

Telephone Company Ownership of Rural Cable Television Companies

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Abstract. In rural communities, cable companies owned by telephone companies supply basic service at a lower price than comparable cable companies not owned by telephone companies. The lower price (approximately \$1.20 per month) appears to be due to lower costs and economies of scope rather than to any anti-competitive actions or cross subsidies. In addition, the monthly price of basic service is positively related to the total number of channels contained in basic service and, in particular, to the number of major channels contained in the basic package. The evidence also suggests that customers purchase basic service to gain access to pay channels.

Key words. Cable television, telephone companies, economies of scope.

I. Introduction

Theoretical arguments abound regarding the negative and positive effects of eliminating the FCC's cross-ownership ban that prohibits local telephone companies from providing video services within their service areas. What is almost always overlooked in the current acrimonious debate is the existence of over 200 local telephone companies that operate cable television systems within their telephone jurisdictions due to the rural nature of their service area.¹ The purpose of this research is to examine, in a controlled fashion, the behavior of such local telephone companies in their provision of cable service. The results of this research provide actual market data to supplement the theoretical and emotional discussion that governs the present debate.

By carefully matching cable companies owned by telephone companies with cable companies not owned by telephone companies, this study isolates the specific effect of the nature of ownership on the monthly price of cable television service, holding constant other determinants of price, such as the density of a system, the number of satellite channels, the number of off-the-air channels, and the number of pay channels. The findings indicate that, in a sample of 210 firms, the nature of ownership has a statistically significant effect on monthly price. Specifically, telephone company ownership of cable service *lowers* the monthly price by approximately \$1.20 or 8 percent.

II. Model

The monthly price of cable television service is the dependent variable in the reduced form model. This allows determining the direction and magnitude of the change in equilibrium price from changes in exogenous variables that capture demand conditions, cost conditions, quality of service, competition, and the nature of ownership.

Using a United States Telephone Association list of telephone companies that provide cable service in their telephone operating territories, additional data were found in the *Factbook, The Networks for the Nineties, Cable 1990, Part I*. Using the *Factbook*, each telco owned cable company in the sample was then matched with a similar cable company that was not owned by a telephone company (i.e. non-telco owned). The matching criteria were similar geographic region (i.e., same state) and similar number of cable subscribers. The matching process attempted to minimize the difference in the number of subscribers between the telco owned and non-telco owned companies while selecting cable companies in the same state. The sample selection process resulted in 105 telco owned cable companies matched with 105 non-telco owned companies. A table listing the telco owned and non-telco owned companies in the sample is available from the authors on request. Although the telco owned cable companies are slightly smaller on average than the non-telco owned cable companies (692 vs. 699 subscribers), they offer essentially the same number of channels for each of the measures used.

The major objective of this study is to investigate if ownership (telco vs. non-telco) plays a role in determining the price of monthly service for cable television for the most comprehensive service that does not include pay movie channels. There are conflicting arguments about whether telco ownership of cable companies would decrease or increase the price of cable service.

Telco owned cable companies may have lower prices for service than do non-telco owned cable companies. Allowing telephone companies to provide cable service might generate economic efficiencies from the integration of voice and video transmission. Economies of scope from an integrated company could result from billing, marketing, and customer contact (Huber, 1987, p. 10.23 and p. 6.36). This reduction in marginal cost should lead to a lower monthly price for cable service provided by a telco owned cable company. A telco might also engage in anticompetitive behavior if allowed entry into cable service. The telco might attempt to shift costs (i.e., cross subsidization) from the cable business to the regulated telephone business where it could increase price to reflect the inflated costs, resulting in the telco's cable price being lower than it otherwise should be. A lower price for telco owned cable service, therefore, could have one of two alternative explanations, each with dramatically different public policy implications.

Telco owned cable companies may also have higher prices than do non-telco owned cable companies. The most probable cause for this is that if regulated

telephone companies have an inefficiently high cost structure and if they consistently 'gold-plate' investments, their relatively higher costs will show up as well in telco owned cable company prices. Consequently, the expected effect of telco ownership on the monthly price of cable service is uncertain.

The number of 'free' off-the-air channels is a substitute (i.e., competitor) for at least a portion of the programming provided by a cable company. In fact, the FCC definition of effective competition is based on the number of off-the-air signals available in a market area. The number of off-the-air signals and the price of basic cable service should be inversely related.

