The European Market for Telecommunications Services

CHAPTER 3

The European market should grow more than the U.S. market for the next decade. . . and access for U.S. firms will increase.

THE EUROPEAN TELECOMMUNICATIONS SERVICES MARKET is ripe for profitable entry by competitive suppliers. Its growth potential is greater than that in the United States because of the present low market penetration for many services. Barriers to entry and high prices have prevented much demand from being met. A recent European Community directive has opened the door for widespread bypass of public switched networks, which will stimulate further demand for innovative applications and services.

This chapter describes the European market for basic and enhanced telecommunications services' and trends that arc changing its structure, and then summarizes available projections of its size and growth over the next 5 to 10 years. The Office of Technology Assessment (OTA) concludes that the European market for telecommunications services will grow strongly in the next decade, and that opportunities for U.S. firms in this market will greatly increase.

The European market for telecommunications services is in reality many national markets, with wildly different regulatory regimes, institutional structures, trade barriers, and infrastructure characteristics.[2] About 85 percent of the aggregate market is currently closed to competition, but technological and political events are combining to open much of the market in the next few years. Meanwhile, the market is studded like a rich plum pudding with niche business opportunities for U.S. telecommunications companies.

A comparison of the scale and scope of European business and industry with its current consumption of telecommunications services indicates that there is a powerful, underserved demand for enhanced services. With the integration of a single European market, geographical expansion and heightened competition should increase this demand, Many U.S. telecommunications firms are demonstrating that they can compete in Europe, and also strengthen the ability of other U.S. services industries to operate successfully in European markets.

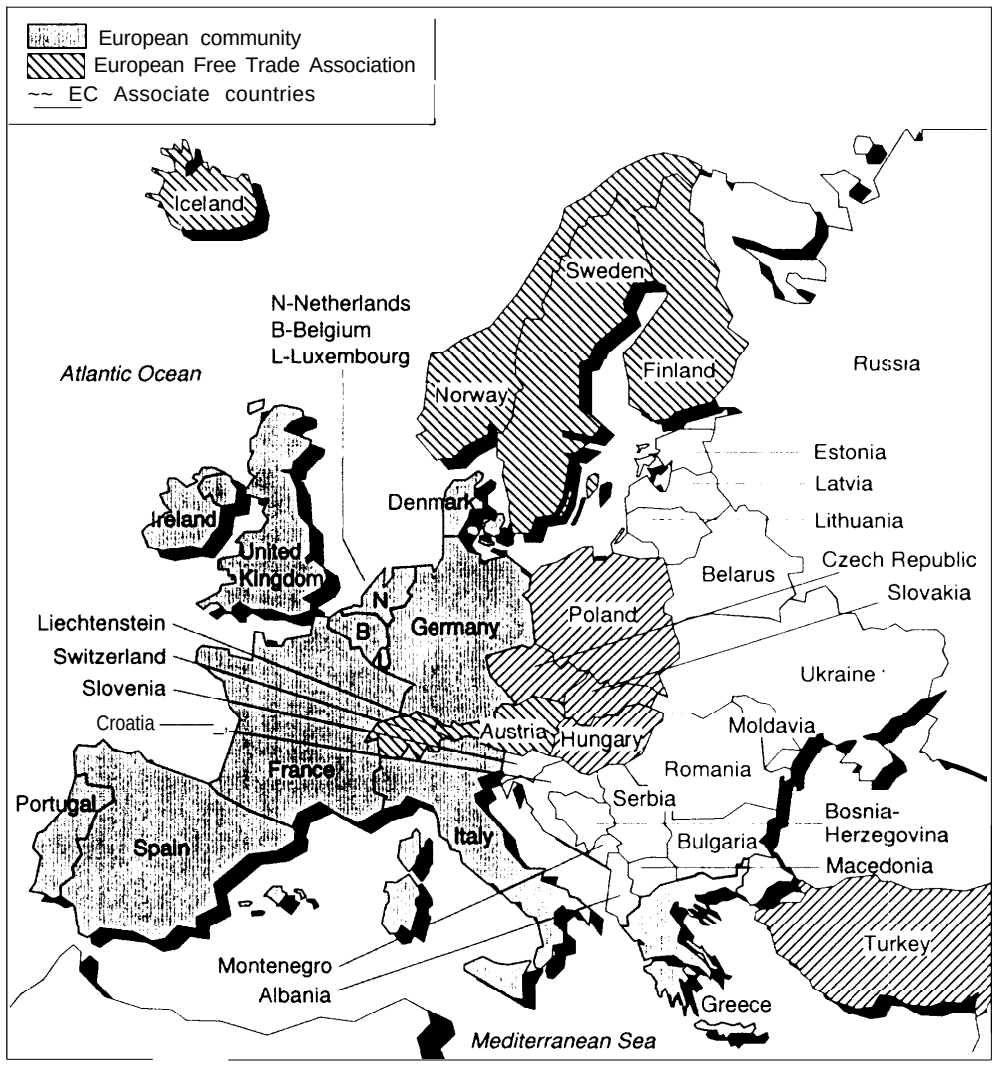
Until recently, the European market for telecommunications products and services was completely closed to entry by non-

NOTE: This chapter draws heavily on an OTA contractor report: Bruce L. Egan, "European Telecoms: A Market Assessment," Nov. 10, 1992.

[1] "Telecommunications services" is defined in this report as including all point-to-point, nonbroadcast communications transmission (basic services) and dependent or closely related information services (enhanced or value-added services). The term "value-added" is more often used in Europe and "enhanced" is more often used in the United States. The two terms are equivalent (although the services categorized as value-added or enhanced may t hem selves dfer); t hey indicate services t hat go beyond t heransmission of voice or data to in some way collect, select, format, change, process, or selectively deliver the material being communicated. This report will treat the terms as interchangeable for most purposes.

[2] The European market includes the 12 countries of the European Communit y (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, the United Kingdom), plus 7 members of the European Free Trade Association (Austria, Finland, Iceland, Liechtenstein, Norway, Sweden, and Switzerland). Together these constitute the European Economic Area for purposes of application of many of the directives of the European Communit y Commission. The countries of Central and Eastern Europe are also Included, but are treated in more detail inch. 6. However, due to data constraints, market size estimates are for the 12 EC member-states except where noted.

Figure 3-1.
Europe



SOURCE OFFICE OF TECHNOLOGY ASSESSMENT, 1993.

Europeans, and in general European countries are still protectionist,[3] U.S. telecommunications markets are more open to entry by foreign firms than are the European markets,[4] yet U.S. investments and business activities appear to be much greater than the

[3] For an overview of the history of European communications and recent trends, see Eli Noam, *Telecommunications in Europe (New* York City, NY: Oxford University Press, 1992).

[4] Europeans sometimes dispute this, and can point to many remaining U.S. barriers to entry (for example, prohibition of foreign ownership of radio licenses, including nonwireless links in telecommunications networks). See ch. 1, box I-A.

combined activities and investments of European firms in U.S. markets. Successful market entry by U.S. firms has so far generally required partnering, usually with the incumbent monopoly telephone operators (public telephone operators, or PTOs).[5] The strong drive to achieve a single European Community market suggests that there will continue for some time to be powerful advantages for American firms in having a legally well-established European identity.

Foreign subsidiaries, joint ventures and alliances, and other forms of shared ownership make it difficult to measure precisely the performance of U.S. telecommunications firms overseas. It is not always easy to classify a business as U.S. or European. More importantly, there arc theoretical and practical problems in measuring trade in services, which arc usually not embedded in discrete, observable units that can be counted as they cross a border or enter a customs shed. [h]U.S. trade balance figures do not include sales of services by European subsidiaries of U.S. firms. The final section of this chaptcr, which described the current status of U.S. trade in services, must be understood as indicative rather than precise.

