

transition to competition in the long-distance market. To wit, it will have spent far too much time mechanically counting the number of competitors, and far too little time assessing whether consumers have meaningful choices at competitive prices for their telecommunications products and services.

Principle 10. Policymakers have recognized that (i) subscription to both wireless and wireline does not imply that the two services are complements, and (ii) wireless provides competitive discipline on wireline prices.

78. There is increasing recognition on the part of regulators and policymakers in the telecommunications industry that wireless provides competitive discipline on wireline pricing. This is evident from the fact that recent regulatory decisions throughout North America cite ubiquitous wireless competition as a factor in forbearance and deregulation of telecommunications services.

79. In Canada, ILECs may petition to be forborne from regulation in an exchange when there are two independent, facilities-based competitors to the incumbent provider, where at least one of them is a wireline provider other than the ILEC.⁸¹ As of June 30, 2009, throughout Canada the CRTC has forborne from regulating in exchanges that account for 77 percent of residential lines and 68 percent of business lines, representing 75% of all local revenues.⁸²

80. The California Commission recently determined that wireless is in the same product market as wireline communications. This determination was instrumental

⁸¹ Telecom Decision CRTC 2006-15, *Forbearance from the regulation of retail local exchange services*, as varied by Order in Council, P.C. 2007-0532, April 4, 2007.

⁸² Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009* (August 2009).

in the California Commission's decision to forbear from regulating local telephone service on a going-forward basis. The following passages are instructive.

Verizon established that "wireless substitution accounts for *approximately half of ILEC primary residential wireline losses*, as wireless providers improve the reach of their networks and customers exhibit a growing willingness to 'cut the cord.' " (footnote omitted) ⁸³

We agree that the build out of wireless carriers' networks since this Commission's last major telecommunications regulatory review eighteen years ago has made wireless technologies a close substitute for landline services. This evidence is a significant factor in this decision. ⁸⁴

81. Finally, in a number of other states, including Iowa and Virginia, ⁸⁵ wireless providers are recognized as full-fledged facilities-based entrants in telecommunications markets that serve to impose pricing discipline on wireline providers. Decisions in a number of other states concerning the competitive discipline imposed by wireless providers are pending at the time of this writing.

82. The latest survey results from National Health Interview Study confirm the validity of treating wireless and wireline as substitutes. As of the second half of 2008, 20.2% of American homes had only wireless telephones. ⁸⁶ In addition, another 14.5% of homes received all or almost all calls on wireless phones despite having a

⁸³ California Public Utilities Commission, Decision 06-08-030, August 30, 2006, p. 119. Available at http://www.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/59388.PDF.

⁸⁴ *Id.*, p. 120.

⁸⁵ Virginia Acts of Assembly — 2009 Reconvened Session, Chapter 788, *An Act to amend § 56-235.5 of the Code of Virginia, relating to telephone regulatory alternatives*, Approved April 8, 2009; State of Iowa, Department of Commerce Utilities Board, Docket No. INU-08-1, In Re: Possible Extension of Board Jurisdiction Over Single Line Flat-Rated Residential and Business Rates for Local Exchange Carriers, Final Order Issued June 27, 2008.

⁸⁶ Stephen J. Blumberg and Julian V. Luke, "Early Release of Estimates From the National Health Interview Survey (NHIS), July –December 2008," Division of Health Interview Statistics, National Center for Health Statistics, May 2009, p. 1. In addition, the authors report a 2.7 percentage point increase in the number of wireless-only households in the last half of 2008. This represents the largest 6-month increase observed since NHIS began collecting data on wireless-only households in 2003.

wireline telephone in the home.⁸⁷ Hence, almost 35% of American homes were “mostly wireless” during the period of the survey.⁸⁸

83. In the *Verizon 6* and *Qwest 4* MSA Orders, the Commission treated wireless as a substitute for wireline only in the case of “cord cutting”—that is, when the consumer no longer subscribes to wireline service.⁸⁹ While it is proper for the Commission to consider wireless competition, the specific approach utilized understates the impact of wireless competition, and is problematic for three primary reasons, each of which is discussed in turn.

84. First, as discussed in connection with *Principle 6*, market definition is problematic when prices have been set by regulatory fiat rather than market forces. Hence, if the Commission observes an increase in wireline prices, it may be inclined to conclude that wireless does not exert sufficient competitive discipline on wireline prices and therefore wireless must not be in the same product market as wireline.

