530

# Telecommunications Strategies in the Developed World: A Hundred Flower Blooming or Old Wine in New Bottles?

Eli Noam and Richard Kramer



Columbia Institute for Tele-Information
Graduate School of Business
809 Uris Hall
Columbia University
New York, New York 10027
(212) 854-4222

**Telecommunications Strategies in the Developed World:**
**A Hundred Flowers Blooming or Old Wine in New Bottles?**

Eli Noam and Richard Kramer
Columbia Institute for Tele-Information

## I. Introduction

The process of providing telecommunications services and equipment in developed countries has traditionally involved a closely knit community of interest groups. Until the late 1980s, most countries combined postal and telecommunications functions under the same roof. These civil service PTTs (post, telegraph and telecommunications administrations) go back to the age of European absolutism when postal monopolies were first established (Noam, 1992) and have since spread to most of the world. The PTT's operations were typically controlled through governmental regulatory authorities. They held a monopoly over all postal and telecommunications services and were closely allied with domestic manufacturers of telecommunications equipment. Internationally, they collaborated through various cartel-like organizations and coordinating agencies. Additional support groups in this "postal-industrial complex" were labor unions and rural populations.

After a century of institutional stability, the PTTs underwent a metamorphosis in the 1980s. They were separated from postal functions, and in some cases from direct civil service status, and renamed themselves public telecommunications operators (PTOs). They followed different institutional and legal models, and pursued varied strategies. Yet the question is raised: but did the new strategies and structures herald real change and diversity, a blooming of a hundred flowers in the telecommunications field? Or were they largely the old wine of PTT control in new bottles? This paper will argue that for all of the diversity of institutional arrangements the new PTOs have emerged from a turbulent decade with greater power than before. However, this condition is temporary. In time, corrective forces will emerge. What we are witnessing today, therefore, is the golden age of traditional telecommunications organizations.

## II. Reform of the old PTT system

For most developed countries, the trend of economic history had been toward increased public control. Joseph Schumpeter described capitalism in a no-win situation: its economic success and creative processes undermined the foundations of the private sector. Yet in the 1980s this trend appeared to be reversed. Now, public enterprises around the world were the ones being challenged.

In telecommunications, one route was laid out by the U.K., where the conservative government of Prime Minister Thatcher created and privatized British Telecom. Japan pursued a similar strategy, privatizing the domestic carrier NTT, inviting competitors into the market and permitting new international carriers as rivals to the traditional KDD. The U.S., in particular, forged ahead with competition, introducing it first into long distance and then into local service. It dismembered the private near-monopoly giant of telecommunications, AT&T.

On the other hand, France in the 1980s took a more traditional statist approach and increased the role of government. The Socialist government made high-technology a national priority and nationalized much of the French electronics and telecommunications equipment industry to meet this goal. The effect was that the French actually created, for a time, a state-owned analog of the old AT&T system: a vertically integrated complex of equipment manufacturing coupled with a telecommunications transmission monopoly and an R&D laboratory. Conservatives, returning briefly to power in 1985, re-privatized several of the equipment firms, and the telephone administration was gradually made more independent. But the state and its affiliated institutions remained in charge, continuing the French tradition of industrial policy for the telecommunications and electronics sectors.

In most of the developed world, telecommunications strategies were somewhere in between the U.S., British and Japanese market ideology and the French statist policies. The classic model was set in the Netherlands, where the traditional PTT was split into postal and telecommunications bodies under the managerial autonomy of a public corporation. This model was eventually followed in most European countries, where the initial resistance of PTTs gave way to increasing support.

Other countries instituted hybrid strategies. Spain partly privatized its monopoly operator Telefónica. Italy, Portugal and Denmark attempted to consolidate separate service providers. Finland strengthened its independent local companies. Sweden opened its market to new entrants. Australia privatized its national carriers along service segments, while New Zealand totally deregulated telecommunications, selling its traditional monopoly carrier Telecom New Zealand to U.S. firms, abolishing the formal regulatory body and permitting others to enter as competitors in all telecommunications services. Singapore aggressively used telecommunications to develop other sectors of its economy. Many Latin American countries privatized their monopoly operators in debt swaps to improve credit-worthiness, and for some, the infusion of foreign capital allowed dramatic improvements in service. And in Eastern Europe, where networks had been developed sparingly as a form of political control under the old regimes, rapid expansion and restructuring of telecommunications as part of democratization was considered.

## III. The policy portfolio : A hundred flowers?

In this policy Tower of Babel, can one distinguish some basic structures and strategies? We will identify eleven fundamental building blocks of national strategies for telecommunications. The first four strategies pertain to the structure and form of telecommunications markets. They are **liberalization, devolution, consolidation**, and **deregulation**. In various combinations, they provide the materials for the new structures that were built in the '80s. They are concerned with the status of a single unified PTT monopoly. Two other strategies, **corporatization** and **privatization**, deal with the question of ownership and control, and do not require a challenge to monopoly. A third set of strategies are those of international collaboration: **transnationalization, international alliances,** and **harmonization**. A final set of strategies are those of high technology development: **vertical integration,** and **industrial policy**. These approaches are now examined in greater detail.