The quality of service a subscriber receives should effect the price paid for cable service. Quality of service is measured by the channel capacity of a system, the number of satellite channels included in basic service, the number of total channels included in basic service, and the number of major satellite channels.² Each of these indicators of the quality of basic service should be positively related to the price of cable service. Customers may purchase basic cable service in order to gain access to pay movie channels. Therefore, the number of pay movie channels offered is a measure of quality and should be positively related to the price of basic service.³

Cost conditions also should affect the price of cable service. The age of a cable system should be related to price. Older systems may have higher marginal maintenance costs. Density, as measured by the number of homes passed per mile of cable, should be inversely related to price. The density hypothesis is that marginal cost will be lower in more dense systems, resulting in lower prices. This may result from shorter distances from the cable to residences, for example. On the other hand, more dense systems may have lower average costs but not lower marginal costs, which would not necessarily result in lower prices.

Per capita income is included to measure demand conditions.⁴ Demand and the basic cable price could be either positively or negatively related to per capita income. Cable demand may rise with income, but lower income consumers may have fewer non-cable entertainment opportunities and, therefore, may have a less elastic demand for cable.

The following regression model is used to test these hypotheses.

$$PRICE = f(DENSITY, AGE, TOTCHAN/MAJCHAN, OFF-THE-AIR, NPC, CHANCAP, OWNERSHIP, PERCAPINC)$$

where

$$\begin{aligned} PRICE &= \text{Monthly basic cable price for the most comprehensive service that does not include pay movie channels (Factbook, 1990)} \\ DENSITY &= \text{Homes passed per mile of cable (Factbook, 1990)} \\ AGE &= \text{Age of the system in days (Factbook, 1990)} \end{aligned}$$

<i>TOTCHAN</i>	= Number of total channels included in basic service (<i>Factbook</i> , 1990)
<i>MAJCHAN</i>	= Number of major satellite channels in basic service (<i>Factbook</i> , 1990)
<i>OFF-THE-AIR</i>	= Number of off-the-air channels included in basic service (<i>Factbook</i> , 1990)
<i>NPC</i>	= Number of pay channels offered on cable system (<i>Factbook</i> , 1990)
<i>CHANCAP</i>	= maximum number of channels available in cable system (<i>Factbook</i> , 1990)
<i>PERCAPINC</i>	= Per capita income in predominant county served by cable system in 1985 (<i>Statistical Abstract Supplement</i> , 1988)
<i>OWNERSHIP</i>	= 1 if telco, 0 otherwise

LPRICE, *LDENSITY*, *LAGE*, *LTOTCHAN*, *LMAJCHAN*, *LOFF-THE-AIR*, *LCHANCAP*, and *LPERCAPINC* are logarithms of the respective variables. The sign on the coefficient of the ownership variable is uncertain. The sign on the coefficient of the density variable should be negative as should the sign on the coefficient of the competition (off-the-air) variable. The sign on the coefficient of the age variable is uncertain. The sign on the coefficients on the variables for the number of total channels, the number of quality channels (major channels), and the number of pay channels should be positive. The sign on the coefficient of the per capita income variable is uncertain.

III. Results

Linear and logarithmic specifications of the model were estimated using ordinary least squares. The results for the 210 cable television companies in 105 paired locations are presented in Table I. All of the regressions are significant, and the results are robust across specifications. Due to the degree of collinearity among the alternative measures of the number of channels, the regressions were estimated individually for each measure.

For the most comprehensive basic service package available without pay movie channels, cable television companies owned by telcos charge between \$1.20 and \$1.25 per month, or almost 9% less, controlling for other factors, than do non-telco owned cable companies. This result is highly significant and robust in all four regressions.⁵

The regressions provide weaker evidence that competition, measured by the number of off-the-air channels available, results in lower prices for cable service. This result is significant in only two of the four regressions, and the coefficient is insignificant whenever major channels are included as an explanatory variable. This result provides weak corroboration in support of Dertouzos and Wildman

Table I. Reduced form estimation of monthly basic service price.

