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I. Introduction and qualifications

1. I am Dr. William E. Taylor, Senior Vice President of National Economic Research Associates, Inc. and head of its Communications Practice and its Boston Office. I have been asked by Bell Canada to assess the claims regarding the US experience in regulating wholesale telecommunications services made in two Appendices to the MTS Allstream Petition: "The Role of Regulation in a Competitive Telecom Environment" and "The Non-Duplicability of Wholesale Ethernet Services," both conducted by Economics and Technology, Inc.¹

2. I received a B.A. degree in economics, magna cum laude, from Harvard College in 1968, a master's degree in statistics from the University of California at Berkeley in 1970, and a Ph.D. in Economics from Berkeley in 1974, specializing in econometrics and industrial organization. I have taught and published research in the areas of theoretical and applied econometrics, industrial organization, microeconomics and telecommunications economics at academic institutions (including the economics departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology) and at industry research organizations (including Bell Laboratories and Bell Communications Research, Inc., in the US). My research has been published in peer-reviewed journals such as *Econometrica*, the *American Economic Review*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, and *The Review of Industrial Organization*, and I have contributed to *The Encyclopedia of Statistical Sciences*. I have served as a referee for these journals (and others) and the National Science Foundation, as an Associate Editor of the *Journal of Econometrics*, and as a commentator on the PBS Nightly News Hour. I have testified in federal and state courts as an economic and statistical expert and have participated in telecommunications regulatory proceedings before numerous state regulatory authorities, the Federal Communications Commission, the Department of Justice, the Canadian Radio-Television and Telecommunications Commission, the New Zealand Commerce Commission, the Indonesian antitrust authority, the Comisión Federal de Telecomunicaciones de México, and federal and state congressional

¹ L. Selwyn, S. Gately, H. Golding and C. Weir, Economics and Technology, Inc. ("ETI"), "The Role of Regulation in a Competitive Telecom Environment: How Smart Regulation of Essential Wholesale Facilities Stimulates Investment and Promotes Competition," March 2009 (henceforth "*RoR*"). L. Selwyn, "The Non-Duplicability of Wholesale Ethernet Services: Promoting Competition in the Face of the Incumbents' Dominance over Last-Mile Facilities," March 2009 (henceforth "*N-DWES*").

committees. I submitted two reports on behalf of Bell Canada in response to Telecom Public Notice CRTC 2006-14 (*Review of regulatory framework for wholesale services and definition of essential service*): "Telecommunications competition in the US: An assessment of wholesale regulation policy" and "Declaration of William E. Taylor."

II. Summary and conclusions

3. ETI's argument is based on three empirical characterizations of the US experience with regulating wholesale services. First, ETI asserts, regulation of wholesale services underwent a sea change in 2001 due to philosophical differences between the outgoing Clinton and incoming Bush administrations. As a result,

US regulators began to abandon the regulatory safeguards that had, up to that point, assured competitor access to last-mile broadband facilities and services at cost-based rates. [*RoR* at ii]

Second, according to ETI, these regulatory changes harmed consumers and the US economy in general. Entrants and incumbents both reduced capital spending, prices increased for wholesale services, competition decreased and US aggregate employment and Gross Domestic Product ("GDP") fell over five years by 234,000 jobs and approximately \$66 billion of GDP. [*RoR* at 4]. Third, ETI concludes that Ethernet services are not duplicable, relying, in part, on US evidence that "competitive carrier-owned facilities have been deployed at a minuscule fraction of all commercial buildings" [*N-DWES* at 15]. From these assertions, ETI concludes that broadband facilities are essential and that US and Canadian experiences show that without mandatory competitor access to all last-mile facilities at reasonable rates, there will be less competition for telecom services, less investment, higher retail prices and harm to the overall economy. [*RoR* at 31, *N-DWES* at 21].

4. In fact, these three characterizations of the US regulatory experience are baseless and inaccurate .

5. First, the dramatic reduction in telecom investment after 2001 was — as even ETI concedes — a result of the dot-com debacle, not a change in US regulatory philosophy. Moreover, a simple timeline shows that the deregulatory actions that ETI cites could not have caused the telecom meltdown because they occurred or were implemented long after 2001 when

telecom investment fell. On the contrary, ETI's own figures show a sharp *increase* in telecom investment after mandatory unbundling of broadband access and local switching were eliminated, from which many analysts have reached the opposite conclusion from ETI — that removing unbundling obligations stimulated telecom investment in the US. In particular, removal of the obligation to unbundle broadband access in 2004 led directly to Verizon and AT&T commitments to fund next-generation fiber to the home or node ("FTTH/N") networks and to sharply increased cable investments to compete with them.

6. Second, ETI uses results from a commercial macroeconomic model of the US economy to claim that excessive special access prices would — in the model — depress US employment and GDP. However, in the real world, special access prices are not excessive, and the mandatory reductions in special access prices that ETI advocates would not have the macroeconomic effects indicated by the model. As the FCC has found, US special access prices are not excessive simply because accounting rates of return based on fully-distributed regulatory accounting costs exceed an authorized level. And, if this logic made any sense — which it does not — the fact that the same accounting rates of return for the aggregate of regulated services² are *below* their authorized level would imply that telecom policy in the aggregate has *increased* US employment and GDP rather than the reverse, as ETI claims. Finally, ETI's misinterprets the results from the macroeconomic model in which prices are determined endogenously (*i.e.*, within the model itself). The results the model reports stem from theoretical productivity increases and cost reductions in the telecommunications sector which lead to lower equilibrium special access prices. They are not the efficiency gains associated with a regulatory mandate to reduce special access prices without any changes in telecom productivity.

7. Third, as US courts and the FCC have found, broadband access facilities have been widely duplicated by competitors in the US. Where competitors rely on incumbents' facilities, an important element in the decision is the incumbents' regulated price rather than consequences of network effects or a natural monopoly. Moreover, the data cited by ETI are produced in regulatory proceedings by special access competitors and customers seeking lower prices.

² Of which interstate special access services are one component.

Incumbent carriers seeking pricing flexibility file data demonstrating the opposite conclusions in the same proceedings.

8. In short, the US experience with network unbundling does not support ETI's three claims.

III. Changes in wholesale regulation do not explain changes in US regulation of wholesale facilities and services.

9. The logic of the ETI reports is simple and deceptive. During the 1990s, ETI claims, telecom regulators in the US and Canada pursued policies that opened the networks of incumbent telephone companies for use by entrants at regulated, generally cost-based, prices. In the US, these policies allegedly came to an abrupt halt with the change in administrations in 2001 and ETI lists five subsequent regulatory actions that, in its opinion, largely dismantled the mandatory unbundling and regulated wholesale price regime. These regulatory changes:

1. removed price constraints on "most" special access³ services and "declined to act" on petitions to reinstate price regulation ("special access pricing flexibility");
2. removed the obligation to provide unbundled loop and switching combinations ("UNE-P") at regulated ("TELRIC") rates;
3. denied mandatory access to the high-frequency channel of voice-grade loops for DSL service ("line sharing");
4. forbore from regulation of "most" broadband services, ("broadband"); and
5. removed reporting obligations that allegedly would have disclosed excessive earnings on special access services ("reporting").

In Canada, however, unbundling and wholesale price regulation policies persisted until Telecom Decision CRTC 2008-17 in March, 2008. ETI then compares various outcomes in the US before and after 2001 and US and Canadian outcomes after 2001. [*RoR* at (i)]

10. There are two fundamental flaws in this logic. First, ETI's asserted causal link between its alleged change in regulatory philosophy in 2001 and subsequent changes in telecom prices and investment is a howling example of a *post hoc* fallacy. Ask any student of US telecom

³ Special access services consist of dedicated links provided by ILECs to large business customers and to competing service providers (long distance carriers, wireless carriers and Internet companies) for the provision of interstate services. Special access in the US is the equivalent of DNA or CDN services in Canada.

history about differences before and after 2001 and the answer will be the bursting of the dot-com bubble and the associated telecom meltdown. Even if all US telecom regulatory liberalization had occurred in 2001 — which it did not — it would still be arrant nonsense to ascribe the effects of the meltdown to changes in regulatory philosophy. Second, the ETI report misstates the genesis and timing of US regulatory history. As shown below for each of ETI's issues and outlined in my previous report,⁴ many of the important regulatory decisions — and implementations of those decisions — about which ETI complains took place well after 2001. In fact, analysts attribute the *increase* in aggregate incumbent local exchange carrier ("ILEC") and cable investment and particularly the decisions to invest in next-generation FTTH/N networks to regulatory decisions to remove unbundling requirements.

A. Telecom history

11. ETI asserts [*RoR* at 31] that failure to mandate access to all last-mile services will, among other things, reduce investment in the telecommunications infrastructure. That theme is illustrated in four graphs in *RoR*, which purport to show:

- Figure 3 - lower Gross Plant Additions by US ILECs in 2002-2007 than in 1996-2001
- Figure 4 - net investment for RBOCs turned from positive to negative in 2002,
- Figure 5 – US ILEC and CLEC capital expenditures fell after 2000, associated with selected US regulatory decisions,
- Figure 6 – Canadian ILEC and CLEC capital spending increased between 2001 and 2007 while US capital spending decreased.

This evidence of reduced investment or capital spending after 2001 does not support ETI's theme that unbundling encourages investment. From 1999 through at least 2003, the telecommunications industry experienced what some analysts have characterized as a "perfect storm" of events that led to one of the largest financial collapses of an industry in US history.

⁴ W. Taylor and A. Ros, "Telecommunications competition in the US: An assessment of wholesale regulation policy," filed on behalf of Bell Canada in CRTC, *Review of regulatory framework for wholesale services and definition of essential service* (Public Notice CRTC 2006-14), March 15, 2007.

No analyst has blamed this debacle on the regulatory events of which ETI complains,⁵ yet ETI asserts the opposite:

Whether we look to different treatments at different points in time in the US or as between the US and Canada during a corresponding period of time, the result is the same and in quite compellent (*sic*): Regulatory policies that work to assure competitor access to the incumbent's network at reasonable, cost-based prices facilitate competition and stimulate investments both by incumbents and by competitive TSPs. [*RoR* at 28-29]

What is difficult to understand is how ETI can make this assertion while recognizing that the reduction in telecom capital spending in 2001 is unrelated to changes in regulatory policy:

While both CLEC and ILEC capital investment declined for several years beginning in 2001, this was more likely due to the post-Internet bubble, post-9/11 stock market slump rather than to regulatory policy, since ILECs and CLECs in both the US and Canada curtailed their capital spending. [*RoR* at 28]

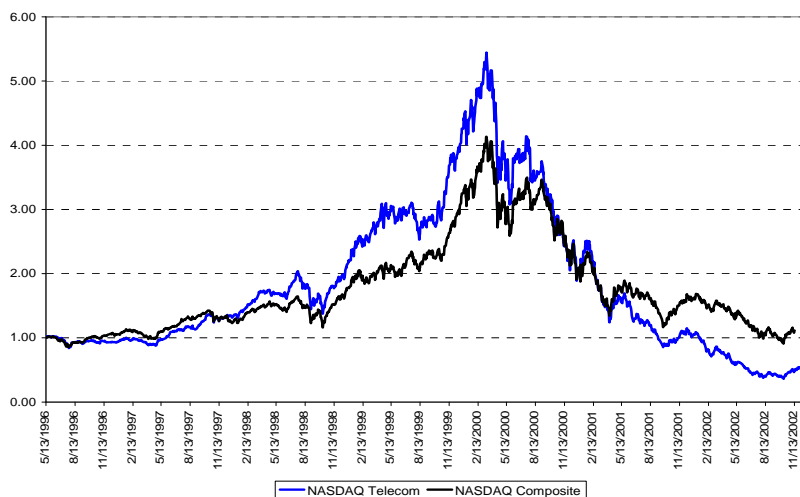
ETI saws off the branch on which it sits but still expects to remain in the air.

12. ETI is correct that the telecom meltdown in the US was not due to regulatory policy changes. The history of U.S. telecommunications since the 1996 Telecom Act falls into three distinct phases: a growth phase, a bankruptcy phase and a consolidation phase. The growth phase lasted for about four years after 1996: opening local exchange markets to competition flooded the industry with new capital, technologies, business models, management styles, and promises of complex and novel services. The bankruptcy phase began in the first quarter of 2000, when the so-called "dot-com boom" came to an abrupt end, and chain-reaction collapses of venture financing, market capitalizations and stock prices, and consumer confidence followed.

13. Figure 1 shows the NASDAQ telecom and composite indices from 1996-2002, which provide a clear picture of the boom and bust cycle and show the relationship between the telecom meltdown and the end of the Internet boom. This figure starkly illustrates the downturn in the overall economy and the dramatic upheaval in the telecommunications industry.

⁵ Possibly because, among other reasons, ETI's regulatory decisions occurred or were implemented *after* the meltdown.

Figure 1
NASDAQ Indices



Source: Yahoo Finance

14. Several studies have offered explanations for the events of the 2000-2002 period, and despite the varying perspectives of the analysts, a loose consensus has emerged regarding root causes. A short list of such analyses would include the Crandall Report,⁶ McDermott,⁷ and Darby *et al.*⁸ and these studies identify two common areas of explanations. First, capital markets were initially, irrationally exuberant: funding CLEC entry and ILEC expansion that—in hindsight—was unlikely ever to be profitable. Sources of capital then dried up for CLECs and ILECs alike. Second, many CLECs were—again in hindsight—undercapitalized, overleveraged and insufficiently quick to achieve profitability to permit them to survive the financial crunch, partly because anticipated demand growth did not materialize. None of these studies identifies regulatory changes associated with access to network elements as a causal factor.

⁶ Robert W. Crandall, "An Assessment of the Competitive Local Exchange Carriers Five Years After the Passage of the Telecommunications Act," Criterion Economics L.L.C., June 2001 ("*Crandall Report*"). Also R.W. Crandall, *Competition and Chaos: U.S. Telecommunications Since the 1996 Telecom Act*, Brookings, 2005.

