The Consumer-Welfare Benefits from Bell Company Entry into Long-Distance Telecommunications: Empirical Evidence from New York and Texas

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For years, the effect of entry by the Bell operating companies (BOCs) into in-region interLATA long-distance markets has been the subject of conjecture and debate. Although economic theory suggests why substantial price reductions will occur upon BOC entry, many regulatory economists nonetheless conjectured that such entry would not benefit consumers significantly. Now that regulators have issued the first authorizations for BOCs to commence in-region interLATA service, it is possible to test that conjecture empirically. In this Article, we report empirical findings that BOC entry has produced substantial consumer-welfare benefits in New York and Texas in the form of lower prices for long-distance service. We find statistically significant evidence that BOC entry enabled the average consumer to reap a 9-percent savings on her monthly interLATA bill in New York and a 23-percent savings in Texas. In addition, we find statistically significant evidence that competitive local exchange carriers (CLECs) have a substantially higher cumulative share of the local exchange market in states where BOC entry has occurred. This empirical evidence is highly relevant to the BOCs' many remaining applications to provide in-region interLATA service in other states. That evidence also reveals the extent to which the framework used by the Federal Communications Commission and the Department of Justice to evaluate BOC applications for in-region interLATA service has failed to account fully for the interests of consumers. This framework has assumed that BOC entry would not significantly lower long-distance prices. But the empirical evidence has demonstrated that this assumption is incorrect. In an attempt to remedy a perceived market failure, the FCC and the DOJ produced a regulatory failure whose losses in consumer welfare run into billions of dollars annually.

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I. INTRODUCTION

As part of the Modification of Final Judgment (MFJ) that effected the divestiture of the Bell operating companies (BOCs) from AT&T on January 1, 1984,[1] the BOCs were forbidden to carry telephone calls from one local access and transport area (LATA) to another.[2] Grossly simplified, an interLATA call is a "long" long-distance call, and an intraLATA call is "short" long-distance call, which is also sometimes called a local toll call. A BOC may supply intraLATA service, as may an interexchange carrier (IXC), such as AT&T, MCI WorldCom, or Sprint. Although the Telecommunications Act of 1996[3] superseded the MFJ, it nonetheless retained the BOCs' interLATA prohibition and established, in section 271,[4] a process—involving each state public utilities commission, the Federal Communications Commission (FCC), and the Department of Justice (DOJ), acting on a state-by-state basis—by which the BOCs could earn regulatory approval to enter the interLATA market within the regions in which they provide local exchange service. As of October 25, 2001, the BOCs had received section 271 authorizations to provide in-region interLATA service in seven states.[5]

1. Modification of Final Judgment, *reprinted in* United States v. American Tel. & Tel. Co., 552 F. Supp. 131, 226-34 (D.D.C. 1982), *aff'd sub nom.* Maryland v. United States, 460 U.S. 1001 (1983). For an overview of the divestiture and its aftermath, see Jerry A. Hausman & J. Gregory Sidak, *A Consumer-Welfare Approach to the Mandatory Unbundling of Telecommunications Networks*, 109 YALE L.J. 417, 426-29 (1999).

2. For an assessment of the social costs of the interLATA line-of-business restriction under the MFJ, see Jerry Hausman, *Competition in Long Distance and Telecommunications Equipment Markets: Effects of the MFJ*, 16 MANAGERIAL & DECISION ECON. 365, 372 (1995) [hereinafter Hausman, *Effects of the MFJ*].

3. Pub. L. No. 104-104, 110 Stat. 56.

4. 47 U.S.C. § 271.

5. As of Janaury 1, 2002, BOCs had received section 271 authorizations in nine states on the following dates: Arkansas (Nov. 16, 2001), Connecticut (July 20, 2001), Kansas (Jan. 22,

Opponents to BOC entry into long-distance routinely raise hypothetical concerns that BOC entry will distort competition. These allegations of social cost associated with BOC entry have been advanced on numerous occasions in regulatory testimony[6] and subsequently have been demonstrated to be incorrect by a long line of respected economists.[7] There is nothing new to add to this debate about hypothetical issues.

Instead, what can illuminate the debate is empirical evidence of the actual consumer benefits of BOC entry into the in-region interLATA market. For years, the benefits of such entry have been a subject of conjecture and disagreement. Economists have exchanged theoretical arguments. The empirical evidence, while instructive, has been limited largely to comparisons with the regulatory experience in other nations and with less-regulated carriers in the United States, such as Southern New England Telephone (SNET), an incumbent local exchange carrier (ILEC) that was never a BOC in the former Bell System, which received authorization to provide service in Connecticut's interLATA market.

Now that regulators have issued the first authorizations under section 271, it is possible for the first time to evaluate directly the empirical effects of BOC entry into the in-region interLATA market. In this Article, we report empirical findings that BOC entry has produced substantial consumer-welfare benefits in New York and Texas in the form of lower prices for long-distance service. We find statistically significant evidence that BOC entry enabled the average consumer to reap a 9-percent savings on her monthly interLATA bill in New York and a 23-percent savings in Texas. In addition, we find statistically significant evidence that competitive local exchange carriers (CLECs) have a substantially higher cumulative share of the local exchange market in states where BOC entry has occurred. This empirical evidence is highly relevant to regulators' evaluation of the BOCs' eventual applications to provide long-distance service in more than forty other states. That evidence also reveals the extent to which the FCC's and the DOJ's framework for evaluating BOC

2001), Massachusetts (Apr. 16, 2001), Missouri (Nov. 16, 2001), New York (Dec. 22, 1999), Oklahoma (Jan. 22, 2001), Pennsylvania (Sept. 19, 2001), and Texas (June 30, 2000). *See* http://www.fcc.gov/Bureaus/Common_Carrier/in-region_applications.

6. For a succinct presentation of the usual arguments of cross subsidization, access discrimination, and litigiousness, see Affidavit of Robert H. Bork 6-13 (Oct. 1997) (filed on behalf of AT&T Corp. in opposition to BellSouth's section 271 application in South Carolina).

7. *See, e.g.*, J. GREGORY SIDAK & DANIEL F. SPULBER, DEREGULATORY TAKINGS AND THE REGULATORY CONTRACT: THE COMPETITIVE TRANSFORMATION OF NETWORK INDUSTRIES IN THE UNITED STATES 55-99 (Cambridge Univ. Press 1997); PAUL W. MACAVOY, THE FAILURE OF ANTITRUST AND REGULATION TO ESTABLISH COMPETITION IN LONG-DISTANCE TELEPHONE SERVICES 177-90 (1996); DAVID E.M. SAPPINGTON & DENNIS L. WEISMAN, DESIGNING INCENTIVE REGULATION FOR THE TELECOMMUNICATIONS INDUSTRY 251-71 (MIT Press & AEI Press 1996); Hausman, *Effects of the MFJ, supra* note 2; Susan Gates, Paul Milgrom & John Roberts, *Deterring Predation in Telecommunications: Are Line-of-Business Restraints Needed?*, 16 MANAGERIAL & DECISION ECON. 427 (1995); Paul S. Brandon & Richard L. Schmalensee, *The Benefits of Releasing the Bell Companies from the Interexchange Restrictions*, 16 MANAGERIAL & DECISION ECON. 349 (1995); Kenneth J. Arrow, Dennis W. Carlton & Hal S. Sider, *The Competitive Effects of Line-of-Business Restrictions in Telecommunications*, 16 MANAGERIAL & DECISION ECON. 301 (1995).

applications for in-region interLATA service have failed to fully account for the interests of consumers. Their framework has assumed that BOC entry would not significantly lower prices for interLATA service. But the empirical evidence has now demonstrated that this assumption was incorrect.

We organize the remainder of this Article as follows. In Part II, we report empirical evidence of the substantial consumer-welfare benefits from BOC entry into the in-region interLATA markets in New York and Texas. In Part III, we explain how the FCC and the DOJ have not fully considered consumer welfare when evaluating the BOCs' section 271 applications. In Part IV, we explain the basis in economic theory and market experience that has existed since soon after the passage of the Telecommunications Act of 1996 for predicting that BOC entry into the in-region interLATA market would benefit consumers by forcing down prices in that market. We explain why the predictions, contained in the expert testimony of several academic economists, that BOC entry into the interLATA market would not benefit consumers to any significant extent have proven to be inaccurate. In Part V, we conclude that the FCC and the DOJ should change their decision rules for evaluating BOC entry in in-region interLATA markets, for their existing rules rest on predictions that have proven to be empirically false.

