

deployment by 40%, while introducing earnings sharing only would have increased their long run fiber deployment by 50%. On the other hand, combining earnings sharing with either type of price regulation eliminates any of the advantages of incentive regulation. These results hold when looking at column 1 of the Table where we impose the constraint that price cap regulation has the same effect as price freezes. Here again we find that combining price regulation with earnings sharing degrades the incentives faced by the LECs to increase their fiber deployment.

A Baseline Growth Model

Since SS7 and ISDN seem to have a very similar evolution, we estimate equation (5) for these two measures jointly, imposing the constraint that the regulatory variables (both incentive regulation and general regulatory framework) have similar effects.⁴⁴ DSPC switches and Fiber are estimated separately.⁴⁵ Furthermore, because there is strong evidence that GTE has had a very different strategy of deploying digital switches than other operating companies,⁴⁶ we let the coefficients of the incentive schemes in the DSPC switches equation differ for GTE.⁴⁷ Table 4

⁴⁴ We do not restrict the coefficient of the demographic variables nor of the interactions with initial (1989) levels. Similarly, we do not restrict the constant to be the same across the two equations.

⁴⁵ Because of data limitation, SS7, ISDN and DSPC switches are estimated for the period 1990/1991. We use 1989 as the base. Furthermore, recall that for these three digital infrastructure measures we have information on a state by state level only for RBOCs and GTE operations.

⁴⁶ See L.K.Ruiz and G.A. Woroch, "GTE's Capital Investment Profile: An Empirical Assessment," GTE Laboratories, TC-0180-03-92-419, March 1992. This study suggests that GTE's ownership of equipment manufacturer affected its deployment decision.

⁴⁷ The GTE specific estimates are the result of interacting the incentive scheme variable with a dummy for GTE.

reports the results of estimating the baseline growth model for fiber optic deployment, for both the restricted and unrestricted specifications. Table 5 reports results for the restricted specification for ISDN, SS7 and DSPC switches ⁴⁸

Table 4 shows that for Fiber deployment, price regulation has a large and statistically significant effect on the growth of fiber optic over the baseline year. Furthermore, that effect, as in Table 2, falls with the initial level of infrastructure deployed by the LEC. The coefficient of the cross-product of price regulation with earnings sharing is negative, but not statistically significant. Earnings sharing by itself has a negative effect and statistically significant effect on fiber optic growth over the baseline year. Finally, Bell operating companies do not seem to deploy fiber optic cable differently than the independent companies. As in Table 2, there do not seem to be important differences between price cap regulation and price freeze schemes. Although the point estimates involving price cap or price freezes in column 2 are slightly different, the explanatory power (and the log-likelihood) of the two columns is approximately the same. Thus, we can conclude, again, that during the period in question, the effect of price cap regulation on infrastructure deployment was not significantly different from the effect of price freezes.⁴⁹

⁴⁸ The sample size for ISDN, SS7 and DSPC switches (152 observations over two years involving only Bell and GTE companies) limits the generality of the specification that can be used. In particular, interactions among price caps and earning sharing cannot be separated from a single state dummy (California). The large number of observations for fiber optic cable deployment does not limit the identification of any of these interactive effects.

⁴⁹ Recall that during the period under consideration, there were no substantial inflationary pressures. Thus, as discussed above, the main difference between the two regulatory approaches would have been the potential for rebalancing inherent in price cap regulation.

In Table 5 we present the results for SS7, ISDN and DSPC switches. In general, the results are as in Table 4. Price regulation has a strong impact on the growth of ISDN and SS7. Price regulation, however, does not seem to have an effect on the deployment of DSPC switches, except for GTE, where we find a negative effect. The cross-products with earnings sharing are negative but not significant. While the point estimates of earnings sharing by itself are positive, they are small and their standard errors are large. Finally, the coefficient of Bell operating companies is statistically significant only in the ISDN equation.

Finally, Table 6 provides the predicted change over the baseline year of what would be achieved by imposing incentive regulation on companies that in 1991 had no incentive scheme. The main finding is that price regulation provides stronger investment incentives than earnings sharing schemes. Indeed, price regulation by itself provides more than 100% increase in deployment over the base year (except for DSPC switches), while earnings sharing by itself increases ISDN and SS7 only by 20%, an economically small (and statistically insignificant) effect, and reduces investment incentives in fiber optic cable by almost 50%.

As in the partial adjustment model estimates, combining earnings sharing and price regulation reduces the incentives for deploying fiber optic cable. On the other hand, such combination does not have an economically or a statistically significant impact over that obtained by price regulation alone.⁵⁰ Thus, our two modeling approaches provide the same conclusion on

⁵⁰ Recall that from Table 5, the coefficients involving earnings sharing are not significantly different from zero. Thus, in Table 6, the simulated values for the effects of price regulation and price regulation with earnings sharing are not statistically different.

the relative merits of price regulation and earnings sharing schemes. These results suggest, then, that there is nothing to be gained from the perspective of infrastructure deployment by the addition of earnings sharing to a price cap plan. Significant administrative costs would be added, though.

VII. CONCLUSION

Divestiture unleashed a wealth of experimentation by state regulators of local exchanges. Judging from the variety of choices made, there exists no consensus about the optimal goals for regulators to pursue, nor about the most efficient means to achieve clearly defined goals. This variety of regulatory structures across hundreds of local exchange carriers provided the natural experiment for this study's analysis.