⁷ Martin F. McDermott III, *CLEC: An Insider's Look at the Rise and Fall of Local Exchange Competition*, Penobscot Press, July 2002, at 70-71.

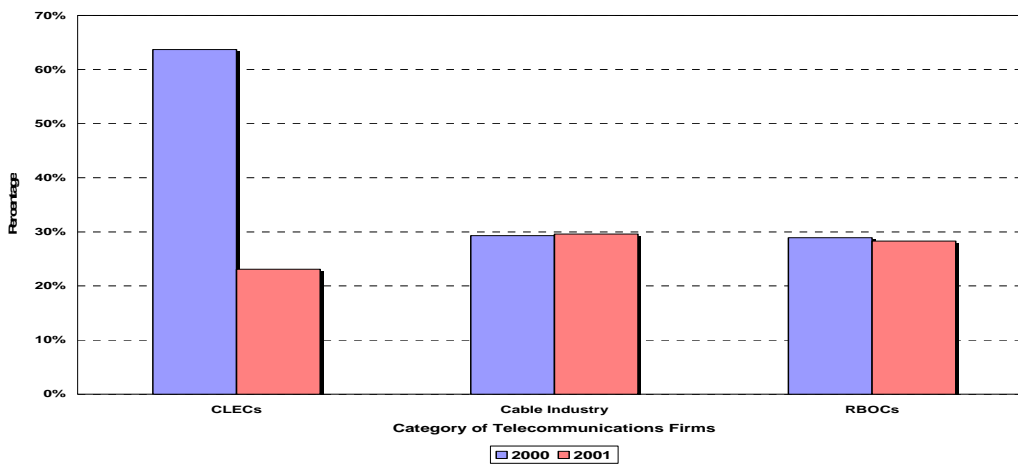
⁸ Larry F. Darby, Jeffrey A. Eisenach, and Joseph S. Kraemer, "The CLEC Experiment: Anatomy of a Meltdown," Progress and Freedom Foundation, September 2002.

1. Capital markets: From "irrational exuberance" to capital crunch

15. Every analyst of this period cites the virtual closing of the capital markets to telecom firms in 2001 as an important factor in understanding the debacle. Rapid expansion in a highly capital-intensive industry like telecommunications requires significant upfront investments. The capital markets (both public and private sources of financing) were prepared to fuel new entry into the telecommunications industry in the early years after the 1996 Act, which opened a market then worth about \$100 billion per year to competition. The dot-com collapse in 2000 then substantially closed capital markets to telecom firms, particularly those entrants who, just a year or so earlier, could do no wrong. Even firms with track records, strong management and good business plans were suddenly unable to obtain financing.

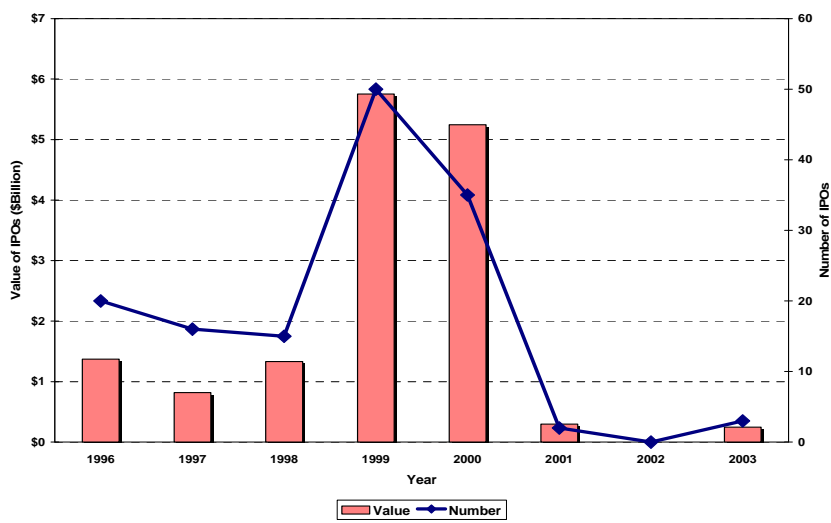
16. Industry data show this change in the capital markets. During 2000 and 2001, CLECs raised and spent capital to a much greater degree (relative to revenue) than either the RBOCs or cable systems. Then in 2001, capital expenditures of CLECs fell dramatically from over 63 percent to barely over 23 percent of revenues. In contrast, capital expenditures as a percentage of revenues remained remarkably steady (at just under 30 percent) for both RBOCs and cable systems throughout the difficult 2000-2001 period. See Figure 2. Figure 3 and **Figure 4** show how quickly and relentlessly the capital market crunch set in, leaving many new entrants without essential financing at a critical stage of their development.

Figure 2
Capital Expenditures as a Percentage of Revenues



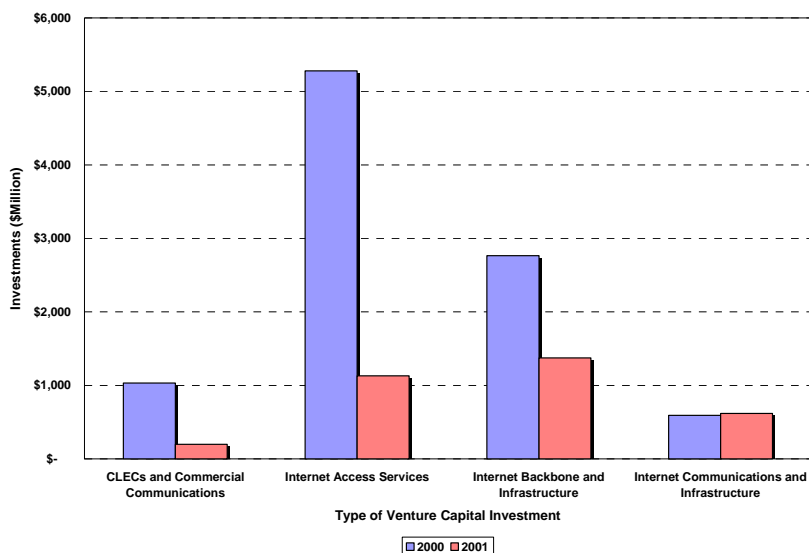
Source: ALTS Annual Report for 2002, citing company reports and research by the New Paradigm Research Group and the National Cable Television Association

Figure 3
Number and Value of IPOs of US Telecommunications Firms



Source: http://www.ventureone.com/ii/4Q03_US_IPOs_release2.xls .

Figure 4
Venture Capital Investments in US Telecommunications Firms



Source: ALTS Annual Report for 2002, citing data from PricewaterhouseCoopers, Venture Economics, and the National Venture Capital Association.

2. Insufficient demand and revenue generation

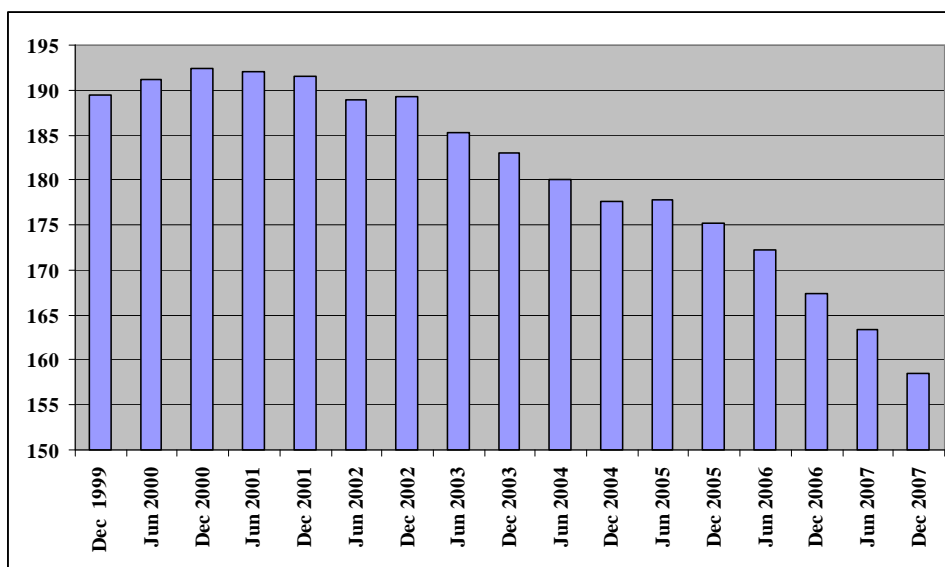
17. The second consensus explanation for the telecom meltdown is the unanticipated slowdown in demand and the associated difficulties in achieving profitability and continued financing. At the height of the dot-com boom, it seemed that the demand for telecommunications bandwidth was insatiable — that carriers could not build capacity fast enough to keep up with anticipated demand from all the new Internet-based applications. Some observers (including FCC Chairman Reed Hundt) claimed that Internet usage was doubling every 100 days, and such information led many investors to overvalue investments in broadband capacity.⁹ In fact, Internet usage was "only" doubling every year,¹⁰ and the dot-com collapse led investors to rethink the prospects for future demand.

⁹ See, e.g., U.S. Department of Commerce, "The Emerging Digital Economy," April 1998 report, available at (<http://www.esa.doc.gov/TheEmergingDigitalEconomy.cfm>).

¹⁰ "Internet traffic growth: Sources and implications," A. M. Odlyzko. *Optical Transmission Systems and Equipment for WDM Networking II*, B. B. Dingel, W. Weiershausen, A. K. Dutta, and K.-I. Sato, eds., Proc. SPIE, vol. 5247, 2003, pp. 1-15.

18. Demand also failed to materialize for traditional wireline voice telephone services. Figure 5 shows that after years of steady growth in access lines, the industry (ILECs and CLECs combined) for the first time in history faced a reduction in demand. Similarly, ILEC wireline long distance usage, which had historically grown at faster rates than access lines, peaked in

Figure 5
ILEC + CLEC End User Access Lines



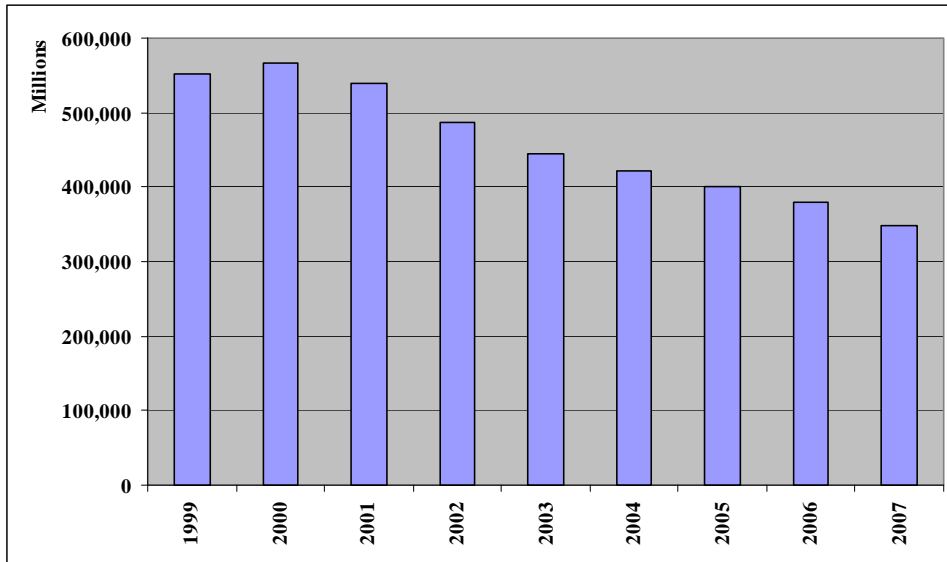
Source: FCC Local Competition Report, September 2008, Table 1.

2000 and began to fall steadily. See Figure 6. While wireless and broadband demands were increasing, the fact that switched access lines and usage demand was falling — for the first time in history — suggests a different explanation from that offered by ETI for reductions in ILEC investment in wireline facilities.

19. A substantial portion of capital investment in telecommunications is driven by the *change* in the number of subscribers rather than the level.¹¹ With fewer subscribers, there is less investment in customer-specific facilities and a reduction in investment to upgrade and expand the network. The annual growth in access lines shifted from positive to negative in June 2001. See Figure 7.

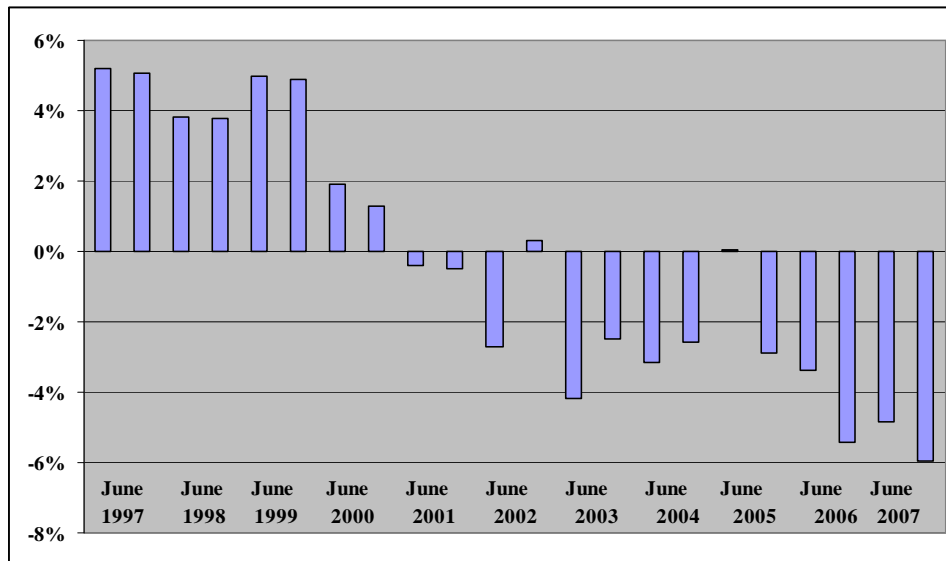
¹¹ Waverman *et. al.* cite a 50 percent figure from a Liberty Global presentation to Investor Conference, Zurich, March 14, 2007. Liberty Global is a large European cable network operator.

