 costs, which is conservative (resulting in lower profit margins), given that marginal costs generally declined over that period.

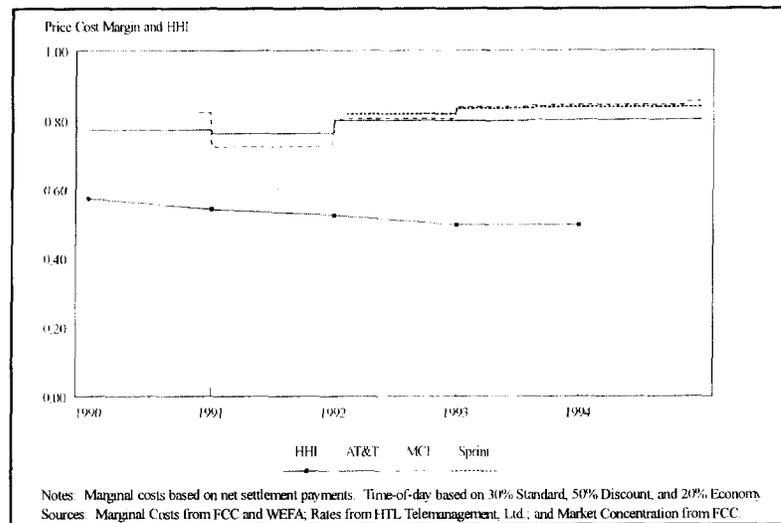
TABLE 5-15 MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS SERVICE FROM UNITED STATES TO UNITED KINGDOM (PRICE PER MINUTE (\$))				
Date	All Carriers ¹	AT&T ²	MCI ²	Sprint ²
1990	0.588	0.200	0.151	0.099
1991	0.541	0.208	0.236	0.136
1992	0.425	0.176	0.169	0.160
1993	0.359	0.178	0.140	0.146
1994	0.359	0.178	0.140	0.146

¹ Marginal costs based on gross settlement payments
² Marginal costs based on net settlement payments.
Source: As explained in the text.

Price-cost margins for standard services across the eight largest country pair markets in general were high, and they increased substantially in the first half of the 1990s. Figure 5-29 shows the margins for outbound service from the United States to the United Kingdom. Company margins are shown by year and market for outbound service to Canada, Mexico, Germany, France, Italy, Japan, and the Dominican Republic in appendix 4. Margins to most of those countries were in excess of 0.70 by 1994, the exceptions being Mexico, Italy (for AT&T and Sprint), and the Dominican Republic. At the same time, price-cost margins for discount services in outbound U.S. international markets were also stable or increasing over the period. The margins for discount services paralleled those for standard MTS service because discount prices are percentages off standard prices. (Those margins are shown by country and year in appendix 4.) Price-cost margins for standard and discount MTS were at the same level for service to Canada, the United Kingdom, and Japan. Margins were up to 10 percent lower for discount service to Mexico, Germany, Italy, France, and the Dominican Republic. Except for service

to Germany and the Dominican Republic, margins on discount plans increased from 1990 to 1994. Given that limited range, discount plans did not generally lead to carrier margin competition.

FIGURE 5-29
IMTS PRICE-COST MARGINS AND MARKET CONCENTRATION
FOR INTERNATIONAL LONG-DISTANCE CALLS FROM
UNITED STATES TO UNITED KINGDOM



Price-cost margins for outbound WATS services also increased from 1991 to 1994, despite declines in concentration in the sales revenues of the three large outbound service providers. Margins in most international markets exceeded 70 percent by 1994. Only margins on services to Mexico and Italy (for AT&T and Sprint), however, were as low as 60 percent and, for the Dominican Republic, even lower at 50 percent of price. Margins to those three countries were lower because of larger net settlement payments that resulted from higher charges on terminating calls—charges, in effect, that resulted in high profit margins for the receiving foreign carrier. Since margins for outbound WATS were the same as for standard MTS calls, the data offer no evidence that markets for outbound WATS were any more competitive than were markets for MTS services.

What can one conclude from the pricing behavior and changes in shares in outbound international markets? Essentially, changes in price-