The structure of the European market

As a single market, the EC, with 345 million consumers, will be the world's largest consumer market. Within the EC, four countries comprise over 80 percent of the potential market in terms of gross national product (GNP) and income: the United Kingdom, France, Germany, and Italy.[7]

The United Kingdom

The United Kingdom has the most broadly liberalized telecommunications market in the world. It began partially privatizing its monopoly operator, British Telecom (BT) in 1984,[8] requiring it to face competition in domestic long-distance services from Mercury, a subsidiary)' of Cable & Wireless. The intent was to create effective competition for BT by limiting entry to one new firm and giving that new competitor some entry assistance.[9]

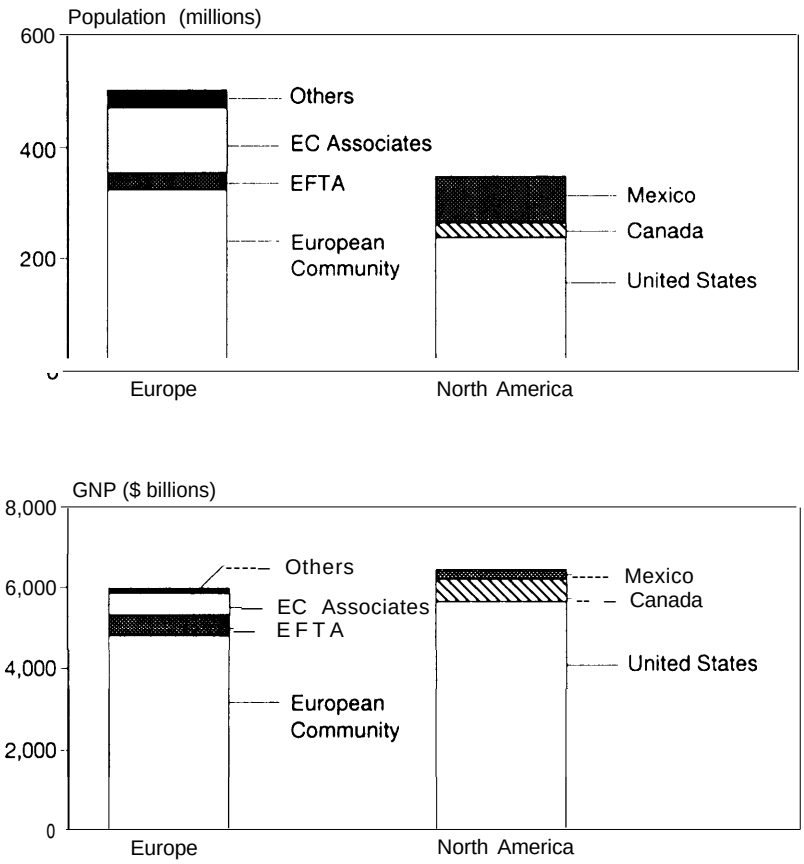
[5] Historically, the term for these organizations has been PTTs (Postal, Telephone, and Telegraph administrations). However in many cases they have been reorganized, separated, liberalized, or privatized and this term no longer fits.

[6] Anne Y. Kester (cd.), Behind *the Numbers: U.S. Trade in the World Economy,* Report of the Panel on Foreign Trade Statist ics of t he Comm ittee on Nat ional Stat istics, National Research Council (Washington, DC: National Academy Press, 1992). For a brief review of practical difficulties, see also Stephen Kindel, "Invisible Trade," *Financial World*, Oct. 13, 1992, pp. 56-59.

[7] The EC member-states together have a population of 345 m Ill Ion and GNP of S6, 157 billion. The European Free Trade Association members add another 32.5 million people and $852 billion. Turkey, Cyprus, and Malta are seeking EC membership; they have an aggregate population of 58 million and GNP of $103.7 billion. Czechoslovakia, Hungary, and Poland hold "EC Associate" status and Bulgaria and Romania are seeking it; together they add 97 million in population and S224 billion. The total population is 533 million.

[8] In 1993, the British Government is preparing to sell off its remaining 21.8 percent ownership of BT.

[9] Sir Bryan Carsberg, Director General of Telecommunications for the United Kingdom, at a sem inar at t he Center for Strategic and International Studies (CSIS), Washington, DC, Oct. 11, 1992; for proceedings see CSIS International Telecommunications Studies, Global Issues, "UK-U.S. Stakes in the International Regulatory Game," no date.



SOURCE: WORLD FACT BOOK, 1991.

Figure 3-2. *European Demographics*

In 1990 the United Kingdom moved to full open-market licensing. Each new company is to be offered some temporary entry assistance, in the form of reduced charges for interconnection with BT networks. As of February 1993, 13 new carriers have been granted licenses and 37 more applications are under consideration. These licensees and applicants propose to provide a wide range of services, with nearly a dozen companies proposing to build domestic trunk networks. (The first of these was the U.S. firm Sprint.) Several other companies plan to provide local delivery services.

The United Kingdom decided not to issue additional licenses for international facilities-based competition, because an open-door policy would require that access be granted to all reasonable newcomers, including those (like Germany) that have not opened their own market. But significant new freedoms to provide international services were introduced. These include international simple resale, for firms of countries with similar regulatory arrangements. (International simple resale is the right to sell capacity and services on leased circuits connected at both ends to public-switched networks in two countries.) (See box 3-A.) National Network, as a reseller, became the third competitor to BT and Mercury in November 1992. Another five applications are under consideration. Operators may also now provide additional satellite services, with interconnection to the public network at both ends being permitted for data traffic, and interconnection at one end permitted for voice. Eight " applications to provide such satellite services have been received to date.[11]

The United Kingdom is also fostering the establishment of cable television to provide competition in the local loop. It has licensed 20 cable networks to provide telephone service as well as TV/radio channels, al-

10 Seethe U.K. Government's 1992 White Paper, *Competition and Choice: Telecommunications Policy for the 1990s.*

11 Information provided courtesy of Mark Hammond, First Secretary for Environment, Energy, and Telecommunications, British Embassy, Washington, DC.

though customer subscriptions for the telephone connection are said to be lagging.[12] Further competition in local service was assured by licensing five nationwide cellular networks.

Since competition began, BT tariffs have been significantly lowered, including a 10 to 25 percent reduction in 1992. BT has become a strong international competitor. It plans to have its Global Network Services, with high-speed frame relay for data applications, serve 60 countries by 1994. [13]

France

In France, telecommunications traditionally was part of the responsibility of the Ministry of Posts, Telecommunications, and Space. On January 1, 1991, France Telecom became an autonomous, although completely state-owned, entity with its own budget and management. Regulatory authority was retained by the Ministry Directorate of Regulatory Affairs (DRG). France Telecom still has a monopoly in basic voice telephony and telex, but also operates competitively in some areas. Private operators may offer data transmission and wireless communications under regulated competition: i.e., they must be state-licensed. There is open competition in cellular and paging services. Private networks for closed user groups, i.e., corporate networks, must get a license from DRG, although small ones may not require licensing. Value-added services have been open to competition since 1987.

France Telecom networks are highly digitized; Integrated Services Digital Network (ISDN) services are universally available, and France Telecom's videotext services (Minitel) are famous worldwide. France Telecom has entered into many international joint ventures and alliances; it intends to be a global player, and says that 20 percent of its revenues will come from international activities by 2000.

Germany

Germany's market is the least liberalized among the larger European countries, and Germany has consistently opposed EC moves to abolish telephone monopolies, However, Deutsche Telekom, one of Europe's largest telecommunications companies, became an independent public company in 1991, when it was separated from the postal administration. The Minister of Posts and Telecommunications has announced its intention to partially privatize Deutsche Telekom by selling 49 percent of the organization's stock, in order to raise capital for the telecommunications infrastructure of East Germany. Chancellor Helmut Kohl had approved the plan in August 1992, but it was then postponed for political reasons; privatization will require the approval of two-thirds of the Parliament, and there is strong opposition from one political party and from the PTO's employees, who want to protect their civil service status. Meanwhile, the number of telephone lines in East Germany has been increased from fewer than 12 per 100 people

The United Kingdom, France, Germany, and Italy now have wide/y different regulatory strategies.

[12] *New Scientist*, July 25, 1992.

[13] "BT Expands Global Network Services Coverage," *Telcom Highlights* /international, May 20, 1992, p. 1.

[14] "Germany Defends EC Telephone Monopolies," *Telcom Highlights International*, Oct. 16, 1991, p. 4.

BOX 3-A. SIMPLE INTERNATIONAL RESALE

Customers with large international capacity requirements often lease circuits from international carriers to connect corporate offices. Since these are dedicated circuits, no switching is required. The term international simple resale refers to the ability to connect these private circuits to the public-switched networks at both ends of the international transmission,[1] and to resell spare capacity to other companies. This allows enhanced services providers to become "light carriers," leasing high-volume capacity at reduced rates and reselling it to customers, often at lower rates than primary carriers can offer (since with private lines, the light carriers avoid paying international accounting rates). The right to do this both empowers users and challenges the traditional relationships between national carriers in providing services and distributing the revenue from international calls.[2] Rules permitting international resale will enable carriers themselves to offer services on an international basis, substituting head-to-head competition between national carriers for the traditional cooperative relationship in delivering international traffic. International simple resale is being pursued in a few countries, including the United States, the United Kingdom, Canada, and Australia.

In June 1991, the U.K.'S Department of Trade and Industry (DTI) lifted restrictions on reselling capacity on domestic private leased lines, but announced that for international simple resale, it would require equivalence in regulatory treatment from the corresponding country. The DTI has identified Canada, Sweden, New Zealand, and Australia as countries with sufficiently equivalent environments for the provision of international simple resale. In

1 Resale that is not "simple" is that in which only one end, or neither end, of the private circuit is attached toapubhc-switched network.

2 International service is a cooperative effort; it was historically a "half-circuit" arrangement whereby a national carrier's jurisdiction hypothetically extended from its home domain to a midpoint on each translational circuit (either a cable or satellite channel); in this way the national carrier owned cable landings and satellite receivers in its own country. in practice the "hand-off" of an international call does not occur at the midpoint but at the international gateway of the recipient country.

in 1989, to 20.15 Germany may follow the French model, a public corporation with autonomous management, but still under state ownership.

