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Did AT&T Die in Vain? An Empirical Comparison of AT&T and Bell Canada

Eli M. Noam*

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I. INTRODUCTION

Did the divestiture of AT&T in 1984 achieve its purpose of greater efficiency, lower prices, and more rapid development in American telecommunications? This question is important not only for economic historians or antitrust officials, but also for current telecommunications policymakers. In Europe, in particular, a policy of structural separation is now in the process of being mandated,¹ which aims to segment dominant

* Columbia University, September 2008. Special thanks go to John Heywood, Namwoo Kim, Dominik Lembke, Arian Rivera, Manuela Schauer and Joost van Dreunen for research assistance.

1. See Viviane Reding, Commissioner for Information Society and Media, European Union, *The EU Telecoms Reform 2007: Better, More Consistent Rules for Effective*

and vertically integrated telecommunications companies in order to enhance competition.

Of the varieties of separation—accounting, structural, functional, geographic, and business-line—none was more radical than the AT&T divestiture. To academic economists, the divestiture was a particularly sweet moment. Their majority perspective—to create competition, if necessary, by breakup—had miraculously prevailed through the legal process against the massed political opposition of consumers, labor unions, rural folks, states, the Pentagon, Congress, and even President Ronald Reagan.² It suggested that the move toward competitive market structure would eventually prevail. This perspective was widespread among economists. Dissenters were either proponents of the classic public-obligation,³ public-utility model, or advocates of theories arguing that monopoly could be efficiently contested,⁴ or true laissez-faire adherents who wished competitors to enter without governmental action.⁵ The first group was dismissed as behind the times, the second as beholden to AT&T, and the third as impractical purists.

Was the full structural separation successful? Did it create innovation, efficiency, consumer benefits, and investment? In terms of theory, one could argue it three ways: (1) Positively—competition is beneficial; (2) negatively—the economies of scale of a “natural monopoly” will be lost; or (3) neutrally—it makes no difference in the end because the underlying technological and economic forces are determinative. Who was right? By now, a quarter century has passed, full of impassioned regulatory and legislative battles. We have some numbers to show for this period. But how can we measure that reality against an alternate reality so we can evaluate them?

Fortunately, such an alternate reality exists—it is called Canada. Canada had a telecommunications structure very similar to that of the United States. In fact, the major Canadian carriers, Bell Canada (by far the largest company) and BC Telecom, were long owned by AT&T and GTE, as were the major telecommunications equipment makers. Canada had

Competition and Sustainable Investment, Address at the 8th Annual European Competitive Telecommunications Association Regulatory Conference (Nov. 28, 2007), *available at* <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/765&format=HTML>.

2. See PETER TEMIN & LOUIS GALAMBOS, *THE FALL OF THE BELL SYSTEM* (Cambridge University Press 1987).

3. See Harry M. Trebing, *A Critique of Structure Regulation in Common Carrier Telecommunications*, in *TELECOMMUNICATIONS REGULATION TODAY AND TOMORROW*, 125-167 (Eli Noam ed., 1983).

4. See WILLIAM J. BAUMOL, JOHN C. PANZAR & ROBERT D. WILLIG, *CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE* (1982).

5. See PAUL MACAVOY, *THE FAILURE OF ANTITRUST AND REGULATION TO ESTABLISH COMPETITION IN LONG-DISTANCE TELEPHONE SERVICE* (1996).

regional carriers along the U.S. model, closely associated with equipment manufacturers, plus many small, rural, independent companies, as well as several province-owned companies.⁶ Its regulatory system was similar, with both a national and a provincial level of regulation. The major structural difference was the absence of a divestiture of Bell Canada.

II. MARKET STRUCTURE

AT&T's dominant position before the breakup was astonishing. It accounted for a full 38% of the entire media and information sector.⁷ The next-largest media and information sector firm, IBM, accounted for 8.3% domestically. The second-largest telecommunications firm, GTE, had 2.2%.⁸ AT&T was the world's largest private company, with over 1 million employees in the United States alone.⁹ However, barely twenty years later, the company ceased to exist after successively shedding major parts and was absorbed for a mere \$16 billion by its own offspring, SBC (formerly Southwestern Bell Corporation). SBC promptly renamed itself AT&T Inc., as distinguished from the historic AT&T Corp.