II. EMPIRICAL EVIDENCE FROM NEW YORK AND TEXAS OF THE ACTUAL CONSUMER-WELFARE BENEFITS FROM BOC ENTRY

Data are now available with which to test empirically the hypothesis that BOC entry into in-region interLATA markets has benefited consumers by lowering the price of long-distance service. The empirical evidence from New York and Texas indicates that BOC entry into in-region interLATA services has indeed produced substantial gains in consumer welfare.

We consider the effect of BOC entry in New York and Texas on both interLATA and intraLATA competition. We compare outcomes in these states to outcomes in Pennsylvania and California, where BOC entry had not occurred as of the time of our analysis.[8] We first analyze a sample of residential interLATA bills and find a statistically significant decrease of approximately 10 to 20 percent in the year after BOC entry compared to price changes in the states without BOC entry. For local service we find a significant increase in residential customers using competitive local exchange carriers in New York and Texas after BOC entry, compared to changes in states without BOC entry. We find small decreases in local customers bills of approximately 4 percent, but the change is not statistically significant.

8. Verizon has since received permission to provide interLATA service in Pennsylvania. *See* note 5 *supra*.

A. *Methodology and Data*

We use a "difference-in-differences" approach to analyzing the competitive effects of BOC entry into interLATA long-distance service.[9] A difference-in-differences approach involves comparing the pre-entry to post-entry change in prices in a state where entry occurred to the change in prices over the same time period in a state where no entry occurred. This approach allows us to control for difference across states due to differences in socio-demographic characteristics, LATA definition, and other factors. If BOC entry had a price-reducing effect, we would expect to see a greater decline in prices in the state where entry occurred than in the state where no entry occurred.

The pre-entry period serves as a "control" for time-invariant economic factors that are specific to the state where entry occurred. For example, the consumers in the state might be relatively heavy users of interLATA service. This characteristic would be expected to be present in both the pre- and post-entry periods.

Similarly, the state used for comparison purposes serves as a control for economic factors that changed between the pre-entry and post-entry periods and would be expected to affect all states similarly. An example would be a change in the competitive interaction among nationwide long-distance providers that affected prices in all states.

We obtained the long-distance telephone bills for a sample of households from New York, Texas, Pennsylvania, and California. Pennsylvania served as a control for New York, and California served as a control for Texas. The control states were chosen because of similarities in factors such as LATAs, BOC ownership of the ILEC, and geography. SBC owns the BOCs in Texas and California, Southwestern Bell and Pacific Bell. Verizon owns the BOCs in New York and Pennsylvania, which were known as NYNEX and Bell Atlantic during part of our sample period.

We used the second half of 1999 as the pre-entry period and the second half of 2000 as the post-entry period. Thus, seasonal effects are controlled for by the choice of period. Bell Atlantic/Verizon introduced interLATA service in New York at the end of December 1999, and SBC introduced interLATA service in Texas in July 2000. Although the Telecommunication Act of 1996 requires uniform nationwide prices, intraLATA and intrastate interLATA offerings by a given company can differ between states. Moreover, facing increased competition, existing carriers would have greater incentives to ensure that a customer was on the minimum-cost plan given his or her calling patterns.

Each household appears in the data for only one billing cycle. We restricted our analysis to those households having only a single long-distance bill during the billing cycle. Thus, we eliminated households with

9. The technique is also called "panel data" or "first differences." It has a long history of use in econometrics. *See, e.g.*, RUSSELL DAVIDSON & JAMES G. MACKINNON, ESTIMATION AND INFERENCE IN ECONOMETRICS 683, 701 (Oxford University Press 1993); WILLIAM H. GREENE, ECONOMETRIC ANALYSIS 615-18 (Prentice Hall 3d ed. 1997).

more than one telephone line and households that switched service providers during the billing cycle.

For each household, we calculated a price per minute for peak (P), off-peak non-Sunday (OPA), and off-peak Sunday (OPB) minutes of use, as well as the monthly fee if the household was on a calling plan that imposed such a fee.

B. *Regression Results*

We used the difference-in-differences approach in a regression framework. For each type of minutes of use (P, OPA, and OPB), we ran a regression of the logarithm of price on indicator variables for the household's state, indicator variables for the household's service provider, an indicator variable for the post-entry period, and an indicator variable for the post-entry period in the state where entry occurred. We ran a similar regression for the monthly fee. We ran separate sets of regressions for Texas/California and New York/Pennsylvania.

The state indicator variables control for state-specific, time-invariant economic factors. The factors are called "fixed effects" in econometrics.[10] The service provider indicator variables control for provider-specific economic factors, such as AT&T's brand name. The indicator variable for the post-entry period controls for economic factors specific to the post-entry period, but common to both states. The coefficients on the indicator variables for the post-entry periods in New York and Texas provide an estimate of the extent to which the change in price or monthly fee between the pre-entry period and post-entry period was different in New York from the analogous change in Pennsylvania.

The detailed regression results appear in Tables 1 and 2. Standard errors appear in parentheses. We summarize the regression results below.

10. *See*, *e.g.*, GREENE, *supra* note 9, at 615-18 (explaining fixed effects); DAVIDSON & MACKINNON, *supra* note 9, at 322 (same). For an explanation of how the use of fixed effects eliminates possible bias in the coefficient estimates, see Jerry A. Hausman & William Taylor, *Panel Data and Unobservable Individual Effects*, 49 ECONOMETRICA 1377 (1981).

TABLE 1— REGRESSION RESULTS,
NEW YORK AND PENNSYLVANIA

Regression 1		Regression 2	
Dependent Variable: Log of Peak Price per Minute		Dependent Variable: Log of Off-Peak Price per Minute	
Intercept	-1.803832	Intercept	-2.247475
	(0.041979)		(0.035848)
New York Post-Entry	-0.156491	New York Post-Entry	-0.099791
	(0.064173)		(0.054395)
Variable for 2H-00	-0.112854	Variable for 2H-00	-0.034462
	(0.046170)		(0.040194)
New York State Variable	-0.029540	New York State Variable	-0.061906
	(0.044098)		(0.037518)
Pennsylvania State Variable	0.000000	Pennsylvania State Variable	0.000000
Sprint Variable	0.127245	Sprint Variable	0.129546
	(0.079068)		(0.068450)
AT&T Variable	0.065701	AT&T Variable	0.241933
	(0.039133)		(0.033269)
MCI Variable	0.000000	MCI Variable	0.000000
Number of Observations	1012	Number of Observations	945

Regression 3		Regression 4	
Dependent Variable: Log of Off-Peak (Sundays) Price per Minute		Dependent Variable: Fee	
Intercept	-2.790159	Intercept	1.354725
	(0.042141)		(0.153674)
New York Post-Entry	-0.116033	New York Post-Entry	0.536128
	(0.064969)		(0.232263)
Variable for 2H-00	0.071941	Variable for 2H-00	0.536630
	(0.048381)		(0.168494)
New York State Variable	-0.021263	New York State Variable	-0.144173
	(0.045504)		(0.162726)
Pennsylvania State Variable	0.000000	Pennsylvania State Variable	0.000000
Sprint Variable	0.551031	Sprint Variable	-0.577738
	(0.083000)		(0.283569)
AT&T Variable	0.529252	AT&T Variable	-0.072248
	(0.038571)		(0.143554)
MCI Variable	0.000000	MCI Variable	0.000000
Number of Observations	787	Number of Observations	1230

TABLE 2— REGRESSION RESULTS,
TEXAS AND CALIFORNIA

Regression 1:		Regression 2:	
Dependent Variable: Log of Peak Price per Minute		Dependent Variable: Log of Off-Peak Price Per Minute	
Intercept	-1.742455	Intercept	-2.028512
	(0.042574)		(0.036980)
Texas Post-Entry	-0.208083	Texas Post-Entry	-0.272094
	(0.063242)		(0.055625)
Variable for 2H-00	-0.085372	Variable for 2H-00	0.013271
	(0.035706)		(0.032721)
California State Variable	-0.256848	California State Variable	-0.326593
	(0.041977)		(0.036530)
Texas State Variable	0.000000	Texas State Variable	0.000000
Sprint Variable	-0.155785	Sprint Variable	-0.093056
	(0.053799)		(0.047414)
AT&T Variable	0.048106	AT&T Variable	0.093277
	(0.034160)		(0.030402)
MCI Variable	0.000000	MCI Variable	0.000000
Number of Observations	1250	Number of Observations	1064