	PRICE		LPRICE	
<i>DENSITY</i>	-0.007509449*	-0.006592982		
<i>LDENSITY</i>			-0.019786553	-0.016685492
<i>AGE</i>	0.000133481*	0.000159523**		
<i>LAGE</i>			-0.002165186	0.007338664
<i>TOTCHAN</i>	0.247002217***			
<i>LTOTCHAN</i>			0.268842019***	
<i>MAJCHAN</i>		0.396326064***		
<i>LMAJCHAN</i>				0.141741694***
<i>OFF-THE-AIR</i>	-0.379040918***	-0.050424179		
<i>LOFF-THE-AIR</i>			-0.134544515***	0.018222626
<i>NPC</i>	0.457***	0.747***	0.038790526***	0.057656848***
<i>CHANCAP</i>	0.003636429	0.017998786		
<i>LCHANCAP</i>			0.002599010	0.018407526
<i>PERCAPINC</i>	-0.000005131	-0.000005886*		
<i>LPERCAPINC</i>			-0.082216284**	-0.094977037***
<i>OWNERSHIP</i>	-1.249***	-1.1989***	-0.085685066***	-0.082***
<i>CONSTANT</i>	10.76***	8.86***	2.82***	2.95***
<i>ADJ. R²</i>	0.26	0.22	0.24	0.23
<i>F-STAT</i>	10.24***	8.56***	9.32***	8.71***

*Significant at 10% level.

**Significant at 5% level.

***Significant at 1% level.

Two tailed tests on AGE, PERCAPHINC, and OWNERSHIP.

(1990) and Crandall (1990) who find that cable prices are negatively related to various measures of the number of off-air channels. The results are more consistent with Hazlett (1986) and a prior study of the authors (1991) which suggests that the presence of competing cable systems, and not necessarily the number of off-air channels, lowers the price of basic cable service.

Three of the measures of quality of service, *TOTCHAN*, *MAJCHAN*, and *NPC*, are highly significant in all of the regressions. Customers pay more for more channels, and they pay more (\$0.40 compared to \$0.25) for major channels than for channels in general. An increase in the number of pay channels increases the basic service price by \$0.45 to \$0.75 per channel. Some customers appear to purchase basic service to gain access to pay channels. Channel capacity is never a significant determinant of quality.

The results for the cost variables are mixed. In one of the linear estimations, the coefficient on the density variable is negative and significant, suggesting that prices are lower in more dense systems, probably reflecting lower marginal costs. The magnitude of the actual price decrease is trivial, less than \$0.01, and these results are not confirmed in the logarithmic regressions. The age variable is positive and significant in the linear specifications, lending some support to the hypothesis that older systems have higher marginal costs.

The coefficients on the per capita income variable are always negative and are significant in 3 of 4 specifications. This supports the hypothesis that lower income

customers have a less elastic demand for cable, and this dominates any positive income effect, although the magnitude of the effect is small.

The finding that cable companies owned by telcos have lower prices, controlling for other differences, than do similar cable systems not owned by telcos is consistent with two hypothesis. First, the telcos may be using telephone company revenues to subsidize cable prices, or second, telephone companies are more efficient operators of cable television systems. In any case, the results are clearly not consistent with claims that regulated company inefficiencies which might increase telco costs would be transferred to telco owned cable companies, raising costs and prices there as well.

Given the realities of telco regulation, it is difficult to construct a plausible scenario by which telcos could shift costs to the regulated telephone business in order to hold down cable prices. Under such a scenario, the telco would need to use cost allocation methods that would assign additional costs to the regulated telephone businesses, and the regulators would have to allow the company to recover these additional costs through higher telco prices. If this occurred, the telco could charge lower prices for cable, but its overall revenues and profitability would be unchanged or might increase depending on elasticities of demand.

The actual cost allocation rules in place, however, both at the federal level and in most states, are designed to guard against just such an attempt to shift costs from non-regulated or competitive businesses to regulated businesses. In fact, the cost allocation rules tend to be intentionally biased in the opposite direction. They assign a disproportionate amount of costs to non-regulated or competitive businesses operated by regulated telephone companies, just to prevent customers of regulated services from intentionally or unintentionally subsidizing non-regulated or competitive services. For example, a new service will bear some of the common costs that regulated services were already covering. Joint cost allocation methodologies always favor regulated services. Some states require non-regulated services to make payments for personnel or corporate identification to the regulated services. Royalties may be paid to the regulated services. Such arrangements are almost never symmetrical, and customers of regulated services do not bear comparable costs even for comparable benefits. These cost allocation rules also often attempt to capture most or all of any economies of scope for the customers of regulated services. Non-regulated services will be assigned stand-alone costs, with any cost reductions from economies of scope benefiting mainly or exclusively the customers of regulated services, even if the economies of scope result from the addition of a new, non-regulated service. At the same time, regulators are vigilant in protecting against cross subsidies paid for by customers of regulated services, and it is difficult to imagine how they would allow the necessary regulated service price increases so that cable television could be the recipient of a subsidy.