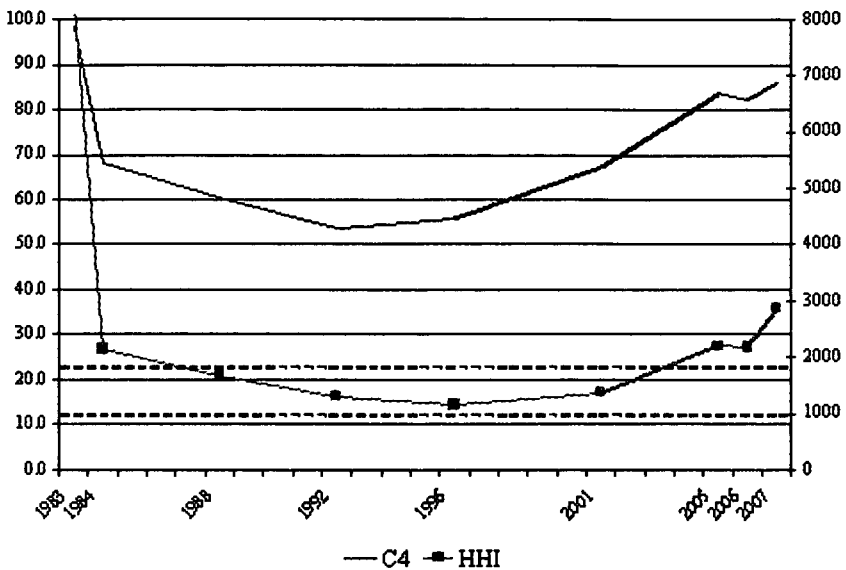
The gradual demise of AT&T, however, does not mean a decline of industry concentration in telecommunications. Graph 1 shows the national concentration in the overall U.S. telecommunications market. Concentration is measured by the U.S. Department of Justice (DOJ) through the so-called Herfindahl-Hirschman Index (HHI) which is the sum of the square of the percentage of market shares. The graph also depicts an alternative and more intuitive definition of market concentration, the C4 Index (C4), which is the sum of the market shares of the top four firms.

6. One difference: Bell Canada did not fully own the monopoly long-distance carrier Stentor but was the dominant partner in this consortium with the other regional carriers. Competition was introduced in 1992.

7. ELI NOAM, *MEDIA OWNERSHIP AND CONCENTRATION IN AMERICA* (forthcoming, Jan. 2009) (manuscript at 258, on file with author).

8. *Id.* (manuscript at 358, on file with author).

9. SONNY KLEINFELD, *THE BIGGEST COMPANY ON EARTH: A PROFILE OF AT&T* 3 (1981).

Graph 1: Pooled Telecom Services Concentration¹⁰

Graph 1 shows how the overall telecom industry has dropped in concentration from a C4 of almost 100% (of which AT&T accounted for 90.7%), to one of about 70% in 1984, after divestiture. However, after 1992, concentration rose again, consolidations were approved after significant struggle, and the C4 climbed to 85% in 2007. AT&T Inc. has a market share of 42%, while Verizon holds 28%.¹¹ In HHI terms, the telecommunications services industry has returned to high national concentration with an HHI of 2,986, significantly higher than the DOJ guideline threshold of 1,800 for a highly-concentrated industry, and much higher than the post-divestiture HHI of 2,145.

In 2007, Bell Canada had 45.2% of the Canadian market, including its share in Aliant, while Telus held 22%.¹² The Canadian market concentration had an HHI of 2,463. In 1984, the HHI stood at about 2,220, about the same as that in the post-divestiture United States. This is a market structure very similar to that of the United States.

Overall, the U.S. telecommunications-sector market moved, not to direct telecommunications competition, but to an oligopoly with a market structure that might be called “2.5” (two major firms, and several small