Figure 6
Switched Access Minutes of Use



Source: FCC, 2008 Universal Service Monitoring Report, Table 8.1.

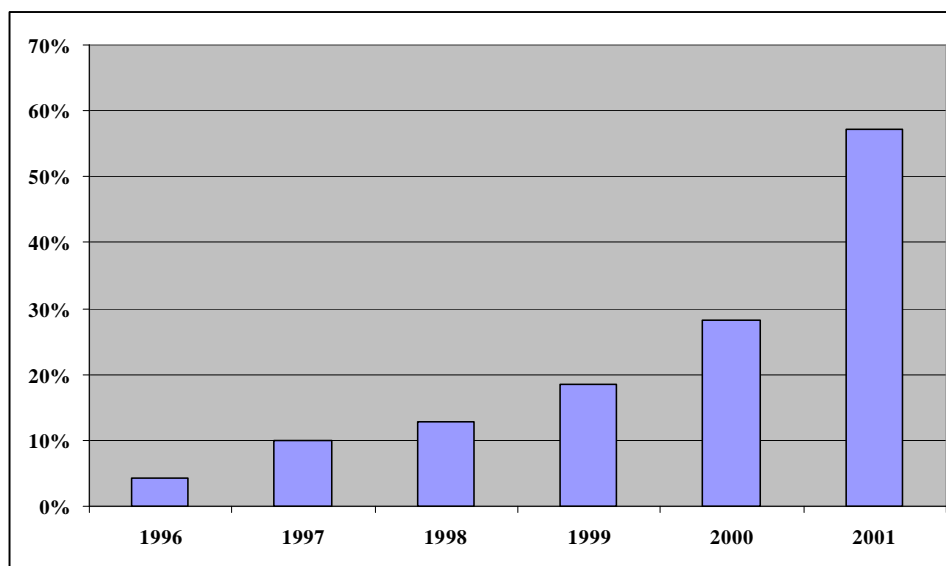
Figure 7
Annual Growth – End User Access Lines



Source: FCC, Statistics of Communications Common Carriers, 2005, Table 5.1, 2008 Universal Service Monitoring Report, Table 8.1

20. The failure of the dot-com revolution to materialize and the drop in traditional wireline demand strained the CLEC's business plans to the breaking point. The studies by Darby *et al.* and Crandall both point to the fact that beginning around 2000, most CLECs did not generate the enough revenue to justify their operations and, as capital markets tightened, ran out of cash to cover their short-term debts and other liabilities. As Figure 8 shows, the percentage of cash shortfalls that needed to be covered by new financing rose persistently throughout the period. By 2001, only 10 of the original 24 CLECs in the Darby *et al.* sample still remained in operation and, among them, spent more than 57 percent of all new financing on their cash needs. This was up dramatically from only 4.3 percent in 1996.¹² As shown in Figure 9, defaults and bankruptcies followed.

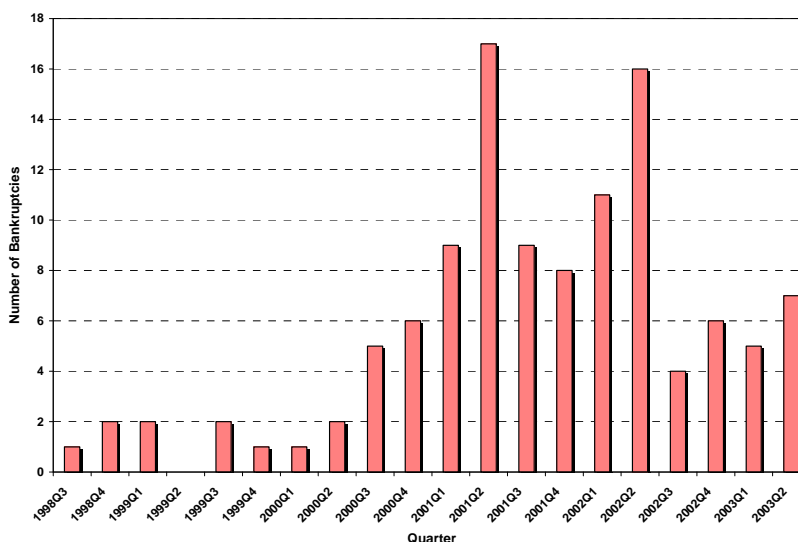
Figure 8
Percentage of New Financing Used to Cover Cash Shortfalls



Source: L. Darby *et al.*, Figure 1 (at 14).

¹² Darby *et al.*, *op cit.*, at 12-13.

Figure 9
Telecommunications Bankruptcies

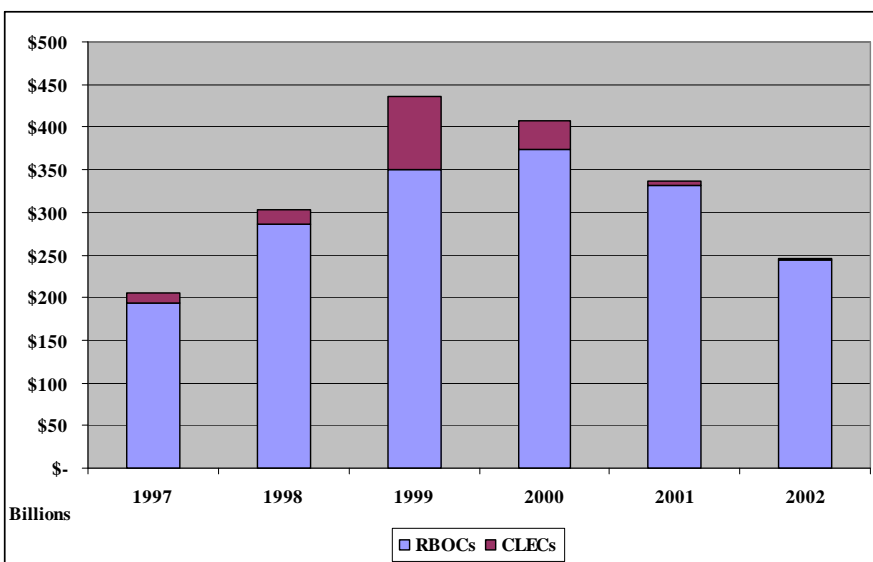


21. The insolvency and cash crisis was a widespread phenomenon among all CLECs, as is clear from data published by ALTS (see Figure 10). Between 1997 and 1999, CLEC capital expenditures reached \$31 billion and, at the end of 1999, the combined market capitalization of CLECs topped \$86 billion (*i.e.*, almost three times the combined booked investment). By the end of 2001, however, CLEC capital expenditures since 1997 had reached \$65 billion, but the combined market capitalization of the CLECs had *dropped* to only \$4 billion (*i.e.*, only about 6 percent of the combined book investment).¹³ Another way to understand the initial, purely speculative, run-up in CLEC market values is to compare an index of CLEC stock prices for the period 1997-1999 to other indices, such as for the S&P 500, other technology stocks, and the major IXC and ILEC. Over this period, the S&P 500 index almost doubled, the indices for the IXCs and ILECs gained 85 and 58 percent, respectively, the index for technology stocks more than quadrupled, but that for the CLECs was up by a factor of more than 6.4.¹⁴

¹³ Darby et al., *op cit.*, at 14.

¹⁴ Darby et al., *op. cit.*, Table 7.

Figure 10
Market Capitalization of U.S. Telecommunications Firms



Source: ALTS Annual Report 2004 and Bernstein Investment Research and Management.

3. Other factors

22. Two other factors are widely cited as important in explaining the ubiquity and degree of the telecommunications meltdown. First, the US economy was officially declared to be in an 8 month recession between March and November 2001.¹⁵ Part of this recession was associated with the collapse of the dot-com market sector. As a result, some carriers changed their expectations regarding demand growth, and some suffered financially from the collapse of important customers.

23. Second, a source of revenue for some CLECs was so-called reciprocal compensation: charges paid by one LEC to terminate traffic on the network of a different LEC. Dial-up Internet access grew rapidly during this period, and CLECs that served Internet Service Providers ("ISPs") terminated far more ILEC calls and minutes of use on their networks (to dial-up ISPs) than they sent to ILEC customers for termination. As the price of reciprocal compensation far exceeded cost (at least in some states), some CLECs received a substantial windfall from serving this traffic. However, in April 2001, the FCC concluded that reciprocal compensation rules did

¹⁵ See National Bureau of Economic Research, "Business Cycle Expansions and Contractions," October 21, 2003, available at <http://www.nber.org/cycles/>.

not apply to this traffic and imposed a transitional pricing mechanism that largely eliminated this revenue stream. Some CLECs had built business plans around serving ISPs and collecting reciprocal compensation, and these firms suffered revenue losses, from which some never recovered.

24. Although the FCC's April 2001 reciprocal compensation decision is sometimes cited as a contributing factor to the CLEC meltdown, that fact does not support ETI's story that a change in regulatory philosophy led to lower investment. Closing a loophole in the pricing of local access charges has nothing to do with ETI's claim that telecom investment fell because CLECs could no longer obtain access to some of the ILECs' last-mile facilities.

4. US-Canada comparisons

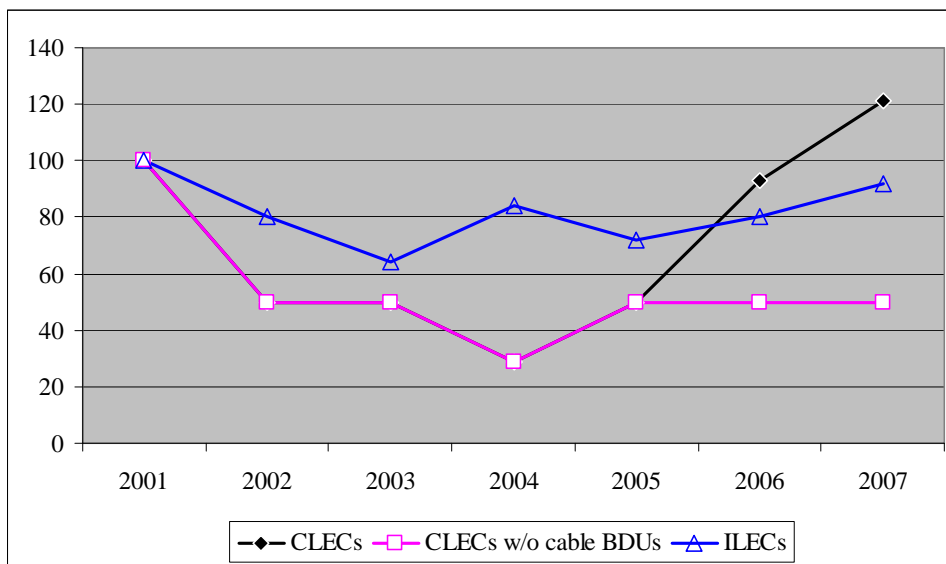
25. ETI asserts [*RoR* 28-29, Figure 6] that differences in the patterns of CLEC and ILEC investment between the US and Canada were caused by differences in the US and Canadian regulatory regimes. Based on the striking difference between the patterns of Canadian and US CLEC investment after 2001, ETI concludes that the

Repeated contentions by incumbents – that rivals will forgo investment in their own facilities if their use can be obtained from the incumbents (*sic*) is simply not borne out by factual evidence and is little more than speculative – and highly inaccurate – rhetoric. [*RoR* at 29].

Nonsense. The striking increase in Canadian CLEC investment in *RoR* Figure 6 is due entirely to investment by Canadian cable Broadcast Distribution Undertakings (BDUs) — carriers that do not make use of the incumbents' last-mile facilities. If we remove capital expenditures by cable BDUs attributable to wireline telephony from the CLEC data in Figure 6¹⁶, we find that capital expenditures by non-cable CLECs have decreased since 2001 rather than increasing sharply as shown in *RoR* Figure 6. See Figure 11. The same pattern is shown using data from an independent source; see Figure 12 .

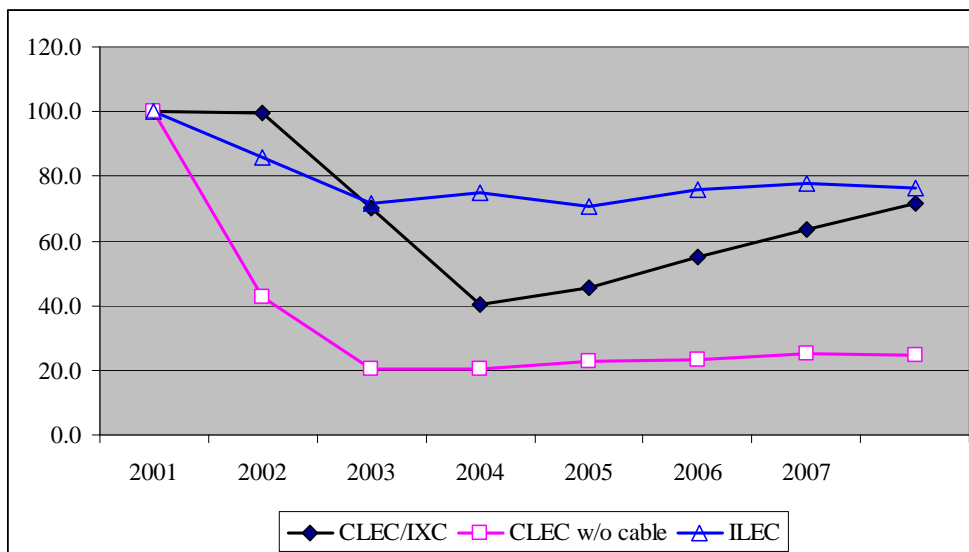
¹⁶ "The non-incumbent facilities-based alternative TSPs doubled their capital expenditures from \$0.6 billion in 2005 to \$1.2 billion in 2006. This increase was primarily attributable to increased expenditures by the cable BDUs in wireline telephony activities." 2007 GIC, at 31. The non-incumbent facilities-based alternative TSPs increased their capital expenditures from \$1.2 billion in 2006 to \$1.6 billion in 2007. This increase was primarily attributable to increased expenditures by the cable BDUs." 2008 CMR at 181.

