Cutting the cord: telecommunications employment shifts toward wireless

The telecommunications industry employment rapidly grew in the late 1990s into early 2001; ever-changing technology, advances in wireless technology, and declining profits resulted in the telecommunications bubble bust

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The telecommunications industry experienced unprecedented employment gains in the latter half of the 1990s and into early 2001, growing by 36 percent from January 1996 to March 2001.[1] This fast-paced growth was fueled largely by changes in Federal regulation, the anticipated demand for telecommunications products associated with those changes, and with rapidly developing technology. The subsequent employment downturn, one signal of the end of the "tech boom," was large and quick. The industry as a whole regrouped and changed its focus to new and emerging technologies as consumer demand for telecommunications services shifted from traditional land-line based services to emerging wireless services. Telecommunications shed 25.3 percent of its employees from the March 2001 peak through 2005. (See chart 1.) This employment bust took only 4 years, about a year less than the employment boom. This article details the telecommunications industry's growth and subsequent bust.

Anticipating deregulation

Throughout the early 1990s, telecommunications employment growth was nonexistent. In fact, employment declined by 43,000 or 4.4 percent between January 1990 and August 1993. (See table 1.) Wired telecommunications was the driving force behind the employment loss, while telecommunications resellers also lost jobs. In contrast, the wireless telecommunications industry added 25,000 employees to their payrolls and cable and other program distribution added 7,000 employees.

Anticipation of changes to telecommunications regulations had begun by mid-1993, and employment trends began to reflect the expected changes. From August 1993 through December 1995, just prior to the passing of the Telecommunications Act of 1996, employment recovered to near its January 1990 level. The gain, however, was concentrated within the wireless industry. Wired telecommunications payroll employment continued to decline and would not experience a notable increase until 1997, in the wake of the Telecommunications Act.

Prior to the Telecommunications Act, the telecom industry could be characterized as having only a few large firms providing services in local monopolies. Local telephone service was generally offered by a lone regional provider, usually one of the "Baby Bell" companies like BellSouth or Verizon. Long distance services were supplied by a limited number of national carriers, such as MCI, AT&T, and Sprint. The wireless industry mirrored this structure with services provided by large national carriers such as Cingular or Verizon Wireless.[2] These companies were rather specialized, focusing mainly on one form of telecommunica-

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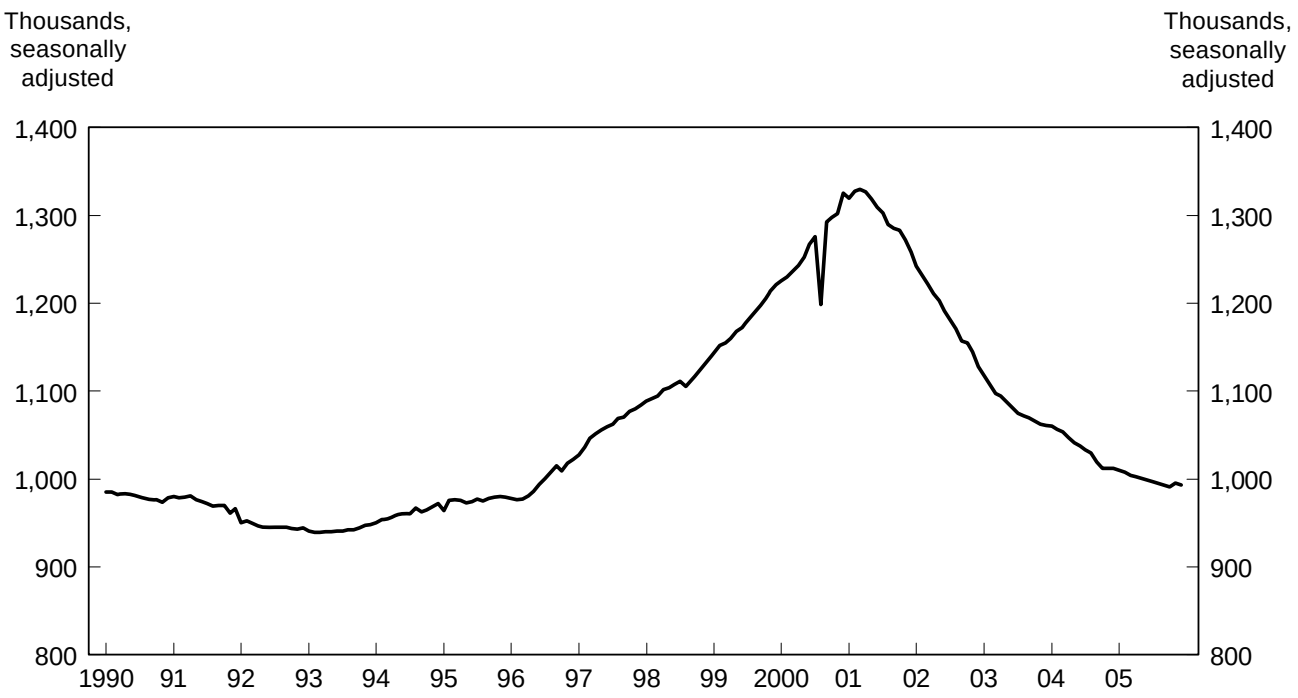
Chart 1. Telecommunications employment, 1990–2005