Regression 3:		Regression 4:	
Dependent Variable: Log of Off-Peak (Sundays) Price Per Minute		Dependent Variable: Fee	
Intercept	-2.489903	Intercept	1.511033
	(0.042588)		(0.170948)
Texas Post-Entry	-0.210583	Texas Post-Entry	0.025690
	(0.064485)		(0.256860)
Variable for 2H-00	0.002924	Variable for 2H-00	0.503157
	(0.035758)		(0.146256)
California State Variable	-0.252007	California State Variable	-0.120472
	(0.042508)		(0.168865)
Texas State Variable	0.000000	Texas State Variable	0.000000
Sprint Variable	0.275187	Sprint Variable	-0.254473
	(0.053866)		(0.218218)
AT&T Variable	0.367200	AT&T Variable	-0.165399
	(0.033969)		(0.137915)
MCI Variable	0.000000	MCI Variable	0.000000
Number of Observations	883	Number of Observations	1423

1. *New York and Pennsylvania*

In the pre-entry period, the prices and monthly fees in New York and Pennsylvania were quite similar. Peak prices fell between the pre-entry and post-entry periods in both states. Pennsylvania peak prices fell by 11 percent. Much of this price decrease is likely associated with FCC-ordered

reductions in long-distance access tariffs. These access tariffs levy a per-minute charge on all long-distance calls carried over an ILEC's network.

Prices decreased in New York relative to Pennsylvania. Specifically, relative to Pennsylvania, prices in New York fell by 14 percent for P, 9 percent for OPA, and 11 percent for OPB. These differences are jointly statistically significant. Thus, the data demonstrate that BOC entry had a substantial price-reducing effect on prices in New York. Prices in New York were 9 to 14 percent lower than they would have been in the absence of BOC entry.

The average monthly fee increased in both states. In Pennsylvania, the average monthly fee increased by $0.54. In New York, the average monthly fee increased by $1.08. However, as discussed further below, the decrease in per-minute prices more than offset this increase in the monthly fee for the average New York consumer, resulting in a lower overall bill.

2. *Texas and California*

In the pre-entry period, Texas had substantially higher prices than California. The average monthly fees in the two states were about the same. Peak prices fell in both states between the pre-entry and post-entry periods. In California, peak prices fell by 8 percent.

Prices decreased in Texas relative to California. Specifically, relative to California, prices in Texas fell by 19 percent for P, 24 percent for OPA, and 19 percent for OPB. These differences are jointly statistically significant. Thus, the data demonstrate that BOC entry had a substantial price-reducing effect on prices in Texas. Prices in Texas were 19 to 24 percent lower than they would have been in the absence of BOC entry.

The average monthly fee increased in both states by approximately the same amount of $0.50.

C. *Effect on the InterLATA Bill for the Average Consumer*

We used the regression results to analyze the effects of BOC entry on the cost of interLATA service for the average New York consumer and the average Texas consumer. We defined the average consumer for a given state as having the average number of P, OPA, and OPB minutes of use calculated over the sampled households from that state.

Using the regression results, we estimated the prices and monthly fee for the average consumer. After multiplying the minutes of use by the corresponding price, summing across the minutes of use types (P, OPA, and OPB), and adding in the monthly fee, we obtained the estimated bill for the average consumer in each state and each time period. These results appear in Tables 3 and 4.

TABLE 3—SAVINGS ON INTERLATA BILLS FOR THE AVERAGE CUSTOMER, NEW YORK AND PENNSYLVANIA

	Average Minutes (New York 2H-00)	Average Price NY 2H-99	Average Price NY 2H-00	Average Price PA 2H-99	Average Price PA 2H-00
Peak	42	$0.198	$0.151	$0.204	$0.182
Off Peak	48	$0.124	$0.109	$0.132	$0.128
Off Peak (Sundays)	32	$0.097	$0.093	$0.099	$0.107
Fee		$0.994	$2.067	$1.138	$1.675
Total Bill		$18.405	$16.627	$19.247	$18.891
Total Savings			$1.778	$0.357	
Savings as Percentage of Total Bill			10.69%	1.89%	
Incremental Savings in Entry State			$1.421		
Incremental Savings as Percentage of Total Bill			8.55%		

TABLE 4—SAVINGS ON INTERLATA BILLS FOR THE AVERAGE CUSTOMER, TEXAS AND CALIFORNIA

	Average Minutes (Texas 2H-00)	Average Price TX 2H-99	Average Price TX 2H-00	Average Price CA 2H-99	Average Price CA 2H-00
Peak	38	$0.193	$0.144	$0.149	$0.137
Off Peak	39	$0.144	$0.111	$0.104	$0.105
Off Peak (Sundays)	20	$0.113	$0.092	$0.088	$0.088
Fee		$1.371	$1.900	$1.251	$1.754
Total Bill		$16.580	$13.540	$12.730	$12.829
Total Savings			$3.040	-$0.098	
Savings as Percentage of Total Bill			22.46%	-0.77%	
Incremental Savings in Entry State			$3.139		
Incremental Savings as Percentage of Total Bill			23.18%		

The results of these calculations indicate that the average consumer in New York and Texas experienced substantial savings as a result of BOC entry. In New York, the average consumer would have paid $18.41 in the pre-entry period and $16.63 in the post-entry period, for a savings of $1.78, or 11 percent. In Pennsylvania, this same consumer would have paid $19.25 in the pre-entry period and $18.89 in the post-entry period, for a savings of $0.36, or 2 percent. Thus, in New York, the average consumer would have saved an additional $1.42, or 9 percent, relative to Pennsylvania.

In Texas, the savings from BOC entry are even greater. In Texas, the average consumer would have paid $16.58 before entry and $13.54 after entry, implying a savings of $3.04, or 22 percent. In California, this same consumer would have paid $12.73 in the pre-entry period and $12.83 in the post-entry period, implying no savings (the implied loss of $0.10, or 1 percent, is not statistically significant). Thus, in Texas, the average consumer would have saved an additional $3.14, or 23 percent, relative to California.

D. *IntraLATA Results*

We next considered the effect of BOC entry on intraLATA competition. We consider the percentage of residential households that use a CLEC rather than the BOC for their local telephone service. Because the BOC does not cover the entire state for local service, we calculated the frequencies for zip codes in which the BOC had at least one customer. This approach should delete most areas where a non-BOC ILEC provides local service. We compare the first half of 1999 with the second half of 2000. Table 5 demonstrates that BOC entry led to a significant increase in CLEC activity in states with BOC entry.

TABLE 5: RESIDENTIAL SHARES FOR LOCAL SERVICE

Time Period	State	BOC	BOC Share	CLEC Share
1H 1999	NY	Bell Atlantic	96.5%	3.5%
2H 2000	NY	Bell Atlantic	82.8%	17.2%
1H 1999	PA	Bell Atlantic	94.1%	5.9%
2H 2000	PA	Bell Atlantic	93.0%	7.0%
1H 1999	TX	SBC	92.0%	8.0%
2H 2000	TX	SBC	84.9%	15.1%
1H 1999	CA	Pacific Bell	91.8%	8.2%
2H 2000	CA	Pacific Bell	90.9%	9.1%

The CLEC share increased from 3.5 percent to 17.2 percent in New York after BOC entry. This change is much larger than the CLEC increase of 1.1 percent in Pennsylvania, where BOC entry did not occur over the same period. The difference-in-differences is highly statistically

significant, with a t-statistic of 6.21. Similarly, in Texas after BOC entry, the CLEC share almost doubled from 8 percent to 15.1 percent, while the change in CLEC share in California, with no BOC entry, increased only slightly from 8.2 percent to 9.1 percent. Again, the difference-in-differences is highly statistically significant, with a t-statistic of 2.81. We also estimated a probit model with very similar results from BOC entry. Table 6 reports our findings that the probability that a consumer would subscribe to the BOC for local service fell after the BOC received permission to offer in-region interLATA service. Standard errors are in parentheses.