### A. Market Structure Strategies

#### 1. Liberalization

Liberalization means the introduction of competition into monopolized markets. For equipment, it may involve adoption of standards which do not favor any group of suppliers, simple procedures for type approvals, non-discriminatory rules for public procurements, and the absence of protective quotas. On the services side, liberalization may involve licensing entrants to provide a particular service, such as cellular telephony or long-distance. Liberalization policies often require government scrutiny to prevent anti-competitive behavior by the former monopoly. In some cases, governments create or support firms to compete with the monopoly operator.

In the services sector, the most common liberalization strategy is to license new entrants to compete in specific markets. The European Commission in Brussels encouraged liberalization of value-added services and cellular markets. In the U.S., the FCC developed policies for long-distance, cellular, and local competition, the latter with some of the state commissions. In Japan, the government licensed facilities-based carriers and service providers (Type I and II carriers). South Korea introduced two new carriers to compete with the existing PTO. In Britain, Mercury was licensed as a rival long distance carrier. A more radical liberalization strategy is to open every market segment to unlimited competition. This was done in New Zealand.

Liberalization should not be confused with deregulation. Deregulation is a reduction in government-imposed constraints on the behavior of PTOs. One may, for example, have a deregulated monopoly, or a tightly regulated multi-carrier system. The experiences in the U.S. and the U.K., two of the most liberalized markets, reveals that more rather than less regulation is often needed in the early stages after markets have been opened. For example, interconnection arrangements may have to be set. A "level playing field" among competitors may have to be ensured through the application of anti-trust laws, or, conversely some competitors may receive a preferential treatment in order to protect competition in its infancy. Thus, the experience of liberalization has shown that the introduction of competition into the market often leads to a period of regulatory scrutiny.

## 2. Devolution

Devolution is a policy of dismantling a single monolithic structure into several units. On one level, this has occurred wherever the postal and the telecommunications authorities were split. Another more important level is the devolution within telecommunications organizations, along lines of functional operations or geography.

The prime example of devolution is the divestiture of AT&T in America into local and long distance operations. So far, no other country has pursued devolution, but it is under consideration in Japan and Britain. Devolution is not a necessary condition for either liberalization or privatization, although it addresses the problems of competitive barriers to new entrants. Devolution serves the long term policy objective of isolating market segments which may at some point be subject to competition. Devolution can also be part of liberalization, where some segments of the market are opened up to competitors, and others are not. If a differentiated regulatory treatment of carriers active in both open and restricted markets is sought, a policy of devolution may be chosen.

For example, in the U.K., portions of BT face competition, such as in VANs and long distance service. Other market segments remain monopolistic, in particular the critical local loop access, despite regulation efforts to introduce competition. Hence, an AT&T-style divestiture of BT has been proposed by the Labour Party (Garnham, 1990).

However, devolution does not necessarily lessen monopoly power, because it may substitute a shared monopoly for an end-to-end national one. In Italy, the public network is segmented along functional lines among several organizations (local, domestic long distance, satellite service, international service, telex) but each operator is monopolistic in its service segment. Similarly, Portugal and Finland have regional or local monopoly carriers. In Canada, mostly private firms hold regional monopolies in local service and jointly control long-distance services.

## 3. Consolidation

The opposite strategy to devolution is consolidation. Consolidation has occurred where a country's telecommunications were divided for various historical reasons along geographic or functional lines. The rationale for consolidation is to capture the economies of scale and scope of a single monopolist, which are important to competition in global markets.

In Denmark, the country's four regional service providers were merged with the national PTT that provided long-distance service to create a single operator, TeleDenmark. Similar plans to create national integrated "super-carriers" were advanced in Italy and Portugal but have met stiff political resistance. The East German network was absorbed into the West German Deutsche Bundespost Telekom system after unification.

Consolidation has also been a major trend in the equipment industry. With the rising costs of research and development, especially for digital switch software, the number of major manufacturers has been shrinking through mergers and acquisitions. The French company Alcatel acquired ITT's far-flung telecommunications manufacturing operations, as well as Italy's Telettra. Siemens took a stake in the U.K. telecommunications firm GPT and acquired the American firms Stromberg-Carlsson and Rolm, and the German computer firm Nixdorf. Canada's Northern Telecom bought the U.K. manufacturer STC. AT&T forged alliances with Italtel, the leading Italian manufacturer, and for awhile with Philips and Olivetti. Smaller national companies offered products of the larger international firms, such as in Switzerland, Portugal, Austria, and Turkey.