10. Noam, *supra* note 7 (manuscript at 232, on file with author).

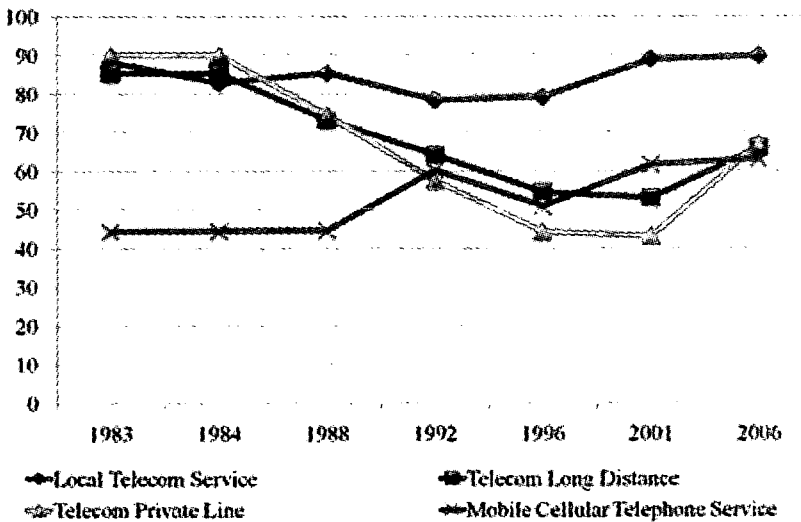
11. Verizon is credited here only with its 55% share of Verizon Wireless (Vodafone owns the remainder). If one counts all of Verizon Wireless as Verizon’s, the latter’s national overall share would rise by another 6% to 34%.

12. Press Release, TELUS Corp., TELUS Reports Fourth Quarter Results, (Feb. 15, 2008), available at <http://about.telus.com/investors/downloads/20074Q/Q407Rep.pdf>.

ones), of parallel, regionally-dominant firms. This same trend also characterized the mobile telecommunication services industry, which was nascent in 1984, with major openings provided to new entrants. In the divestiture, AT&T lost its wireless mobile operations. In time, this sector also moved to the same market structure of two major national firms plus a few smaller operators. The top three firms, thus, are AT&T with 35.2%, Verizon with 34.5%, and Sprint Nextel with 18.9%. T-Mobile follows with 5.9% nationally, and there are several regional operators. In Canada, the market structure is similar: there are three major providers—Bell, Telus, and Rogers—each with about 30%, plus 2 larger providers in their respective provinces.¹³

Graph 2 shows the combined U.S. market shares of AT&T and its successor firms.

Graph 2: Market shares of “AT&T” 1983-2006¹⁴



Before the divestiture, AT&T controlled almost 90% of the three classic telecommunications services: local, private line, and long distance. For local telecommunications providers, narrowly defined as phone companies in a national market, this share remained and even slightly increased by 2006. However, with a broader and more accurate definition which includes resellers, cable companies, and Voice over Internet Protocol

13. CANADIAN RADIO-TELEVISION AND TELECOMM. COMM’N, UPDATE TO CRTC TELECOMMUNICATIONS MONITORING REPORT, table 4.6.4 (July 2007) available at <http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2007/tmr2007.htm>.

14. Noam, *supra* note 7 (manuscript at 236-37, 240-43, on file with author).

(VoIP) providers over broadband, it has declined to 69.2%. But this did not require a divestiture.

In Canada, on the other hand, the share of incumbent telephone companies in local service dropped even more, to 62% by 2006. A move to cable TV as a major telecommunications platform can be observed in all countries where cable TV has a strong presence. Relatedly, broadband, offered by the telecommunications carriers themselves, has enabled access by independent companies offering VoIP. This, too, does not require a divestiture, and can be observed around the world. In Canada, there are 2.4 million residential VoIP and cable phone subscribers, a 50% higher penetration than in the United States.¹⁵

III. GROWTH

In 1983, AT&T's revenues were \$89 billion¹⁶ (\$185 billion adjusted for inflation to 2007 dollars), of which \$85.3 billion came from services and \$3.8 billion from equipment. In 2008, all of AT&T's successor companies had combined revenues of \$242 billion.¹⁷ The revenue growth was 31% over 25 years, which is quite low. In contrast, in 1983, Bell Canada's revenues were \$4.65 billion (\$10.9 billion adjusted for inflation to 2007 dollars) and in 2007, \$17.9 billion.¹⁸ Bell Canada's revenue rose by 64% over the last 25 years—more than double the rate of AT&T's combined successors in the United States.

IV. PRICES

It might be objected that the slower revenue growth in the United States merely reflects a stronger price decline in the United States, and hence consumer benefits. This objection is incorrect. The Consumer Price Index for telecommunications rose in the United States from 1984 to 2004 from an index of 100 to 120.¹⁹ In Canada, during the same period, the price index rose almost identically, from 100 to 118.²⁰ These were the relative

15. See, e.g., *U.S. Has Overtaken Japan in Retail VoIP Subscriber Numbers*, Mar. 17, 2008, http://www.ilocus.com/2008/03/us_has_overtaken_japan_in_reta.html; *Residential Telephone Service Survey*, THE DAILY (STATISTICS CANADA), Apr. 23, 2008, <http://www.statcan.ca/Daily/English/080423/d080423d.htm>.