This study focuses on the influence of regulatory rules on investment in modern infrastructure. We collected and analyzed investment at every large local exchange company in the United States. We modeled and identified the contribution of state regulatory policies from that of other local economic and demographic factors of the service territories of LECs. We especially focused on the effects of two regulatory rules of current policy debate, price regulation and earnings sharing.

We showed that both demographic and regulatory factors influenced observed deployment patterns. Neither alone provides an accurate picture of the determinants of infrastructure growth. Moreover, the absence of accounting for demographic and economic factors can bias analysis of

the impact of regulatory factors and lead to inaccurate inferences. While this finding is not surprising, we highlight it because of how frequently it is forgotten in theoretical and empirical studies of pricing regulation.

Our main findings are that price regulations influence the level of deployment of modern equipment at the local exchange level. Moreover, the direction and magnitude of the influence are consistent with economic theory. The pattern persists in different degrees for three measures of modern infrastructure deployment -- fiber, ISDN lines, and SS7 switches. The results also hold for fiber deployment under alternative specifications of the statistical relationship between regulatory incentives and infrastructure deployment. These effects are not small. Had every state regulators adopted such pricing schemes, fiber deployment would be at least 75 percent higher, and probably more, in those local exchanges that did not adopt such schemes.

If deployment of modern equipment is a primary goal of state agencies, our research shows that pricing regulations must play an important role in achieving that goal. Our research does not find similar evidence about earnings sharing arrangements. Accordingly, we are less sanguine about the use of earnings sharing schemes as a tool to achieve modern infrastructure deployment. We do anticipate the present variety of regulatory regimes to persist after the experiences under different incentives schemes become widely known. If agencies act on these observations, pricing regulations will become the national norm, and eliminate the interesting, yet costly, natural experiment that made this study feasible.

**TABLE 1: INFRASTRUCTURE INVESTMENT
EXPLAINED BY TERRITORY SPECIFIC AND DEMOGRAPHIC FACTORS
(T-STATISTICS IN PARENTHESIS)**

ENDOGENOUS VAR	FIBER ¹	ISDN LINES ²	TOTALSS7 ³	SWITCHES ⁴
YEARS	1988-1991	1989-1991	1989-91	1989-1991
NUMBER OBSERVATIONS	606	228	228	228
METHOD	OLS	TOBIT	TOBIT	OLS
R-SQUARED	0.752	NA	NA	0.792
CONSTANT	0.43 (0.09)	-27.86 (-2.35)	-31.05 (-2.20)	-5.06 (-2.48)
LOG LAND MASS	0.0062 (0.07)	0.49 (2.29)	-0.53 (-2.11)	0.045 (0.96)
LOG URBANIZED POP	0.11 (2.16)	1.14 (5.00)	-0.10 (-0.46)	0.0021 (0.07)
LOG URBAN POP	0.11 (1.11)	-0.61 (-2.40)	-0.56 (-1.90)	-0.0004 (-0.007)
LOG RURAL POP	-0.04 (-0.37)	-0.29 (-1.09)	0.74 (2.38)	0.13 (1.98)
LOG PERCAP INCOME	-0.39 (-0.80)	2.53 (2.04)	1.85 (1.24)	0.067 (0.33)
LOG MANUFACTURING	0.31 (3.06)	0.45 (1.27)	0.11 (0.26)	0.093 (1.23)
LOG FIRE	0.44 (3.60)	-0.33 (-0.78)	1.13 (2.40)	0.35 (4.19)
LOG CONSTR WAGE	-2.12 (-3.79)	-3.31 (-2.52)	-1.58 (-1.02)	0.38 (1.22)
NUMBER OF LEC	0.19 (2.39)	0.15 (0.94)	0.34 (1.80)	0.071 (1.66)
BELL	1.54 (6.23)	3.38 (6.88)	3.19 (5.02)	-0.17 (-1.40)
GTE	0.34 (1.66)	NA	NA	NA
Y87	1.37 (5.93)	NA	NA	NA
Y88	3.48 (15.10)	NA	NA	NA
Y89	4.06 (17.55)	NA	NA	NA
Y90	4.41 (19.08)	1.35 (3.96)	1.93 (4.52)	0.17 (2.01)
Y91	4.74 (20.40)	2.17 (6.42)	2.79 (6.54)	0.47 (5.54)
SIGMA	NA (16.21)	1.81 (16.21)	2.01 (13.64)	NA

NOTES:

¹ Fiber is number of fiber miles in LEC territory.

² ISDN is total number of ISDN lines in LEC territory.

³ SS7 is total number of SS7394 and SS7317 switches in LEC territory.

⁴ Switches is total number of DSPC switches in territory.