NOTE: The large drop and subsequent rebound in telecommunications employment in August 2000 and September 2000 reflect a strike of 87,000 workers who were off establishment payrolls in August and returned in September.

Table 1. Telecommunications employment change by industry and time period, 1990–2005

Industry	Early 1990s (January 1990–August 1993)	Anticipated deregulation (August 1993–January 1996)	Boom (January 1996–March 2001)	Bust (March 2001–December 2005)	Net change
Telecommunications					
Employment change	–43,000	36,000	352,000	–337,000	8,000
Percent change	–4.4	3.8	36.0	–25.3	0.8
Wired					
Employment change	–57,000	–24,000	151,000	–241,000	–170,000
Percent change	–8.4	–3.8	25.2	–32.1	–25.0
Percent of telecom employment	66.1	61.3	56.5	51.4	–14.7
Wireless					
Employment change	25,000	43,000	103,000	–8,000	163,000
Percent change	74.8	75.1	102.0	–3.8	494.5
Percent of telecom employment	6.1	10.3	15.3	19.7	13.6
Resellers					
Employment change	–11,000	–1,000	53,000	–92,000	–51,000
Percent change	–6.0	–.5	31.0	–41.4	–28.1
Percent of telecom employment	18.1	17.3	16.7	13.1	–5.0
Cable					
Employment change	7,000	15,000	38,000	5,000	66,000
Percent change	10.8	20.3	41.6	4.0	96.4
Percent of telecom employment	8.1	9.3	9.7	13.5	5.4

tions service. This structure is evidenced by the distribution of long distance revenues amongst providers. In 1996, more than 68 percent of industry revenues were distributed among only three carriers. (See chart 2.)