16. All dollar values given in U.S. dollars unless otherwise specified.

17. Noam, *supra* note 7 (manuscript at 346, on file with author).

18. BELL CANADA, 1983 ANNUAL REPORT (1984).

19. For information from 2000-2008, see U.S. BUREAU OF LABOR STATISTICS, ARCHIVED CONSUMER PRICE INDEX DETAILED REPORT INFORMATION, http://www.bls.gov/cpi/cpi_dr.htm (last visited Nov. 10, 2008). The U.S. Consumer Price Index is based upon a 1984 base rate of 100; thus, any increase in the index represents total inflation since the base year.

20. For detailed statistics on the Canadian Consumer Price Index, see Statistics Canada, <http://www.statcan.ca/start.html> (last visited Nov. 13, 2008). The Canadian Consumer Price

price trends. The prices themselves stack up, according to the Organisation for Economic Co-operation and Development (OECD), as follows:²¹ in 2007, prices in Canada were, relative to the United States, 7% higher for residential low users and 26% lower for residential high users. Prices were higher for small and medium-sized businesses (SMEs) by 40%, they were higher for business long distance by 7%, while cheaper for residential long distance by 108%. Thus, United States rates are more favorable to business users and low-use residential users, and less favorable to high-use residential users, especially those making long-distance calls. For mobile calls, the United States is cheaper, with comparable popular service baskets costing 30-67% more in Canada.²²

V. EMPLOYMENT

U.S. telecommunications employment rose from 1990 to 2006 by 0.8%. There was actually a huge reduction in employment (25%, or 170,000 jobs) in the wireline sector, offset by growth in wireless (130,000 jobs) and cable (66,000 jobs).²³ There was a huge peak around 2001 during the Internet boom years. From 1997 to 2006, U.S. telecommunications employment declined slightly, by 1% or 10,000 jobs. In Canada, during the same period, employment increased by 20,000 jobs, from 99.5% to 119.7%, an increase of 20.3%.

VI. MARKET CAPITALIZATION

In 1981, the market capitalization for AT&T was \$48 billion (\$99.6 billion adjusted for inflation to 2008 dollars).²⁴ The combined figure for AT&T and GTE was \$111 billion adjusted for inflation to 2008 dollars. In 2008, the AT&T capitalization was \$225 billion; for Verizon, \$103 billion; for Quest, \$8 billion; for Agere, \$4 billion; and for Lucent-Alcatel, \$13.69 billion, of which Lucent accounts for \$5.5 billion. Thus, the total AT&T family's market capitalization was \$353 billion in 2008, an increase of 222% from 1981. In comparison, the Bell Canada market capitalization was \$2.9 billion in 1981 (\$6.8 billion adjusted for inflation to 2008 dollars) and Bell Canada's 2008 private-equity buyout paid \$51.7 billion for Bell

Index is based upon a 2002 base rate of 100; here, the data has been recalculated so that 1984 = 100 for direct comparison with the U.S. Consumer Price Index.

21. See OFFICE OF COMM., THE COMMUNICATIONS MARKET 2006 (2006), available at http://www.ofcom.org.uk/research/cm/cm06/cmr06_print/main.pdf.

22. LEE L. SELWYN & COLIN B. WEIR, ECONOMICS & TECHNOLOGY INC., COMPARISON OF WIRELESS SERVICE PRICE LEVELS IN THE US AND CANADA 7, tbl.3 (May 25, 2007).

23. Cristopher C. Carbone, *Cutting the Cord: Telecommunications Employment Shifts Toward Wireless*, 129 MONTHLY LABOR REV. 28 (July 2006).

24. MOODY'S INVESTORS SERVICE, PUBLIC UTILITIES MANUAL, 70, 77 (1981).

Canada, a 660% increase—three times as high as the increase for the AT&T successor family.

VII. OWNERSHIP

AT&T was the quintessential widow-and-orphan stock. In 1984, it had 3 million stockholders. Insider ownership was trivial then and remains so today. However, institutional ownership of the combined AT&T successor firms doubled in 25 years to 76.2%, while personal ownership declined considerably (Table 1).