Figure 11
Canadian ILEC and CLEC Capital Expenditure



Source: GIC, CMR.

Figure 12
Canadian ILEC and CLEC Capital Expenditure



Source: IDC Canada, "Canadian Telecommunications Capex Budgets 2007-2008, Figure 19.

26. Worse, the comparison in *RoR* Figure 6 between Canadian and US CLEC capital expenditures is incorrect: while the Canadian CLEC figure includes cable companies, the US CLEC capital expenditure series apparently does not. ETI does not tell us which US CLECs are included in its Figures 5 and 6. If the CLECs listed in *RoR* Table 6 are also the CLECs included in Figures 5 and 6, that list does not include the large cable companies active in telephony such as Comcast (the third-largest US telephone company) , Cablevision, Cox and Charter. Moreover, capital expenditures by these cable companies could not have been included in *RoR* Figure 5 because the sum of the capital expenditures of Comcast, Cablevision, Cox and Charter by themselves exceeded the amount reported by ETI for all CLECs in each of the years between 2004 and 2007.¹⁷

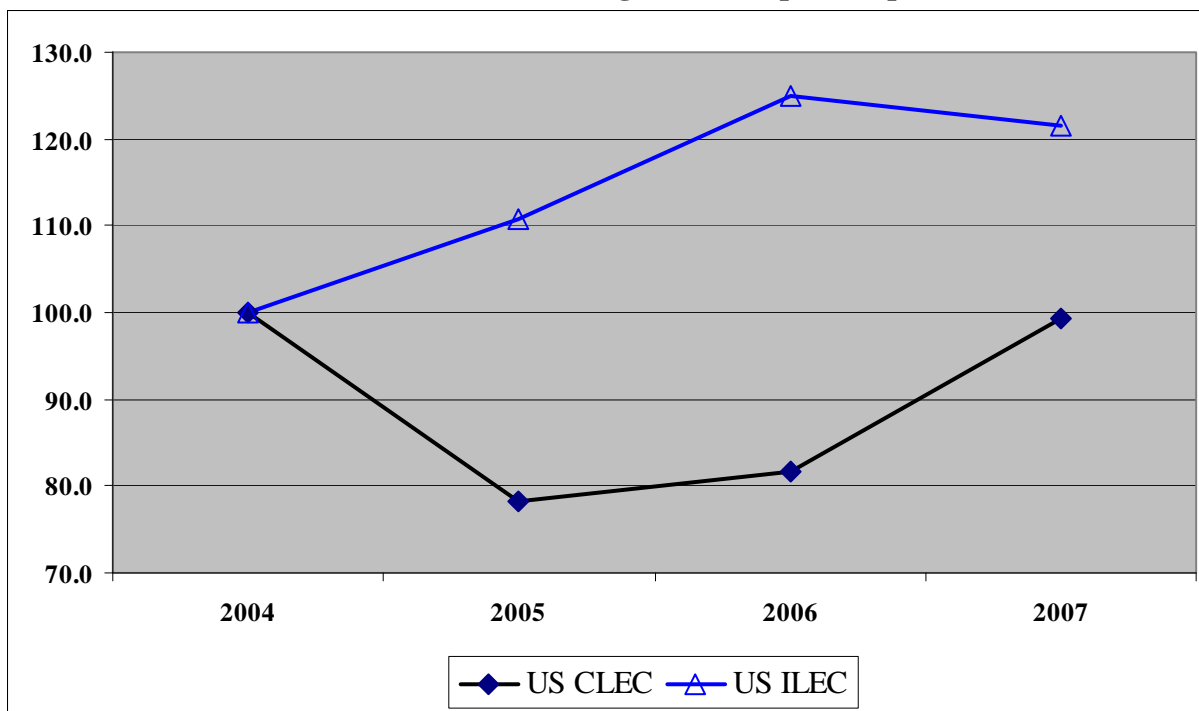
27. ETI summarizes this comparison as follows:

Canadian ILECs and CLECs increased their capital spending between 2001 and 2007 under a regime in which wholesale ILEC last-mile services remained subject to rate regulation, whereas in the US, ILECs and CLECs scaled back their investment outlays once regulation of wholesale services had been eliminated. [*RoR*, Figure 6]

What is true is that Canadian ILECs and non-cable CLECs decreased their capital spending between 2001 and 2007, albeit by proportionally smaller amounts than the reductions in US ILEC and non-cable CLEC capital expenditures. Regarding the US, regulation of wholesale services was arguably eliminated with the *TRO* (August 2003) and *USTA II* (March 2004) where UNE-P and broadband obligations were removed. As Figure 13 shows, since 2004, US ILEC investment rose and CLEC investment — including cable — fell and then increased, ending in 2007 at approximately its 2004 level. Once UNE-P and broadband unbundling were no longer mandatory, US ILECs and CLECs did not scale back their total investment outlays. Rather, their *total* capital expenditures increased sharply and they initiated investment on the order of \$5 billion per year in next-generation FTTH/N networks.

¹⁷ Capital expenditures for Comcast, Cablevision, Cox and Charter amounted to \$5.8, \$5.9, \$6.4 and \$8.2 billion in 2004-2007 respectively, as reported in those firms 10-Ks. Note that the 2007 and 2006 sums exclude Cox, which no longer reported to the SEC after 2005.

Figure 13
US ILEC and CLEC (including Cable) Capital Expenditure



Source: *RoR* Figure 5 and 10-K reports for Charter, Comcast, Cablevision and Cox

B. Regulatory history

28. The (identical) conclusory paragraphs in the two ETI reports assert that the evidence shows that two elements of wholesale regulation are important for competition, prices, investment and the health of the overall economy: (i) unbundled access to all last-mile network elements and (ii) regulated wholesale prices for facilities and services. The decisions that allegedly dismantled the pre-2001 regulatory structure were outlined in *RoR* [at 19-20]. They

1. removed price constraints on "most" special access services and "declined to act" on petitions to reinstate price regulation ("special access pricing flexibility");
2. removed the obligation to provide unbundled loop and switching combinations ("UNE-P") at TELRIC rates;
3. eliminated mandatory access to the high-frequency channel of voice-grade loops for DSL service ("line sharing");
4. forbore from regulation of "most" broadband services ("broadband"); and
5. removed reporting obligations that allegedly would have disclosed excessive earnings on special access services ("reporting").

In fact, the timing of these regulatory (and judicial) decisions and the rate at which they were implemented sharply contradicts ETI's simplistic story that a 1996-2001 open access regulatory regime was replaced — along with the Clinton administration — by a Republican deregulatory initiative in which "regulators at both the federal and state levels ...acceded to most of the ILECs' deregulatory demands." [RoR at 19] The source and timing of these issues are outlined in Table 1.

1. Special access pricing flexibility

29. Limited pricing flexibility for some special access services in some markets upon a showing of competition was not introduced and implemented in 2001. It had its roots in the FCC's 1997 *Access Reform First Report and Order*,¹⁸ where, according to a later FCC decision,

Date	Party	Decision	Issue
May-97	FCC	Access Reform First Report and Order	special access
Jan-99	Supreme Court	Iowa Utilities Board	UNE-P, broadband
Aug-99	FCC	Pricing Flex Order	special access
Nov-99	FCC	UNE Remand	broadband
Dec-99	FCC	Line Sharing Order	line sharing
May-02	DC Court of Appeals	USTA I	line sharing, broadband
Aug-03	FCC	Triennial Review Order - TRO	line sharing, broadband
Mar-04	DC Court of Appeals	USTA-II	UNE-P, broadband
Feb-05	FCC	Triennial Review Remand Order - TRRO	UNE-P, broadband
Jun-05	Supreme Court	Brand X	broadband Internet access
Sep-05	FCC	Broadband Order	broadband Internet access
Apr-Dec-08	FCC	reporting forbearance	reporting

the Commission adopted a primarily market-based approach to drive interstate access charges toward the costs of providing these services. The Commission envisioned that this approach would enable it to give carriers progressively greater flexibility to set rates as competition develops, until competition gradually replaces regulation as the primary means of setting prices. In this [1999] *Order*, the Commission fulfills its commitment to provide detailed rules for implementing the market-based approach, pursuant to which price cap LECs

¹⁸ *Access Reform First Report and Order*, 12 FCC Rcd at 15985, 16094 (rel. May 16, 1997).

would receive pricing flexibility in the provision of interstate access services as competition for those services develops.¹⁹

30. Limited pricing flexibility was authorized in August 1999 in the FCC's *Special Access Pricing Flexibility Order* in two phases and two flavors in Metropolitan Statistical Areas ("MSAs") where the ILEC can show that competitive carriers have made "irreversible investment" in alternative facilities. In Phase I pricing flexibility, the ILEC may enter into volume discount and term arrangements and negotiate individual contracts with wholesale customers. In Phase II pricing flexibility, the ILEC may apply rates without regard to price cap and certain other rate regulations.²⁰ Separate applications and findings are made for dedicated transport/special access services on the one hand and channel terminations on the other.

31. Phase I and Phase II pricing flexibility require ILECs to apply MSA-by-MSA, and the rules limit pricing flexibility to those MSAs where competitors have committed facilities to serving the market. To be able to reduce prices through term and volume contracts in Phase I flexibility, the ILEC must show that competitors collocate in at least 15 percent of the ILEC's wire centers that amount to at least 30 percent of the ILEC's special access revenue in the MSA. In addition, at least one collocator must use transport links supplied by an entity other than the ILEC. To be able to raise prices in Phase II flexibility, the proportions increase to 50 and 65 percent, respectively.

32. ETI's claim that

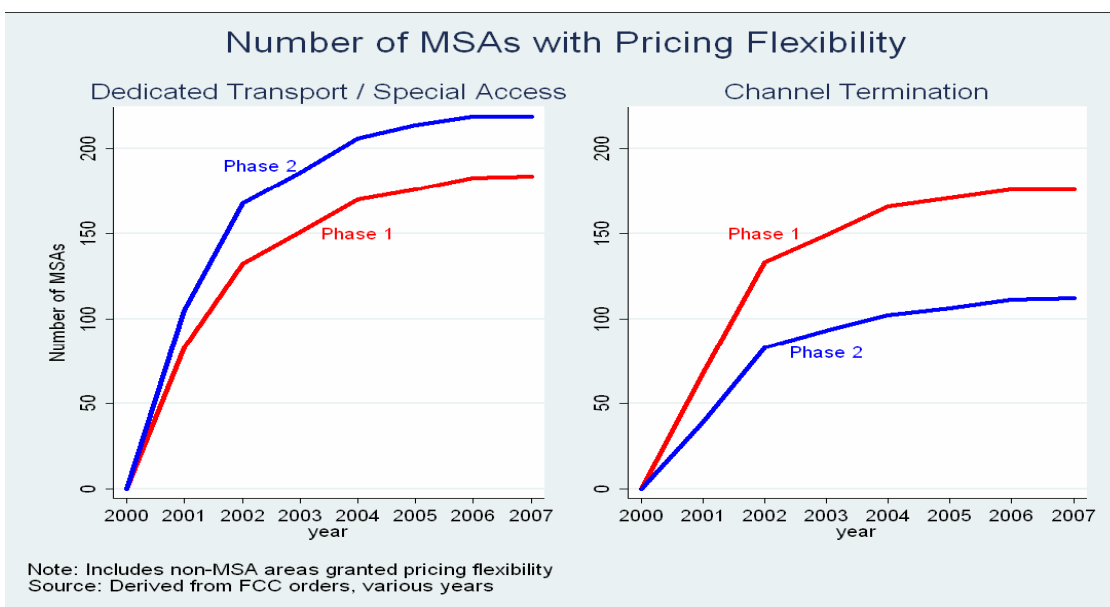
Accepting the ILECs' arguments and assurances, the FCC largely acceded to their demands. From 2001 on through the closing days of the Bush administration, the Commission — eliminated price constraints on most special access services [*RoR* at 19]

¹⁹ *Fifth Report and Order, Access Charge Reform*, 14 FCC Rcd 14221, ¶ 2 (rel. Aug. 27, 1999) ("*Special Access Pricing Flexibility Order*"), *aff'd*, *WorldCom, Inc. v. FCC*, 238 F.3d 449 (D.C. Cir. 2001).

²⁰ Phase I and Phase II pricing flexibility are implemented by Metropolitan Statistical Areas ("MSAs") and are distinguished by the degree of competition as measured by the proportion of wire centers where competitors have collocated and where at least one collocator is using transport links provided by an entity other than the ILEC. The collocation proportions are 15 percent by number and 30 percent by special access revenue for Phase I flexibility and 50 percent and 65 percent respectively for Phase II flexibility.

is incorrect. Full upward and downward pricing flexibility for special access services was not instituted in 2001, when ETI's investment numbers drop precipitously. Rather, ILECs petitioned for flexibility MSA-by-MSA over time in a process that stretched from 2001 to about 2006. By 2001 — ETI's watershed year — Figure 14 shows that ILECs had received upward pricing flexibility for dedicated transport in only 28 percent of the 369 US MSAs \and for channel terminations in only 11 percent of US MSAs. Moreover, pricing constraints for special access services were never simply "eliminated;" rather pricing flexibility was granted only in those

Figure 14



Source: S. Wallenstein, "Has Deregulation Affected Investment in Special Access?" Progress and Freedom Foundation, July 2007, Figure 3.