85. To further illustrate the nature of this problem, suppose that the price of wireline telephone service was pegged by regulators at a price of zero. In addition, suppose that virtually all consumers subscribe to both wireless and wireline telephone service. It would be erroneous to conclude that these two services are complements based solely on the fact that most consumers choose to subscribe to both services. Nor could the regulator credibly determine that wireless exerts insufficient competitive discipline on wireline if the price of wireline were to increase upon the

⁸⁷ *Id.* In contrast, one year earlier, 15.8% of households had “cut the cord” and an additional 13.1% received all or most of their calls on a wireless phone. Thus, the proportion of “wireless mostly” households increased from 28.9% to 34.6% (or 16 percent) in a single year.

⁸⁸ In its initial filing in this proceeding, Qwest provided a Phoenix specific study performed by Market Strategies that shows 25% cord-cutting in Phoenix.

⁸⁹ See paragraphs 19 and 20 of the *Qwest 4 MSA* Order.

relaxation or removal of price regulation. This argument is valid whenever regulatory fiat has served to peg wireline prices below market levels.

86. Second, as discussed in connection with *Principle 7*, given the cost structure of wireline telephony, wireless may exert sufficient competitive discipline on wireline prices even when the two services are imperfect substitutes. This underscores the fact that not all consumers need to view wireless and wireline as close substitutes for wireless to exert sufficient competitive discipline on wireline prices. As discussed above, it is the “competition at the margin” that disciplines the firm’s pricing behavior.
87. Finally, recent market research is suggestive of a relatively high degree of substitutability between wireline and wireless in the lower income strata of the U.S. population.⁹⁰ This may suggest that what may appear anecdotally to be a complementary demand relationship between wireless and wireline may, in fact, be attributable to an income effect rather than a price effect. That is to say, consumers that are less income-constrained may well subscribe to both wireline and wireless, not because they are complements but simply because they can afford to do so.⁹¹ Moreover, if consumers must choose between wireless and wireline, they are increasingly likely to choose wireless.⁹² This is further reflected in the fact that as of June 2008, there were 65% more wireless access lines than wireline access lines

⁹⁰ For example, among those surveyed that described their household income as “Poor, Near Poor and Not Poor,” the percentage of wireless-only households is 30.9%, 23.8% and 16.0%, respectively. See Stephen J. Blumberg and Julian V. Luke, “Early Release of Estimates from the National Health Interview Survey, July – December 2008,” Division of Health Interview Statistics, National Center for Health Statistics, May 2009, p. 8.

⁹¹ In a similar vein, we would not conclude that the Toyota Camry and the Honda Accord are complements merely because some households own both models simultaneously.

⁹² See notes 88 and 90 *supra*.

in the U.S.⁹³

VI. SUMMARY AND CONCLUSION

88. This primary objective of this paper is to inform the Commission's deliberations on the proper scope of regulatory oversight in the rapidly evolving telecommunications marketplace. Given the technologically dynamic nature of the industry and the emergence of facilities-based platforms, the social costs of regulatory intervention, whether through mandatory unbundling policies, stringent price regulation or mandated network management practices, are far more pronounced today than they were just a few years ago.

89. The principles articulated in this paper along with the economic and public policy rationale underlying their development suggest two overarching policy recommendations. First, the Commission should reverse the traditional presumption regarding economic regulation in telecommunications markets; regulation should be the exception rather than the rule. Second, the Commission previously concluded that unbundling is among the most intrusive of all forms of regulation. This implies that the use of mandatory sharing should be exceptional in nature, a policy instrument of last resort to be used by the Commission only under conditions in which competition is not possible any other way.

⁹³ *Local Telephone Competition: Status as of June 30, 2008*; Industry Analysis and Technology Division, Wireline Competition Bureau, July 2009, Tables 7 & 14.

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Curriculum Vitae

Dr. Tardiff has more than 30 years of academic and consulting experience. He has participated in numerous legal and regulatory proceedings regarding telecommunications, economics, anti-trust, and regulation issues. His research consulting, and expert witness experience in telecommunications has addressed pricing and costing issues involving increasingly competitive services, such as wireless and traditional wireline services. This experience has also included extensive examination and economic evaluation of all facets of the costing methodologies used to establish prices in rate-regulated industries. His work has included the telecommunications, transportation, energy, and public utility industries, and he has published extensively in economics, telecommunications, and transportation journals. Dr. Tardiff holds a Ph.D. in Social Science from the University of California, Irvine and a B.S. in mathematics from the California Institute of Technology.