The Telecommunications Act of 1996

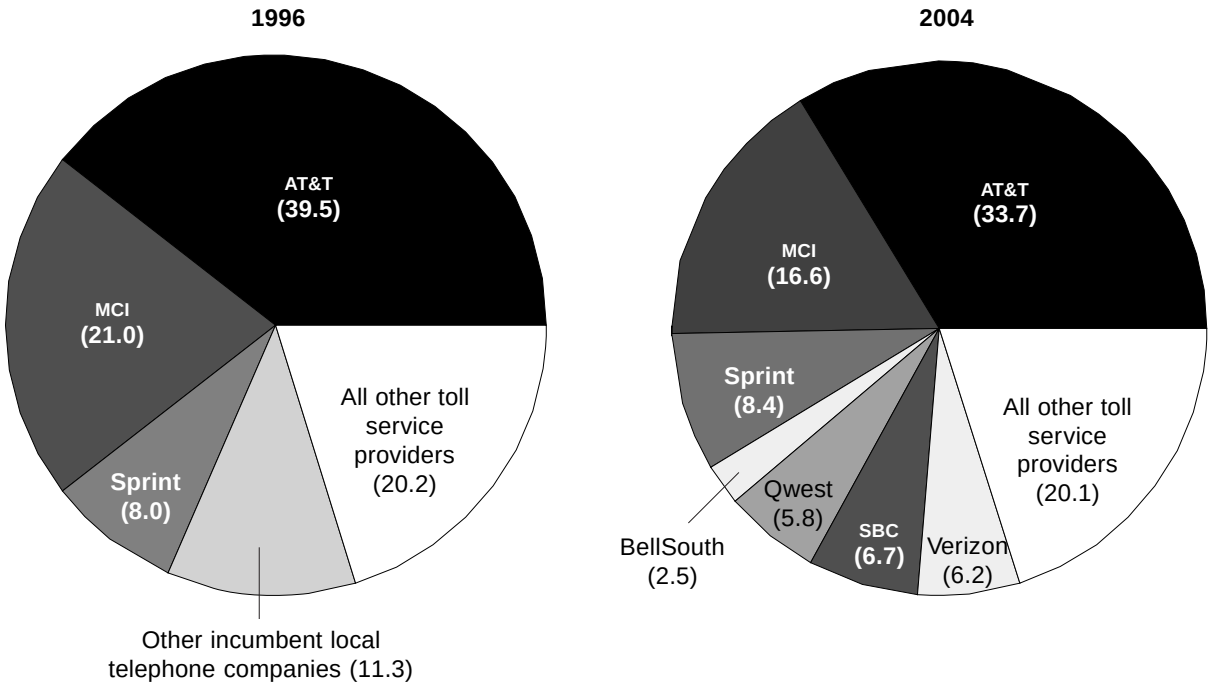
The Telecommunications Act of 1996 greatly influenced employment in the telecommunications industry after its enactment. The change in regulatory policy was the first major overhaul to communications laws in 62 years. The main goal of the Act was to "let any communications business compete in any market against any other."[3] It was widely believed that by opening telecommunications markets up to competition, consumer prices would fall.

Technological advances in fiber optic cable dramatically increased data transmission capacity and coincided with the passage of the Act. Over the past decade, fiber optic transmission capacity has grown by a factor of 200. Average fiber capacity in 1996 was about 10 gigabytes per second. By 1998, the figure had increased tenfold to 100 gigabytes per second.[4] Also, new technologies allowed more efficient transmission of wireless signals over the frequency spectrum allotted by the Federal Communications Commission (FCC). When coupled with the prospects of a deregulated market and rising Internet usage, investment in telecommunications took off, and the employment boom began.

Investment in fixed assets by the telecommunications industry increased dramatically from the mid-1990s until peaking in 2000.[5] These assets included fiber optic cables, which conduct guided transmission of light, and wireless cell sites, which transmit wireless signals to wireless devices. It was believed that fiber optic cables would be used to transmit the majority of data for the growing Internet population.[6] New wireless towers, or cell sites, were necessary to keep companies competitive by providing better signal coverage. Prior to the Act of 1996, annual fixed asset investment by telecommunications companies was modest, with only $53 billion invested in 1993. (See chart 3.) Investment increased in anticipation of the passage of the Act, and by 1996 had reached $70.7 billion. Investment increased even more rapidly after the new regulations were passed, nearly doubling the 1996 dollar figure and reaching a peak level of $136.6 billion in 2000.[7] The number of cell sites skyrocketed from 30,045 in December 1996 to 175,725 by the end of 2004.[8]