**TABLE 2: PARTIAL ADJUSTMENT MODEL
LOG (FIBER)¹
TWO STAGE LEAST SQUARES WITH ROBUST STANDARD ERRORS²
1987-1991
(T-STATISTICS IN PARENTHESES)**

SPECIFICATION	GENERAL	RESTRICTED	GENERAL	RESTRICTED
DEMOGRAPHIC VARS	NO ³	NO ³	YES ⁴	YES ⁴
R-SQUARED	.583	.561	.772	.771
LOG OF LIKELIHOOD	-1036.32	-1037.49	-871.941	-873.636
PRICECAP	2.64 (3.38)	2.02 (3.08)	1.75 (3.53)	0.84 (2.04)
PRICECAP & FIBER86	-0.45 (-3.65)	-0.32 (-2.82)	-0.31 (-3.26)	-0.12 (-1.38)
PRICECAP & E. SHARING	-0.52 (-0.81)	-0.59 (-1.02)	-0.77 (-1.59)	-0.48 (-1.35)
PRICE FREEZE	-1.62 (-0.81)	2.02 (3.08)	-0.18 (-0.38)	0.84 (2.04)
PRICE FREEZE & FIBER86	0.35 (0.72)	-0.32 (-2.82)	0.11 (1.28)	-0.12 (-1.38)
PRICE FRZE & E. SHARING	-1.55 (-1.36)	-0.59 (-1.02)	-0.73 (-2.20)	-0.48 (-1.35)
E. SHARING ON COMPANY	0.61 (2.32)	0.60 (2.30)	0.29 (1.41)	0.29 (1.39)
NOT RESTRICT	0.52 (1.93)	0.53 (2.02)	0.29 (1.59)	0.32 (1.67)
COMP. ACC PROVIDER	0.32 (0.92)	0.31 (0.89)	-0.11 (-0.38)	-0.10 (-0.33)
RESALE OF LEX	-1.00 (-3.24)	-0.97 (-3.17)	-0.57 (-2.62)	-0.55 (-2.49)
INTRALATA COMP	-0.27 (-1.59)	-0.25 (-1.49)	-0.29 (-2.17)	-0.25 (-1.85)
DEREG. OF COMP. SERV.	-0.060 (-0.28)	-0.060 (-0.29)	0.24 (1.62)	0.22 (1.51)
E. SHARING IN STATE	0.76 (2.65)	0.70 (2.54)	0.56 (2.91)	0.43 (2.31)
CAP & DER. COMP. SERV.	0.42 (0.94)	0.45 (0.99)	0.48 (1.29)	0.38 (1.07)
1 - ALPHA	0.61 (2.67)	0.59 (2.71)	0.56 (2.39)	0.49 (2.00)

NOTES:

¹ Fiber represents the amount of fiber in fiber miles in LEC territory.

² Estimated equation is $Y = XB + (1-\text{ALPHA})\text{YHAT}(-1)$, where B/ALPHA = optimal investment.

³ The following exogenous variables are not shown in columns 1, 2: CONSTANT, COMPANY COUNT, BELL, GTE, Y88, Y89, Y90, Y91.

⁴ The following exogenous variables are not shown in columns 3, 4: CONSTANT, COMPANY COUNT, LOG LAND, LOG URBANIZED POP, LOG URBAN POP, LOG RURAL POP, LOG CONSTRUCTION WAGE, LOG PERCAPITA INCOME, LOG MANUFACTURING, LOG FIRE, BELL, GTE, Y88, Y89, Y90, Y91.

**TABLE 3: AVERAGE PREDICTED EFFECT OF INCENTIVE REGULATION
ON LEC UNDER RATE OF RETURN AS OF 1991
PERCENTAGE CHANGE IN FIBER¹
PARTIAL ADJUSTMENT MODEL
(N=66)**

REGULATORY CHANGE	RESTRICTED ESTIMATION	UNRESTRICTED ESTIMATION
PRICE CAP	77%	96%
PRICE CAP & EARNINGS SHARING	39%	10%
PRICE FREEZE	77%	42%
PRICE FREEZE & EAR. SHARING	39%	-37%
EARNINGS SHARING ALONE	59%	52%

Notes:

¹ Restricted estimation derived from Table 2 column 4. Unrestricted estimation derived from Table 2 column 3.

**TABLE 4: FIBER OPTIC CABLE, BASELINE GROWTH MODEL
TWO STAGE LEAST SQUARES WITH ROBUST STANDARD ERRORS
T-STATISTICS IN PARENTHESES
1987/1991**

VARIABLE ¹	UNRESTRICTED	RESTRICTED
PRICE CAP REG	4.25 (5.90)	3.78 (5.58)
PRICE CAP REG * INITIAL LEVEL	-.69 (-6.02)	-.65 (-5.77)
PRICE CAP REG * EARN SHARING	-.25 (-.31)	-.25 (.44)
PRICE FREEZE	2.07 (2.18)	3.78 (5.58)
PRICE FREEZE * INITIAL LEVEL	-.44 (-3.17)	-.65 (-5.77)
PRICE FREEZE * EARN SHARING	.05 (.07)	-.25 (.44)
EARNINGS SHARING	-.48 (-1.59)	-.47 (-1.56)
BELL DUMMY	-.10 (-.30)	-.19 (-.58)
GTE DUMMY	1.78 (5.56)	1.78 (5.59)
TIME TREND	.76 (10.74)	.75 (10.67)
LOG LIKELIHOOD	-1051.30	-1052.35
R-SQUARED	.44	.44
# OF OBSERVATIONS	505	505

¹ The coefficients of the following variables are not shown: CONSTANT, NUMBER OF LEC, LOG LAND, LOG URBANIZED POP, LOG URBAN POP, LOG RURAL POP, LOG CONSTRUCTION WAGE, LOG PERCAPITA INCOME, LOG MANUFACTURING, LOG FIRE.