Professional experience

Dr. Tardiff is an economic consultant with clients in the telecommunications and regulated utilities industries. From 2006 to 2009, he was a Managing Director at Huron Consulting Group. Prior to joining Huron, Dr. Tardiff served as a vice president in the telecommunication practice at NERA Economic Consulting. During his career, he has served as the director of Marketing Research and senior member of the transportation practice at Charles River Associates, Inc. and assistant professor in the Department of Civil Engineering and Division of Environmental Studies at the University of California, Davis.

His research has addressed the demand, cost, and competitive aspects of converging technologies, including wireless and broadband. He has evaluated pricing policies for increasingly competitive telecommunications markets, including appropriate mechanisms for pricing access services to competitors and studied actual and potential competition for services provided by incumbent telephone operating companies. Most recently, he has analyzed the effects of convergence and growing intermodal competition on whether incumbent firms should be considered dominant in the provision of certain services and the regulatory and antitrust implication of such determinations.

Since the passage of the United States Telecommunications Act, he has participated in interconnection arbitrations, unbundled element proceedings, universal service investigation, applications by incumbent local exchange carriers for authorization to provide interLATA long-distance, and implementation of the Triennial Review Order rules for unbundling network elements in over 25 states and before the United States Federal Communications Commission. His international research and consulting experience includes studies and expert reports on telecommunication competition issues in Canada, Japan, New Zealand, Peru, Australia, and Trinidad and Tobago, where he was an economic expert in an interconnection arbitration between two wireless carriers.

Dr. Tardiff has also participated in class action litigation in regulated (or partially regulated) industries. This experience includes analysis of the communality of proposed class members in an antitrust claim that a regional telephone operator failed to implement the provision of the 1996 Telecommunications Act as well as evaluation of the damage claims of plaintiffs in securities actions involving providers of telecommunications network services.

He has recently provided expert reports and testimonies on the reasonableness from an economic perspective of increases in the rates international carriers at Los Angeles International Airport pay for use of terminal space.