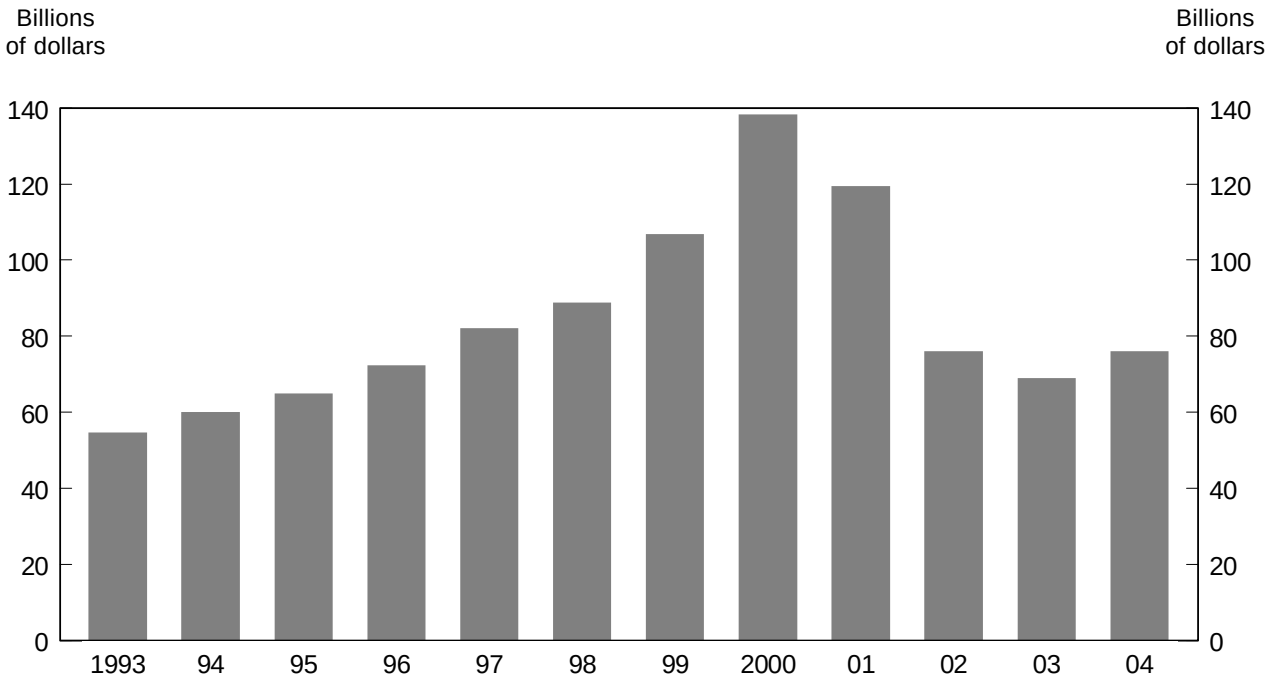
Along with the rapid rise in investment came a sharp increase in hiring. As seen in chart 1, employment within the telecommunications industry as a whole rose by 36 percent with the addition of 352,000 jobs from the beginning of 1996 until the employment peak in March 2001. Wired telecom-

Chart 2. Percentage of toll service revenue by provider, 1996 and 2004



SOURCE: Federal Communications Commission.

Chart 3. Telecommunications industry investment in fixed assets



SOURCE: Bureau of Economic Analysis.

munications employment increased by more than 25 percent during this period, while the number of jobs in wireless telecommunications more than doubled. Telecommunications resellers and cable and other program distribution also added jobs.

The employment bust

Fears of a telecom bubble were realized when, following the telecommunications employment peak in March 2001, the industry began to shed jobs rapidly. Chart 1 shows that by the end of 2004, employers had cut more than 300,000 jobs. More than two-thirds of those cuts occurred within the wired telecommunications industry. Overbuilding, increased competition, and shifts in technology contributed to the large employment declines.