TABLE 6—REGRESSION RESULTS

New York and Pennsylvania		Texas and California	
Dependent Variable: Bell Operating Company Variable		Dependent Variable: Bell Operating Company Variable	
Intercept	1.558780	Intercept	1.394650
	(0.097520)		(0.062380)
New York Post-Entry	-0.779010	Texas Post-Entry	-0.311840
	(0.156280)		(0.128460)
Variable for 2H-00	-0.086680	Variable for 2H-00	-0.061780
	(0.119180)		(0.080290)
New York State Variable	0.254840	Texas State Variable	0.010420
	(0.131990)		(0.102720)
Number of Observations	2853	Number of Observations	3239

We conclude that BOC entry caused a significant increase in the CLECs' cumulative market share. Most of the change in CLEC share is attributable to AT&T Local and MCI Local, which now must compete to keep their residential local customers by offering bundles of local and long-distance services, because the BOC can now offer a similar package to residential consumers.

Finally, we estimated changes in local telephone bills after BOC entry. We again used the differences-in-differences approach to compare New York to Pennsylvania and Texas to California. The estimated coefficients appear in Table 7, with standard errors in parentheses.

TABLE 7—REGRESSION RESULTS

New York and Pennsylvania		Texas and California	
Dependent Variable: Log of Local Bill		Dependent Variable: Log of Local Bill	
Intercept	3.706654	Intercept	3.195285
	(0.186852)		(0.059075)
New York Post-Entry	-0.065833	Texas Post-Entry	-0.027955
	(0.041743)		(0.049503)
Variable for 2H-00	0.012796	Variable for 2H-00	0.050518
	(0.032079)		(0.029904)
New York State Variable	0.166886	Texas State Variable	0.403362
	(0.080401)		(0.083385)
Pennsylvania State Variable	0.000000	California State Variable	0.000000
All Other Companies Variable	-0.384793	All Other Companies Variable	-0.003581
	(0.196997)		(0.076861)
NYNEX Variable	-0.379002	Pacific Bell Variable	-0.164725
	(0.201384)		(0.058327)
Bell Atlantic Variable	-0.436730	SBC Variable	-0.125809
	(0.187335)		(0.073632)
GTE Variable	0.000000	GTE Variable	0.000000
Number of Observations	2853	Number of Observations	3237

In New York after BOC entry, we found that the local telephone bill decreased 6.6 percent, although the change is not statistically significant. In Texas after BOC entry, we found a decrease of 2.8 percent, which again is not statistically significant. We conclude that BOC entry has a downward effect on customers' local telephone bills, but the effect is much smaller than the effect on interLATA long-distance bills. The smaller effect on local bills is predictable, as both AT&T Local and MCI Local mainly resell the BOC's local service. With those carriers making only a limited investment in local facilities, we would not expect the cost basis for AT&T and MCI to differ very much from that of the BOC.

E. *Summary*

BOC entry into the in-region interLATA market has had large and statistically significant effects on the bills of residential consumers in New York and Texas. By using Pennsylvania and California as control states, we have been able to associate the decline in long-distance prices to BOC entry, separating out the overall decline in long-distance prices. BOC entry enabled the average consumer to save 9 percent per month on her interLATA bill in New York and 23 percent in Texas. We predict that, when the BOCs receive section 271 approvals in other states, a similar significant decrease in long-distance prices will occur that leads to consumer benefits.

Also, BOC entry led to large and statistically significant effect on CLEC shares for local residential service in New York and Texas. If the

BOCs receive section 271 approvals in other states, we expect to see a similar significant increase in CLEC share, as competition requires the long-distance companies to offer their customer bundled packages of long-distance and local service. This increased choice leads to consumer benefits. We found a small effect on local bills from BOC entry. This result occurs because most CLEC service to residential customers is resale of the BOC service.

III. THE FCC'S AND THE DOJ'S REJECTION OF A CONSUMER-WELFARE STANDARD FOR EVALUATING BOC ENTRY

Although BOC entry has occurred in seven states as of this writing, the FCC has embraced since 1997 a decision rule that has had the effect of retarding such entry by several years. The agency has not used a consumer-welfare standard that compares competitive benefits and anticompetitive harms.[11] Instead, the FCC has applied a decision rule in section 271 proceedings that gives little or no weight to the consumer benefits that will flow from BOC entry into the in-region interLATA market. The DOJ, through the testimony of its expert academic economist, also endorsed in 1997 a similar decision rule that deviates from the consumer-welfare standard.

From the empirical evidence reported in Part II, it is now clear that the FCC and the DOJ should have considered (1) the benefits from BOC entry in terms of lower long-distance prices and (2) the role of BOC entry in terms of stimulating the competitive entry of CLECs in the local exchange market. In an attempt to remedy a perceived market failure, the FCC and the DOJ produced a regulatory failure whose losses in consumer welfare run into billions of dollars annually. We review and critique now the inaccurate predictions that produced that socially deleterious policy.

A. *The FCC's* Ameritech *Standard*

The FCC's 1997 ruling on Ameritech's Michigan application for in-region interLATA authority stated that, rather than focusing on the substantial consumer benefits from BOC entry, such as lower residential long-distance prices, the public-interest inquiry "should focus on the status

11. In our previous research we have emphasized the importance of a consumer-welfare standard in the FCC's actions. *See* Hausman & Sidak, *supra* note 1. *See also* JERRY A. HAUSMAN, TAXATION BY TELECOMMUNICATIONS REGULATION: THE ECONOMICS OF THE E-RATE 4 (1998) [hereinafter HAUSMAN, TAXATION BY TELECOMMUNICATIONS REGULATION]; SIDAK & SPULBER, *supra* note 7, at 309-10, 340; WILLIAM J. BAUMOL & J. GREGORY SIDAK, TOWARD COMPETITION IN LOCAL TELEPHONY 40-41 (1994); Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, 1997 BROOKINGS PAPERS ON ECON. ACTIVITY: MICROECONOMICS 1 [hereinafter Hausman, *Valuing the Effect of Regulation on New Services*]; Jerry A. Hausman & Howard A. Shelanski, *Economic Welfare and Telecommunications Welfare: The E-Rate Policy for Universal Service Subsidies*, 16 YALE J. ON REG. 19, 26-29 (1999); J. Gregory Sidak, *Telecommunications in Jericho*, 81 CAL. L. REV. 1209, 1234-38 (1993) (review essay).

of market-opening measures in the relevant local exchange market."[12] For the FCC, BOC entry into the in-region interLATA market has been "an incentive or reward for opening the local exchange market."[13]

The FCC has failed to recognize that regulation is meant to benefit consumers, not to further other objectives of regulators that can decrease consumer welfare on an overall basis. The FCC's view of BOC long-distance entry as a "reward" does not analyze the effect on consumers of restrictions on the BOCs while they seek to achieve "reward status" according to the FCC's dictates. This view is misguided. As Professors David Sappington (the FCC's current chief economist) and Dennis Weisman have written: "From a social perspective, the key question is whether ROBC entry into the interLATA market enhances social welfare, not whether it injures a particular IXC."[14] Academic research has demonstrated that the FCC's regulatory actions that delayed the introduction of voice messaging cost consumers over $1 billion per year, and that the FCC's regulatory delays in the introduction of cellular telephony cost consumers about $25 billion per year.[15] Similarly, the FCC's means of funding the Internet subsidy to schools and libraries is costing consumers over $1 billion year, in addition to the tax (fee) revenue raised for the subsidy.[16] The FCC's policy under section 271 likewise is costing consumers billions of dollars per year in forgone consumer-welfare gains, as we explained in Part II.

1. *Consumer Benefits and Regulatory Perfection*

Economic analysis for policymaking considers the benefits and costs of a given policy design, and it then attempts to equate the marginal benefits and marginal costs. As our empirical results in Part II demonstrate,

12. Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services in Michigan, CC Dkt. No. 97-137, 12 F.C.C. Rcd. 20,543, 20,746 ¶ 385 (1997) [hereinafter *1997 Michigan Section 271 Order*]. For an early criticism of the section 271 process on this ground, see MACAVOY, supra note 7, at 175-212.