Table 1: Ownership Structure of AT&T and its Successor Companies²⁵

<u>AT&T</u>	<u>1983</u>	<u>2008</u>
Insider owned	0.01 %	0.1%
Institutional ownership	38.6 %	76.2%
Personal ownership	41.4 %	23.7%

Bell Canada went through an even greater transformation. In 2008, it was acquired by institutional investors and taken private.²⁶ The main investor is the Ontario Teachers' Pension Fund, but several major U.S. equity firms play a significant role.²⁷ This follows general trends toward institutional ownership. It also reflects the fact that the telecommunications sector has become a more volatile investment. This applies equally across the border.

VIII. TELECOMMUNICATIONS EQUIPMENT

AT&T was also involved in telecommunications hardware manufacturing and remained so after the divestiture. Indeed, the company's vertical integration into manufacturing, and its desire to expand into computers, was one of the major reasons for the divestiture. This, however, proved to be a flawed analysis and execution. On the consumer side, AT&T could not withstand imports from Asia and lost in the marketplace (Graph 3). On the network equipment side, the regulatory battles with the successor regional Bell companies led them to resist buying from their vertically integrated rival. Partly in consequence, AT&T's market share

25. Noam, *supra* note 7 (manuscript at 388, 392, on file with author).

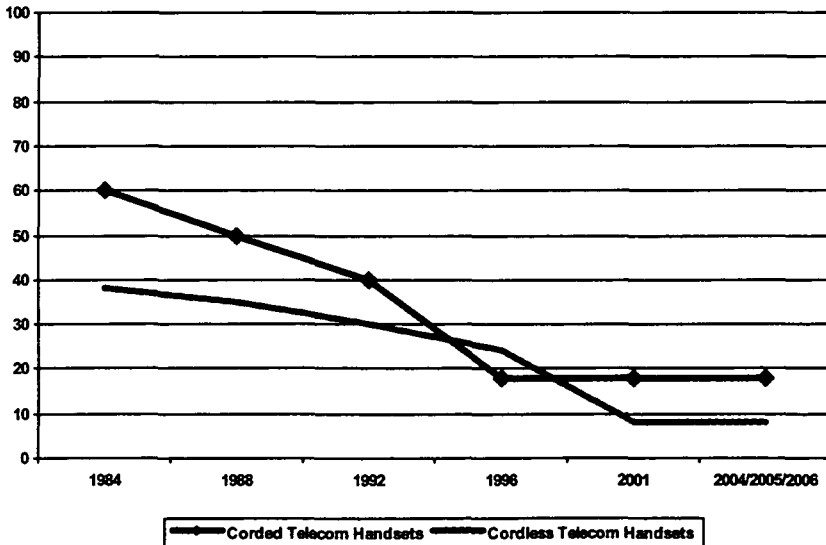
26. Press Release, BCE, BCE and Purchaser Enter Into Final Agreement Financing and Credit Agreements Signed, (July 4, 2008), available at <http://www.bce.ca/en/news/releases/corporate/index.php?cat=1&year=2008&month=7>.

27. *Id.*

steadily decreased (Graph 4) in most business lines from over 60% to about 40%, and the company was forced to divest itself, this time voluntarily, from the equipment sector. AT&T's market share in midrange computers, workstations, and semiconductors also collapsed in this fast-moving segment (Graphs 5 and 6), and was also spun off. Thus, the hardware side proved to be AT&T's biggest misjudgment, and the expectations by policymakers of unleashing innovation in the telecommunications sector through the divestiture did not materialize. There were, of course, major innovations, but they were part of an overall trend in electronics and took place as much in Finland, Japan, and Korea, without divestiture, as they did in the United States.

In Canada, Northern Telecom (renamed Nortel Networks) zoomed forward after 1984 and became the world's third-largest telecommunications equipment maker. For a while, the company accounted for a third of the total valuation of the Toronto Stock Exchange. However, with the bursting of the Internet bubble, its stock price dropped from C\$124 to C\$0.47.²⁸ The company retrenched radically and cut employment from 96,000 to 35,000 jobs. Like AT&T's equipment successor firm Lucent, Nortel was caught in serious accounting misstatements which brought down its CEOs. Unlike Lucent, Nortel survived.