The current capacity utilization rate of the fiber optic cable laid in the 1990s has been estimated at a mere 5 percent.[9] The realized demand for fiber capacity was much less than anticipated, largely because of the emergence of wireless technology that could be substituted for the traditional wired service.

Traditional wired services have become more easily replaced by wireless services. Unlike in the early days of wireless when most users relied on pagers and bulky, unreliable car phones that were often permanent installations in a vehicle, today's wireless technology is increasingly reliable, clear, and offers a growing variety of features. Increased reliability of service has led to larger numbers of "wireless-only" consumers who have no landline telephone. New features of wireless phones allow users to send e-mail, take pictures, and even watch television broadcasts.

Increased competition, especially among long distance carriers, also contributed to the decline of the telecommunications industry. Chart 2 shows that while the largest three providers enjoyed a large share of the toll revenues in 1996, by 2004, the number of providers capturing more than 1 percent of total revenues more than doubled to seven. In 1996 when the Telecommunications Act was passed, there were approximately 3,800 interstate telecommunications providers offering State-to-State long-distance service. When employment in the industry peaked in 2001, this number had risen by nearly 50 percent to approximately 5,700.

New long distance providers, namely the so-called "10-10 numbers," flooded the market. Consumers were bombarded with TV and radio commercials advertising substantial savings over traditional long-distance carriers.[10] These changes signaled that one of the main goals of the Telecommunications Act, increased competition, had been accomplished. Along with the increased competition came a

decrease in long distance rates, which in turn cut revenue. In fact, average revenue per minute for interstate toll calls, which are calls from one State to another, fell from 15 cents in 1993 to 8 cents in 2001.

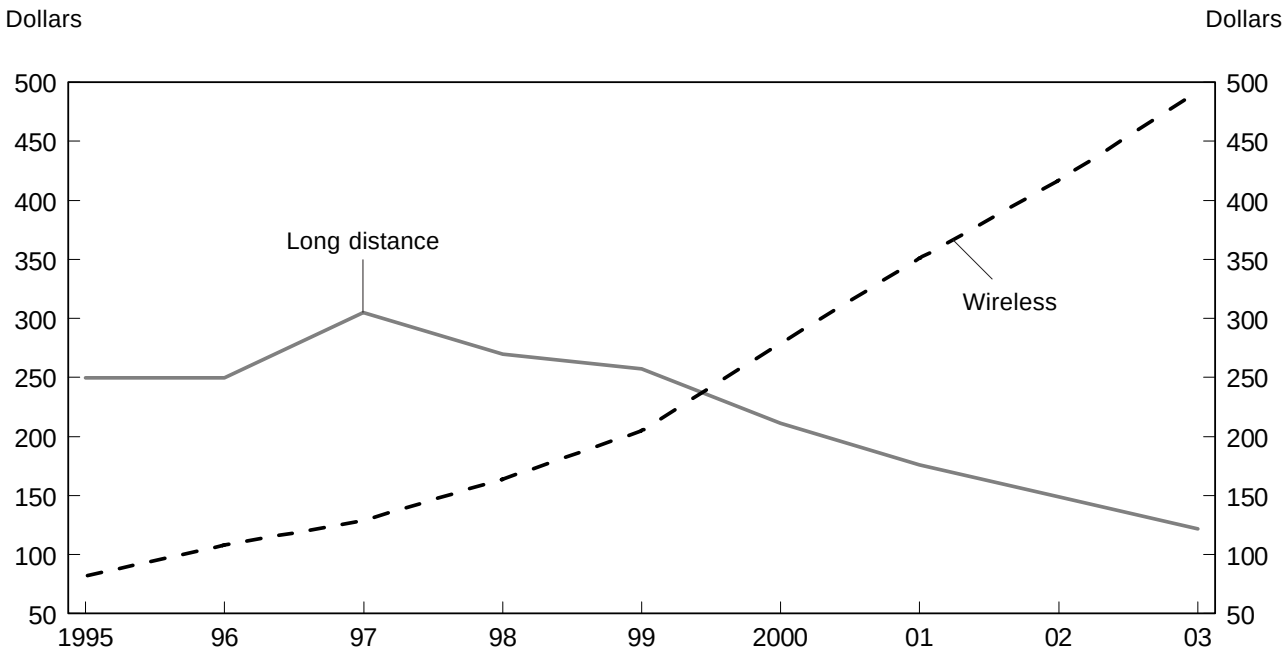
The drop in long-distance revenues for wired carriers was further amplified by a drop in long-distance usage. Wireless usage was on the rise, and the introduction of free long distance for many wireless plans lured consumers away from their traditional wired long-distance services. The estimated number of wireless subscribers more than quadrupled from 44 million in 1996 to 182 million by the end of 2004.[11] Industry revenues also reflected this shift in usage. Wireless revenue increased by more than 750 percent, from 10.2 billion dollars in 1993 to more than 88 billion dollars in 2003. During this same time period, long distance revenue fell by 67 percent to 4.3 billion dollars, down from 13.0 billion dollars. By 2000, the average annual household expenditure on wireless service surpassed the average long-distance expenditure. (See chart 4.) In the second quarter of 2004, consumer spending on wireless services surpassed spending on all traditional wired services combined for the first time ever, further evidence of consumers' shift towards wireless technology.[12]