13. *1997 Michigan Section 271 Order*, 12 F.C.C. Rcd. at 20,746 ¶ 388. Professor William J. Baumol, testifying on behalf of AT&T concerning BellSouth's initial section 271 application in Louisiana, similarly set as his standard that a BOC should not be allowed to enter the in-region interLATA market until "concerns about anticompetitive conduct (concerns underlying the original imposition of the MFJ restrictions) have evaporated." Affidavit of William J. Baumol, at 5 ¶ 7 (Oct. 1997) (filed on behalf of AT&T Corp. in opposition to BellSouth's section 271 application in Louisiana). Professor Baumol's analysis implies that vertical integration should be prohibited in the U.S. economy if the upstream firm has market power. Yet no antitrust decision has ever stated that vertical integration should be prohibited solely on the basis that in the upstream market the firm has substantial market power. Only if the firm leverages its market power to cause higher prices in the *downstream* market are consumers injured. In the case of BOC entry into in-region interLATA service, downstream prices (for long-distance services) will be lower, as the evidence in Part II reveals.

14. SAPPINGTON & WEISMAN, *supra* note 7, at 258; *see also* Hausman & Sidak, *supra* note 1.

15. *See* Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, *supra* note 11.

16. *See* JERRY HAUSMAN, TAXATION BY TELECOMMUNICATIONS REGULATION, *supra* note 11; *see also* Hausman & Shelanski, *supra* note 11.

the marginal costs of the FCC's policy of not permitting increased competition in in-region interLATA markets is high—certainly in the tens of billions of dollars per year. The marginal benefits of the regulatory perfection standard of no barriers to local entry are considerably less than the *Ameritech* decision implies. The FCC should permit BOC entry into in-region interLATA markets as soon as all significant barriers to local entry have been removed, by which we mean barriers to entry that would allow a BOC to charge supracompetitive prices. However, even if, say, 95 percent of the barriers to entry had been eliminated and 5 percent remained, it will not be in consumers' best interest to forgo the billions of dollars of consumers benefits from long-distance competition to achieve the last 5 percent of entry-barrier removal. Thus, the *Ameritech* decision does not perform the cost-benefit tradeoff analysis that economic analysis demonstrates leads to the greatest consumer benefits.

The benefits to residential long-distance customers of allowing BOC entry into the in-region interLATA market can be calculated using a well known economic approach.[17] The change in consumer welfare from lower long-distance prices, ΔW, can be expressed as:

$$\Delta W \approx \sum_{i=1}^{m} -\Delta p_i \ (q_i + .5\Delta q_i) \approx \sum -\frac{\Delta p_i}{p_i}[p_i q_i + .5\eta_i\left(\frac{\Delta p_i}{p_i}\right)(p_i q_i)]$$

where q_i is quantity, p_i is price, η_i is the own-price elasticity of demand for long-distance service, and $\Delta p_i/p_i$ is the percentage price change. The first term in the formula is the percentage price change times the size of the residential long-distance market. The second term in the equation arises from increased consumer welfare from making more long-distance calls because of the lower prices.[18] Here, we need an estimate of the uncompensated price elasticity of demand. This term leads to a further increment of increased consumer welfare that arises from the additional calls that customers place because of the lower rates. Additional gains also go to businesses because of the increased competition that lead to lower long-distance prices for small businesses. Again, additional gains also go to businesses because the increased competition causes lower long-distance prices for small businesses.

Using this framework, Hausman estimated in 1997 that the decision rule in the FCC's *Ameritech* decision would cost consumers approximately $7 billion per year, or about $580 million for each month that the FCC induced delay in seeking its goal of no barriers to entry.[19] This tax was, and

17. This formula is well known in the public finance literature in economics. *See, e.g.*, Alan Auerbach, *The Theory of Excess Burden and Optimal Taxation*, *in* HANDBOOK OF PUBLIC ECONOMICS (Alan Auerbach & Martin Feldstein eds., 1985). The same formula is used in Hausman & Shelanski, *supra* note 11.

18. The second term in the formula is calculated with (utility) compensated quantities using the formula from Jerry A. Hausman, *Exact Consumer's Surplus and Deadweight Loss*, 71 AM. ECON. REV. 662 (1981).

19. Declaration of Jerry A. Hausman, at 11 ¶ 19, 19 ¶ 37, 34 ¶ 72 (Oct. 2, 1997) [hereinafter *Hausman Declaration*] (filed in support of BellSouth's section 271 application in Georgia). In 1997, Professor Paul MacAvoy estimated that the consumer-welfare benefits from

remains, significant for many households, because earlier academic research had demonstrated that poor households make a significant amount of long-distance calls.[20] One can see the mistake in the *Ameritech* decision rule by using the equation above to estimate how much consumer gain might be caused by a realization of the regulatory perfection standard of no barriers to entry. The second term in the equation for local exchange markets is essentially zero because previous research has found that the own-price elasticity of demand for local exchange service is near zero.[21] Thus, only the first term, $-(\Delta p_j/p_j)(p_j q_j)$, occurs in the consumer-welfare calculation, where p_j and q_j are the prices and quantities of local exchange demand. This term is likely to be small overall to the extent that regulation has been effective. Furthermore, most economists agree that local exchange service is priced below incremental cost, which further limits welfare gains.[22] Most important, if the BOCs have satisfied the provisions of sections 271 and 272 of the Telecommunications Act of 1996, then significant barriers to entry into local exchange markets have been removed.

Using an estimated own-price elasticity of demand for long-distance service of -0.723 and an economic model of AT&T price leadership in residential long-distance, Hausman computed in 1997 that BOC entry would drive down long-distance prices at least 15 to 25 percent.[23] That estimate was consistent with the market evidence of price reductions that SNET actually offered once regulators allowed it to provide interLATA long-distance service in Connecticut. SNET's residential prices were about 17 percent lower on average than AT&T's prices, taking account of all discount plans that AT&T offered. SNET gained a substantial portion of the market in Connecticut, which demonstrated that many residential customers preferred its service.[24]

SNET's experience provided regulators a basis in 1997 for predicting the magnitude of consumer-welfare gains from lower prices resulting from BOC entry into the in-region interLATA market. When estimated on a

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BOC entry into the in-region interLATA market would be $1.9 billion annually in the Ameritech region alone (Michigan, Wisconsin, Illinois, Indiana, and Ohio). Reply Affidavit of Paul W. MacAvoy 5 (July 2, 1997) (filed in support of Ameritech's section 271 application in Michigan).

20. *See* Jerry A. Hausman, Timothy Tardiff & Alexander Belinfante, *The Effects of the Breakup of AT&T on Telephone Penetration in the United States*", 83 AM. ECON. ASS'N PAPERS & PROC. 178 (1993).

21. Earlier research estimated the elasticity with respect to the basic exchange price to be -0.005. *See id*.

22. *See, e.g.*, SIDAK & SPULBER, *supra* note 7, at 353-56.

23. *Hausman Declaration, supra* note 19, at 7-8 ¶ 15. The own-price elasticity of demand for long-distance service predicts the percentage increase in long-distance calls that will result from a 1 percent decrease in long-distance prices. The market price elasticity of demand that Hausman used is widely accepted in the economics literature. *See, e.g.*, William E. Taylor & Lester D. Taylor, *Post-Divestiture Long-Distance Competition in the United States*, 83 AM. ECON. ASS'N PAPERS & PROC. 185 (1993); Joseph P. Gatto, Jerry Langin-Hooper, Paul B. Robinson & Holly Tyan, *Interstate Switched Access Demand Analysis*, 3 INFORMATION ECON. & POL'Y 283 (1988). If we let the long-distance margin be higher than Hausman's 1997 assumption of $0.07 per minute, which is likely to be the actual situation, we would estimate a larger expected decrease in long-distance prices.