Meanwhile, the state retains a monopoly on terrestrial networks and telephone services, but cellular communications, satellite services, and data networks services have been opened to competition. Two cellular systems have been licensed, and there arc a number of licensed private mobile radio systems for taxis, trucking companies, etc. By the mid- 1990s, the company hopes that about one-third of its revenue will be in competitive areas. ISDN is to be fully implemented during the 1990s,

In addition to the massive task of rebuilding networks in caster-n Germany, Deutsche Telekom faces other challenges: reorganizing its internal structure and expanding into international markets.[16] It has already initiated joint ventures with firms in several

15 "Deutsche Telekom Appeals for Faster Privat ization," *Telcom Highlights International,* Feb. 10, 1993, p. 2.

16 H. Ricke, chairman of the board, "Germany's TELEKOM: A New Way of Doing Business in a Liberalized Market," *Telecommunication Journal, vol.* 58, October 1991, p. 711.

International simple resale would likely lead to growth of "light carriers," who would challenge national monopolies' control of international services.

September 1992, the DTI licensed ACC Long Distance to provide the service between the United Kingdom and Canada.

In the United States, the U.S. Federal Communications Commission (FCC) ruled in December 1991 that international carriers must permit the resale of private leased line capacity, but stipulated that this rule would apply only where the foreign country permits equivalent access. Despite objections from AT&T, the FCC has permitted resale between the United States and Canada, and has authorized Fonorola and EM I Communications to offer the service.

No international simple resale is allowed directly between t he United States and the United Kingdom, despite their relatively harmonious approaches to liberalization. (Telephone rates between the two countries are relatively low compared with other international rates.) Each of the two regulatory agencies maintains that a reciprocal regulatory environment does not exist in the other country. The DTI objects to the FCC's treatment of all foreign-owned common carriers as "dominant," subjecting them to more rigorous filing requirements than some domestic carriers.[3] U.S. regulators point to rules in the United Kingdom that deny U.S. firms international facilities licenses, which U.S. rules permit to foreigners. The DTI is reserving t he right to build, operate, and own international facilities to BT and Mercury, and competitors must bargain with one or the other for leased lines for international services. The intent is to protect Mercury, whose share of the U.K. market is only about 10 percent, in an effort to assure competition for BT.

3 AT&T and all foreign carriers are subjected to more rigorous regulatory requirements (I.e., 45 days notice before filing for "Sectlon214" authorization to provide additional international services) on the grounds that because of market dominance or monopoly power they are able to restrict competition in their home markets. The FCC has proposed to modify this rule so that it will not apply to all foreign earners in regard to all services or geographical markets.

SOURCE OFFICE OF TECHNOLOGY ASSESSMENT, 1993.

countries, including one to build an electronic data interchange (EDI) exchange for Europe, and one with France Telecom to offer managed networks services.

Italy

In Italy several entities provide different kinds of telecommunications services, but each has a monopoly in its own kind of services. Azienda di Stato per i Servizi Telefonici (ASST) is operated directly by the Ministry of Posts and Telecommunications, and provides trunk services between major cities. international services for Europe, and some data serv ices. Societa Italiana per l'Esercizio delle Telecommunicazioni (SIP) is the major carrier, operating the national network and providing trunk services not run by ASST. SIP also holds the concessions for mobile radio and packet-switched services, [7] The connection for all intercontinental communications services is provided by Italcable, which also provides a number of value-added services.

[7] The packet-switched service (Itapac) began in 1984, but has expanded significantly in only the last few years.

The Italian Government-through its trading corporation, the Instituto per la Ricostruzione Industrial (IRI)--owns 85 percent of the Societa Finanziaria Telefonica, which in turn owns most of the shares of SIP, Telespazio, and Italcable. The IRI group also has an research and development subsidiary, CSELT, which also serves equipment manufacturers, in order to link carrier/manufacturer research.[18] The Ministry of Posts and Telecommunications has final authority over all of the companies, in addition to operating ASST directly.

Italy expects to rationalize this complicated market structure and to introduce competition in services; it has ratified the EC Services Directives. The government policy puts high priority on increasing network penetration to 42 lines per 100 people and upgrading the infrastructure.

The EC aggregate market

The total 1992 market for EC telecommunications in terms of sales is estimated at $150 billion, of which 70 percent or $120 billion is for telecommunications services.[19] Overall market growth for EC telecommunications services for the early 1990s is expected to be about 5 to 6 percent per year.[20]

The EC also represents about 25 percent of the world market for telecommunications equipment (for comparison, North America accounts for 35 percent). It is widely reported that U.S. companies are doing well in European sales of equipment needed for private networks, such as very small aperture terminal (VSATs).[21] Sales of enhanced telecommunications and information services by U.S. firms also encourage the sale of U.S. equipment, even though some U.S. firms, such as MCI, make a point of using a mix of U.S. and foreign equipment vendors.

Growth in PTO revenues and in market penetration (access lines relative to population) is much higher in EC countries than in

[18] Italy 's telecommunicat ions equipment manufacturer, Italtel, is the fourth largest in Europe. However, all of the major European equipment manufacturers hold significant market shares in Italy. ("Research and Development in Telecommunications," *Telecommunications Policy*, January/February 1992, p. 49).

[19] All market estimates in this section are for the 12 member-states of the EC unless otherwise noted. This represents the vast preponderance of the greater Europeartelecommunicat ions market. The est i mates and projections unless otherwise noted were developed for OTA by Professor Bruce Egan, Columbia Institute for Tele-information, Columbia University School of Business, on the basis of assessment and integration of a large number of market analyses. The sources Include: McGraw-Hill and subsidiaries Northern Business Information and Datapro; Dataquest; Communications and Information Technology Research (CIT); Intelidata; Logica; Input; the Commission of the EC; Organization for Economic Cooperation an Development; North American Telecommunications Association; Observatoire Mondial des Systèmes de Communications (France); Frost and Sullivan; the Gartner Group; Link; the Yankee Group.

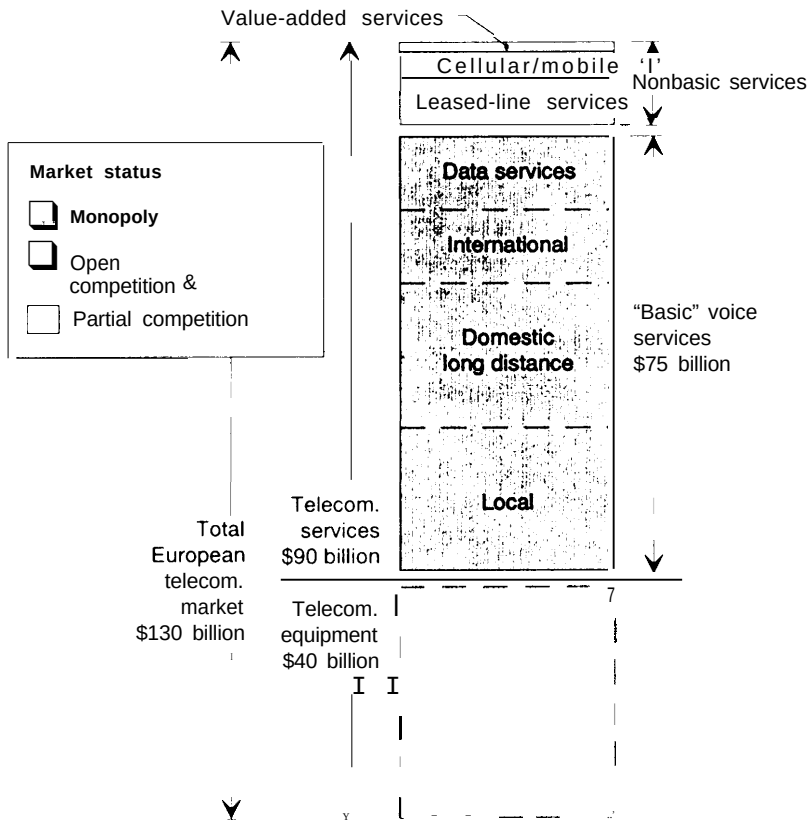
[20] Market forecasts range from 5 percent to 9 percent for services. Growth projectionsfor telecommunications equipment ranged more widely, from 3 to 10 percent but concentrated at the lower end of the range. The projected growth rates for European telecommunications services revenues are very similar to those projected for U.S. telephone company service revenues (slightly lower in real growth because inflation is slightly higher in Europe at present). Revenues of U.S. private network service providers are growing faster.

2 David Gilhooly, publisher of *Communications Week*, speaking at a seminar on International Strategies held in connection with COMNET Exposition, Washington, DC, Feb. 3, 1993.

the United States.[22] Businesses account for 26 percent of total access lines and 45 percent of PTO revenues. Total EC traffic growth for the public-switched network is about 6 percent per year. Toll call revenues are growing somewhat faster, and international toll calls arc growing fastest—l 4 percent per year. Of all international calls made in the EC in 1991, 55 percent went to other EC countries, and 11 percent to the rest of Europe.[23]? (See figure 3-3.)