**TABLE 5: BASELINE GROWTH MODEL
RESTRICTED ESTIMATION: PRICE CAP=PRICE FREEZE
TWO STAGE LEAST SQUARES WITH ROBUST STANDARD ERRORS
T-STATISTICS IN PARENTHESES**

VARIABLE ¹	SS7 ¹ 1990/91	ISDN ¹ 1990/91	DSPC SWITCHES 1990/91	
			BELL	GTE ²
PRICE REGULATION		1.59 (4.79)	-.59 (-2.61)	-1.98 (-2.70)
PRICE REGULATION * INITIAL LEVEL	-.61 (-3.98)	-.21 (-2.11)	.18 (3.26)	.39 (1.80)
PRICE REGULATION * EARN SHARING	-.05 (-.10)		-.13 (-1.12)	NA
EARNINGS SHARING	.20 (.84)		.01 (.24)	.26 (1.17)
BELL DUMMY	.28 (.76)	.75 (2.09)		-.09 (-1.10)
GTE DUMMY	NA	NA	NA	NA
TIME TREND	.62 (2.97)	.75 (2.08)		.30 (7.55)
LOG LIKELIHOOD		-493.755		1.864
R-SQUARED	.36	.43		.43
# OF OBSERVATIONS	152	152		152

NOTES:

¹ Jointly estimated

² GTE column reflects coefficients of interacting regulatory variables with a GTE dummy.

³ The coefficients of the following variables are not shown: CONSTANT, NUMBER OF LEC, LOG LAND, LOG URBANIZED POP, LOG URBAN POP, LOG RURAL POP, LOG CONSTRUCTION WAGE, LOG PERCAPITA INCOME, LOG MANUFACTURING, LOG FIRE.

**TABLE 6: AVERAGE PREDICTED EFFECT OF INCENTIVE REGULATION
ON LEC UNDER RATE OF RETURN AS OF 1991¹
PERCENTAGE CHANGES
BASELINE GROWTH MODEL
(N=66)**

REGULATORY CHANGE	SS7	ISDN	FIBER	SWITCHES BELL	GTE
PRICE CAP OR PRICE FREEZE	111%	114%	127%	18%	-72%
PRICE CAP OR PRICE FREEZE × EARNINGS SHARING	126%	129%	55%	7%	-57%
EARNINGS SHARING ALONE	20%	20%	-47%	1%	27%

NOTE:

¹ Estimates derived from Tables 4 and 5.