All of these factors combined to facilitate the employment losses that began in 2001 and continued through early 2005, as seen in chart 1. In 2001 alone, 77 telecommunications companies filed for bankruptcy, up from just 20 in 2000.[13] Job losses began in April 2001 and continued through 2005. As the year ended, employment levels within the industry were about 337,000 below the peak level seen in March 2001. The two major components of the telecommunications industry, wired carriers and wireless carriers, fared very differently during the employment downturn. (See chart 5.) Wired telecommunications carriers experienced the majority of telecommunications job losses since the industry's employment peak. These losses represented a 32.1 percent drop in employment and can largely be attributed to increased competition and consumers shifting towards wireless technology. In 2005, employment in the wired telecommunications industry appeared to stabilize as the loss of jobs decelerated. Employment levels at the end of 2005 were below those in 1995 prior to the Act. In contrast to wired telecommunications, wireless experienced relatively fewer job losses during the 2001–05 period. As 2005 came to a close, wireless employment stood below its peak level by a comparatively modest 7,800, or 3.8 percent.

The current evolution

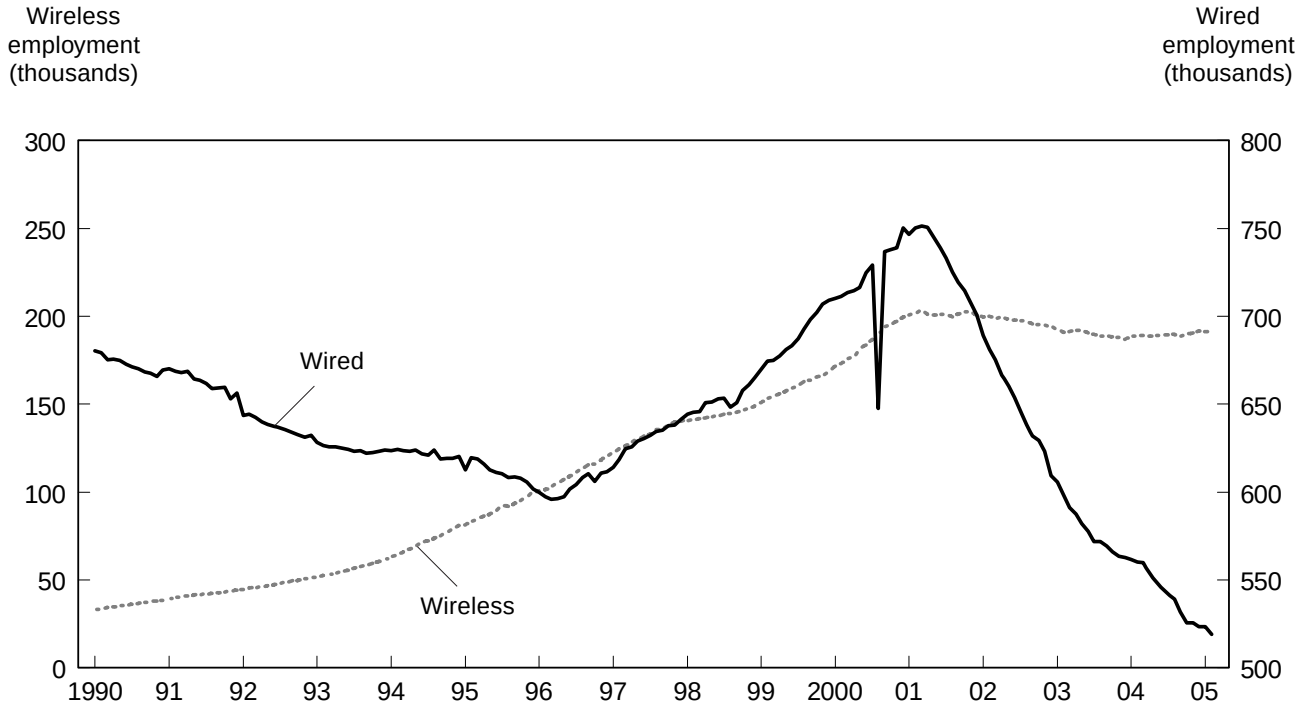
The telecommunications industry is expected to continue evolving along with technology and demand for its products.

Chart 4. Average annual household telecommunications expenditures by type of provider



SOURCE: Federal Communications Commission.

Chart 5. Wired and wireless telecommunications carriers employment in thousands, seasonally adjusted



Consumer demand for wireless services is still on the rise. For example, universities across the country are evaluating plans to eliminate traditional land-line services to residence halls, and some are even providing students with mobile phones that include long-distance options.