In most EC countries the sole or majority owner of the monopoly PTO is the central government, although the operating entity (the PTO) has been separated from the entity exercising regulatory authority. The PTO retains a monopoly on voice services.[24] The exception is the United Kingdom, which has liberalized market entry. As a result, BT (fomerly British Telecom) is beginning to see its monopoly on local voice services eroded by cable television companies that provide two-way telephone service. Most of these are now financed by U.S. telephone companies.

In major EC countries there are a few large providers of nonvoice services: i.e., the structure of the market is oligopolist. In practice, these markets are characterized by what economists call "the dominant firm model. That is, the PTO—which has a monopoly on voice services-also dominates the major non-voice service market sector and sets the prices; the other providers arc price-followers. There may be a number



SOURCE OFFICE OF TECHNOLOGY ASSESSMENT, 1993

Figure 3-3. European Telecommunications Market

22 EC revenue growth averaged 10 percent nominally (4 percent per year in real terms) during the 1980s, whi le market penetration grew about 5 percent per year. In the United States access l ine penetration is stable, line growth is 2 to 3 percent per year, and nominal revenue growth is about 7 percent. The growth estimates are a broad average for 1980-90, and are different from some other growth estimates presented in t his chapter for a shorter, more recent time period. Commission oft he European Communi ties, "Towards Cost Orient ation and t he Adjustment oPricing St ructures—Telecommunicat ions Tariffs in t heCommunit y," Brussels, July 15, 1992, p. 8.

23 Gregory C. Staple (cd.), "TeleGeography 1992: Global Telecommunications Traffic Statistics and Commentary," International Institute of Communication, 1992, p. 86.

24 In Denmark, Finland, and possibly some other countries, although there is a national government monopoly PTO/telecommunications authority, there are also several other PTOS with regional monopolies. In Britain, one small service area has Hull Telephone Department as its monopoly PTO.

The EC ONP Directive opened the way for competitive services suppliers and business customers to bypass PTOs In spite of their legal monopoly.

of competitive regional and niche market suppliers, including resellers and third-party network management operations.

In most EC countries there arc two providers of cellular communications; i.e., the market is duopolist (as it is by regulation in the United States). In a few countries, the PTO is still the only cellular services provider for the initial analog system. But as the cellular communications markets begin to grow rapidly and new radio frequency spectrum is allocated to cellular service, the monopoly/duopoly structure is tending to give way to oligopoly, This has happened in the United Kingdom, which has the most liberal entry policies for telecommunications in the world.

The introduction of competition in the European cellular market is being speeded by agreement on a new digital standard, the Global System Mobile Communications (GSM).[25] The United States has not adopted a compatible standard, but U.S. cellular operators are aggressively pursuing European market opportunities using the GSM standard.

The structure of the telecommunications markets in Central and Eastern Europe, now undergoing radical economic and social change, is discussed in a later chapter. These countries are likely to maintain the monopoly model for switched voice, data, and even cellular services for a long time, but probably the monopoly entity will not in all cases be wholly government-owned. Foreign ownership is needed to provide capital for rebuilding infrastructure, and to attract this capital it may be necessary to guarantee investors/operators that the PTO will enjoy a monopoly for some fixed period. On the other hand, some sources of funds for infrastructure projects, such as the World Bank and the International Finance Corporation, now tend to promote private sector control in a capitalistic market environment.

Trends shaping the European telecommunications market

Over the next decade, the European market for telecommunications services will be shaped not only by technological trends, as described in chapter 2, but by demand patterns, price trends, market liberalization, and market unification.

Long-range demand patterns:

Several trends in demand for telecommunications services are discernible:

- the expansion of private networks (much less advanced in Europe than in the United States, where a counter-trend is underway);
- the popularity of communications portability;
- growing demand for multimedia services, and
- strong and growing pressure from users.

In the United States, corporate private networks using leased lines proliferated in the 1980s, as large corporations sought less expensive and more flexible ways to obtain voice and data services. Before the AT&T divestiture in 1984, 80 percent of toll usage was billed per minute of use. Private networks shifted much of this traffic away from the public-switched networks, and today less than half of all long-distance access services in the United States are purchased under

25 The acronym originally stood for "Groupe Spécial Mobile," but as use of the standard has spread, it has become more generally known by the new name.

traditional per-minute tariff rates. (''Long-distance access services' are the interconnections between local and long-distance telephone companies.) Very large corporations, especially in the financial services sector. may send over 90 percent of their traffic over dedicated lines. There is good evidence. however, that the trend toward private networks is reversing in the United States, because of the fall in voice services tariffs and the new ability of public carriers to provide "virtual private networks' (software-controlled allocation, by the public carrier, of dedicated lines to customers on demand).[26]

On the contrary, the movement toward private networks is just gathering steam in Europe. The substitution of private networks for public-switched services (''b)puss') is a result of market forces and deregulation, especially the ability legally to resell capac - ity.[27] Bypass cost U.S. telecommunications companies bill ions of dollars in lost revenue in the 1980s.[28] It is likely that the same phenomena will occur in Europe, although it is being strong] y resisted to protect the social objective of universal service .29

The EC Services Directive of 1990 called for liberalization of all telecommunications services except for switched voice service and some data sin-vices, which member-states can continue to reserve for their PTOs. The EC Open Network Provision (ONP) Directive of June 1992, however, directly mandated non-discriminatory interconnection for leased lines by 1993, with no restrictions on their use, even for voice sevices.[30] This provides an obvious bac[k] door for business customers and competitive network suppliers to bypass the PTOs' voice services in spite of their legal monopoly. ?

[26] See ch. 2. See also, U.S. Congress, Office of Technology Assessment, U.S. *Banks and International Telecommunications,* OTA-BP-TCT-1 00 (Washington, DC: U.S. Government Printing Office, September 1992),

[27] Well before t he AT&T divestit ure, after years of litigation, the FCC in 1976 recognized t he legalit y of MCI'S Execunet Service, which was a switched private line service for large users. Private networks without Interconnect Ion had been allowed before 1976. Eventually this private network capacity expanded to most U.S. cities and became available for small companies and private residences.

[28] Bruce L. Egan, "Europeans Telecoms: A Market Assessment," OTA contractor report, Nov. 10, 1992, p. 11.

[29] Universal service was built on broadly averaged subscriber rates and built-in cross subsidies that made it possible to serve all members of the society. Eli Noam, op. cit., footnote 3, and others hold that as telephone penetration rises to a high level, very large corporations are motivated to break away from the system rather than cost-share with the general body of subscribers, whose volume of use is low and who sometimes are remote and difficult to serve.

[30] The direct ive calls for EC mem ber-states to make available by 1993 five categories of standardized leased line services (two types of analog voice lines, 64 kbps digital lines, and two types of 2 Mbps digital lines), with no restrictions on Interconnect Ion or use.

[31] Some EC member-states (Spain, Belgium, Italy) appealed to the European Court of Justice hoping to overturn the Comm ission's directives on telecommunications equipment and services. However, the Comm ission has in a series of cases successfully defended its authority under Article 90 of the Treaty of Rome to issue direct ives limiting member-states' use of monopoly power. In t he most recent case, t he Court ruled that the Comm ission's abolition of special rights was not lawful in that the Commission had failed to define them precisely, but it upheld again the legality of measures intended to abolish exclusive rights to exploitation of telecom m u nications services gra nted to PTOs. "Europea n Comm ission's Powers Upheld in Telecommunications," *Telcom Highlights International*, Dec. 2, 1992, p. 2.

This “back door" will open the way for many innovative services arrangements to challenge PTO-provided services with advanced software, customer premises equipment, and information content and fomatting. American firms have the knowledge and experience to develop such innovative services, and their prospects for successful competition should grow.

Profits from software and value-added services are likely to grow in the future, while core facilities or ‘‘conduits’ become relatively less important as a source of profits. Two other factors will further drive prices for core network capacity close to commodity costs: the growing usc of wireless technology and the usc of other infrastructures as channels for telecommunications. Railroads, highways, and canals include rights-of-way that can accommodate fiber optic cable; electric power grids can provide poles, towers, and power. Sprint, the third largest U.S. long-distance carrier, has bought the right to install cable along British Waterway canals.

Pm-table communications are now the fastest-growing communications mass market. As the technology improves, their convenience becomes increasingly attractive. Demand for mobile phones is especially strong in Central and Eastern Europe because there are long waiting lists for basic telephone service, and wireless is a relatively fast and inexpensive way to satisfy this pent-up demand.

There is a large unsatisfied market for telecommunications services in Europe, where business consumption lags far behind that in the United States.

Multimedia telecommunications is the ability to combine video, audio, text and data, and also to provide interactivity between end users and the network head-end. A growing demand for multimedia telecommunications can be expected in the long-range future to meet business needs such as three dimensional computer-aided design and videoconferencing, and to provide consumers with opportunities for distance learning, shopping from home, entertainment, and transaction services. How swiftly this market demand will mature is, however, hotly debated.