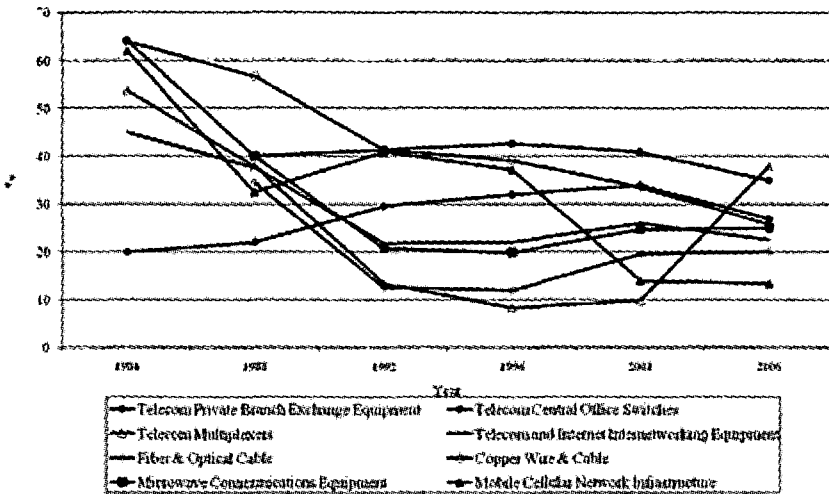
Graph 3: AT&T Consumer Telecom Equipment²⁹



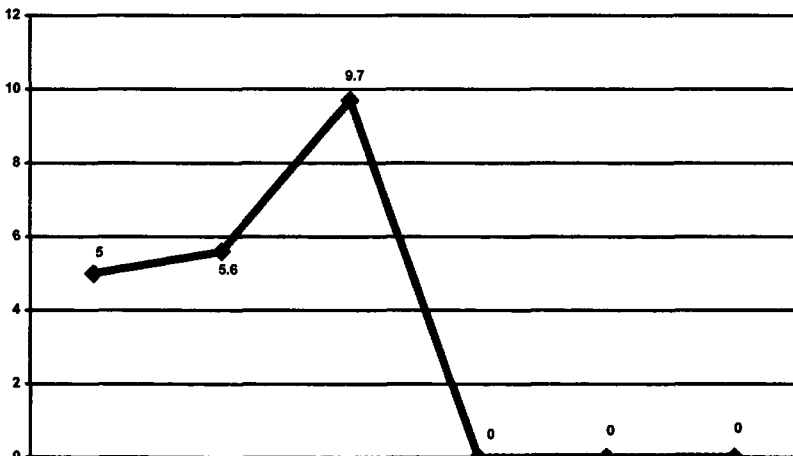
28. InverstorGuide.com, Nortel Networks (NT) Stock Charts - Technical Analysis and Charting, <http://www.investorguide.com> (enter "NT" in "Get Quotes" search field and follow hyperlink) (last visited Nov. 13, 2008).

29. Noam, *supra* note 7 (manuscript at 253, on file with author).

Graph 4: "AT&T" Telecom Network Equipment US Market Shares³⁰



**Graph 5: "AT&T" Midrange Computers³¹
(U.S. Market Shares in % of Units)**

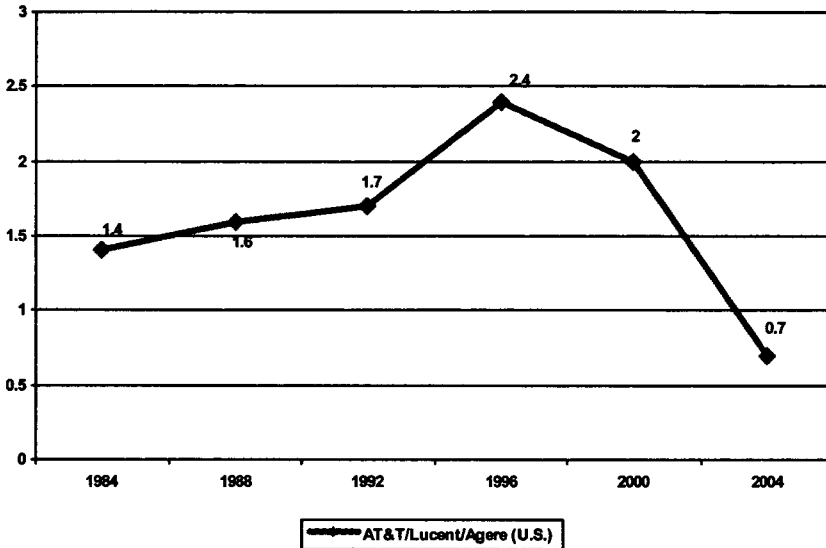


* AT&T owned NCR from 1991 to 1996

30. *Id.* (manuscript at 257, 260-261, 263-264, 266, on file with author).

31. *Id.* (manuscript at 192, on file with author).