24. *Hausman Declaration, supra* note 19, at 7-8 ¶ 15, 9 ¶ 16-17.

national basis using 1997 data, the increase in consumer welfare from BOC entry would be about $7 billion per year, assuming that long-distance prices fell as they did in Connecticut.[25]

2. *Double Marginalization*

The BOCs have a significant economic incentive to lower prices because of the significant increase in long-distance traffic that a lower price will cause. An increase in long-distance traffic increases the access revenues that the BOCs receive on long-distance calls. Thus, the BOCs receive two "profit margins," one on long-distance calls and one on access. The effects of this "double marginalization" have been known for decades to economists. Double marginalization occurs when two companies have a vertical supplier-customer relationship. The upstream company sets its margin to maximize its profits individually, while the downstream company does the same. If the upstream company begins to offer the downstream product also, it generally will set the final price of the downstream product to maximize its profits jointly. The company offering the combined product will often find it profitable to lower the price of the final product because it can increase its profits by lowering the price of the final product below the combined price that would obtain in the previous situation. Economists have recognized this price-decreasing effect of vertical integration for decades.[26] Although access reform under the Telecommunications Act of 1996 has decreased the LECs' access margin, it has not eliminated the entire margin. Thus, the price-decreasing effect of BOC entry into in-region interLATA service will remain.[27]

Suppose that a BOC's incremental margin on the provision of network access is $0.03 per minute, while the IXC's incremental margin on residential long-distance service is at least $0.07 per minute. The BOC will find it to be profit maximizing to lower the total margin from $0.10 per minute because it earns both margins, rather than only a single margin ($0.03 for access + $0.07 for long-distance = $0.10 total margin). The BOC would also be using two sets of facilities, local access and long-distance facilities, to earn this higher margin. When the BOC decreases the price slightly, it sells more access and more long-distance services and earns approximately $0.10 per minute; in contrast, if an IXC decreases the

25. *Id.* at 10-11 ¶ 19.

26. *See, e.g.*, JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 174 (MIT Press 1993). Professor Tirole, *id.*, discusses Joseph Spengler's "famous illustration of double marginalization." *See* Joseph Spengler, *Vertical Integration and Antitrust Policy*, 58 J. POL. ECON. 347 (1950). Although the original example of double marginalization was in the case of monopoly, it is well known to work in the case of imperfect competition as well. Imperfect competition occurs in telecommunications markets because of large fixed and common costs.

27. Although BOC entry together with the resulting price decreases may harm some inefficient IXCs, the public interest inquiry concerns protection of competition, not inefficient competitors. Also, under sections 251 and 252 of the Telecommunications Act of 1996, 47 U.S.C. §§ 251, 252, the IXCs have the ability to provide facilities-based access, which allows them to realize both margins, just as the BOCs could if permitted to provide in-region interLATA service.

price, it only receives the additional margin from increased sales of long-distance service of $0.07 per minute. Thus, the BOC has a greater incentive to charge lower long-distance prices than does an IXC. Furthermore, when the BOC lowers the long-distance price, the IXCs will lower their prices, which will increase the number of long-distance minutes demanded and consequently the number of access minutes demanded from the BOCs.[28]

Application of the economic theory of double marginalization leads directly to the prediction that BOC entry into the in-region interLATA market will lead to decreased long-distance prices. However, the FCC ignored this well accepted economic theory, even though Hausman explained its importance in his filings to the Commission.

3. *Summary and Implications*

Economic analysis submitted to regulators in 1997 predicted that BOC entry into the in-region interLATA market would decrease long-distance prices and increase long-distance competition, all to the benefit of consumers. This conclusion would again hold under a wide range of assumptions. For example, if one did not use a model of price leadership by AT&T, but instead used an oligopoly model of IXC behavior (such as a Cournot model), one would again find a substantial predicted decrease in long-distance prices from BOC entry because each IXC's own-price elasticity of demand increases with BOC entry and because the BOCs have an economic incentive to charge lower long-distance prices than do the IXCs. Regulators, however, were unimpressed by this prediction of substantial consumer-welfare gains from BOC entry, and they did not approve a section 271 application until December 22, 1999.[29]

It has harmed the public interest for the FCC to condition BOC entry into the in-region interLATA market on the elimination of *all* conceivable barriers to entry in the local exchange. The incremental gain from the first term in the equation above is very small for the last incremental step to regulatory perfection. The better interpretation of the public interest standard is one explicitly rooted in consumer welfare.[30] BOC entry will produce consumer-welfare gains from increased competition in the in-region interLATA market that outweigh the incremental gain from the last step to theoretical regulatory perfection in the local exchange market. The FCC has resisted such reasoning and, consequently, it deserves blame for neglecting consumer welfare through its implementation of section 271 of the Telecommunications Act of 1996.

28. This economic reasoning holds true under a wide range of specific assumptions about the exact size of the relevant margins. For a theoretical model showing this price-reducing effect of BOC entry into the in-region interLATA market, see SAPPINGTON & WEISMAN, *supra* note 14, at 258-61, 267-71; *see also* David S. Sibley & Dennis L. Weisman, *The Competitive Incentives of Vertically Integrated Local Exchange Carriers: An Economic and Policy Analysis*, 17 J. POL'Y ANALYSIS & MGMT. 74 (1998); Dennis L. Weisman, *Regulation and the Vertically Integrated Firm: The Case of RBOC Entry into InterLATA Long Distance*, 8 J. REG. ECON. 249 (1995).

29. *See* note 5 *supra*.

30. *See* Hausman & Sidak, *supra* note 1.

B. *Professor Schwartz's Standard for the Department of Justice*

The DOJ has also taken a position in opposition to the consumer welfare standard. In 1997, the same year that Hausman predicted that BOC entry into the in-region interLATA market would give consumers price savings of 15 to 25 percent, Professor Marius Schwartz of Georgetown University, submitting testimony as the expert witness of the Department of Justice in section 271 proceedings, admitted that he had not quantified the benefits or costs of delaying BOC entry.[31] Instead, Professor Schwartz stated that his conclusions rested on two main points: (1) the local market is larger than the long-distance market, and (2) the long-distance market is more competitive than the local market.[32] Economic conclusions, however, cannot rest on these two pieces of data alone, without economic analysis.

As the equation in Part III.A demonstrated, the two most important changes in consumer welfare arise from the change in price and from the price elasticity of demand. Yet, Professor Schwartz did not address the values of these parameters in markets for local services or for long-distance services. To the contrary, he made an error in economics when he stated: "The same *percentage* improvement in economic performance in both markets in response to increased competition would therefore generate considerably greater *total* benefits in the local market."[33] Professor Schwartz would be correct only if the demand elasticities were the same in both markets. They are not. Price changes are likely to be larger in the long-distance market because effective regulation of local services has constrained prices and because the price elasticity of demand for long-distance services is many times larger, indeed more than one-hundred times larger, than the price elasticity of demand for local access.[34] Because Professor Schwartz did no formal economic analysis, he could not conclude that his perceived benefits of faster local competition outweigh the costs of delaying greater price competition in long-distance markets.

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31. Supplemental Affidavit of Marius Schwartz, The "Open Local Market Standard" for Authorizing BOC InterLATA Entry: Reply to BOC Criticisms 4 ¶ 9 (Nov. 3, 1997) (filed on behalf of the U.S. Department of Justice) [hereinafter Schwartz, *Open Local Market Standard*]. Professor Schwartz said:

> It is true that my [previous] affidavit did not attempt to explicitly quantify the benefits or costs of delayed BOC entry. While I am sympathetic to attempts by some BOC experts to try and quantify such effects, forecasts are only as good as their underlying assumptions. Given the tremendous uncertainty involved in the case at hand, forecasting exercises are inherently speculative. Moreover, . . . some forecasts of the benefits of BOC entry produce the illusion of precision, when in fact they hinge on dubious assumptions that cause the estimates of the benefits to be grossly inflated.

Id. *See also See* Affidavit of Marius Schwartz, Competitive Implications of Bell Operating Company Entry Into Long-distance Telecommunications Services (May 14, 1997) (filed on behalf of the U.S. Department of Justice) [hereinafter Schwartz, *Competitive Implications of BOC Entry*].

32. Schwartz, *Open Local Market Standard, supra* note 31, at 5 ¶ 10(A).

33. *Id.* at 8 ¶ 17 (emphasis in original).

34 For a discussion of these price elasticities, see Hausman & Shelanski, *supra* note 11.

Professor Schwartz asked a rhetorical question about improvement from competition in the BOCs' local markets, which he said "today are largely *monopolies.*"[35] However, the BOCs are *regulated* monopolies. Thus, no monopoly profits are being earned if the regulators are doing their jobs.[36] The price distortions that exist arise largely from regulation.[37] Rural consumers receive large subsidies for local telephone service. The BOCs do not create this policy by exerting monopoly power, however. The FCC and state regulators cause this outcome. For the FCC and DOJ to refuse to permit BOC entry because of the distortions *created* in part by the FCC itself is to doubly harm consumers. The first harm is created by cross subsidies and taxes imposed by the FCC, and the second harm is created by supracompetitive long-distance prices.