There are many indicators of strong latent demand for services in the European market. Greater Europe has a larger population and income than has the United States. Yet the United States’ consumption of telecommunications services is over half of the world’s total. In 1990 the four largest EC countries together accounted for only 19 percent of world sales of telecommunications services: the United Kingdom (5.6 percent), Germany (5.1 percent), France (4,5 percent), and Italy (3.8 percent). This indicates an unsatisfied market for telecommunications in Europe.

Within the EC market, Germany has about 30 percent of the total income, compared with the United Kingdom’s 16 percent, but its telecommunications sector is smaller. There is thus especially great potential for growth in the German market, but it is one of the least liberalized. In terms of real growth in telecommunications services revenues (1985-90), both Germany at 2.6 percent and France at 2.4 percent lagged behind Spain (8.5 percent), Italy (4.9 percent). and the United Kingdom (4. 1 percent). Germany is struggling to bring the infrastructure in the eastern part of the country up to par and has indicated that this will delay the move toward telecommunications liberalization.

The United States represents about two-thirds of the world market for ‘‘nonbasic’ telephone services such as database services and cellular telephony, while the four largest EC countries together made up only 12 percent in 1990, the latest figures available.

Telephone penetration is now growing about twice as fast in the EC as in the United States.[32] In 1991 there were between 45 and 50 telephone lines per 100 population in both the United States and the larger EC countries; more in the Scandinavian countries, and man y fewer in Central and Eastern Europe (about 13).[33] The latter area is averaging 6 percent growth in telephone penetration, and this is expected to speed up substantially during the decade. The goal in these countries is 40 telephone lines per 100 population by the year 2000; this would require nearly 15 percent annual growth.

People in the United States make three times more telephone calls than people in the four largest EC countries; but calling rates are increasing faster in those countries. [34] The average annual expenditure per capita in the United States ($445) is more than twice the average for the large EC countries ($200) in spite of lower U.S. customer charges, but average growth rates for expenditures are much higher in the European countries (5 percent compared with 1.5 percent).[35]

	EC average (1 980-90)	U.S average (1984-91)
Connection charges	-39 "/0	+ 2%
Monthly line rental	+20	+15
Local call charges	+ 3	
Monthly business line		+ 8
Intracountry toll call	-29	
Intrastate toll call		-40
Interstate toll call		-72
Cumulative inflation during period	60	22

SOURCE: BRUCE EGAN, USING DATA FROM COMMISSION OF THE EUROPEAN COMMUNITIES, "TOWARDS COST ORIENTATION AND THE ADJUSTMENT OF PRICING STRUCTURES—ELECOMMUNICATIONS TARIFFS IN THE COMMUNITY," BRUSSELS, JULY 15, 1992.

Table 3-1. EC and U.S. Changes in Prices for Telecommunications Services (changes in nominal prices)

Price trends

Tariff rationalization has not yet been achieved in the EC, and there are wide differences among countries in tariffing pol - icy.[36] Prices are high compared with those in the United States and this clearly depresses demand and causes the telecommunications networks to be underutilized.[37] Table 3-1 shows relative price changes, 1980 through 1990. Given the inflation rates, the average EC tariff rates did not decline and perhaps increased in real terms, whereas in the United States they declined as much as 72 percent in

32 "Telephone penetration" Is the number of telephones per 100 people. Average annual growth from 1985 to 1990 was: the United States, 1.8 percent; Germany, 3.2 percent; France, 4.4 percent; Italy, 4.2 percent; the United Kingdom, 3.1 percent.

33 Organ ization for Economic Cooperation and Development, *Telecommunications and Information Policies: 1992/93 Community Outlook*, OECD Working Party on Telecommunications and Information Services Policies, Aug. 7, 1992, pp. 100-109.

34 Observatoire Mondial des Systèmes de Communications, op. cit., footnote 20, pp. 60-63. Calling rates per capita are growing 3.6 percent in Germany, 4 percent in Italy, and 5.5 percent in the United Kingdom, compared with 2.4 percent in the United States.

35 The OMSYC statistics are in relative agreement with OECD spending data, although reported levels are different due to differences in both base year prices and methods of calculation. Egan, op. cit., footnote 29, p. 54.

36 Commission of the European Communities, "Towards Cost Orientation and the Adjustment of Pricing Structures—Telecommunications Tariffs in the Community," Brussels, July 15, 1992.

37 Commission of the European Communities, op. cit., footnote 23, says that revenue in the EC per main line averaged, in 1990, about 630 ecus or S819, while in the United States it was over 900 ecus or about $1,200, in spite of substantially lower U.S. prices.

real terms during the shorter time period used in the table.

In 1992, the average toll call price per minute in the United States was less than $0.20. In the EC it was $0.33 for intracountry calls and about $1 for intercountry toll calls within the EC.[38] It may cost twice as much to make a call across a nearby national boundary than to call many times that distance within one country. If the EC succeeds in opening transborder communications to competition (as may result from an ongoing review of the EC Services Directive of 1990), price cutting will surely enlarge calling rates; there is evidence from AT&T and BT of the effects of aggressive price cutting on growth in usage, [39]

The average monthly rental for a 50-km voice grade leased line is reported to be more than twice the U.S. price, although the average monthly prices for PTO leased lines (voice grade) fell about 20 percent in real terms from 1980 to 1991.[40] In the EC, higher capacity circuits cost about $3,000 per month, or about three times the cost in the United States, and except in the United Kingdom, any excess capacity on them cannot be resold .41

Cost declines due to technology adoption should be roughly similar in Europe and in the United States, so most of the price differential is due to political and institutional factors. The PTO prices appear to provide heavy cross-subsidies to other services and markets. Such differences between costs and price levels indicate a large potential for competitive entry.

Market liberalization

The pace of liberalization slowed in 1992, but the EC Commission has signaled its determination that further liberalization of telecommunications services markets will occur. The Services Directive that specifically reserved switched voice services to PTOs was scheduled to be reviewed in 1993. In spite of contention within the EC, preparation for this review produced a consultative document that set out four alternatives for consideration: 1) direct regulation of intcrna-

38 Commission of the European Communities, op. cit., footnote 22.

39 In the United States there is evidence that as AT&T, the Bell operat ing companies, and BT lost market share due to market liberalizat ion, total market volumes and revenues increased substantially, as didprof its and market values. AT&T tariff rates fell by over 70 percent in real terms between 1983 and 1991 and its market share declined by 35 percent, yet AT&T revenues and profit rates held steady because of increased demand. BT toll prices have fallen and its market share has declined as competition is introduced, butt here has been substantial growth in prof its. Bruce Egan and J. Wenders, "The Cost of State Regulation: In Theory and Practice, " Columbia Institute for Tele-Information, Research Working Paper No. 443, Columbia Business School, revised, 1992, p. 26.

Whether all consumers also benefited, or benefited equally, is less clear. U.S. consumers Increased real spending on public telecommunications by 58 percent to $700 per capita per year.

40 Given Inflation rates, this implies that nominal tariff rates increased. Commission of the European Communities, op. cit., footnote 22.

41 The comparison here is for DS1 lines. The European version is 2Mb/s, with the capacity of 31 equivalent voice grade circuits (64kbps); in the United States a DS1 circuit has a capacity of 1.5Mb/s or 24 voice grade equivalent channels. Prices for DS1 service vary substantially within the EC. In the United Kingdom the average price is about 20 percent higher than the U.S. price; in France about two and a half times higher, in Germany about 11 times higher. Egan, op. cit., footnote 29, p. 59.

tional prices by the EC, 2) ending monopolies' control of cross-border interconnections, 3) opening up the entire regulated telecommunications market, and *4)* freezing the liberalization effort and maintaining the status quo.

There was opposition to further liberalization by most PTOs and in most governments.[42] In France, for example, members of Parliament declared opposition to further deregulation on the grounds that competition would led to higher prices for local calls (which have been subsidized), hurting small businesses, and because it would enable U.S. operators to penetrate the European market.[43] On the other hand, the international Users Group (INTUG) strongly advocated the second alternative, opening transborder infrastructure and voice services to competition, in advertisements and in letters to the Commission president.[44] European newspapers reported that ''almost all consumers favour far-reaching liberalisation and harmonisation"[45]—but over a period of 10 years, rather than immediately. When the EC's 6-month period for comment ended in April 1993, the EC backed away from its proposal, and instead announced that liberalization would be accomplished more gradually, between 1993 and 1998, under "a well-managed liberalization plan' to be announced in a ''new green paper' by the end of 1995.[46]

If the U.S. experience can be used to foresee likely events in Europe, the ability to bypass PTOs' services that is implicit in the ONP Directive is likely to lead to steadily increasing competition in the European market, in spite of the success in blocking EC formal procedures. While there are strong cultural, institutional, and political differences between the U.S. situation in 1976 through 1984 and Europe today, business incentives and responses arc similar and the momentum already underway points to continued erosion of monopoly protection. In international long distance, a number of entrepreneurs have begun to arbitrage asymmetrical customer charges in the United States and Europe with arrangements for code-calling and automatic call-back schemes.[47]

If the U.S. experience is any guide, bypass will /cad to increasing competition in European markets, in spite of political opposition.