FIGURE 1: THE STATES REGULATORY ENVIRONMENT

STATES REGULATORY ENVIRONMENT

NUMBER OF STATES WITH SPECIFIC POLICY

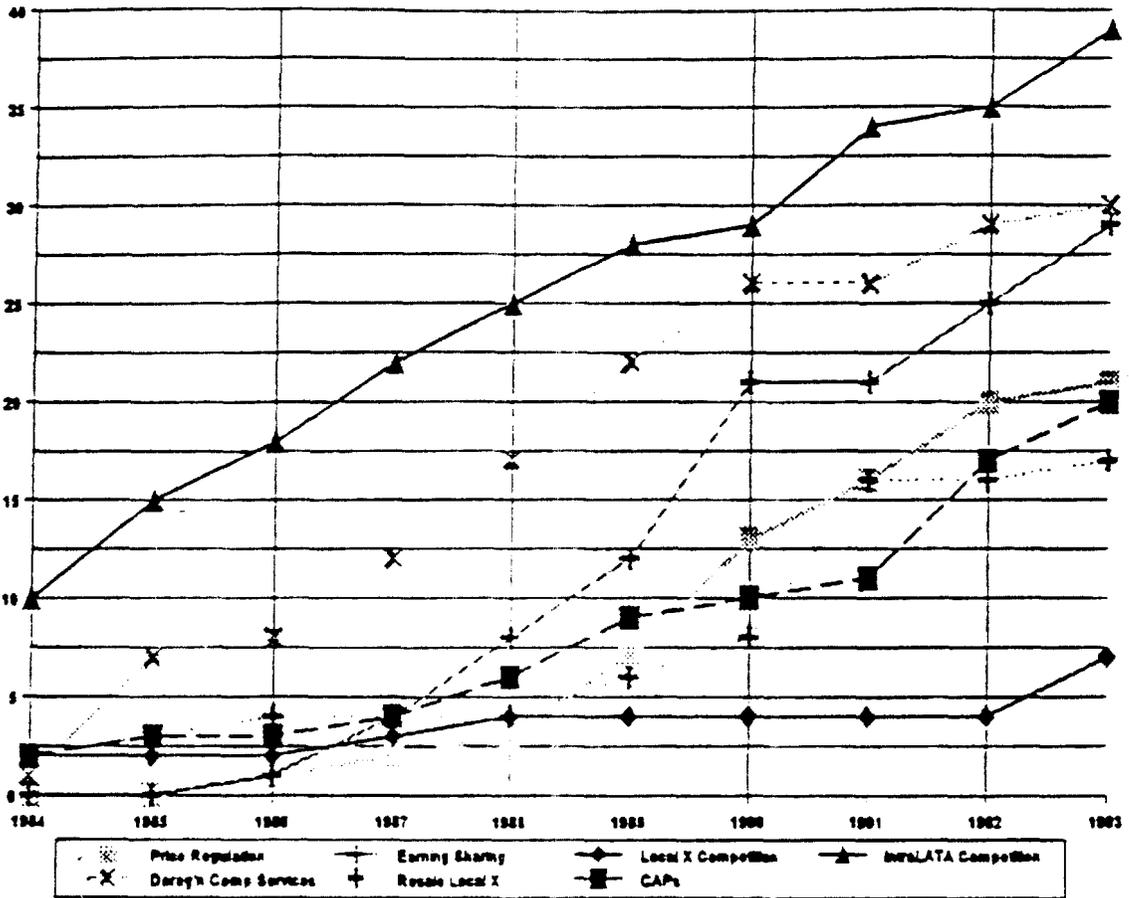
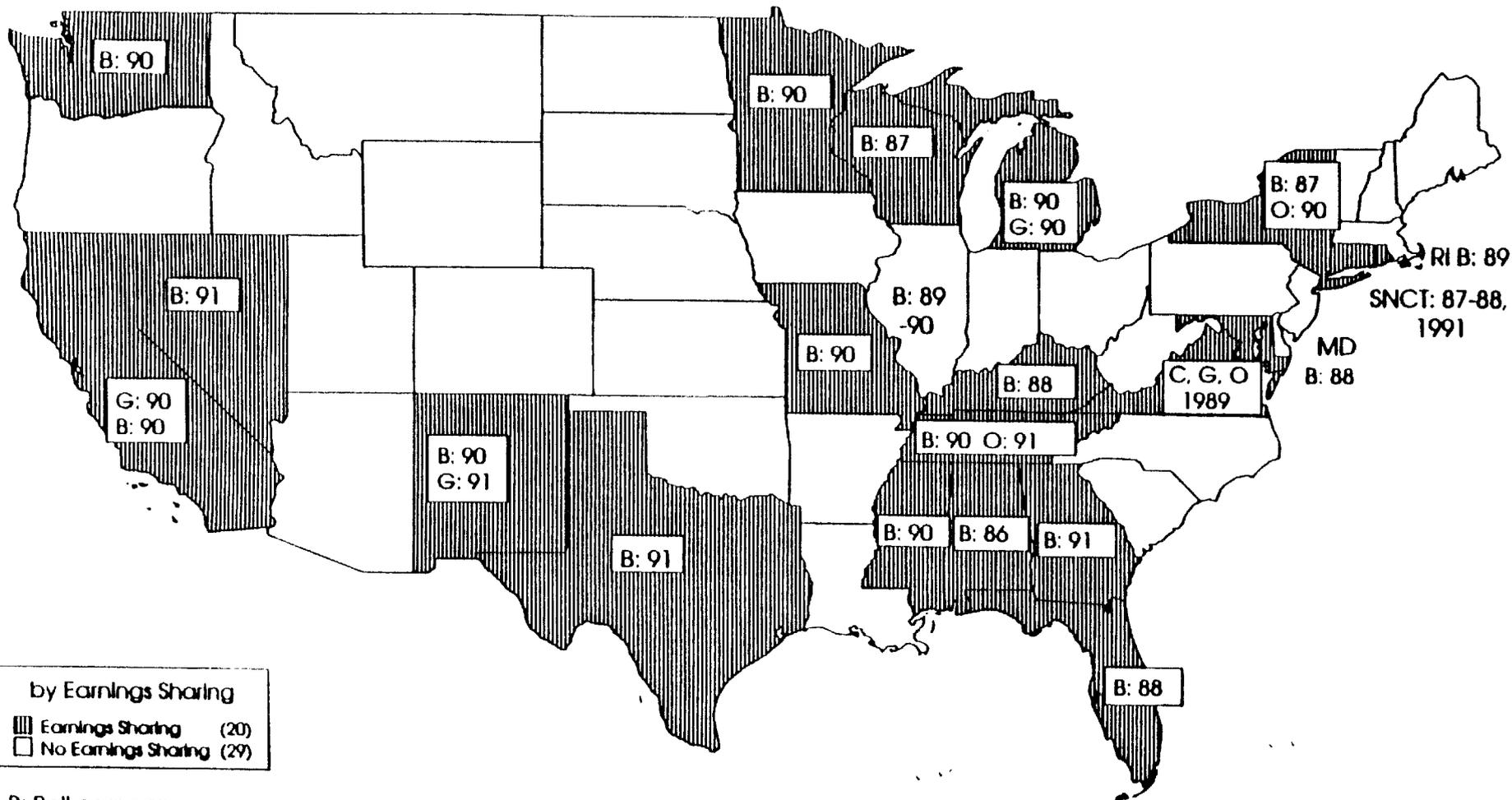


