Executive Summary

The web of supply and demand in the international telecom industry becomes more intricately woven each year. The purpose of the *TeleGeography* annual report is to help readers understand how that web is evolving through careful observation and rigorous reporting. The highlights of this year's edition follow.

Competition

As of July 2000, more than 2,800 companies worldwide were authorized to build international telephone networks. Three years before, there were less than 600. Although most of these companies are too small to be noticed, their gross impact on global traffic flows is hard to miss. In total, the facilities-based carriers which started business since 1989 now carry almost a quarter of the world's international call minutes. In places like Hong Kong and Germany, for example—where the incumbents had only lost their monopolies in 1998—new entrants gained more than a third of the international minutes market in just one year.

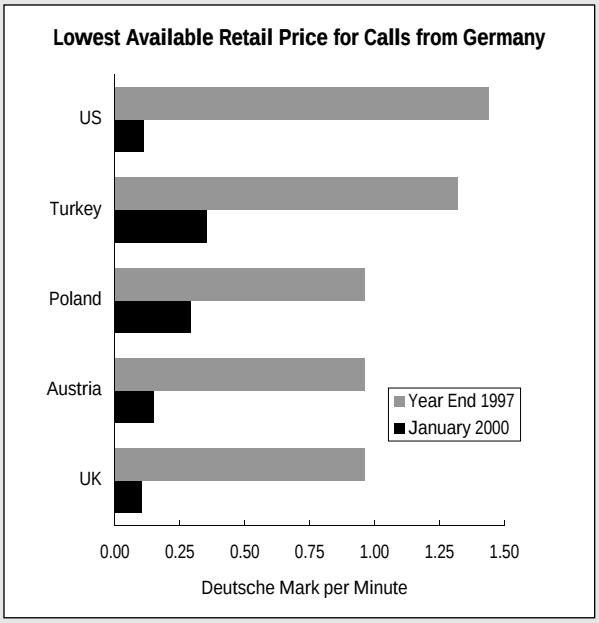
Pricing

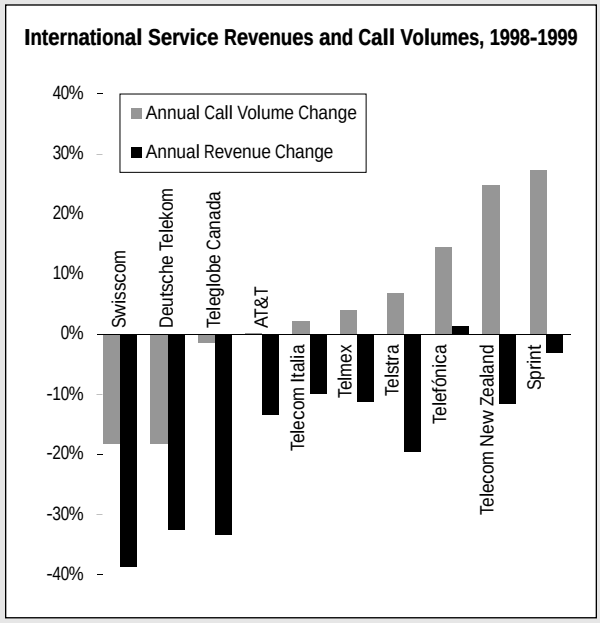
Prices for international calls are falling fast. Cutthroat competition in the international services industry is providing the incentive—and falling settlement and bandwidth costs the means—for carriers to slash prices. Call prices from parts of recently liberalized Western Europe (e.g., Germany) to many international destinations have fallen 90 percent in just two years. Ironically, the only thing holding up international call prices on many competitive routes is the cost of local interconnection at either end of the call. In the long run, as the settlements regime disintegrates in favor of an interconnection model, we can expect local, domestic long distance, and international consumer prices to converge. Just as we were going to press, the German regulator helped prove the point by permitting Deutsche Telekom to charge just 9 pfennigs (4¢) per minute for calls to the United States—only one pfennig more than a call to the apartment next door.