The alternative hypothesis, then, is much more reasonable. There may be economies of scope in providing cable television service along with other telecommunications services, and the cable television customers may be the beneficiaries,

at least in part, of these reduced costs. In addition to explicit costs savings from the joint provision of services, telcos may have expertise in customer relations, in marketing, and in technical areas which contribute to lower costs. Given the realities of telco regulation at the federal and state levels, this second hypothesis is much more convincing than one which relies on anticompetitive behavior.

IV. Conclusions

Small telcos providing cable service in rural areas are doing so at lower prices than similar non-telco owned cable companies. The reasons for this appear to be due to lower costs and economies of scope rather than to any anti-competitive actions or cross subsidies. These results have important implications for public policy toward cable television and telecommunications companies.

The cable/telco cross ownership ban should be lifted. Cost allocation rules now in place will more than prevent telcos from subsidizing cable service. Economies of scope and established expertise may well result in lower cable prices. Of course, if telco entry into cable results in competitive cable systems, this should also cause cable prices to fall (Levin and Meisel, 1991). OPASTCO has recently asked the FCC to raise the population threshold for telco ownership of cable systems from 2500 to 20,000 ('Opastco President . . .', 1991), and until this cross-ownership ban is lifted entirely, this measure should also be in the public's interest.

Cable television price increases have resulted in a great deal of public concern. Re-regulation, however, will at best only lock in higher prices. In addition, most re-regulation plans only apply to cable companies facing a small number of off-the-air stations as competitors, and the regulation will only affect the price of a very limited package of basic channels. This re-regulated service may not include those satellite channels that customers are most willing to pay for. A far more attractive public policy approach would be to allow (or require) competing cable systems and to allow telcos to provide cable television service. This approach holds out the real possibility of lower prices and improved cable television service.

Notes

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¹ In 1981, the FCC ruled that the telco-cable cross-ownership ban could be waived on a case-by-case basis in rural areas with a population of less than 2,500. Then, in 1984, the Cable Communications Policy Act codified a blanket exemption for all rural areas. Telephone companies can provide cable service within their service area if (1) the population is small enough to be deemed rural and (2) cable service is not otherwise available.

² Major satellite channels are those satellite channels received on at least half of the cable systems in the study. They are WGN, ESPN, CNN, TBS, USA, Nashville, and Family.

³ It also makes sense to include pay-per-view services as a determinant of basic cable prices, but this could not be done as only five of the 210 rural cable systems in the study offered this option. The pay channels included are HBO, Showtime, Disney Channel, the Movie Channel, Cinemax, American

Movie Classics, New England Sports Network, Madison Square Garden Network, and Playboy at Night.

⁴ Median household income in 1979 and persons per household in 1985 were also used in the analysis but were not significant in any specification of the model.

⁵ There were too few cable companies facing a second cable competitor to allow for the effect of this competition to be included in the study. Nearly all of the non-telco owned cable companies were part of larger companies operating multiple cable systems (MSOs). While this could result in higher prices, there is not a good hypothesis to suggest why this would be so. There were too few non-MSOs that were comparable to the telco-owned cable companies to allow the measurement of any separate effect of MSOs on cable prices.

References

- Crandall, Robert (1990) 'Regulation, Competition, and Cable Performance', prepared for Tele-Communications, Inc.
- Dertouzos, James N. and Steven S. Wildman (1990) 'Competitive Effects of Broadcast Signals on Cable', prepared for The National Cable Television Association.
- Factbook, The Networks for the Nineties, Cable 1990, Part I*, Washington, DC: Warren Publishing, Inc., 1990
- Hazlett, Thomas W. (1986) 'Competition v. Franchise Monopoly in Cable Television', *Contemporary Policy Issues*, **80**, pp. 80–97.
- Huber, Peter W. (1987) *The Geodesic Network*. Washington, DC: U. S. Department of Justice.
- Levin, Stanford L., and John B. Meisel (1991) 'Cable Television and Competition', *Telecommunications Policy*, December, pp. 519–528.
- 'Opastco President Urges FCC to Raise Rural Exemption to Telco/Cable TV Cross-Ownership', *Telecommunications Reports*, April 15, 1991, p. 39.
- U. S. Department of Commerce and Bureau of the Census (1988) *A Statistical Abstract Supplement, County and City Data Book*. Table B, pp. 16–600.