MSAs where — in the FCC's view — sufficient evidence of facilities-based competition was present to warrant pricing flexibility. According to the US Government Accountability Office ("GAO"):

In 2001, concurrently with the scheduled decreases in price caps resulting from the CALLS Order, FCC began granting pricing flexibility to price-cap incumbents. Some level of pricing flexibility has since [November 2006] been granted to the four major price-cap incumbents in 215 of the 369 MSAs in the United States and Puerto Rico. These four price-cap incumbents have received full price deregulation (phase II for all circuit components) in 112 MSAs. Only 3

of the 100 largest MSAs in the United States and Puerto Rico are not under any pricing flexibility.²¹

2. UNE-P

33. The UNE Platform is a combination of an unbundled loop and unbundled switching that essentially provided resold local exchange service at about half the price of regulated resale. That the Telecommunications Act of 1996 required ILECs to provide these rebundled unbundled elements was extremely controversial. Decisions by several state regulatory commissions in 1999 required ILECs to provide them, and the FCC subsequently determined that ILECs could not impose additional charges for such "rebundling." In 2002, the Supreme Court ruled that entrants could legally re-bundle UNEs at no additional charge, and that the FCC's version of cost-based rates ("TELRIC") was consistent with the Act.²² Not surprisingly, CLECs found UNE-P to be an attractive way to serve residential and small business customers, and much of the growth in CLEC access lines took place using this platform.

34. However, while the FCC and the Courts agreed upon rebundling and TELRIC, there remained a fundamental disagreement on "impairment," the standard by which ILECs were required to unbundle elements in the first place. This issue was finally resolved in the Courts in March 2004 and at the FCC in December 2004 when it was determined that CLECs were generally not impaired by the unavailability of ILEC local switching at TELRIC rates.²³ A transition was put in place by which wholesale UNE-P would remain available at no more than \$1 per month above TELRIC for 12 months ending in March 2006, after which the price of a UNE-P-equivalent service would be subject to commercial negotiation.

²¹ U.S. Government Accountability Office, *FCC Needs to Improve Its Ability to Monitor and Determine the Extent of Competition in Dedicated Access Services*, Report to the Chairman, Committee on Government Reform, House of Representatives, GAO-07-08, November 2006 ("GAO Report").
and reports its results to the Congress.

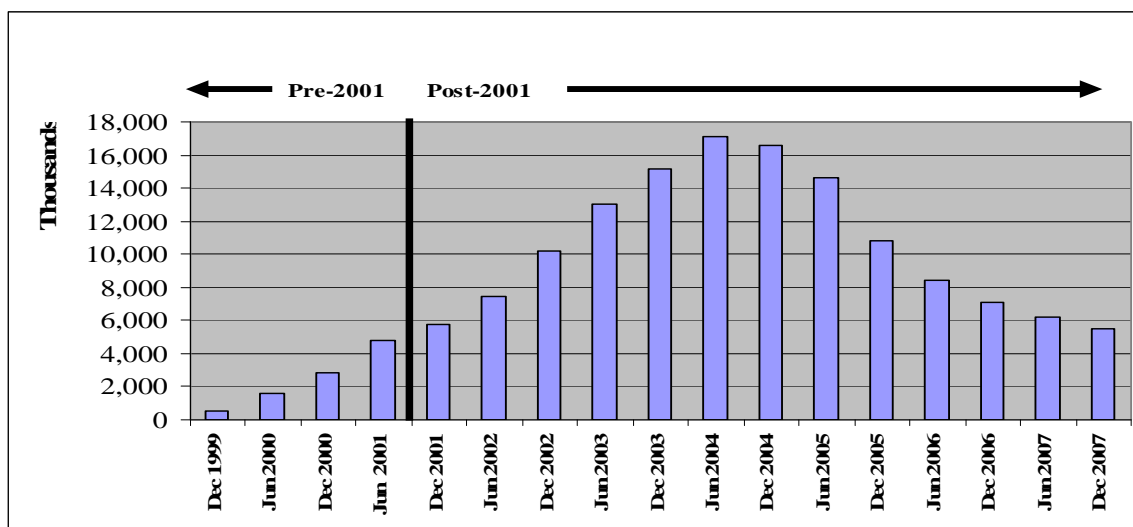
At 6.

²² *AT&T Corp. v. Iowa Utilities Bd.*, 525 U.S. 366 (1999). See T. Quast, "Did federal regulation discourage facilities-based entry into US local telecommunications markets?" *Telecommunications Policy*, Volume 32, Issue 8, September 2008 at 572-581.

²³ *United States Telecom Ass'n v. FCC*, 359 F.3d 554, 573 (D.C. Cir. 2004) ("USTA II"), cert. denied, 543 U.S. 925 (2004). *Order on Remand*, In the Matter of Unbundled Access to Network Elements, Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 20 FCC Rcd 2533, 2586-88 ¶¶ 87-92 (2005) ("*Triennial Review Remand Order*").

35. This history and timetable contradicts the ETI reports. It was not a change in regulatory philosophy at the FCC associated with the change in administrations in 2001 that did away with UNE-P. The FCC's *Triennial Review Remand Order* that removed the obligation to provide unbundled switching (and thus UNE-P) at TELRIC rates did not appear until January 2005, and CLECs were permitted to use UNE-P facilities through March 2006. Moreover, the *Triennial Review Remand Order* was a response to repeated court decisions disagreeing with the FCC's interpretation of the Telecommunications Act, culminating in the DC Court of Appeals *USTA II* decision in March 2004. In 2001, UNE-P was just beginning — and it wasn't until June 2004 that the number of UNE-P lines peaked: see Figure 15. During most of the "post-2001" period in ETI's Figures (*RoR* Figures 3-6, *N-DWES* Figure 1), UNE-P lines were available for CLEC purchase at TELRIC rates and the number of such lines increased sharply from 2001 until mid

Figure 15
UNE Loops with Switching



Source: FCC Local Competition Report, January 2009, Table 4.

2004.²⁴ One could equally interpret the ETI Figures as showing that the availability and growth of UNE-P after 2001 caused massive *reductions* in Gross Plant Additions (*RoR* Figure 3), Net Investment (*RoR* Figure 4), Capital Expenditures (*RoR*, Figure 5), and Capital Spending (*RoR*

²⁴ The end of UNE-P came well after the reductions in investment cited by ETI, so its argument might better be described as an *ante hoc* rather than a *post hoc* fallacy.

Figure 6, *N-DWES*, Figure 1). In fact, Professor Hazlett interprets the RBOC and cable investment data in precisely that way:

Financial analysts have repeatedly found that one important factor making telecommunications investments uneconomic (for both incumbent and competing carriers) is the 'overhang' produced by network sharing mandates. The prospect that UNE-P line growth will ramp up, spurred by low, regulated wholesale terms, offers a disincentive to the creation of the substitute product – irreversible capital infrastructure. The evidence is consistent with this view. Since the emergence of substantial UNE-P line growth in 2000, the simple correlation between UNE-P lines and Bell Operating Company ... investment is -0.94, indicating a strongly negative relationship.²⁵

3. Line sharing

36. As part of its implementation of the Telecommunications Act of 1996, the FCC determined in 1999 that a competitor's ability to provide DSL-based services would be impaired without access to the high-frequency portion of the incumbent's local loop.²⁶ Customers would then be able to buy access to voice services from the incumbent and Internet access from a competitor using the incumbent's local loop. The requirement to provide such access was vacated by the D.C. Circuit Court of Appeals in its May 2002 Decision, citing competition from cable and satellite providers of broadband services.²⁷ The FCC implemented this decision in its August 2003 *TRO* decision, which set up a three-year transition period during which the price of a shared loop would rise to the price of a full unbundled loop or commercially-negotiated rate after August 2006.²⁸

²⁵ T. Hazlett, "Rivalrous Telecommunications Networks With and Without Mandatory Sharing," AEI-Brookings Joint Center for Regulatory Studies, Working Paper 05-05, March 2005, at 15-16.

²⁶ *Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket Nos. 98-147, 96-98, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, 14 FCC Rcd 20912 (1999) (*Line Sharing Order*).

²⁷ *United States Telecom Ass'n v. FCC*, 290 F.3d 415 (D.C. Cir. 2002) (*USTA I*).

²⁸ *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 01-338, 96-98, 98-147, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd 16978, 17145, (2003) (*TRO*), *vacated and remanded in part, affirmed in part, United States Telecom Ass'n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004) (*USTA II cert. denied*, 125 S.Ct. 313, 316, 345 (2004)).

37. As in the case of UNE-P, the facts belie ETI's claims. Line sharing remained available as a UNE at TELRIC rates until August 2003 and remained available at transitioning rates until August 2006. The sharp drop in net investment between 2001 and 2002 — shown, for example in *RoR* Figure 4 — can hardly be ascribed to the death of a practice that was alive and well in August 2003. Similarly, the simplistic story of a change in FCC regulatory philosophy in 2001 associated with the new Bush administration makes no sense since the impetus for the change was the *USTA I* decision of the DC Court of Appeals. In general, the elements of FCC unbundling policy with which ETI disagrees primarily reflect US Court orders overturning earlier FCC decisions that had incorrectly interpreted the 1996 Act. *See, e.g., Iowa Utilities Board, USTA I, and USTA II.*

4. Broadband services

38. Again, no announcement of a radical change in the FCC's regulation of broadband Internet access occurred in the 2001-2002 time frame. The FCC's *UNE Remand Order* (released November 1999) confirmed that ILECs must unbundle high-capacity loops and dedicated transport. The DC Court of Appeals *USTA I* decision rejected the impairment standard underlying this decision, and the FCC's subsequent *TRO* (August 2003) established that ILECs would not be required to unbundle next-generation broadband facilities. This decision was upheld by the Appeals Court in *USTA II* (March 2004). Subsequent FCC decisions declined to unbundle broadband Internet access,²⁹ and these were reinforced by and consistent with the Supreme Court's contemporaneous opinion in *NCTA v. Brand X*.³⁰ Thus, this chronology is again inconsistent with ETI's claims: changes in unbundling policies in 2003 and 2005 can hardly have been responsible for investment declines in 2000 and 2001.

39. Moreover, in May and June of 2004 respectively, Verizon and AT&T announced their intentions to construct fiber-to-the-home and fiber-to-the-curb broadband networks.³¹ The possibility of a relationship between the *USTA II* Order and these announcements of investment

²⁹ *Report and Order and Notice of Proposed Rulemaking, In the Matter of Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, et al.*, 20 FCC Rcd 14853, 14865, 14877-78 ¶¶ 19, 43-44 (rel. Sept. 23, 2005) ("*Wireline Broadband Order*").

³⁰ *National Cable & Telecommunications Ass'n v. Brand X Internet Services*, 545 U.S. 967 (2005).

in next-generation broadband platforms was not lost on analysts, who were aware of the effect of mandatory unbundling on the business case for a new broadband platform:

Although the cost of deployment has fallen rapidly in recent years, phone companies have made little progress in bringing fiber to homes across the United States. In October 2004, only 146,000 U.S. households had fiber-to-the-home service, according to Mike Render, head of Render Vanderslice & Associates, a market research firm in Tulsa, Oklahoma. At that time, Mr. Render says, about 970,000 homes had fiber available in their neighborhoods if they wanted to subscribe.

What's the holdup? Federal regulations that, until 2003, forced phone companies to share any fiber they laid down, thus providing a disincentive for investing in the technology. In late 2004, however, nearly a year after the rules governing fiber lines changed, at least three major telephone companies—Verizon, SBC, and BellSouth—announced fiber-based business strategies.³²

Investments in new fiber infrastructure are large, sunk and subject to risk from changes in the market and in technology. Mandatory unbundling provides competitors with a free option to use the platform at the ILEC's cost, which reduces the possible returns an ILEC can expect to earn. Thus, it is not surprising that ILEC investment decisions regarding FiOS and U-verse were premised on regulatory expectations. Take, for example, the SBC announcement:

SBC Communications Inc. (NYSE:SBC) today announced key advances in developing a network capable of delivering a new generation of integrated digital TV, super-high-speed broadband and voice over IP (Internet Protocol) services to residential and small business customers.

SBC companies have defined a strategy to drive fiber deeper into its networks to power high-speed, IP-based local connections. Pending final clarity on applicable regulatory requirements and successful completion of neighborhood-level trials, which begin this summer, the SBC strategy could result in an incremental investment of \$4 billion to \$6 billion over five years to deploy the network and make advanced services available to millions of customers in the SBC service territory.

"Fiber technologies and IP-based services will enable a communications revolution, allowing consumers and businesses to experience integrated video, data and voice services beyond what can be provided over any network today,"

³¹ See <http://newscenter.verizon.com/kit/fiber/events.html> and <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=21207> .

³² RedHerring Staff Report, "Fiber Wars," May 7, 2005, <http://www.redherring.com/Home/12030> .

said Edward E. Whitacre Jr., SBC chairman and CEO. "This next generation of services will require us to revolutionize our local networks as well, which we will do as economic and regulatory conditions make practical.

"The recent decision by the Bush Administration to allow unlawful telephone wholesale rules to lapse and let stand the FCC's decision not to unbundle broadband is a positive step," said Whitacre. "We are now more optimistic that we may be headed toward rational, market-oriented regulations that will promote investment and deployment of new capabilities."³³

40. The incremental investment is large. According to Aron and Crandall, Verizon's FiOS FTTH platform was expected to generate \$23 billion of capital expenditure to pass 18 million homes between 2004 and 2010, while the AT&T U-verse FTTN platform was projected to cost about \$6.5 billion to pass about 8 million homes by 2008. In addition, the threat of ILEC broadband competition has stimulated investment from traditional cable companies:

while the combined annual capital expenditures of AT&T and Verizon have increased from \$17.1 to \$24.6 billion since 2004, the aggregate annual capital expenditures of the three largest publicly held cable providers, Comcast, Cablevision, and Time Warner Cable, have nearly doubled, from \$5.6 billion to \$10.1 billion.³⁴

5. Reporting obligations

41. For many years, telephone company interstate services were regulated under a rate-of-return regulatory regime in which prices for services were set so that accounting earnings for groups of services would not exceed an allowed rate of return. That regime largely ended in 1990 for large local exchange carriers, and between April and December 2008, the FCC relieved AT&T, Verizon and Qwest from the obligation to report costs, investment and earnings in its Automated Reporting Management Information System ("ARMIS") reports.³⁵ Obviously, this decision had nothing to do with LEC investment in 2000-2001.