Professor Schwartz agreed that a marginal analysis is appropriate for section 271 proceedings.[38] He disagreed, however, that the remaining barriers to entry into local telephony could be accurately portrayed as minor. But Professor Schwartz provided no method for deciding whether the remaining barriers were "major" or "minor" as of 1997, as he presented no model with which to perform the analysis and quantify the effect of remaining barriers (if any). With no available model, Professor Schwartz could not draw reliable conclusions, nor were his conclusions falsifiable. That is, without quantification, it is impossible to decide whether barriers to entry are "minor" or "major." It has been known since the 1930s that if conclusions are not falsifiable, then they do not provide a scientific guide to decision making.[39]

Professor Schwartz made another error in economics when he used the *industry* elasticity of demand for long-distance service (he used –0.7) to conclude that the BOCs would prefer to raise the price of in-region interLATA price, not lower it, as the experience in Connecticut with SNET suggested and evidence of BOC entry in New York and Texas has since confirmed.[40] A BOC entering the interLATA market faces a *firm* price elasticity of demand, not the industry elasticity of demand. The firm elasticity of demand exceeds the industry elasticity of demand and will exceed –1.0 in magnitude. The correct economic model then demonstrates that the BOC will desire lower prices, unless it can achieve an extremely large share of the interLATA market, well beyond any realistic expectations. Professor Schwartz was only correct if he assumed (at least implicitly) that the BOCs would engage in coordinated interaction or form

35. Schwartz, *Open Local Market Standard, supra* note 31, at 9 ¶ 21 (emphasis in original).

36. *See, e.g.*, SIDAK & SPULBER, *supra* note 7, at 352-56.

37. *See* ROBERT W. CRANDALL & LEONARD WAVERMAN, WHO PAYS FOR UNIVERSAL SERVICE? WHEN TELEPHONE SUBSIDIES BECOME TRANSPARENT 166 (Brookings Institution 2000) (discussing regulatory requirements to price local exchange service below cost).

38. *See* Schwartz, *Open Local Market Standard, supra* note 31, at 17-18 n.16.

39. Sir Karl Popper's epistemological work on falsifiability, dating from the 1930s, culminated in KARL POPPER, OBJECTIVE KNOWLEDGE: AN EVOLUTIONARY APPROACH (Clarendon Press rev. ed. 1979). The classic paper on falsifiability in economics is Milton Friedman, *The Methodology of Positive Economics, in* ESSAYS IN POSITIVE ECONOMICS 4 (1953).

40. Schwartz, *Open Local Market Standard, supra* note 31, at 26-27 ¶ 68.

a cartel with the incumbent IXCs in the interLATA market. Such an outcome is extremely unlikely given the BOCs' economic incentives. More important, it is directly contrary to the actual experience of lower long-distance prices following BOC entry in New York and Texas and SNET's earlier entry in Connecticut.

Professor Schwartz claimed that the profit from BOC entry into long-distance would come largely from diverting sales from IXCs.[41] Even if correct, that claim is largely irrelevant for evaluation of the consumer-welfare effects of BOC entry. The consumer-welfare benefit has two components: lower prices on the current amount of long-distance traffic and an increased amount of long-distance traffic. The first component, which would exist even if the BOC obtained all of its sales from IXCs, is by far the larger of the two components. Hausman calculated in 1997 that the consumer-welfare increase due to the increased amount of long-distance traffic is about $400 million year, while the consumer-welfare increase due to lower prices on the current amount of long-distance traffic is $6.2 billion.[42]

The more fundamental problem with Professor Schwartz's approach is that *it protects the profits of IXCs rather than analyzing the effects on consumers.* Indeed, Professor Schwartz captioned this part of his analysis, "diverting sales from IXCs."[43] An economist should not be concerned about the sales and profits of the incumbent IXCs. The government's proper considerations are the lower prices and increased consumer welfare that follow from BOC entry into the in-region interLATA market. Somehow the process of competition became subverted to protecting the current IXCs' market share and profits. Professor Schwartz did not consider how the BOCs could "*divert[]* output away from IXCs" except by offering consumers a better deal.[44]

In articulating the DOJ's economic position on section 271 proceedings, Professor Schwartz failed to answer the $64,000 question in 1997: Why were consumers in Connecticut turning to SNET if they were not getting a better deal? Professor Schwartz conceded that "some SNET . . . customers may well be enjoying better rates as a result of interLATA entry" by SNET.[45] However, because economic analysis respects consumer sovereignty, one would have thought that the government's position would be that virtually *all* of SNET's interLATA customers got what they considered to be a better deal. Otherwise, those customers would not have

41. *Id*. at 27-29 ¶¶ 71-74 .

42. *See* note 19 *supra* and accompanying text.

43. Schwartz, *Open Local Market Standard, supra* note 31, at 27 ¶ 71. *Accord, id*. at 29 ¶ 74.

44. *Id*. at 29 ¶ 74 (emphasis in original). Professor Schwartz argued that Hausman overestimated the benefits from BOC entry because "only 77% of all interLATA minutes originated in BOC service areas." *Id*. at 31 ¶ 79. Professor Schwartz failed to note that all of the large IXCs have uniform national pricing policies, partly as a result of regulation and partly as a result of the inherent complications in billing systems. If AT&T is subjected to greater competition for 77 percent of its traffic, one can safely predict that AT&T will lower its prices on a nationwide basis.

45. *Id*. at 33 ¶ 84.

chosen and remained with SNET. After all, AT&T and MCI were hardly unknown companies to consumers of long-distance service in 1997.

Finally, Professor Schwartz said that BOC entry could "accelerate" price decreases, but that over time the effect of that new competition would lessen.[46] He was incorrect here because he failed to take account of the double marginalization that leads to an economic incentive for the BOCs to charge lower long-distance prices. In addition, Professor Schwartz forgot the most famous dictum in economics: In the long run, we are all dead. In 1997, the DOJ's standard for implementing section 271 (operating in conjunction with the FCC's *Ameritech* standard) was costing each American household on average $60 to $70 per year in supracompetitive long-distance charges. The substantial price reductions that followed BOC entry into the in-region interLATA markets in New York and Texas confirm the reasonableness of that 1997 estimate by Hausman. In any public interest determination, regulators should consider this current and continuing consumer harm against uncertain claims about what might happen to the IXCs' detriment in the long run.

IV. INCORRECT CONSUMER-WELFARE PREDICTIONS OF EXPERT ACADEMIC ECONOMISTS

Since the first BOC filed a section 271 application in 1997, a number of academic economists have submitted affidavits on behalf of the IXCs in which they predicted that, regardless of the probability or improbability of hypothetical anticompetitive harms, delaying BOC entry into in-region interLATA markets would impose little social cost because such entry—when regulators did allow it to occur—would not produce any significant competitive benefits for consumers. The common thread in these predictions was that BOC entry would not cause the price of interLATA service to fall. Of course, the empirical evidence now available from New York and Texas demonstrates that those predictions were inaccurate.

A. *Professor Shapiro for Sprint*

In testimony presented on behalf of Sprint in 1997, Professor Carl Shapiro of the University of California, Berkeley, who served as chief economist of the Antitrust Division of the DOJ during the Clinton administration, attempted to establish a framework to evaluate the public interest standard in section 271 proceedings without any mention or analysis of benefits that would flow from increased long-distance competition from BOC entry.[47] He assumed, with no supporting evidence, that the consumer benefits from local competition would be high. But he failed to assess how effective regulation had been in keeping local

46. *Id*. at 34 ¶ 85.

47. Declaration of Carl Shapiro (Oct. 1997) (filed on behalf of Sprint Corp. in opposition to BellSouth's section 271 application in South Carolina).

exchange services at (or below) their economic cost. Thus, like Professor Schwartz, Professor Shapiro assumed large benefits arising from local exchange competition, yet he ignored the benefits to consumers from lower long-distance prices.

Professor Shapiro argued on a priori grounds that "adding another competitor" to the in-region interLATA market will bring little benefit.[48] He failed, however, to consider the empirical evidence, already available by 1997, of SNET's charging significantly lower prices upon its entry into Connecticut's interLATA market. Moreover, a BOC is not just *another* competitor. A BOC is a particularly able competitor that has an economic incentive to charge lower prices because of its vertical integration and the double-marginalization effect.