FIGURE 2: FIRMS SUBJECT TO PRICE REGULATION AS OF 1991

FIGURE 3: FIRMS SUBJECT TO EARNINGS SHARING AS OF 1991

Firms subject to Earnings Sharing as of 1991

(year of adpption)



by Earnings Sharing

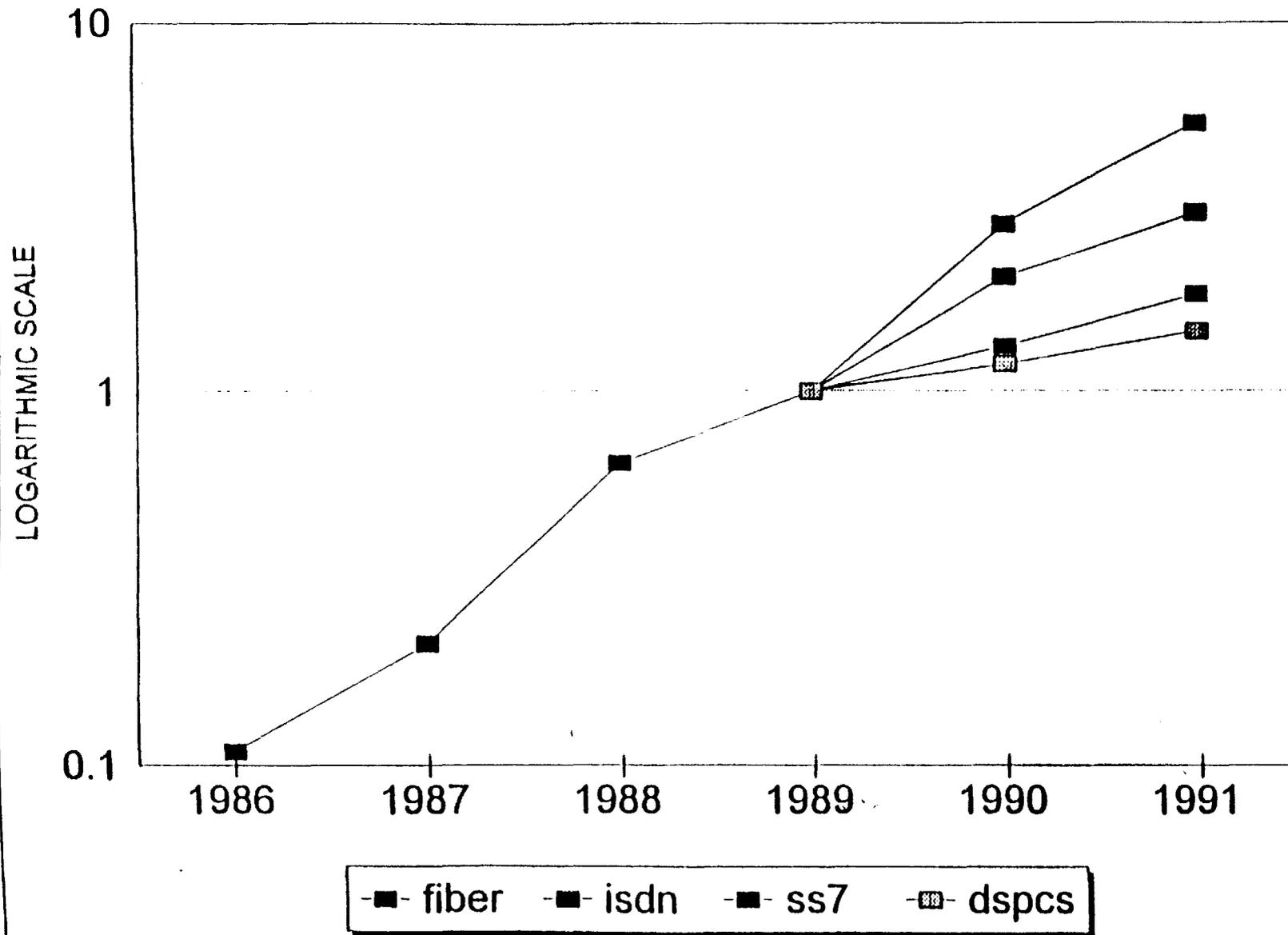
▨ Earnings Sharing (20)

□ No Earnings Sharing (29)

B: Bell company
 G: GTE company
 O: Other - NY: Rochester Tel., TN: United, VA: Central & Contel

FIGURE 4: DIGITAL GROWTH

DIGITAL GROWTH



APPENDIX 1: States with Price Regulation Plans 1984 - 1993

<u>STATES</u>	<u>TIME PERIOD</u>
● California	1990-
● Delaware	1993-
● District of Columbia	1993-
● Florida	1988-
● Idaho	1989-
● Kansas	1990-1995
● Maine	1989-1992
● Michigan	1992-1995
● Minnesota	1990-
● Missouri	1990-
● Nebraska	1986-
● Nevada	1991-
● New Jersey	1987-2000
● New Mexico	1990-1993
● New York	1990-1992
● North Dakota	1989-
● Oregon	1992-1996
● Rhode Island	1992-1995
● Texas	1991-
● Vermont	1989-1997
● West Virginia	1992-1994
● Wisconsin	1991-1993

Types of Price Regulation Plans:

Price-caps:

- Prices allowed to increase according to pre-set formula

Price-Freezes:

- Prices for non-competitive services are frozen or have downward flexibility for a specific duration period

California

California's plan became effective on January 1, 1990. Services are classified as either non-competitive, partially competitive or fully competitive. Non-competitive services such as basic local service are regulated by a price index. Partially competitive services are allowed downward pricing flexibility and have price caps and floors. The price index for both non-competitive and partially competitive services is set according to the GNP and adjusted by a productivity offset. Fully competitive services are allowed full pricing flexibility. The plan also includes an earnings sharing mechanism. (Source: Maine Report)

Delaware

In July 1993, the Delaware State Senate enacted SB 115 which provides for "price cap-type" regulation of LECs. Companies now have the option of electing price cap regulation return for infrastructure investment commitments. Services are classified as basic, discretionary or competitive. (Source: NARUC)