³³ "SBC Communications Announces Advances in Initiative to Develop IP-Based Residential Network for Integrated Video, Internet, VoIP Services," press release, June 22, 2004.

³⁴ D. Aron and R. Crandall, "Investment in Next Generation Networks and Wholesale Telecommunications Regulation," November 2008, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1294910.

³⁵ *Petition of AT&T Inc. For Forbearance Under 47 U.S.C. § 160 From Enforcement of Certain of the Commission's Cost Assignment Rules; Petition of BellSouth Telecommunications, Inc. For Forbearance Under 47 U.S.C. § 160 From Enforcement of Certain of the Commission's Cost Assignment Rules*, WC Docket Nos. 07-21, 05-342, Memorandum Opinion and Order, 23 FCC Rcd 7302 (2008).

6. Conclusion

42. Neither the timing nor the origins of the unbundling policies in the US cited by ETI support its conclusion that

Failure of the Government to require that incumbent carriers make *all* last mile services — including Ethernet and other next-generation services and facilities — available to competitors at reasonable wholesale rates will result in less competition overall, less investment in Canada's telecom infrastructure, higher retail telecom prices, and substantial harm to Canadian business and the Canadian economy overall. [*RoR*, at 31, *N-DWES* at 21]

Indeed, the important unbundling decisions came not from the FCC but from the Courts: *USTA I* and *USTA II* overturned FCC policies that would have required more substantial unbundling. And those decisions, as well as the FCC Orders that implemented them — the *TRO* and *TRRO* — took place well after the meltdown in the telecommunications industry in 2000-2001.

43. If one took seriously ETI's claims that changes in regulation caused reductions in telecom investment, one might look more closely at the ETI Figures 4, 5 and 6 in *RoR*. For the US ILECs, these figures generally show large reductions in investment or capital expenditures after 2000, whose causes we will explore below. However, the same graphs show year-over-year *increases* in investment (or reductions in net disinvestment) after 2004: *i.e.*, shortly after the *TRO*, which relaxed unbundling requirements for line sharing and broadband services in August 2003 and the *TRRO*, which removed the unbundling obligation for local switching and the obligation to provide UNE-P at TELRIC rates in December 2004.³⁶

Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering; Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's ARMIS Reporting Requirements; Petition of Qwest Corporation for Forbearance from Enforcement of the Commission's ARMIS and 492A Reporting Requirements Pursuant to 47 U.S.C. § 160(c); Petition of the Embarq Local Operating Companies for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of ARMIS Reporting Requirements; Petition of Frontier and Citizens ILECs for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's ARMIS Reporting Requirements; Petition of Verizon for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's Recordkeeping and Reporting Requirements; Petition of AT&T Inc. For Forbearance Under 47 U.S.C. § 160 From Enforcement of Certain of the Commission's Cost Assignment Rules, WC Docket Nos. 08-190, 07-139, 07-204, 07-273, 07-21, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 23 FCC Rcd 13647 (2008).

³⁶ Note that ETI's Figure 5 in *RoR* is incorrect in two important respects. It omits any mention of the *TRO* (August 2003), which removed unbundling requirements for line sharing and broadband services, and it places what it calls the "Triennial Review Remand Order" (which removed the UNE-P obligation) in December 2003 rather than December 2004.

C. The economic literature

44. For economists, the relationship between mandatory unbundling and infrastructure investment is straightforward. On the one hand, mandatory unbundling could, in theory, encourage competition where competition would not otherwise take hold, leading to additional investment from ILECs and CLECs as a consequence. On the other hand, mandatory sharing of facilities would immediately reduce the payoff to both ILECs and CLECs from infrastructure investment. Many studies have examined this tradeoff empirically. While ETI offers only a simplistic coincidence in time to link deregulation and reduced investment, other, more detailed studies come to the opposite conclusion — that reducing unbundling requirements increases infrastructure investment. In the section entitled "Telecom Regulation and the Investment Decline," Professor Hazlett concludes that

There is no question that CLEC investment is robust in the period following the Telecommunications Act... Yet, by the period in which UNE-P is expanding, CLEC investment is falling rapidly, just as is ILEC investment; by 2003, they are, combined, easily less than 1996 investment in real terms. ...

Investment in these other communications industries [cable, satellite, wireless] are introduced to provide benchmarks for the pattern seen in local exchange markets. They exhibit large increases in capital expenditures in the boom of the late 1990s, followed by retrenchment, but then settle (in 2003) at annual rates of investment well above 1996. This is distinctly different than that seen in local telecommunications, where 2003 investment flows are well below the base year of 1996. This is consistent with the hypothesis that network sharing obligations were specifically depressing telecom network investment; where such regulations were not imposed, a different pattern emerges.³⁷

Ironically, Hazlett observes the same drop in ILEC and CLEC investment after 2000 and the same changes in regulation that ETI observes but reaches the opposite conclusion: that the availability of UNE-P decreased ILEC and CLEC investment and delayed the investment of cable companies in telephony.³⁸

45. Statistical evidence from cross-section data from the US states leads Crandall, Ingraham and Singer to conclude that

³⁷ Hazlett, *op. cit.*, at 21.

³⁸ *Ibid.*, at 12.

An expanding economics literature has examined the theoretical linkages between mandatory unbundling in the telecommunications sector and the incentives to invest in facilities by both incumbent local carriers and competitive carriers. Recent empirical evidence that substantiates the theory has emerged. That literature documents CLECs' reluctance to make facilities-based investments instead of availing themselves of incumbents' UNEs at low regulated prices that are based on total element long-run incremental costs (TELRIC). By examining the variation in facilities-based investment in loops across U.S. states, we find that an increase in the UNE loop rate increases CLEC facilities based lines for any reasonable own-price elasticity of demand for CLEC service.³⁹

46. Similar empirical findings across Europe support the conclusion that access to network elements discourages investment in facilities:

Our study identifies strong statistical relationships between specific regulatory policies and specific market outcomes. This approach allows us to avoid the problems associated with previous aggregate studies that have attempted to delineate the relationship between 'overall' investment and 'overall' regulation (such as the London Economics/PWC study for the European Commission). We also use both more data, and more recent data, than other studies we are aware of.

We show clearly that while access regulation may promote short-term competition based on the existing PSTN network, it does so at a substantial cost. This cost is the potential reduction in alternative infrastructure investment by both incumbents and entrants....

The key finding from our study is that the intensity of access regulation (measured through LLU prices) negatively affects investment in alternative and new access infrastructures. The key implication from our work is therefore that regulators should not view access regulation as a costless panacea for a perceived lack of competition in the broadband market. The application of access regulation and its extension to new access networks should be scrutinised in light of the costs in terms of lost investment and reduced interplatform competition that this regulation can create.⁴⁰

While the results of none of these studies are dispositive, it is certainly safe to say that the preponderance of empirical evidence today supports the opposite conclusion from ETI's simplistic *post hoc* argument.

³⁹ R. Crandall, A. Ingraham and H. Singer, "Do Unbundling Policies Discourage CLEC Facilities-Based Investment?" Brookings Working Paper: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=387421.

⁴⁰ L. Waverman, M. Meschi, B. Reillier and Kalyan Dasgupta, "Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation," LECG, at 1.16, 1.18. http://www.etno.be/Portals/34/ETNO%20Documents/LECG_Final%20Report.pdf.

47. Moreover, economic theory is consistent with these empirical findings. For ILECs, expected revenue from services that require new infrastructure would be smaller under mandatory unbundling, particularly where the regulated prices of unbundled facilities fail to account for the option value of using new network facilities that require investment that is both risky and sunk. For CLECs, month-to-month leasing of new facilities at rates that do not fully account for risk is more profitable than sinking investment in their own facilities. ETI's assertion that mandatory unbundling increases investment in telecommunications infrastructure has neither empirical nor theoretical support.

D. Conclusions

48. The regulatory events discussed above did not cause the sharp reduction in investment depicted in Figures 3-6 of *RoR*. The timing is wrong, and the drop in telecom investment after 2000 is explained as a consequence of the dot-com collapse in which demand failed to materialize and capital markets closed to telecommunications firms. Nowhere in this story do changes in US regulatory policy appear. ETI appears to agree with this history (at *RoR* 28, cited above) but leaves many contradictory and misleading claims in the text, imparting a causal relationship between ILEC and CLEC investment and regulatory changes.⁴¹

49. Since ETI agrees that the reduction in investment in the US telecom market after 2000-2001 was not caused by changes in regulatory philosophy, it cannot conclude from Figures 3-6 that

Failure of the Government to require that incumbent carriers make *all* last mile services – including Ethernet and other next-generation services and facilities – available to competitors at reasonable wholesale rates will result in ... less investment in Canada's telecom infrastructure.... [*RoR* at 31, *N-DWES* at 21]

On the contrary, the post-UNE-P increases in ILEC investment [*RoR*, Figures 5,6] and the broadband commitments by Verizon and AT&T after mandatory unbundling was rejected in

⁴¹ For example, see *RoR* Figures 3 and 6 and *RoR* pp. 24, 25, 26, and 28.

USTA-II are consistent with the hypothesis that mandatory sharing of last-mile facilities discourages rather than encourages investment.⁴²

IV. Deregulation of special access services in the US has not led to higher prices, job losses or reductions in Gross Domestic Product.

50. The FCC's decision in August 1999 to substitute pricing flexibility for price cap regulation for special access services was controversial. After the decision was affirmed by the Court of Appeals in 2001, various special access customers petitioned the FCC and the Courts to overturn the decision, and the matter has continued in more or less active litigation before the FCC to this day. ETI has made some of the same arguments it presents in *RoR* in many filings on behalf of special access customers. Professor Alfred Kahn and I filed a study on behalf of the large ILECs in December 2002,⁴³ and I have filed several additional studies on their behalf. The FCC and the DC Court of Appeals have rejected calls for emergency changes in the rules, but the FCC has yet to act on its *Notice of Proposed Rulemaking* promulgated in 2005.⁴⁴

A. Price changes

51. ETI asserts [*RoR* at 7] that the lack of competitive dedicated circuits in the US has enabled ILECs to increase special access prices in the wake of pricing flexibility: evidence of alleged price increases is presented at *RoR* 13-16, citing a report by the Government Accountability Office (GAO)⁴⁵, a paper by two FCC staffers⁴⁶ and previous ETI filings. Two

⁴² ETI downplays the FiOS and U-verse investments, arguing that total investment by Verizon and AT&T was less in the 2002-2007 period than in 1996-2001, even after the broadband expenditures [*RoR* at 24-25]. That argument fails because (i) the decline in capital investment "was more likely due to the post-Internet bubble, post-9/11 stock market slump, rather than to regulatory policy" [*RoR* at 28] and (ii) access line demand fell sharply after 2000, reducing the investment required for conventional wireline telephone services.

⁴³ Declaration of Alfred E. Kahn and William E. Taylor on behalf of BellSouth Corporation, Qwest Corporation, SBC Communications, Inc., and Verizon, RM No. 10593, filed December 2, 2002.

⁴⁴ *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers and AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, Order and Notice of Proposed Rulemaking, WC Docket No. 05-25, RM 10-593, released January 31, 2005 ("*Special Access NPRM*").

⁴⁵ "FCC Needs to Improve Its Ability to Monitor and Determine the Extent of Competition in Dedicated Access Services," Report No. GAO-07-80 (Washington, D.C. Nov. 2006) (GAO Report).

⁴⁶ N. Uri and P. Zimmerman, "Market Power and the Deregulation of Special Access Service by the Federal Communications Commission," *Information & Communications Technology Law*, Vol. 13, No. 2, 2004 ("Uri-Zimmerman")

factual assertions are made: (i) that special access prices are higher in areas subject to pricing flexibility and (ii) that special access prices increased more in areas subject to pricing flexibility. Neither statement implies that competition has failed to control prices for special access services.

52. First, all of the evidence cited by ETI — including the Uri-Zimmerman paper — pertains to prices of individual special access services (*e.g.*, month-to-month DS-1 channel terminations), not to the average prices that customers actually pay. The distinction is vital, because those data ignore the proliferation of price discounts that are commonplace in the market.⁴⁷ If the basic tariffed price of a 36-month DS-1 channel termination increases, ETI interprets that increase as an exercise of market power. However, if at the same time, the ILEC introduces a new 36-month DS-1 channel termination tariff having a 40 percent discount off the month-to-month rates instead of a 10 percent discount, ETI's measure of prices does not register that change. Customers, however, *do* register that change, and they are better off, paying lower average prices after an increase in tariffed prices combined with the introduction of new discounted contract tariffs. The FCC agreed. In another matter, the FCC found that:

Verizon provides special access services under tariffed rates as well as through individual contracts, as Verizon has gained pricing flexibility in certain MSAs. Various volume and term discounts may apply to individual purchases or for all purchases in particular regions. Other discounts are dependent on maintaining minimum purchasing levels over several years. While it is not always clear how much each buyer pays, *it is clear that the simple tariff rate sometimes used by commenters for comparing prices is not adequate for that purpose.*⁴⁸

53. I showed at length⁴⁹ and it is undisputed in the special access proceedings that average revenue per circuit for special access services has fallen, even as the demand for those services

⁴⁷ Estimates suggest that on the order of about 90 percent of Verizon's special access revenue from carrier customers now derives from services purchased from these tariffs and other discount plans, which offer discounts of 50 percent and more off of tariffed month-to-month rates. See Declaration of Quintin Lew, In the Matter of Special Access Rates for Price Cap Local Exchange Carriers, WC Docket No. 05-25, June 9, 2005 at ¶62. The result of this shift in demand has been a reduction in the prices customers actually pay, even though the month-to-month or any individual contract tariff price may have stayed the same or increased.