Testimony experience

- Deposition Testimony, Florida Power Corporation d/b/a Progress Energy Florida, Inc., Plaintiff v. Verizon Florida LLC, Defendant, Case No: 08-013358, Circuit Court in and for Hillsborough County, Florida Civil Division, August 27, 2009.
- Expert Rebuttal Report, Florida Power Corporation d/b/a Progress Energy Florida, Inc., Plaintiff v. Verizon Florida LLC, Defendant, Case No: 08-013358, Circuit Court in and for Hillsborough County, Florida Civil Division, August 4, 2009 (with Matthew G. Medlin).
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- Reply Testimony of Timothy J. Tardiff on local exchange service price floors, prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, July 10, 1996.
- "Economic Evaluation of Version 2.2 of the Hatfield Model," attached to Reply Testimony of Timothy J. Tardiff, prepared for filing with the California Public Utilities Commission on behalf of GTE California, July 10, 1996. Also presented to the Federal Communications Commission as attachment to letter from Whitney Hatch of GTE to William F. Caton, in the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, July 11, 1996.
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- Declaration of Timothy J. Tardiff on Round I and Round II OANAD Cost Studies, prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, May 24, 1996.
- "Economic Evaluation of Pacific Bell's Round I and Round II Cost Studies: Reply Comments," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, April 17, 1996.
- "Incremental Cost Principles for Local and Wireless Network Interconnection," prepared for filing with the Federal Communications Commission on behalf of Pacific Telesis, March 4, 1996 (with Richard D. Emmerson).
- "Economic Evaluation of Selected Issues from the Fourth Further Notice of Proposed Rulemaking in the LEC Price Cap Performance Review: Reply Comments," Prepared for filing with the Federal Communications Commission on behalf of the United States Telephone Association, March 1, 1996 (with William E. Taylor and Charles J. Zarkadas).
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- "Universal Service Funding and Cost Modeling," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, January 19, 1996.
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- Participant, California Public Utilities Commission, Full Panel Hearing on Universal Telephone Service, September 29, 1995.
- "Incentive Regulation and Competition: Reply Comments," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, September 18, 1995 (with Richard L. Schmalensee and William E. Taylor).
- "Incentive Regulation and Competition: Issues for the 1995 Incentive Regulation Review," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, September 8, 1995 (with Richard L. Schmalensee and William E. Taylor).
- "Preserving Universality of Subscription to Telephone Service in an Increasingly Competitive Industry," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, September 1, 1995 (with Alfred E. Kahn).
- Declaration of Timothy J. Tardiff and Lester D. Taylor on the toll and carrier access demand stimulation caused by the January 1, 1995 price reductions, prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, September 1, 1995.
- "Economic Evaluation of Proposed Long-Run Incremental Cost (LRIC) Methodology," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, July 13, 1995 (with Richard D. Emmerson).
- "California Public Utilities Commission Proposed Rules for Local Competition: An Economic Evaluation," prepared for filing with the California Public Utilities Commission on behalf of Pacific Bell, May 24, 1995.
- "Benefits and Costs of Vertical Integration of Basic and Enhanced Telecommunications Services," prepared for filing with the Federal Communications Commission, Computer III Further Remand Proceedings, CC Docket No. 95-20, on behalf of Bell Atlantic, Bell South, NYNEX, Pacific Bell, Southwestern Bell, and U S West, April 6, 1995 (with Jerry A. Hausman).
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- "Access to Intelligent Networks: Economic Issues," prepared for filing with the Federal Communications Commission, on behalf of Pacific Bell, December 1, 1993.
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- *Imputation Tests for Bundled Services*, With Greg Houston, Carol Osborne, and Jennifer Fish, Prepared for the Australian Competition and Consumer Commission, January 2003.
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- Participant in AGT International Symposium on Local Interconnection Policy, Emerald Lake, British Columbia, Canada, May 27-28, 1994.
- Tardiff, T.J., "Access Charges and Toll Prices in the United States: An Economic Evaluation," Presented to representatives of Japanese Long-Distance Companies, New York, New York, May 16, 1994.
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Education

- Ph.D., Social Sciences, University of California, Irvine, CA
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Professional associations

- Member, American Economic Association
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Fellowships, grants and awards

- First Place, Dissertation Contest of the Transportation Science Section of the Operations Research Society of America.
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- NSF Grant for Improving Doctoral Dissertation Research in the Social Sciences, 1973-1974.
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1993 - Present Kansas State University:

 Professor of Economics (2000 – Present)
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1989 - 1993 SBC Communications Inc. (now AT&T):

 Director – Strategic Marketing
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1982 - 1989 Southwestern Bell Telephone Company – Demand Analysis:

 District Manager
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OTHER POSITIONS HELD:

2008 – Present Board of Academic Advisors, The Free State Foundation.

2007 – 2008 Co-Guest Editor, Symposium Commemorating the Economic and Public Policy Contributions of Professor Alfred E. Kahn on the Occasion of His 90th Birthday, *The Review of Network Economics*, 2008.

2007 – 2008 Program Committee Member, International Telecommunications Society.

OTHER POSITIONS HELD (CONTINUED):

- 2005 – Present Regulatory Framework Working Group, Digital Age Communications Act (DACA) Project, Progress and Freedom Foundation.
- 2004 – 2005 Chairperson, Site Council, Frank V. Bergman Elementary School.
- 2003 – Present Advisory Board, The Institute for Regulatory Law and Economics.
- 2003 – Present Executive Committee, Global Communications Strategy Forum.
- 2002 – 2003 Guest Editor, Symposium on Incentive Regulation, *The Review of Network Economics*, Vol. 2(4), December 2003.
- 2000 - 2003 Dean's Advisory Council On Tenure and Promotion in Arts and Sciences.
- 1998 - 2005 Associated Faculty Member, Center For Research In Regulated Industries, Rutgers University.
- 1990 - 1992 Research Fellow, Public Utility Research Center, University of Florida.

PUBLICATIONS:

"The Dominant Firm Revisited." *Journal of Competition Law & Economics*, Vol. 5(3) September 2009, pp. 517-536 (with T. Tardiff).

"Designing Competition Policy for Telecommunications." *The Review of Network Economics*, Vol. 7(4), December 2008, pp. 509-546 (with G. Robinson).

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