Facilities

The undersea bandwidth boom reached an unprecedented single-year growth rate in 2000. Submarine cables installed in 2000 increased aggregated trans-Atlantic bandwidth by a factor of 12 in just one year, to over two terabits per second. And while huge growth rates in long-haul capacity have been standard fare for the latter half of this decade, bandwidth at the edges—in the metropolitan area network (MAN)—has been in short supply until recently. This short-

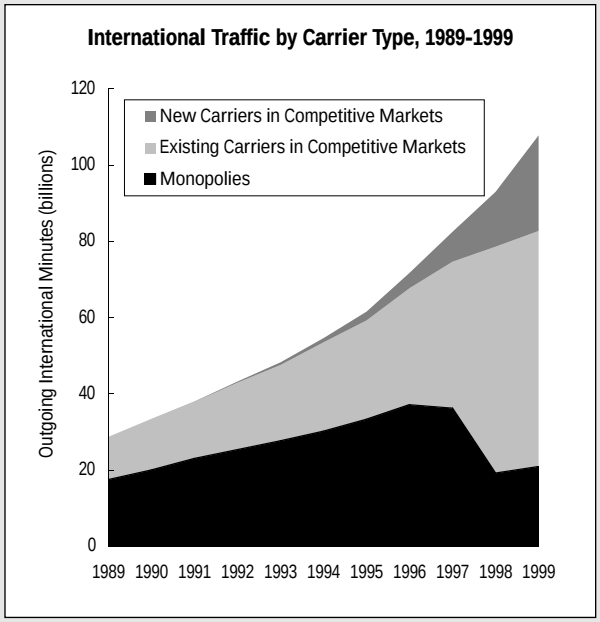
Figure 1. Falling Prices, Falling Revenue





Source: Regierungsbehörde für Telekommunikation und Post (RegTP), company reports, TeleGeography research

Figure 2. Top Carriers and Competition



The Top 10 International Carriers

Rank	Company (Country)	Outgoing Traffic (millions of minutes) 1998	1999
1.	AT&T (U.S.)	10,798.5	10,816.5
2.	WorldCom (U.S.)	7,195.0	8,294.9
3.	France Télécom (France)	3,911.0	4,390.0
4.	BT (U.K.)	4,249.3	4,029.1
5.	Deutsche Telekom (Germany)	4,711.0	3,860.0
6.	Sprint (U.S.)	2,916.0	3,714.4
7.	C&W Com. (U.K.)	2,646.2	3,177.0
8.	Telecom Italia (Italy)	2,339.4	2,390.6
9.	Swisscom (Switzerland)	2,258.0	2,259.0
10.	China Telecom (China)	1,711.5	1,950.0
	Top 10 Total	42,735.9	44,881.5
	Global Total	**93,350.0**	**107,800.0**

Source: TeleGeography research

age sparked a MAN building boom—first in the U.S. and then in Europe. In most international business cities, at least three (and often more) networks are being constructed, creating a unprecedented capacity infrastructure filled with many hundreds of fiber pairs.

Internet Backbones

So what is filling up all this new capacity? Although people do make more phone calls each year, much new bandwidth is being devoured by hungry Internet service providers (ISPs). In 2000, ISPs began to take advantage of the fiber explosion, and some upgraded their international backbone connections from 155 Mbps to 2.5 Gbps (or 2,500 Mbps). This led to a tripling or quadrupling of bandwidth on many routes, especially those connecting North America to Europe (13 to 56 Gbps) and to Asia (6 to 20 Gbps).

Traffic Flows

International telephone traffic grew by over 15 percent in 1999, to 107.8 billion minutes, fueled by falling prices and the mobile phone boom in Europe and Asia. Call volume grew especially rapidly in Western Europe, where new carriers piled into recently liberalized markets, and where mobile operators added 75 million customers. International traffic from countries such as the Netherlands and Germany, which had been growing at five percent or less in 1996 and 1997, increased by 14 to 18 percent in 1999. Nevertheless, demand did not grow fast enough to compensate for the steep drop in prices, as many carriers, including Telstra, Sprint, and Telmex, reported increased call volumes, but lower revenues from international calls.

Mobile phones played an increasingly important role in international telephone traffic in 1999—approximately 11.5 percent of international calls were placed from mobile phones. Almost two-thirds of this traffic was generated in Europe, where cross-border roaming contributed substantially to international call volumes. Swisscom, for example, reported that mobiles originated one-third of outbound international calls in 1999.

Voice over Internet Protocol (VoIP) traffic began to have an appreciable impact on international call volumes in 1999. Total international VoIP traffic grew more than tenfold, to approximately 1.7 billion minutes. Although VoIP accounted for only approximately 1.6 percent of total international traffic in 1999, it had a disproportionate impact on some routes, particularly from the U.S. to developing countries. The largest route for international VoIP, by far, is from the U.S. to Mexico. In 1999, calls between these two countries accounted for nearly 30 percent of all international VoIP minutes.

Conclusion

This year's edition of *TeleGeography*—the most comprehensive yet—expands on the points above with a collection of 15 topical essays and over 250 statistical tables and charts. Like the markets we cover, however, the form and function of TeleGeography are evolving. We welcome your questions, comments, and criticisms to help improve future editions. Please send your correspondence to the coordinates listed on the title page of this book.