⁴⁸ *In the Matter of Verizon Communications Inc. and MCI, Inc. Application for Approval of Transfer of Control*, WC Docket No. 05-75, Memorandum Order and Opinion, released November 17, 2005 at footnote 114. Emphasis added, citations excluded.

⁴⁹ See, *e.g.*, Supplemental Declaration of William E. Taylor on behalf of Verizon, *Special Access NPRM*, filed August 15, 2007.

has increased.⁵⁰ These price reductions continued and even accelerated as ILECs began to receive Phase I and II pricing flexibility for special access channel terminations and channel mileage in various MSAs beginning in 2001. On average, special access prices fell faster during the pricing flexibility period than would have been required by the price cap annual adjustment formula. For specific services, prices for DS-1 and DS-3 services (treated independently) fell on average, as did prices for DS-1 and DS-3 channel terminations and channel mileage services, again treated separately. These findings were corroborated by the GAO Report, cited by ETI, which concluded that

Average revenue for channel terminations and dedicated transport for DS-1 and DS-3 has generally decreased over time, although the decline in average revenue for channel terminations is larger in phase I areas compared with phase II areas. Comparing average revenue across price-cap areas, phase I areas, and phase II areas as of 2005—the most recent period available—we found that average revenue in the 27 phase II areas is higher, on average, than it is in the 29 phase I areas and not statistically different than average revenue in areas that are still under a price cap. [GAO Report at 14]

This conclusion is emphatically *not* a finding that pricing flexibility has led to significant and sustained price increases.

54. In fact, one would expect that prices would remain unchanged or rise after an MSA is granted Phase II classification. Phase I pricing flexibility allows ILECs to selectively reduce prices through contract tariffs and responses to RFPs. In contrast, Phase II pricing flexibility provides the additional flexibility to *raise* prices. All else equal, one would expect the effect of the regulatory reclassification would necessarily be to increase rates after Phase II classification. And such a finding would tell us nothing about whether competitive forces were constraining special access prices.⁵¹ Similarly, the comparison between prices under Phase II pricing flexibility and price caps is ambiguous: it is undetermined whether the new regulatory flexibility

⁵⁰ Average revenue per voice-grade equivalent circuit is a proper measure of the price that customers actually pay for the special access service they receive. If customers shift to lower-priced contract services, they will pay less for a unit of service, which, to them, is effectively a reduction in the price the ILEC charges for the service.

⁵¹ Before reclassification, firms could lower prices but not increase them. After reclassification, prices could rise. Thus, all else equal, reclassification would cause prices to remain the same or increase. And that increase would say nothing about competition because the initial price (before the increase) had been regulated forever (as discussed below) and bears no necessary relationship with a competitive market price.

to reduce prices under Phase I flexibility outweighs the new regulatory ability to raise prices under Phase II flexibility.

55. Second, the comparisons in *RoR* Figure 2 and Table 5 provide no useful information about competitive conditions in the special access markets because they use price levels and price changes in price-cap-regulated areas as the standard of comparison. Those price levels are not competitive market price levels, as the FCC acknowledged in the *Pricing Flexibility Order*.⁵² Price changes in price cap areas say nothing about competitive market conditions because in the years since pricing flexibility was granted, price cap rates were driven down, not by an approved productivity factor or any other measure of productivity growth, but rather by a transitional X-factor negotiated as part of the CALLS plan.⁵³ Thus price changes under the price cap plan bear no relationship to price changes under competitive market conditions.

56. Third, ETI cites independent studies by the GAO⁵⁴ and the NRRI⁵⁵ as supporting its claim that special access pricing flexibility led to higher prices. As explained above, the GAO Report concurs with my findings that prices as measured by average revenue per circuit fell after pricing flexibility was instituted. Its analysis of individual service price changes — as shown in *RoR* Table 5 — ignores the introduction of new discount plans which cause average revenue per circuit to fall.

⁵² According to the FCC, regulated prices could be below or above cost so that although Phase II pricing flexibility could result in price increases, those increases would be warranted because the public interest was better served by permitting market forces to govern the rates. *Access Charge Reform*, CC Docket Nos. 96-262, 94-1, 98-63, 98-157, Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221 (1999) (*Pricing Flexibility Order*) at ¶ 155.

⁵³ As the Commission expressly acknowledged:

[T]he X-factor as adopted herein will not be a productivity factor as it has been in past price cap formulas. Instead, the X-factor is now a transitional mechanism . . . to lower rates for a specified period of time for special access.

Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, CC Docket Nos. 96-262 and 94-1, Sixth Report and Order, *Low-Volume Long Distance Users*, CC Docket No. 99-249, Report and Order, *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Eleventh Report and Order, 15 FCC Rcd 12962 (2000) (CALLS Order), ¶ 160.

⁵⁴ The GAO Report, cited above.

⁵⁵ P. Bluhm and R. Loube, "Competitive Issues in Special Access Markets, Revised Edition," NRRI, January 21, 2009 (NRRI Report).

57. The NRRI Report repeats the conceptual error in the GAO Report — that competition should lead to lower prices and larger price reductions in Phase II (pricing flexibility) MSAs than in Phase I (price cap) MSAs. It examines data from buyers and sellers, effectively confined to 2006 and 2007, and although the authors of the Report are concerned about some of the pricing data submitted by a small number of CLECs, they declined to draw any conclusions from the price trend data: "[i]n sum, the data do not support any clear conclusions about price trends." [NRRI Report at 67]. A detailed criticism of the NRRI Report is available on the NERA website.⁵⁶

58. In summary, ETI's conclusion that "the effect of special access pricing flexibility was a succession of large price increases" [*RoR* at 26] is unwarranted and contradicted by some of the very studies ETI cites. Moreover, the relevant statistic examines the average prices that customers paid for special access services and those prices fell after special access pricing flexibility was implemented.

B. Macroeconomic effects

59. ETI claims [*RoR* at 3-4] that overpricing of special access services led to massive inefficiency in the US economy, amounting to about 234,000 lost jobs and a reduction in output of about \$66 billion. These claims were filed with the FCC in August 2007 and roundly criticized by several economists including myself.⁵⁷

60. These sound-byte numbers have nothing to do with special access services or economics. What ETI did was to assume that special access prices were reduced by the amount necessary to drive the ARMIS rates of return for interstate special access services to 11.25 percent — the level last authorized under rate of return regulation in 1999.⁵⁸ This calculation required a 53 percent reduction in interstate special access prices in 2007, followed by roughly 6 percent

⁵⁶ H. Ware, C. Dippon and W. Taylor, "Is More Special Access Regulation Needed? Reactions to the NRRI Report on Special Access Competition," March 4, 2009, available at http://www.nera.com/image/PUB_Special_Access_Regulation_03.2009_final.pdf.

⁵⁷ Supplemental Reply Declaration of William E. Taylor on behalf of Verizon, WC Docket No. 05-25, August 15, 2007.

⁵⁸ The FCC's Automated Reporting Management Information Systems (ARMIS) was initiated in 1987 to track financial and operating data from regulated local exchange carriers. The ARMIS rate of return is measured as net return divided by average net investment.

additional price reductions in 2008 and 2009. amounting to expenditure reductions of about \$8 billion in 2007, followed by additional reductions of about \$1 billion in 2008 and another \$1 billion 2009. When the dust settled in this thought experiment, US firms that purchase telecommunications services would spend about \$10 billion per year less to obtain the same amount of service. A standard macroeconomic model then took the assumed reductions of \$8, \$9 and \$10 billion per year in telecommunications expenses and flowed them through the US economy, as if they represented productivity increases. The result, according to ETI, was cumulative increases in 2009 of about 234,000 jobs and \$66.7 billion annual GDP. Stripped of rhetoric, then, all this calculation really showed was that if \$10 billion in annual expenditure on ILEC telecommunications services could be made to disappear without affecting telecommunications suppliers, US GDP and employment would be higher.

61. As discussed below, treating special access prices and revenues as dead-weight loss based on ARMIS accounting rates of return is microeconomic nonsense.⁵⁹ Treating that loss as a productivity gain in a general equilibrium model of the US economy is macroeconomic nonsense.

1. ARMIS rates of return

62. ARMIS rates of return at the category level were never intended to set prices and are particularly meaningless in 2007 after a seven year freeze in the allocation factors that assign costs and investment to the interstate special access category. Indeed, the FCC agreed that accounting rates of return from ARMIS data cannot be used to set rates; thus, it would make no sense to use them to adjust a given set of rates to competitive market levels, as ETI claims it has done. In its 2005 *Notice of Proposed Rulemaking* examining special access pricing flexibility, the FCC stated that:

One year's data are insufficient to support conclusions about the relationship between pricing flexibility and high rates of return. Even if the Commission had enough data, moreover, *we question AT&T's central reliance on accounting rate of return data to draw conclusions about market power. High or increasing rates*

⁵⁹ Uri-Zimmerman (at 135) also infer the presence of market power from ARMIS accounting rates.

*of return calculated using regulatory cost assignments for special access services do not in themselves indicate the exercise of monopoly power.*⁶⁰

63. Professor Kahn and I discussed at length the fallacy in using accounting rates of return to infer anything about the level of special access services prices or rates of return.⁶¹ Our reasoning centered around the impossibility — not just in practice but in principle — of assigning fixed common costs and network investment in any economically meaningful way to particular services in particular jurisdictions. Telecommunications services are supplied by multiproduct, multi-state firms that provide regulated and unregulated services over a single joint-use network using an integrated regional management structure. For such firms, economists have long understood that fully-distributed costs allocated to particular services in particular jurisdictions are not economic costs and cannot be used for ratemaking purposes or for assessing the degree of competitiveness in a market. As Professor Kahn observed:

Once you abandon marginal cost, it is not *difficult* to find another measure of cost..., it is hopeless. This is not a question of looking for a black cat in a room where all the lights have been turned out. *There is no cat there.*⁶²

The absence of the cat is widely acknowledged among economists. As Professor Kahn and I explained:

The regulatory expedient of assigning fixed costs among categories (e.g., between regulated and unregulated or between interstate and intrastate jurisdictions), in proportion to variable costs or demand volumes, though "reasonable," is not cost-causative, and the resulting costs are not economic costs. It might be equally reasonable to allocate railroad overhead costs to services by volume, weight or value, but shippers of feathers, coal and diamonds would undoubtedly disagree about the results.⁶³

⁶⁰ *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers and AT&T Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25 and RM-10593, Order and Notice of Proposed Rulemaking, released January 31, 2005 at ¶ 129 (emphasis added), citing Franklin M. Fisher & John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73 AMERICAN ECON. REV. (1983) at 83.

⁶¹ Declaration of Alfred E. Kahn and William E. Taylor On Behalf of BellSouth Corporation, Qwest Corporation, SBC Communications, Inc., and Verizon in FCC RM No. 10593, December 2, 2002, at 7 (Kahn-Taylor Declaration).

⁶² Alfred E. Kahn, "The Uneasy Marriage of Regulation and Competition," *Telematics*, Vol. 1, 1984, p. 12 (emphasis in the original).

⁶³ *Ibid* at 7.

and other distinguished economists agree:

Fully allocated cost figures and the corresponding rate of return numbers simply have zero economic content. They cannot pretend to constitute approximations to *anything*. The "reasonableness" of the basis of allocation selected makes absolutely no difference except to the success of the advocates of the figures in deluding others (and perhaps themselves) about the defensibility of the numbers. There just can be no excuse for continued use of such an essentially random, or, rather, fully manipulable calculation process as a basis for vital economic decisions by regulators.⁶⁴

Just so.

64. In addition to the economists' generic condemnation of using accounting rates of return to measure market power, there are specific reasons why rates of return calculated from ARMIS data bear no relationship with economic profits. ARMIS costs and investment for special access services are derived from the Part 32 Uniform System of Accounts by a multi-stage process that allocates costs and investment between regulated and nonregulated services, between regulated interstate and regulated intrastate services and among regulated interstate services and access rate elements. Costs and investment in these processes are assigned to the various categories on bases other than cost-causation, and by the time costs and investment for individual interstate special access rate elements are produced, the results bear no relationship with economic costs. Tellingly, when required to set prices for unbundled network elements by the Telecommunications Act of 1996, the Commission rejected ILEC accounting costs as opposed to forward-looking economic costs as a basis for pricing.

⁶⁴ W. J. Baumol, M. F. Koehn and R.D. Willig, "How Arbitrary is 'Arbitrary'? – or, Toward the Deserved Demise of Full Cost Allocation," *Public Utilities Fortnightly*, Vol. 120, No. 5, September 3, 1987 at 21.