**Graph 6: “AT&T” Semiconductor³²
(World Market Share in %)**



IX. RESEARCH AND DEVELOPMENT

AT&T operated a celebrated research organization—Bell Labs—that focused on information technology (IT) research. Initially, the number of researchers increased after the divestiture, as the successor companies established their research and development (R&D) operations, but this soon changed. After several rounds of restructuring, Bell Labs, with 2000 researchers, was virtually gone and the regional companies greatly reduced their activities (Graph 7).

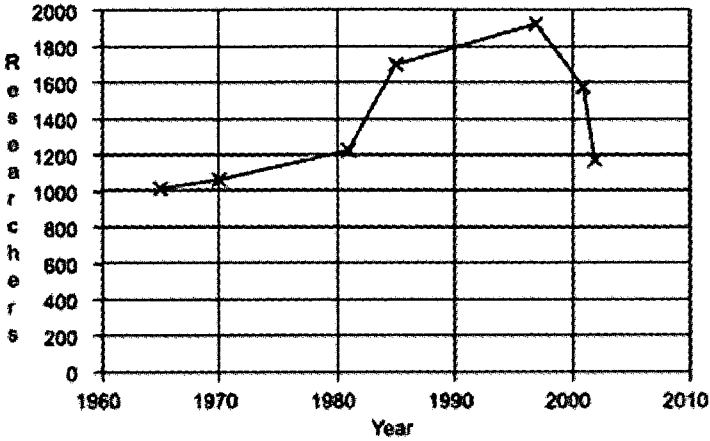
In Canada, Bell Canada and Nortel ran a research institution, Bell Northern Research, which later folded into Nortel. It was significantly reduced in size, but was still active in R&D, with over 1,000 researchers.

The research output of private-sector firms dropped with the decline of corporate research or its redirection to commercial development (Graph 8). Even in the commercial sphere, the R&D output declined. From 2000 to 2006, the number of patents granted by the U.S. Patent and Trademark Office to Lucent (AT&T’s equipment successor) dropped from 106 per year to 52. It was similar with Nortel, whose patent yield fell from 69 to 30 in the same period.³³

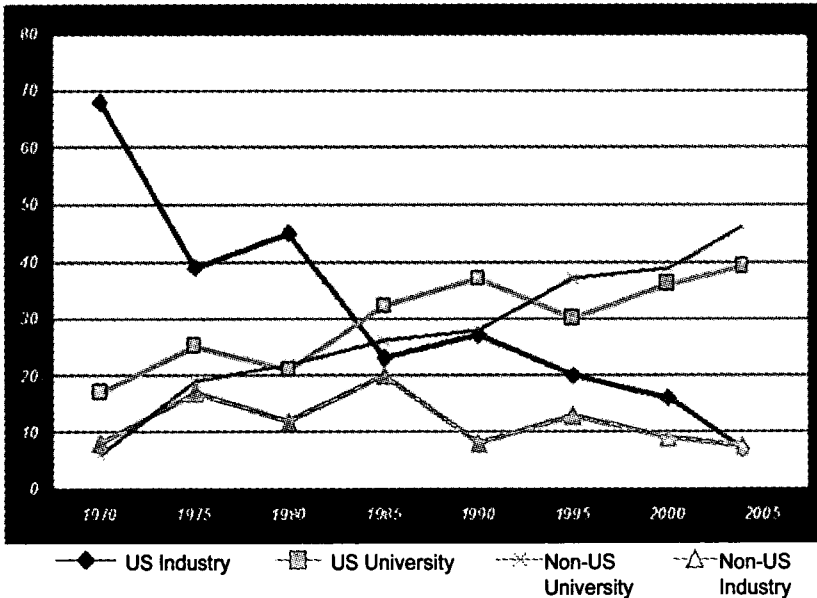
32. *Id.* (manuscript at 207, on file with author).

33. ORGANISATION OF ECONOMIC CO-OPERATION AND DEVELOPMENT, INFORMATION AND COMMUNICATIONS TECHNOLOGIES - COMMUNICATIONS OUTLOOK 2007 90 (2007), available at <http://213.253.134.43/oecd/pdfs/browseit/9307021E.PDF> [hereinafter OECD COMMUNICATIONS OUTLOOK].

Graph 7: Research Employees of Reconstituted Bell Family³⁴



Graph 8: Source of Authorship of Scientific Papers in the IEEE Transactions on Communications, 1970 to 2005³⁵



34. A. Michael Noll, *Telecommunication Basic Research: An Uncertain Future for the Bell Legacy*, 21 PROMETHEUS 184-86 (2003).