[42] The newsletter of the International Telecommunications Users Group commented that". . the forces of reaction continue to dom inate. . and to retain their hold on the political levers. " "Presidents Letter, " *INTUG News,* October 1992. The United Kingdom, Denmark, and the Netherlands are reported to support proposals to open the European voice market to competition. Dawn Hayes and John Blau, "Crack in Services Market," *Communications Week International*, *Nov. 9, 1992,* p. 3.

[43] "France Hits EC Plans for Telecom Industry," *Telcom High/ighfs International*, Jan. 27, 1993, p. 3.

[44] *INTUG News,* October 1992 and January 1993, p. 3.

[45] Andrew Hill, "Brussels Considers Widening Corn petition in EC Telecoms," *Financial Times,* Mar. 10,1993, p. 1.

[46] Statement by EC Commissioner Karel van Miert on Apr. 15, 1993, reported by *Telecommunications Reports,* Apr. 19, 1993, p. 10.

[47] For example, a European subscriber calls a U.S. number; the call is not answered, but a computer in the U.S. st rips off the number of the Incoming call, automatically returns the call (at U.S. rates), and connects the caller to a desired recipient. In many of these arrangements, calls from one foreign country to another foreign country can be hubbed through the United States at U.S. rates—this gives the caller the benefit of lower rates, but Incidentally exacerbates the accounting rate problem for the United States, which is described later in this chapter.

As European countries reluctantly allow greater competition, their policies will continue to favor European firms.

European monopolies are beginning to crumble due to the pressure from the Commission for competition within the EC, pressure from the U.S. government, and the influence of the continuing general agreement on trade and tariffs (GATT') negotiations. The United Kingdom has led the way by offering permission for international resale to the firms of any country that will agree to bilateral symmetry in market access and pricing. In October 1992, it granted the first license for international simple resale to ACC Long Distance UK, which will initially sell transmission services from the United Kingdom to Australia, Canada, and Sweden, and has applied to the U.S. Federal Communications Commission (FCC) for authority to resell service to the United States.[48] The United States also requires bilateral symmetry, and neither country's regulators are yet willing to agree that symmetry exists, each pointing to restrictions on access to the other's market. (See chapter 1, box 1 -A.) In March 1993, BT's U.S. subsidiary, BT-North America, asked the FCC for authority to resell U.S. carriers' international switched and private line services, in order to put together global virtual private networks;[49] this permission would require an FCC finding of regulatory equivalence.

The domestic long-distance market may be the last segment to be liberalized in Europe.[50] As profits and subsidies from services to large businesses and from international long distance begin to shrink due to competition, monopoly profits on domestic long-distance services will become even more important.[51] If the EC succeeds in reducing intercountry toll service rates and intracountry rates do not drop, companies may route traffic via a neighboring country with lower tariffs or lease private lines.

The non-discriminatory interconnection mandated by the Commission of the EC in the ONP Directive does not go as far as the ''equal ease and convenience of access' ordered by the U.S. District Court in the AT&T divestiture. In that case the court said that there must be punctually equal access for all competitors such that users would see no difference, even to the number of digits that must be dialed. In Europe such issues as dialing parity, subscription procedures, and control of telephone numbers still must be addressed by regulators. However, as pointed out in chapter 2, advanced software and

48 John Williamson, "Competition Drives Down Global Tariffs," *Telephony*, Nov. 2, 1992, p. 24. A number of U.S. companies, called "light carriers," already provide international resale services.

49 "British Telecom Applies for U.S. Private-Line License," *Telecom Highlights International*, Mar. 17, 1993, p. 3.

50 It should be noted, however, that in both Europe and the United States basic local telephone service for residential subscribers is still effectively a monopoly, even though in the United States and in ?he United Kingdom local loop competition is legal.

51 The comparable U.S. network segment is intra-LATA long distance. (LATA stands for Local Access and Transport Area, a geographical term invented at the time of divestiture to denote the area within which a regional Bell operating company (RBOC), as a local exchange carrier, can legally provide end-to-end toll call ing service at tariffed rates.) RBOCs cannot legally provide inter-LATA toll service. LATAs vary in size; there may be one in a small state or several in a large state, but they are roughly comparable in scale to domestic long distance in a European country. Local carriers have lost over a fourt h of this market to private networks, although legally this market is reserved for the carriers.

switching systems may be able to overcome such problems as dialing parity.

In short, it appears that there will eventually be competition in nearly all telecommunications services markets in Europe, including toll voice services, not necessarily because open entry is explicitly allowed but because of the back door created by the EC ONP Directive. This may, however, take some time-possibly the rest of this decade—to become effective. It is likely to be at least that long before U.S. firms will have full or easy access to these markets. Until then, the strategy of partnering or joint ventures, as described in the next chapter, is likely to prevail.

Market unification

Even as European countries move to allow greater competition, they will continue to promote policies favoring their own domestic firms. They naturally prefer that if the dismantling of monopolies and cross-subsidy structures is to occur, it should benefit first their own and then other EC businesses before it benefits foreign businesses. The Commission of the EC appears to concede this; market unification itself is designed to develop a strong domestic market base for leverage in the international marketplace.[52] Explicit Commission support for favoring domestic firms in conjunction with EC market unification efforts was reemphasized in the Eurostrategies Report released in July 1992.[53]

The further unification of the EC market will thus enhance the competitiveness of EC firms relative to foreign suppliers. Domestic firms will benefit most directly and immediately from liberalization of regulations, from the opportunity to expand into neighboring geographic areas, and from more uniform business law and technical standards. Experience in the United States and in the United Kingdom indicates that when competition is introduced the revenues, profits, and market value of the former monopoly provider increase rather than decrease.

The EC rules for unification and free trade will apply specifically only to firms of member-states, while treatment of foreign firms will still be governed by GATT and other international conventions, as discussed in chapter 7. The prevailing U.S. strategy of partnering will continue. Joint venturing qualifies U.S. firms as European firms. In addition, firms in some of the smaller EC member-states, not themselves large enough to become strong players in an expanded market, have recently been seeking to partner with large U.S. firms. Examples arc STET (Italy) and Telefonica (Spain).

If market unification is likely to benefit at least the stronger European firms, conventional wisdom would suggest that U.S. firms might be relative losers. The perspectives of U.S. services firms operating in Europe, on the contrary,[54] suggest that **the relative** disadvantages to U.S. firms may be far outweighed by the benefits to them of greater uniformity in equipment and services, regu-

[52] See discussions in Commission of the European Communities, 1992 *Review of the Situation in the Telecommunications Services Sector,* Brussels, July 10, 1992, pp. 33-41.

53 Commission of the European Communities, *The European Telecommunications Equipment Industry—The State of Play, Issues at Stake and Proposals /or Action,* Brussels, July 15, 1992.

[54] See the extended discussion in ch. 5, "Users' Perspectives," based on interviews and contributed remarks of approximately 50 representative services firms.

lations, and institutional procedures, which will allow them to offer additional innovative services in a more cost-effective way.

Some American business people fear that once the EC Commission has consolidated its regulatory authority it could assert centralized protectionist policies of its own,[55] In view of that possibility, however slim, it is essential to make sure that there is parity in the terms of trade between U.S. and European telecommunications services markets.

Market estimates and projections

Basic services

The PTOs control about 90 percent of the European market for telecommunications services; their share is about $110 billion per year (199 I -92), with a growth rate of 6 to 7 percent. The monopoly voice services portion is, in turn, about 80 percent to 90 of total PTO revenues. Thus 85 percent of the total market is legally closed to competition at this time. Nonvoice services (including leased data lines) are growing about 10 per year. Voice services have lower growth rates.

In most European countries, because leased line interconnection is restricted and prices are high, there are relatively few private networks.[56] The growth potential for leased line services is phenomenal now that technological improvements and the EC ONP Directive will allow leased lines to become a viable substitute for switched services for large customers. Revenues from the fast-growing data and value-added services markets already constitute a higher portion of PTO revenues than do the monthly rentals for leased lines. The growth potential for leased line services should be double that for traditional switched services for the next decade, at least 10 to 15 percent per year, and may be higher. The potential effect of the ONP Directive may be gauged by looking at the United Kingdom, where there are full interconnection rights. The United Kingdom represents only 16 percent of the total EC market in terms of population and income, but has well over half of the leased lines and 90 percent of the high capacity lines (2 Mbps),

In Europe, the OPN Directive should make the market structure for private network suppliers oligopolist, not only for facilities-based leased line suppliers[57] but for resellers and other value-added services

In European countries there are relatively few private networks, the growth potential is enormous.