65. Even on their own terms, this selective use of ARMIS rates of return for an individual service makes no sense. Table 2 is constructed from the ARMIS 43-01 report for Verizon. The rate of return for the total company subject to separations (that is regulated services before splitting up by interstate and intrastate) for 2006 is 9.78% and the pattern of total returns is relatively stable and not unreasonable. It is only after generic, economically-arbitrary allocations to the interstate and intrastate jurisdictions and then further allocations to different buckets within jurisdictions that the return numbers become disproportionate and unreasonable. If ETI actually believed that ARMIS rates of return above 11.25 percent signaled excessive prices, its policy recommendations would presumably be very different, requiring a massive rate rebalancing across *all* categories. Using the ETI benchmark rate of return implies that intrastate

Table 2
ARMIS 43-01 Verizon Rates of Return

	1999	2000	2001	2002	2003	2004	2005	2006
Subject to Separations	15.07%	13.81%	12.92%	10.61%	6.68%	9.18%	9.64%	9.78%
State	13.76%	11.51%	9.97%	7.37%	2.61%	4.07%	2.49%	1.15%
Interstate	17.30%	17.24%	17.08%	15.10%	12.40%	15.81%	18.99%	21.21%
Common Line	20.78%	19.45%	19.87%	17.23%	14.40%	14.10%	13.53%	9.29%
TS - Switching	47.80%	46.70%	16.20%	10.84%	7.50%	7.36%	9.38%	15.55%
TS - Transport	10.16%	1.22%	-1.24%	-1.99%	-5.19%	-4.58%	-4.72%	-4.61%
TS - Total	27.85%	20.93%	6.43%	4.41%	1.77%	1.81%	2.54%	4.97%
Special	9.92%	15.28%	22.15%	23.81%	22.99%	31.43%	41.41%	51.39%

prices would have to increase radically, along with some other interstate access charges, to remedy the extremely low accounting rate of return reported by ARMIS. Other prices would have to fall. In net, Verizon's prices would have to increase to bring its ARMIS earnings for services subject to separations to ETI's assumed target of 11.25 percent.

2. Macroeconomic modeling

66. The second flaw in ETI's exercise is macroeconomic. ETI assumes that in a better world, ILEC special access prices would be reduced by more than 50 percent, ILEC special access demand would increase by the same percentage, and customers of ILEC special access services

would pay about \$8 - \$10 billion less for the same volume of service. In the context of an equilibrium model of the US economy, this experiment manipulates a price that is determined endogenously by the model itself, effectively assuming that productivity has increased in telecommunications and competitive market pressure has passed that productivity growth through in lower prices to special access customers. However, in the real world, a \$10 billion annual rate reduction for high-capacity services would have other effects: for example, it would reduce the industry's incentives to invest in broadband infrastructure to supply those services by ILECs, wireline competitors and intermodal competitors. The long-run effects of this rate reduction on reduced broadband infrastructure with respect to employment and GDP are ignored in ETI's calculation.

67. Moreover, as explained above, ETI's assumption that special access prices that would achieve an 11.25 percent ARMIS accounting return have nothing to do with competitive market prices. And if those assumptions were applied consistently across ILEC telecommunications services, prices for telecommunications users, on average, would rise, not fall. Rather than a \$10 billion cost reduction to firms that purchase special access — which was ETI's input to the Global Insight macroeconomic model — the result of this policy would be an *increase* in costs to firms that purchase telecommunications services as well as to final consumers. If that cost increase were fed into the Global Insight model, the policy simulation would show that reversing the FCC's deregulatory initiatives would lead to decreases in US GDP and employment rather than the increases trumpeted by ETI.

V. Broadband business access facilities have been widely duplicated across markets in the US

68. ETI takes issue [*N-DWES* at 2-3] with the portions of CRTC Telecom Decisions 2008-17 and 2008-118 that find that Ethernet services are not essential, arguing that the CRTC has misinterpreted the non-duplicability requirement for an essential facility. That requirement reads that "it is not practical or feasible for competitors to duplicate the functionality of the facility,"⁶⁵ and ETI asserts that the CRTC misunderstands "practicality" and "feasibility" because

⁶⁵ CRTC Telecom Decision 2008-17 at ¶¶ 36-37.

[e]xperience in the US confirms that competitive carrier-owned facilities have been deployed at a minuscule fraction of all commercial buildings – even in what purport to be the most competitive US markets – and while there is a higher incidence of CLEC-owned facilities at higher capacity levels (OC-3 and above), the ILECs continue to overwhelmingly dominate this segment as well. 'N-DWES at 15]

ETI misstates the evidence regarding duplicability from the US experience.

A. Feasibility is not measured by use

69. The assertion that competitor-owned facilities currently serve a small fraction of commercial buildings — even if true — does not imply the *inability* of a competitor to self-supply or commercially supply such facilities to others. Special access prices have been regulated in the US since the services were invented; it would be an amazing feat of regulatory ratemaking if, after all these years, ILEC special access prices even approximated competitive market rates. And what determines whether a competitor chooses to self-supply special access services is a comparison of the cost of self-supply with the ILEC tariffed special access prices, or, in some cases, unbundled loop prices.

70. For example, Sprint, the wireless carrier, uses dedicated facilities for backhaul. Barry West, its Chief Technology Officer recently described its problems in self-supplying microwave backhaul facilities for its nascent WiMax network:

The fact that landline carriers have made T-1s relatively cheap and easy to buy in the U.S. is one reason microwave hasn't been widely adopted [for WiMax backhaul] West said. In fact, the lines always cost just slightly less than deploying microwave, he said. "They price it very carefully that it doesn't work out," West said.⁶⁶

In contrast, ETI repeatedly cites [*RoR* at 7, *N-DWES* at 3] a Sprint filing before the FCC in which Sprint argues that it is dependent on BOC facilities and unable to find alternatives. While there is nothing wrong with firms using the regulatory process to try to reduce the prices they pay (or increase the prices they receive), it is wrong to infer that self-supply of a last-mile facility is not feasible from the fact that many carriers choose to use ILEC facilities.

⁶⁶ S. Lawson, "Backhaul woes slow Sprint's WiMax rollout," PCWorld About.com, Thu, 3 Apr 2008, citing Barry West, chief technology officer of Sprint and head of the Xohm business unit.

71. The fact that some competitors supply retail services without using the ILEC's facilities does suggest that self-supply is — at least under some circumstances — feasible. ETI caricaturizes this obvious point [*N-DWES* at 2]:

Put simply, if the Commission determines that duplication of a particular type of incumbent carrier facility – e.g., a fibre-based access or transport facility – has been done *somewhere* by *somebody* at some (unspecified) "level of alternative supply," then it concludes that, by inference, the same *type* of facility must be deemed to be capable of duplication *anywhere* by *anybody*.

What the CRTC is actually saying is similar to what the DC Court of Appeals said in the US:

At first blush, it might seem a little harsh to eliminate unbundling for all CLECs where one or more has demonstrated the economic feasibility of competing without UNEs. However, as the Commission explained, CLECs can use TSASs and other wholesale facilities "as a gap-filler" to enter or expand into new markets. ... And the CLECs' assertion that the wholesale supply of DS1 loops is "extremely limited," ... is belied by the CLECs' own evidence confirming that they are "able to purchase wholesale capacity to serve a DS1 customer." ...The ILECs corroborated the CLECs' concessions with respect to the availability of DS1 loops at wholesale prices. ... In the face of evidence that CLECs can—and do—offer DS1 services without UNEs, there is nothing unlawful about the FCC's well-reasoned refusal to order unbundling.⁶⁷

The important economic points are (i) that a facility need not be duplicable everywhere in order for competition to occur and (ii) the US experience shows sufficient competitive supply of high-capacity services, even at the DS-1 level.

B. ETI systematically understates the presence of competitors

72. ETI cites [*RoR* Tables 1-4] GeoResults data on the number of buildings served by CLECs in various wire centers and MSAs. These data were submitted to the FCC by CLECs in regulatory forbearance proceedings and form the basis for the GAO's analysis of special access competition. As the GAO concluded, the GeoResults data on which it relied was necessarily inaccurate and incomplete for several reasons, including the fact that CLEC identification of the buildings they serve is optional. AT&T argued that the fact that

⁶⁷ *Covad Communs. Co. v. FCC*, No. 05-1095, United States Court of Appeals for the District of Columbia Circuit, June 16, 2006, at 31.

GAO seriously understates the level of competition is evident from the limited number of buildings in the BellSouth region where AT&T has deployed facilities. For example, GAO claims that there are only 25 buildings in the entire Atlanta MSA with at least a DS3 level of demand and a "lit" competitor. However, in this proceeding BellSouth and AT&T have identified 61 buildings in Atlanta with more than a DS3 of demand that they both serve and in which another CLEC has fiber.¹⁹ Similarly, in the Miami MSA, GAO claims there are only 14 buildings with at least a DS3 level of demand and a "lit" competitor. By contrast, BellSouth and AT&T have identified 66 buildings in Miami with more than a DS3 of demand that they serve and in which a CLEC has fiber. Obviously, there are scores of additional buildings in both Atlanta and Miami that have at least a DS3 of demand and CLEC fiber but that are not served by AT&T, which GAO has overlooked.⁶⁸

In addition, the GAO building counts measure the presence of competitive *fiber*. In the US, copper loops are still subject to mandatory unbundling, so that the total number of buildings with competitive fiber presence ignores the market for data services that can be provided over copper.

73. Counting aside, ETI ignores the effect of concentration on demand and on competition. The GAO Report [at 12 and Table II] acknowledges the fact that CLECs deploy facilities where demand for high-capacity services is greatest. Moreover, demand for high-capacity services is highly concentrated in particular buildings and particular wire centers: Verizon frequently asserts that over 80 percent of such demand is concentrated in locations served by just over 8 percent of its wire centers. Buildings in those locations are frequently served by multiple facilities-based competitors, and in unregulated markets, competition for those customers — customers at the margin — would determine the market price. Also, in addition to undercounting buildings with a competitive presence, the focus of these data on specific buildings rather than on competitive fiber networks underestimates the presence of competitors and the feasibility of duplicating ILEC special access facilities.

74. Evidence that the GeoResults data underestimates competition for special access services comes from the actions taken by the FCC and the DOJ in response to the Verizon-MCI and the SBC-AT&T mergers. At the time, AT&T and MCI were among the largest suppliers and purchasers of special access services, and US merger law does not permit a merger to take place that would result in a substantial lessening of competition. Having subpoena powers, these

⁶⁸ AT&T Inc. and BellSouth Corporation Applications for Approval of Transfer of Control, WC Docket No. 06-74, letter from G. Phillips and B. Ross to Secretary, FCC, December 7, 2006.

agencies were able to examine competition in the markets for special access in detail with data unavailable to GeoResults or the GAO and their conclusions approving the mergers imply a very different view of special access competition than that of the GAO Report. As the FCC stated in the Verizon-MCI Merger Order:

We find that competition for medium and large enterprise customers should remain strong after the merger because medium and large enterprise customers are sophisticated, high-volume purchasers of communication services that demand high-capacity communications services, and because there will remain a significant number of carriers competing in the market.⁶⁹

75. The competitiveness of the enterprise market is reflected by numerous indicia including: the significant loss of ILEC retail business lines, the number, size and types of companies competing for this business (interexchange carriers, competitive LECs, cable companies, other incumbent LECs, system integrators, and equipment vendors), the amount of competitor facilities that have been deployed and success of competitors in serving customers. These data are provided in the various ILEC special access filings and in the Verizon and Qwest petitions for FCC regulatory forbearance.

76. Dr. Selwyn's reliance on the number of commercial buildings with CLEC fiber to reach conclusions about competitive conditions in the enterprise market is flawed, as is his assertion [*RoR* at 11-12] that SBC fiber maps demonstrate that fiber access to CLEC customers is not feasible. On the contrary, the economically relevant question is the ability of CLECs to provide facilities-based high-capacity services to the buildings that generate telecommunications traffic and revenue. In its *Triennial Review Remand Order*, the FCC recognized that the demand for high-capacity services is highly concentrated and that facilities-based deployment of DS3-level services to buildings with sufficient demand would likely be economic for competitors that were not currently serving such a building.⁷⁰

77. Thus, Dr. Selwyn's assertion that many buildings have no CLEC presence tells us nothing about competition for enterprise customers where those enterprise customers are located. What determines the extent of competition in these markets is not the proportion of all buildings

⁶⁹ *Verizon Communications Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18433 ¶ 56 (2005).

⁷⁰ *Triennial Review Remand Order*, ¶ 174.

having a CLEC presence but the capacity that competitors can use economically in the MSA to provide high capacity services to customers. Essentially what the FCC determined was that in high-volume wire centers, buildings that generate approximately a DS-3 level of traffic can be served economically on a facilities-basis by extending fiber facilities or by using tariffed ILEC special access services. The fact that many buildings generate insufficient traffic to warrant the presence of multiple facilities-based carriers does not signal a failure of the competitive process that must be mitigated by regulation. Prices for telecommunications services are determined at the margin. Just as POTS customers benefit from the competition for high-volume residential customers, enterprise customers in isolated buildings benefit from the presence and diffusion of competing fiber networks supporting the undisputed competition for customers at high-volume locations.

78. Tellingly, the GAO Report itself [at 15, 44] "does not call for the reregulation of dedicated access prices" but rather for the collection of "more meaningful data," possibly including data from those carriers that petition for lower special access rates but refuse to provide data on their networks or on the buildings they serve.

VI. Conclusion

79. In support of its reinterpretation of the duplicability of Ethernet services in Canada, ETI claims that changes in US unbundling policy led to lower telecom investment, lower economy-wide employment and lower GDP and that the data show that high-capacity services are not duplicable in the US. All of these arguments have been raised by ETI in regulatory proceedings in the US; none of them can be taken as having been accepted by regulators or by the economics profession. In its two reports, ETI

- ignores the widely-accepted explanation for the telecom meltdown in 2000-2001;
- misstates the timing and genesis of US regulatory policy;
- makes false comparisons between US and Canadian telecom investment, including cable investment in the Canada while excluding it in the US;
- incorrectly infers that US special access prices are excessive from rates of return based on fully-distributed regulatory accounting costs and improperly flows those allegedly excessive prices through a macroeconomic model. ETI's method, applied to

aggregate US telecommunications, would require *higher* telecom prices, leading to lower economy-wide employment and GDP;

- accepts competitors' data on the number of buildings served by competitive fiber as evidence that broadband access services are not duplicable in the US in the face of (i) US regulatory and judicial decisions to the contrary and (ii) incumbents' data to the contrary.

In short, ETI's recycled descriptions of the US experience with unbundling and competition for broadband access are not accurate, have had no influence on US regulatory policy and can serve no useful purpose in formulating Canadian policies.