35. NATIONAL RESEARCH COUNCIL, *RENEWING TELECOMMUNICATIONS RESEARCH* 25 (Robert W. Lucky & Jon Eisenberg eds., 2006), available at http://www.nap.edu/catalog.php?record_id=11711.

X. CONCLUSION

Looking at the empirical evidence, one can find only a few instances of the hoped-for benefits of the AT&T divestiture. Twenty-five years later, market concentration in the United States has returned to high levels, with the difference being a structure of a national duopoly of vertically integrated firms rather than a monopoly. This was not different from Canada. On the local level, competition in the United States is essentially the same as in Canada, and mostly based on cable TV operators, resellers, and VoIP companies. As the Canadian experience shows, a divestiture was unnecessary for any of this competition. Meanwhile, the market value of AT&T and its successors has only risen by one-third of Bell Canada's, and the revenues of all of AT&T's successor companies combined rose only half as much as Bell Canada's, even though their prices rose slightly higher than those in Canada. Moreover, AT&T's R&D sector was decimated, while Canada has preserved some reduced in-house research. Employment in Canada rose, while it remained stagnant in the United States. Business users have benefited from lower prices than in Canada, as did low-use residents. In-between those two rate categories, Canadian rates are more favorable. On the other hand, wireless prices in the United States are considerably more favorable, though this is not based on the divestiture.

The AT&T divestiture created not a competitive market, but an oligopoly at best. The reason was not an ineffective or captured policymaking by lawmakers and legislators, but rather the fundamental economics of telecommunications and networks. These exhibit high fixed costs, low marginal costs, and high network effects. Together, they provide advantages to large providers. For a time, these advantages were offset by the accumulated inefficiencies of monopoly. But in time, and after internal cost-cutting, the large firms' economies of scale reasserted themselves. Thus, the previously lucrative long-distance business turned into a commodity business as prices dropped to the low marginal costs. Long-distance companies hemorrhaged; AT&T was running out of money, WorldCom was convicted of massive investor fraud, and Sprint struggled to remain in business. The regional Bell Operating Companies, meanwhile, consolidated among themselves and absorbed the ailing long-distance carriers as soon as the law permitted. Similarly, the advantages of offering bundles of services—economies of scope—became a major advantage for the established companies. This was not only true for the telecommunications incumbents, but also for the large cable television operators which experienced a similar consolidation.

Did the divestiture of AT&T make a difference? In comparison to Bell Canada, one finds few advantages. AT&T's shareholders and employees did worse than those in Canada, but that could be expected as a

squeezing of the monopoly rents. But what about the public? As mentioned, prices rose a bit more than in Canada, research fell, wireless introduction was slower, and the household penetration of broadband was lower by 28%.³⁶ On the other hand, there is more investment in the United States in the infrastructure, especially in fiber-access lines. According to the OECD, total 2006 investment per capita in the United States is \$195 and \$145 in Canada.³⁷ But overall, the United States has lost its leadership role in the past twenty-five years. In 1983, the United States was far ahead in the telecommunications world. Today it remains one of the top 15 in the telecommunications industry—good, but not a leader. For example, when it comes to the number of access paths to the home, the United States is twenty-fifth in an OECD ranking. This is the price of a policy preference for process over progress that imposed huge direct costs on all participants and even greater costs in terms of delay.

Although this Article reaches a skeptical conclusion on the success of the AT&T divestiture, the author supports the concept of a divestiture, just not the one that was undertaken. AT&T had become too dominant in a vital sector of the country. One company controlled one-third of the entire media, information, and communications sector of the world's largest economy. This would suggest that a better solution would have been to simply reduce the size of the giant, perhaps by cutting it up into maybe 4 large regional firms—each vertically integrated and free to enter all lines of business. Competition would have been opened through regulation and antitrust proceedings. No structural divestiture was necessary. Thus, perhaps the reason for the AT&T divestiture's failure was that it tried too hard to be perfect and conceptual, and to follow legal and economic theories that did not take into account either the extraordinary dynamism of the sector, or the extraordinary resiliency of the legal teams sent to battle by competitors to block each other. If there is a tragedy in AT&T's demise, it is that it died for nothing.

36. OECD COMMUNICATIONS OUTLOOK, *supra* note 30, at 136.

37. OECD COMMUNICATIONS OUTLOOK, *supra* note 30, at 126.