[14] A 2003 survey of wireless phone users estimated that 21 percent of consumers with cell phones were considering ending their home land-line service. Furthermore, "A quarter of the 'tech elite,'—the 31 percent of Americans who rely heavily on computers, cell phones, personal digital assistants and other gadgets—said Internet use has decreased their usage of traditional phones."[15] The service-penetration rate (the percentage of households with service) for wireless service has reached 70 percent. In 2005, Intel announced that it was working with several wireless communications carriers to create a chip that can pick up "WiMax" transmissions, which can carry long-range, high-speed wireless data more than 20 miles.[16] In 2004, more than 64 million wireless network connectivity systems (Wi-Fi) were expected to be sold, up from just 24 million in 2002. The industry also anticipates that the number of homes with wireless Internet connectivity will surge in coming years from an estimated 8.7 million in 2004 to 28 million in 2008.[17]

The wired telecommunications industry has undergone restructuring and consolidation in recent months. Several large mergers point to this consolidation—SBC acquired AT&T, and Verizon is in the process of acquiring MCI.[18] Overall, the wired telecommunications industry trend is one of back-tracking to a pre-1996 structure, with several large companies instead of many smaller establishments. In contrast, the wireless industry has remained comparatively stable over the past 2 years, with employment remaining little changed since early 2003. Further evidence of the shift towards wireless technology can be found in the distribution of telecommunications employment. Table 1 shows that in January 1996, wired telecommunications accounted for 61.3 percent of employment, while wireless telecommunications accounted for just 10.3 percent. By December 2005, the percentage of total employment had shifted—wired telecommunications' share had decreased by nearly 10 points to 51.4 percent, while wireless' share of total employment had increased nearly 10 points to 19.7 percent.