District of Columbia

On January 1993 the Public Service Commission adopted an incentive regulation scheme for C&P including a three year freeze on basic service rates for residential (dial tone, touch tone, message units and service connections) customers and provided pricing flexibility for Centrex interconnections and granted C&P the right to make future requests for pricing flexibility under a screening process. (Source: NARUC)

Florida

Since 1988 Southern Bell has been under an earnings incentive plan which included a cap on residential rates (these were reduced by \$1 and capped at that level). (Source: LECG survey)

Idaho

In 1988, the state enacted legislation which allows companies to deregulate all but basic local service. US West chose to deregulate non-basic local service and forfeited its certificate of public convenience. In 1989, the PUC approved a revenue sharing plan for US West. Revenue per access line is calculated for the base year, 1987. In subsequent "sharing" years, the same calculation is made. If the revenue per line exceeds the base year amount, a portion of the surplus is attributed to regulated services. Similarly, if the revenue per line is less than the base year amount, a portion of the deficit is attributed to regulated services. The remaining share of the deficit or surplus is attributed to deregulated services. US West and customers share in the surplus or deficit. The sharing plan is not affected by changes in expenses except for tax and FCC access charges. (Source: Maine Report)

Kansas

The TeleKansas plan was approved on Feb. 2, 1990. The plan freezes basic local residential and business rates until 1995. Certain discretionary services have pricing flexibility. The plan does not limit Southwestern Bell's earnings or require earnings sharing. (Sources: NARUC, Illinois Bell Analysis, Harris Indiana Bell Testimony)

Maine

Between 1989 and 1992, New England Telephone agreed to decrease toll rates, make certain infrastructure investments and not file for a rate increase in exchange for greater regulatory flexibility from the PUC. The PUC agreed not to request a decrease in rates. This arrangement amounted to a form of social contract. (Sources: Maine Report, Illinois Bell Analysis)

Michigan

On January 1, 1992, Michigan passed a second generation incentive regulation plan. The plan freezes for two years monthly service rates for all but very small carriers. Residential rates are flat-rated up to 400 calls. Intrastate access rates are capped at interstate rates for identical offerings. Intrastate toll rates are capped at 12/31/91 levels but can be reduced. After the two year period, Bell can file for a rate increase. An increase less than the inflation rate (-1%) will involve little review. (Sources: Maine Report, Harris Indiana Bell Testimony)

Minnesota

Since 1990 USWest operates under an incentive scheme plan that freezes regulated rates, except for income-neutral fillings (Source: LECG survey)

Missouri

From 1990 to 1993 Bell South's earnings sharing scheme included a freeze on basic local rates. (Source: LECG survey)

Nebraska

LB 835, enacted in 1986, deregulated all but basic local service. Local service rate increases less than 10% are enacted automatically, unless a certain percentage of customers object. (Sources: Maine Report, Illinois Bell Analysis)

Nevada

Since 1991 Nevada Bell operates under an incentive scheme that freezes basic services for 5 years. (Source: LECG survey)

New Jersey

New Jersey has had a Rate Stability Plan with no limit on earnings since July 1, 1987. Services are classified as competitive or non-competitive. In 1987, New Jersey Bell capped all rates for at least three years. Certain events such as a change in the CPI of at least 4.5% over a twelve month period will cause a rate review prior to the end of the three year period. On January 17, 1992, legislation was passed allowing the deregulation of competitive services and the introduction of alternatives to ROR regulation, including the possibility of price regulation. (Sources: NARUC, Maine Report, Illinois Bell Analysis, Harris Ohio Bell Interrogatory)

New Mexico

A three-year incentive regulation plan was implemented for US West on January 18, 1990. Touch-Tone and switched access services are classified as non-competitive and subject to price caps. All other services are classified as non-basic and regulated via rate banding. The plan also includes an earnings sharing mechanism. (Sources: Maine Report, NARUC)

Contel was subject to an incentive scheme with some pricing flexibility from 1991 to 1993. Local rates were frozen and other services regulated by rate-banding. (Source: State Telephone Regulation Report).

New York

In February 1990, a two year incentive regulation plan was implemented for Rochester Telephone. A base ROE was established in 1990 with adjustments made to reflect changes in the interest rate environment. Rates for Rochester's monopoly offerings are adjusted annually to reflect changes in inflation less a productivity adjustment. The plan also includes pricing flexibility for non-monopoly services, as well as an earnings sharing mechanism. (Maine Report)

North Dakota

A July 1, 1989 law classified services as "essential" or "non-essential." Prices for essential services are limited by an input cost index adjusted by a productivity offset. Prices for essential services can change by greater than the productivity-adjusted input cost index as long as the overall service price is less than the cap. Prices for non-essential services are detariffed. (Source: Maine Report)

Oregon

The PUC approved an incentive regulation plan for US West in November 1991. The five year plan classifies services as "essential" or "non-essential." Prices for essential services may change only on a revenue-neutral basis, effectively freezing these rates for the life of the plan. Non-essential services are clustered into product groups and price-listed. The weighted average price of each product group, which accounts for inflation less a productivity

offset, can increase a maximum of 10% over the life of the plan. The 10% maximum may be increased to 15% if the company can demonstrate to the PUC that it lacks market power for a sufficient number of services. (Source: Maine Report)