55 In a recent paper, Professor Eli Noam discusses the possibility of such a "power play" by the Commission: "Telecommunications Reforms at the Periphery: Role Models of Followers," draft, Columbia Institute for TeleInformation, Columbia University Business School, September 1992. The possibility may not be slim. On February 1, 1993, the new U.S. Trade Representative (Ambassador Michael Kantor) denounced the EC's Ut I lit ies Directive as containing "discriminatory procurement pract ices [t hat] prevent some of our most competitive companies from selling products such as telecommunications amd power generating equipment to government owned utilities. " As of March 22, 1993, Kantor said, the United States will prohibit the procurement of EC sourced products not covered by the GATT procurement code or other security-related agreements, and will also consider the feasibility y of withdrawing from the GATT government procurement code.

56 Organization for Econom ic Cooperation and Development, *Telecommunications and Information Policies: 1992/1993,* Pans, 1992, pp. 79-87.

57 "Facilities-based suppliers" are those firms that own and operate all or a large part of the network and equipment that they use to deliver services, or that build and lease such networks and equipments to ot her services providers.

providers. Competition may force the PTOs to offer high-capacity (45 Mbps) DS3 leased line services, not now available in Europe.

Value-added services

Value-added services[58] include applications such as electronic mail (E-mail), facsimile, database services, cellular communications, paging, high-capacity data services, EDI, transaction services (automated teller machine services, credit card authorizations, computerized reservation services. electronic funds transfer), and networked computer-aidcd design and manufacturing (CAD/CAM). ''Soft' \aluc-added services include network management and consulting, software engineering, network operations and systems support services. Local area networks (LANs), wide area networks (WANs), and metropolitan area networks (MANs) are here also lumpcd with value-added services because they are often used as the delivery mechanism for services.

The United Kingdom at present constitutes most of the market for value-added services, about 70 to 80 percent.[59] The market for Yaluc-added services is generally compctitive, and full of niche suppliers. It is possible for small innovative firms to compete successfully in these markets. However, very large firms that span a wide range of services offerings and have the capacity and geographical presence to serve large, multinational corporations may dominate the market in the long run.

Large firms that can offer multinational corporations a wide range of enhanced services may dominate the market in the long run.

Estimates of the total European value-added services market vary widely depending on how broadly the category is defined. A reasonable figure is about $5 to $6 billion for the networking, infomation, and delivery portion of the market (not including charges for private data nets, cellular, paging, and other mobile and satellite business services).[60] Annual growth estimates are generally as high as 20 to 30 percent.[61] There arc 3 million subscribers for cellular commu - nications services in the EC, making up a market estimatcd at $4.5 billion in 1990. In the United Kingdom, BT provides less than half of the cellular mobile services. but elsewhere PTOs dominate this market segment.

New wireless technology applications arc expanding rapidly; these include wide area paging, private and trunked mobile radio. mobile data transmission, GSM digital cellular communications, cordless phones. personal communications services, and satellite mobile services. The potential for market growth is very high. The United States and

[58] As here used, value-added or enhanced services are those that add value beyond pure transmission. Basic services are traditional switched services such as regulated local and toll voice services and some leased line services.

59 In many EC countries the PTO is the dominant supplier of value-added services, but tariff charges for PTO-provided network delivery are excluded from market estimates.

[60] Datapro, July 1990; CIT Research, 1992; U.S. International Trade Commission, April 1990. The U.S. International Trade Commission reported that in 1989 the EC value-added services market was S26 billion, compared with S50 billion for the United States. This, however, Included computer services and software. See *Third Followup Report on the Effects of Greater Economic Integration Within the European Community on the U. S.,* Pub. 2368, March 1991.

[61] U.S. International Trade Commission, 1991; Northern Business Information, 1990; Communications and Information Technology Research, 1992.

the United Kingdom, with relatively low prices, have market penetration of about 20 mobile phones per 1,000 population. The Nordic countries, which adopted a standard very early and have lower prices than the United States, have about 50 mobile phones per 1,000 people. Germany and France have 7 and 5, respectively; and some European countries do not yet have cellular services. This should be a high-growth market through the 1990s.[62]

Electronic data interchange (EDI) is computer-to-computer transfer of fixed-format data such as orders, invoices, payment instructions, and legal documents. This market is burgeoning in the United States. Only about 7,500 of the EC's 6 million companies were using EDI in 1992, and the market is only about $110 million, of which $65 million is in the United Kingdom. With many potential applications and the effects of public network interconnection, the market may grow at 50 percent per year for the next few years.

Two related technological developments may greatly expand the hitherto small European market for satellite communications. High-powered direct broadcast satellites will allow a large number of TV channels, including new high-definition television, to reach subscribers' small, inexpensive receiving dishes. The use of VSATs with high-powered satellites allows point-to-point data transmission where good wireline network infrastructures do not exist, as in portions of Central and Eastern Europe. The total market for satellite business services is estimated to grow from $350 million in 1991 to $1.3 billion by 2001 .[63]

The traditional public broadcasting monopolies are rapidly losing market share to new channels on satellite and cable television.[64] In the United Kingdom, much of the cable television activity is financed by U.S. firms. Cable television penetration in the United Kingdom is still only 1 percent but is growing rapidly. In France it is 3.7 percent and in Germany 31 percent; for comparison, in the United States it is 55 percent. Cable penetration is estimated to rise from 23 percent of European households in 1990 to 36 percent in 1995, with revenues increasing 300 percent by 1999 (from $4.6 billion in 1990).6s Satellite television is also expected to grow rapidly. Penetration rates are now very low—from zero in Italy to 5 percent in

[62] Organization for Economic and Cooperation and Development, 1992, op. cit. footnote 56.

[63] Communications and Information Technology Research, in "Satellite Earth Stations: New Window of Opportunity," *Financial Times*, Oct. 15, 1992, Sec. III, p. X.

[64] Between 1986 and 1990, the number of broadcast hours on European television more than doubled. Much of this growth was reruns of U.S. television programs. Strong growth (32 percent) is expected over the next decade, much of it from purchase of reruns. Until recently, most growth was in in-house productions by the monopoly (public) broadcaster. From 1985 to 1990, France's public television lost 67 percent of public viewing, Germany's 29 percent, and Italy's 41 percent. (R. Le Chain pion and P. Rasmoela, "The Positioning of Private and Public Channels in Europe," Twentieth Annual Telecommunications Policy Research Conference, Solomans, MD, Sept. 10, 1992.) But on October 31, 1992, an EC directive (which member-states are rushing to implement) setup a single EC market for television broadcasting and provided that broadcasters must reserve a majority of entertainment programming for European works. The implementation of this quota will be a significant trade policy issue.

[65] Kagan World Media, Ltd., 1991.

[66] Ireland is an exception, with 42 percent of households receiving satellite television.

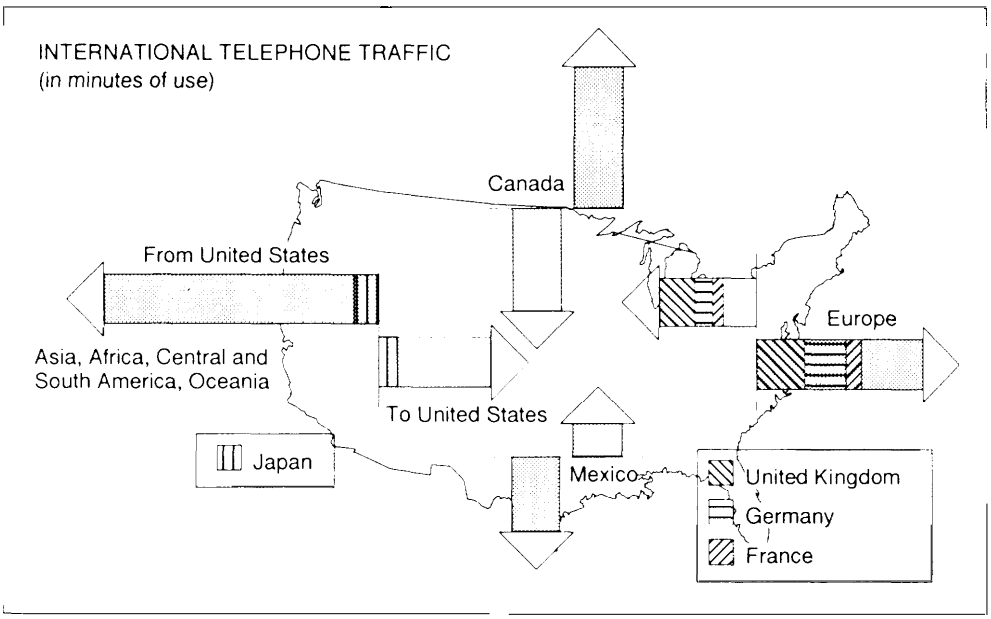


Figure 3-4. U.S. International Telephone Traffic, 1991

SOURCE FEDERAL COMMUNICATIONS COMMISSION, 1992

the United Kingdom.[66] Across Europe, penetration is expected to increase from 3 percent in 1990 (o about 16 percent by 1995.[67]

Network management systems and services is a small and fast-growing niche market estimated to grow about 40 percent per year through the early 1990s. Networked data, facsimile, E-mail, and online database services arc all expected to grow at about 20 percent per year. The United States dominates the field of on-linc database services, except for Reuters, the British/international firm specializing in financial data. The 1990 on-linc market for the United States, Europe, and Japan together was estimated in 1990 to be $10.3 billion, with the United States having 49 percent of the markct. Average annual growth for Europe was estimated at over 13 percent.[68]

The importance of U.S. trade in services

Services exports arc increasingly important to the United States economy. They arc now one-third the volume of merchandise exports, and growing briskly. U.S. services exports were $166,7 billion in 1992, 9.5 percent more than in 1991 and 41 percent more than in 1989.[69] The United States has a healthy positive trade balance in services,

[67] CARAT TV Market Forecast, 1992.