Economic theory implies that BOCs have an economic incentive to decrease long-distance prices. First, BOCs will have economies of scope that, to the extent they can be realized consistent with FCC rules, will lead to lower costs and lower prices. More important, as discussed above, because under current regulatory policies access and long-distance services are both sold at prices exceeding marginal (incremental) cost to cover the large fixed costs of the local and long-distance networks, the double-marginalization effect will give the BOCs an economic incentive to lower prices.

B. *Professor Hall for MCI*

Professor Robert E. Hall of Stanford University, testifying for MCI in 1997, also disagreed that BOC entry into in-region interLATA service would lower prices by avoiding double marginalization.[49] He misunderstood the argument, however. It is not that the downstream operation faces the upstream marginal cost because an opportunity cost exists of selling long-distance access to the IXCs. Rather, the argument is that, when the vertically integrated company makes its profit-maximization calculations, it has an economic incentive to lower prices because it will gain additional profits from its own and its competitors' increased demand for originating and terminating access for long-distance calls. The IXCs lack this extra economic incentive. Professor Hall claimed that the BOCs' incentive arises from above-cost access prices.[50] That argument is incorrect. So long as access prices reflect the significant sunk costs of providing long-distance access, the economic incentive remains for a BOC to offer lower long-distance prices than an IXC.

Professor Hall attempted to explain SNET's success in Connecticut by claiming that "SNET has a huge competitive advantage."[51] He conceded that SNET's prices were lower than the IXCs' in Connecticut: "The

48. *Id*. at 8.

49. Declaration of Robert E. Hall, at 64-65 (Oct. 1997) (filed on behalf of MCI in opposition to BellSouth's section 271 application in South Carolina) [hereinafter *Hall Declaration*].

50. *Id*.

51. *Id*. at 28.

national long-distance carriers would have to lower their prices nationally in order to respond to SNET's pricing."[52] Professor Hall agreed that the margin inherent in long-distance access could lead to the result that "the local carrier may reduce the price of long-distance service."[53] But this effect, he said, should not be considered as a benefit. Yet, lower prices always benefit consumers (holding quality constant). How those benefits would arise is not particularly relevant. Professor Hall also argues that SNET's large market share is "no indicator of social benefits."[54] However, SNET achieved a 35 to 40 percent market share in Connecticut's long-distance market because consumers preferred its service. Given the likely elasticities of demand faced by SNET, its large market share demonstrates that its entry led to substantial consumer benefits.[55]

Professor Hall also predicted that the consumer benefits of one-stop shopping following BOC entry would be trivial.[56] Yet, few persons would dispute that customers value such convenience. AT&T, MCI WorldCom, and Sprint have all stated publicly that they consider it is important competitively to offer one-stop shopping. BOC entry into in-region interLATA services will permit the BOCs to offer one-stop shopping to compete with the big three IXCs and other carriers. Consumers benefit from increased choices, and consequently they will benefit from BOC entry into the interLATA market. BOC entry into the in-region interLATA market will also increase the economic incentives of IXCs to offer local services. Bundling increases the expected economic return to IXCs from offering local services. Also, once the BOCs begin to offer bundled packages of local and long-distance services, the IXCs will have to respond competitively with similarly bundled packages of local and long-distance services.[57] BOC entry will advance the goal of increased competition that underlies the Telecommunications Act of 1996, as competition will increase in both long-distance and local markets.[58]

Again, market experience has shown an economic prediction concerning BOC entry to be false. SNET's experience in Connecticut and the BOCs' experiences in New York and Texas demonstrate that

52. *Id*.

53. *Id*. at 30. This statement contradicted Professor Hall's claim that the BOC's elimination of double marginalization would not lead to lower long-distance prices. *Id*. at 64.

54. *Id.*

55. *See* Jerry A. Hausman, *Valuation of New Goods Under Perfect and Imperfect Competition, in* TIMOTHY BRESNAHAN & R. GORDON, THE ECONOMICS OF NEW GOODS 209 (Univ. of Chicago Press 1996); Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, *supra* note 11; Jerry A. Hausman, *The CPI Commission: Discussion*, 87 AM. ECON. ASS'N PAPERS & PROC. 96 (1997).

56. *Hall Declaration*, *supra* note 49, at 23.

57. For the first three years after enactment of the Telecommunications Act of 1996, BOC entry into the in-region interLATA market was a precondition to removing restrictions that prevented the IXCs from bundling resold local services with their long-distance services. *See* 47 U.S.C. § 271(e)(1).

58. *See* Telecommunications Act of 1996, Pub. L. No. 104-104, preamble, 110 Stat. 56, 56 (purpose of Telecommunications Act of 1996 is to "promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies").

consumers prefer one-stop shopping. Under the principle of consumer sovereignty, economists and regulators should not question market outcomes because these outcomes reveal consumers preferences.

C. *Professors Hubbard and Lehr for AT&T*

Professors Glenn Hubbard and William Lehr, both then of Columbia University, testified for AT&T in 1997 in opposition to BellSouth's first application to provide in-region interLATA service in Louisiana.[59] They argued that long-distance markets are "effectively competitive today."[60] Professors Hubbard and Lehr further concluded that BellSouth's entry into in-region interLATA markets would not increase competition, but instead would threaten competition in long-distance markets.[61] They said that BellSouth's ability to succeed in long-distance competition was "not the relevant question."[62]

Professors Hubbard and Lehr considered various structural factors of the long-distance market, such as the number of competitors and AT&T's market share. They also reviewed the decline in real (inflation adjusted) prices. But Professors Hubbard and Lehr performed no price (rate) comparisons for actual customers, such as Hausman did for SNET in Connecticut. If Professors Hubbard and Lehr had done so, they would have found that SNET's prices were lower than the IXCs.

Given that SNET offered lower prices, Professors Hubbard and Lehr should have concluded that residential long-distance prices were not effectively competitive in Connecticut before SNET's entry. Otherwise, how could an ILEC that was allowed to offer long-distance offer significantly lower prices? Indeed, Professors Hubbard and Lehr never considered the main economic reason that SNET and the BOCs would offer lower prices: double marginalization. Professors Hubbard and Lehr's only response to the greater competition witnessed in long-distance services in Connecticut was to speculate that the price discounts might not be "long-term."[63] Although Professors Hubbard and Lehr referred to the importance of consumer sovereignty,[64] they failed to explain why consumers soon gave SNET about 35 to 40 percent of their long-distance business in Connecticut if long-distance competition there had been "vigorously" competitive, as these economists insisted.[65] Consumer choice demonstrated that, when SNET offered lower long-distance prices, consumers chose SNET to the point that SNET became the second-largest

59. *See* Declaration of R. Glenn Hubbard and William H. Lehr (Nov. 1997) (filed on behalf of AT&T Corp. in opposition to BellSouth's first section 271 application in Louisiana). In 2001, President Bush appointed Professor Hubbard chairman of the Council of Economic Advisers.

60. *Id*. at 7.

61. *Id.* at 8.

62. *Id*. at 10.

63. *Id*. at 63.

64. *Id*. at 28.

65. *Id*. at 30.

long-distance provider in Connecticut. Despite such evidence available in 1997, Professors Hubbard and Lehr advised regulators to prevent customers from benefiting from the $7 billion per year that Hausman computed, because they believed that the benefit might not be "long-term."

V. CONCLUSION

The implementation of the Telecommunications Act of 1996 should be informed by empirical evidence. On the basis of empirical evidence, it is now necessary to reject as erroneous the prediction that entry by the Bell operating companies into in-region interLATA markets would not significantly improve consumer welfare. In actuality, consumers have reaped substantial benefits in New York and Texas, where BOC entry has enabled them to pay between 9 and 23 percent less each month for their interLATA calls than comparable customers pay in Pennsylvania and California. At the same time, BOC entry into New York and Texas has stimulated greater local competition from CLECs than has occurred in Pennsylvania and California.

In light of the empirical evidence, the Federal Communications Commission and the Department of Justice should change their decision rules for evaluating BOC entry in in-region interLATA markets. Their existing rules rest on predictions that have proven to be empirically false. Consumer welfare, not regulatory perfection, is the appropriate public interest standard for implementing section 271. Further regulatory delay in approving section 271 applications will significantly harm consumers by forcing them to overpay for interLATA service by billions of dollars annually.