THROUGHOUT THE LATE 1990S AND INTO 2000, the telecommunications industry experienced unprecedented growth. Fueled by prospects of new profits and increasing demand for telecommunications services in the wake of the Telecommunications Act of 1996, establishments entered the market and rapidly built up network infrastructure along with their workforce. This infrastructure was overbuilt and realized

demand for services fell short of expectations. Ever-changing technology, an increasing substitution of wireless technology for traditional land-line services, and declining profits combined, resulting in the telecommunications bubble burst. Substantial job loss within the industry, most notably within wired telecommunications, offset much of the prior employment buildup. Today, the industry is still struggling to recover, with employment continuing to decrease as establishments merge and consolidate, technology improves, new products are introduced, and consumers shift demand. □

Notes

[1] Data on employment used in this article are from the Current Employment Statistics (CES) program, which surveys 160,000 nonfarm businesses representing about 400,000 establishments monthly. For more information on the program's concepts and methodology, see *BLS Handbook of Methods,* Bulletin 2490 (Bureau of Labor Statistics, April 1997), Chapter 2 on the Internet at **http://www.bls.gov/opub/hom/homch2_a.htm**. CES data are available on the Internet at **http://www.bls.gov/ces/**. Data used in this article are seasonally adjusted unless otherwise noted.

[2] The Federal Communications Commission (FCC). For more information on the FCC and regulated wired and wireless telecommunications carriers, visit **http://www.fcc.gov**.

[3] For more information on The Telecommunications Act of 1996, visit **http://www.fcc.gov/telecom.html**.

[4] *A Brief History of Fiber Optic Technology,* available on the Internet at **http://www.fiber-optics.info/fiber-history.htm**.

[5] While some investment likely occurred as a result of year 2000 system upgrades, most literature indicates that the investment supported new technology.

[6] "Jobs, cash gone, but fiber cables remain," *Associated Press*, Dec. 10, 2002, on the Internet at **http://archives.cnn.com/2002/TECH/biztech/12/10/miles.cable.ap/**.

[7] Bureau of Economic Analysis. For more information on the Bureau of Economic Analysis, visit **http://www.bea.gov**.

[8] CTIA–The Wireless Association, *Semi-annual Wireless Industry Survey*, December 1985–December 2004, available on the Internet at **http://www.ctia.org**.

[9] "Jobs, cash gone," Associated Press, on the Internet at **http://archives.cnn.com/2002/TECH/biztech/12/10/miles.cable.ap/**.

[10] Special 10-10 numbers are dialed by consumers prior to placing a long-distance phone call to override a landline's default long-distance carrier and allow a third party to provide and charge for long-distance service.

[11] CTIA–The Wireless Association, *Semi-annual Wireless Industry Survey,* available on the Internet at **http://ww.ctia.org**.

[12] TNS Telecoms, "Wireless Spending Overtakes Wireline," available on the Internet at **http://tnstelecoms.com/press-10-20-04.html**.

[13] Thomas K. Crowe, "The Telecom Meltdown...Looking for the Underlying Reasons," available on the Internet at **http://www.stcconsultants.org/THE%20TELECOM%20MELTDOWN.htm**.

[14] Susan Kinzie, "Colleges' Land Lines Nearing Silent End," *The Washington Post,* Feb. 12, 2005.

[15] Yuki Noguchi, "Study: 21% of Cell Phone Users Weigh Ending Home Service," *The Washington Post*, Nov. 24, 2003.

[16] Matt Richtel, "Intel's New Chip is Meant to Give Wireless Internet A Longer Reach," *New York Times,* Apr. 18, 2005.

[17] Rebecca Lieb, "Wi-Fi Moves In," Oct. 4, 2004, available on the Internet at **http://www.clickz.com/stats/sectors/wireless/article.php/3416331**.

[18] Grant Goss, "Study: Telecom mergers will raise costs to businesses," June 14, 2005, available on the Internet at **http://www.infoworld.com/article/05/06/14/HNtelecommergers_1.html**.