[68] Lydia Arossa, "Computerized Information Services: Economic and Trade Issues ın the Database Market," OECD DSTI/ICCP (92)6.

[69] Due to definitional and methodological changes ın data collection ın 1989, figures before and after that date are not comparable. However, ın 1988 services exports were 23 percent greater than in 1986.

$59 billion in 1992 and $52.2 billion in 1991.70 This should be compared with a merchandise trade deficit of –$ 105.3 billion in 1992 and –$73.4 billion in 1991.[71]

The European Community is the primary foreign market for U.S. service producers; almost a third of all U.S. exports of business services go to EC countries (an estimated $37.5 billion in 1991).

These figures cover only direct transactions in services and do not include revenue from sales of U.S. affiliates overseas. Such foreign investments account for about half of the total U.S. delivery of services to foreign citizens and organizations.[72] In this category, also, the United States has a favorable balance of trade, $11 billion in 1991, up from $8.5 billion in 1990.[73]

In telecommunications products and services taken together, the United States has a large trade surplus; but it has an overall deficit in telecommunications services, -$2.8 billion in 1991. This annual deficit has doubled since 1987. Why should the United States, which prides itself on being a leadcr in basic and enhanced telecommunications services, have a persistent and growing trade deficit in this sector?

The deficit in telecommunications services trade is, by a strange twist, a measure of U.S. strength in telecommunications, rather than a sign of lack of competitiveness. The telecommunications trade deficits are a result of asymmetrical traffic demand patterns and of international accounting and revenue settlement practices. When an international call is made over a public-switched network, the long-distance company in the country of origin pays the Iong-distance company in the receiving country for its services in routing the call to a customer. The amount of the payment, which is called the accounting rate, has been negotiated between the two companies. It is the same regardless of the direction of the call and is independent both of the collection rates (what the customer is charged) in either country, and of thc actual

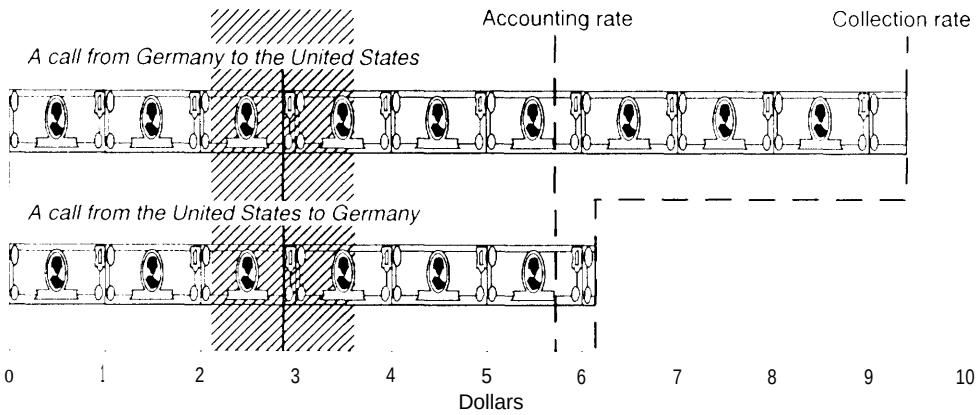
70 The total international trade in services is $700 billion (1991). The world's major services export ers are t he United States, France, Germany, the United Kingdom, and Japan. Most of the International trade in services is among the Organization for Economic Cooperation and Development countries, and these five countries together account for about 30 percent of t he OECD total. James Brian Quinn, "Technology in Services: Past Myths and Future Challenges," Bruce R. Guile and James Brian Quinn (eds.), Technology *in Services: Policies for Growth, Trade, and Employment* (Washington, DC: National Academy Press, 1988), pp. 38-44.

71 The merchandise trade deficit is often reported in newspapers as "the U.S. trade deficit," ignoring both the surplus in trade in services and other net income (direct investment receipts and payments, government receipts and payments).

72 Linda F. Powers, Deputy Assistant Secretary for Services, and Fred Elliott, Office of Service Industries, U.S. Department of Commerce, "U.S. Service Industries Face Open Quest ions," *Business America*, Feb. 24, 1992, pp. 9-10. Figures for sales to foreign persons by foreign affiliates of U.S. companies before and after 1989 are not exactly comparable because of "definitional and methodological improvements" in Bureau of Economic Analysis' 1989 Benchmark Survey. However, the proportion of crossborder transactions to the total is roughly 50 percent in 1987 and 1988 and 54 percent for 1989 and 1990; figures for 1991 are not available. Bureau of Economic Analysis, *Current Survey of Business.*

73 In crossborder transactions, travel and transportation services account for about 59 percent of U.S. exports and about 73 percent of U.S. imports, as a 5-year average, 1987-91. The second largest part of trade in services is royalties and license fees (12 percent of exports, 3 percent of imports).

A comparison of a 5-minute, peak-time call between the United States and Germany, 1991



Amount paid to the correspondent carrier to complete the call, as per the accounting rate

Amount retained by operator originating the call

Estimate of carriers' costs

SOURCE OFFICE OF TECHNOLOGY ASSESSMENT, 1993

Figure 3-5.
Accounting and Collection Rates

NOTES The accounting rate with Germany in 1992 was 0.8 special drawing rights or $1 14 (FCC, Statistics of Communications Common Carriers, 1991/1 992 Ed.).

The collection rate (i.e., what the caller is charged) for the U S.-to-Germany call is calculated as $1.77 [for the initialminute] + 4x$1 .09 = $6.13 (FCC).

The collection rate for the Germany-to-U.S call is derived from 5x$1 88 (TeleGeoraphy 1992, International Institute of Communications)

The costs to the carriers are estimated at $015 per minute at both the U S. and German end, this number is conservative.

cost to the phone company of de1ivering calls.

In one sense, the deficits represent good news; they are a side effect of lower telecommunications prices in the United States. They arc also testimony to the size and vigor of U.S. industry and its reliance on telecommunications. In the United States, customer charges for overseas calls arc much lower than in most other countries, because European countries subsidize basic services with international and business revenues; some countries also use telecommunications revenues to subsidize the postal system and public transportation. Because of lower costs and because of the size of the economy, about twice as many international calls are made from this country as arc received from overseas. Thus accounting rates cause much more money to flow out of the country than they cause to flow in.[74]

The U.S. Federal Communications Commission, the International Telecommunication Union, and the Commission of the European Communities are pressuring European telecommunications authorities to join U.S. firms in negotiating lower, cost-based accounting rates. To end the negative U.S. trade balance in telecommunications" services, however, will require not only lower accounting rates but also lower customer charges in Europe for international calls, so that the number of calls made in each direction comes into better balance.

[74] Kenneth B. Stanley, FCC, "Balance of Payments, Deficits, and Subsidies in International Communications Services: A New Challenge to Regulation," *Administrative Law Review, vol. 43,* summer 1991, pp.411 -438.

The telecommunications services trade balance will also be much improved if U.S. exports of value-added or enhanced telecommunications services grow significantly. Just as telecommunications services are a small part of all international trade in services (about 2 percent of U.S. exports and 5 to 6 percent of imports), value-added or enhanced services are a small segment of the overall market in telecommunications services. The value-added services sector is, however, likely to expand tremendously in the next decade.

The United States had a positive trade balance of $60 million in value-added services in 1991.75 In addition, there are massive investments by U.S. telecommunications companies in Europe that are too new to show substantial profits as yet, but in the near future are likely to become very profitable ventures. Telecommunications services will probably continue to be delivered primarily through foreign-based subsidiaries. Some economists assume this because communications are infrastructure-based services,[76] but it should be noted that many telecommunications and information services can actually be delivered electronically, without regard to geographic proximity. Nontariff trade barriers are more potent reasons to establish a presence within Europe. However, U.S. subsidiaries and joint venture firms do not necessarily enjoy all of the advantages of European firms, and as the European market expands and is liberalized, direct U.S. exports of value-added telecommunications services to Europe could grow strongly.

75 Bureau of Economic Affairs, *Current Survey of Business,* September 1992, table 2.

[76] See Bruce R. Guile and James Brian Quinn, op. cit., footnote 70.