Rhode Island

New England Telephone is operating under a May 1992 four year alternative regulation plan. Rates for basic local service are frozen for the first year of the plan. During the second year of the plan, rates may increase by 50% of a price cap index which measures changes in the inflation rate less a productivity offset. In the third year, rates may increase up to 75% of the price cap index. In the fourth year, rates may increase by an amount equal to the change in the index. Prices for all other services may increase by an amount equal to the change in the index. The plan does not include any earnings sharing plan or earnings limitations. (Source: Illinois Bell Analysis)

Texas

From 1991 to 1994 Southwestern Bell's basic local rates are capped. (Source: LECG survey)

Vermont

New England Telephone is operating under the Vermont Telecommunications Agreement (VTA), in effect since February 1989. The VTA removes New England Telephone from any earnings regulation and freezes local rates for a three year period. The company is also granted pricing and regulatory flexibility to offer new services in exchange for infrastructure investment commitments. (Sources: Harris Indiana Bell Testimony and Illinois Bell Analysis)

West Virginia

The PUC approved a second-generation incentive regulation plan for C&P Telephone. The plan retained the previous plan's classification of services as competitive or discretionary, non-competitive or intrastate access services, as well as a new classification for services subject to "workable competition." Prices for basic services are frozen for the length of the plan. The company is removed from any earnings regulation and commits to network modernization improvements. (Sources: Harris Indiana Bell Testimony and Illinois Bell Analysis)

Wisconsin

On June 1, 1991, Wisconsin Bell and the PSC implemented an alternative regulation plan. Prices for basic local rates are frozen for a three-year period unless unforeseen events occur such as high inflation or interest rates. There is no earnings sharing mechanism or earnings regulation. (Sources: Illinois Bell Analysis, Maine Report)

APPENDIX 2: States with Earnings Sharing Schemes

State/Co.	Period	Earnings/sharing plan and conditions
Alabama		
BellSouth	November 1986-Present	<p>BellSouth keeps earnings <12.3%ROC. Earnings >12.3% shared with ratepayers up to 50% split. Earnings <11.65% BellSouth may seek rate increases between 50-100% of amount needed to return ROC to 11.925%.</p> <p>Degree of sharing with R/P above 12.3%ROC based on how well BellSouth meets service and cost efficiency standards.</p>
California		
Pacific Telesis		
	January 1990-Present	<p>LEC's share earnings 50/50 with R/P between 13-16.5%ROR, LEC's return 100% to R/P of earnings >16.5%.</p> <p>Speculative telecommunications services not included in earnings sharing calculations.</p>
GTE	January 1990-Present	<p>LEC's share earnings 50/50 with R/P between 13-16.5%ROR, LEC's return 100% to R/P of earnings >16.5%. For 1994-1996, GTE retains 100% earnings <15.5%ROR, and returns 100% of earnings >15.5%ROR.</p> <p>Speculative telecommunications services not included in earnings sharing calculations.</p> <p>GTE proposes to replace electromechanical switches and some electronic switches and associated analog interoffice facilities.</p>
Colorado		
USWest	January 1993-Present	<p>USWest retains 100% earnings <13.5%ROE, retains 35% between 13.5-14.5%, retains 50% between 14.5-15.5%, retains 65% between 15.5-16.5%, returns to R/P 100% >16.5%ROE.</p> <p>Plan includes service quality standards which must be met (not specified).</p>
Connecticut		
SNET	June 1987-December 1988	<p>SNET kept all earnings up to 13%ROE, between 13-13.5% earnings shared between increased depreciation and net income, between 13.5-14.3% shared 50/50 w/ R/P, >14.3% returned 100% to R/P</p>

No special conditioning

SNET July 1991-Present
 SNET shares earnings 50/50 with R/P between 11.26-13.05%ROR, SNET returns 100% earnings >13.05%ROR.

SNET must alter service schedule to provide installation and repair service through 8pm weekdays and 5pm Saturdays.

District of Columbia

Bell Atlantic January 1993-Present
 Bell Atlantic retains 100% earnings between 11.5-13.5%ROE, splits 50/50 with R/P >13.5%.

Plan stipulates that directory advertising revenues and expenses must continue to be calculated in the company's earnings.

Florida

BellSouth September 1988-December 1992
 BellSouth splits earnings 60/40 in favor of R/P for >14%ROE, earnings >16% returned 100% to R/P.

No special conditions

BellSouth January 1993-Present
 1993: Earnings 10.8%ROE; 1994: >12% split 60/40 in favor of R/P, >14% return 100% to R/P; 1995: >12.5% split 60/40 with R/P, >14.5% return 100% to R/P

No special conditions

Georgia

BellSouth January 1991-Present
 BellSouth splits 50/50 with R/P earnings between 14-16%ROE, returns 100% earnings >16%ROE. BellSouth may recover 50% of earnings needed to return to 13%ROE if ROE falls into 10-12% range, 100% if below 10%ROE

Prohibited from sharing over-earnings if any exchange fails the trouble Report standard of 5 reports per 100 access lines.

BellSouth must also meet productivity and service quality standards.

Idaho

USWest 1989-Present
 Revenue for sharing year in excess of benchmark year (1987) allocated between regulated and deregulated services. In first year of sharing (1989) 37% of over-earnings distributed to R/P. Beginning in 1991, sharing level increased to 41% for R/P.