### 4. Deregulation

Deregulation is an imprecise concept and is often used as a synonym for liberalization, that is, for a lowering of entry barriers or other restrictions. It more correctly means a reduction in red tape and government-set constraints. As mentioned, deregulation can be at odds with liberalization: the entry of new competitors tends to complicate things much more than an outright monopoly and can lead to a more extensive set of rules. For example, the need to keep an interoperating system functioning requires access and interconnection rules, such as Open Network Provision in Europe and Open Network Architecture in the U.S..

Typically, full deregulation is not an early option, because of the unequal power of competitors on the one hand, and the politics of protecting the monopoly system, on the other. Also, governments are typically unwilling to cede all control over the vital telecommunications infrastructure.

## B. Ownership Strategies

### 5. Corporatization

Corporatization is the transformation of the PTT into a semi-autonomous structure, which may still be state owned, but controls its own managerial and administrative functions. The monopoly status is not touched by corporatization as such, though once the close link to the government is severed, a process is set in motion that makes further changes more likely.

Sometimes the corporatized entity is described as a "private" firm, in the sense that it may be organized under private law provisions, which determines its status in, for example, contract and labor law. But that description confuses legal detail with the reality of control, which is still very much governmental. In other instances, a minority or shares may be issued to the public, though control is still retained by the state.

Corporatization may be a first step on the road to privatization. It is often sought by the PTOs themselves, who need greater managerial and budgetary autonomy to pursue long range investment projects and the ability to raise investment capital outside of government borrowing ceilings. Corporatization may also derive from a public desire to inject new life into sleepy monopoly bureaucracies.

Because corporatization loosens direct administrative controls, it is usually accompanied by the creation or strengthening of a government regulatory mechanism. Such was the case in the Netherlands, where the Dutch PTT was split from the state control into a public corporation, with regulatory authority vested in the Ministry of Transport and Public Works. In Belgium, the RTT was renamed Belgacom and regulated by the new Belgian Institute for Telecommunications and the Ministry of Economic Affairs. After a national debate over telecommunications reform, France Télécom was corporatized in 1990. In Germany, corporatization created the Deutsche Bundespost Telekom, with its employees retaining their attractive civil service status.

## 6. Privatization

Privatization involves the government sale of shares in the PTT to private investors. However, ownership need not affect the monopoly status. In the United States, AT&T was private and a near monopoly for a very long period. In Canada, private regional monopolies exist, and long distance competition has only recently been contemplated. Most European privatizations are only partial. In the 1980s, the Italian government sold shares totalling 40 percent of the Italian monopoly local carrier SIP. It also sold 42 percent of SIP's parent company STET, but retained overall control. In Spain, the government sold 65 percent of Telefónica, yet still controlled the appointment of its chief executive and top management. In Denmark, the state sold 49 percent of the shares in the newly created teleDenmark, but a large block was purchased by the state pension fund. Non-telecommunications concerns have often intruded into privatization decisions. Sweden put the partial privatization of Televerket on hold until the Swedish stock market recovered from a recession. In the U.K., Conservatives pressed for the sale of the remaining 49 percent of British Telecom before a general election which the Labour Party might win.

Privatization may encourage efficiencies of operation. But quality of service may fall if an unconstrained monopolist seeks cost reductions without regard to its captive customers. Privatization can also have the unintended effect of strengthening a monopoly, as shareholders become a political constituency to preserve a monopoly. Widespread shareholder involvement in the U.K. created a deregulatory force opposed to curbs on BT's dominance which might threaten profitability. In Spain, Telefónica is protected by the "widow and orphan" status of its stock.

Ownership strategies depend on national economic development. Privatization in less developed nations derives from a need to raise capital. Indonesia, for example, offered an infrastructure role for private capital. Throughout Latin America, privatization was used as a method to reduce the heavy debt burden. In Eastern Europe, it is led by the need for foreign capital and expertise. In Malaysia, it was part of a national program to increase the ownership share by ethnic Malays in the national economy.

In contrast, in more developed nations, privatization and corporatization aim to overcome borrowing or investment restrictions on public enterprises, and to provide a means to shake up bureaucratized enterprises.

## C. International Strategies

### 7. Transnationalization

Transnationalization is a strategy of large and advanced PTOs, to expand beyond national markets. As these PTOs achieved universal telephone penetration, they expanded their sights geographically. This strategy has been pursued through acquisitions, international service offerings (such as network software or management) and by establishing foreign subsidiaries. British Telecom, for example, purchased a leading U.S. value-added service provider (Tymnet) and a large stake in a major U.S. cellular carrier (McCaw), and established a firm to serve the network management needs of large multinational users (Syncordia). France Télécom acquired part of the Mexican telecommunications monopoly, TelMex, and entered the U.K. by providing packet-switched network service in partnership with the London Underground. Spain's Telefónica sought to leverage its linguistic affinities with Latin America through investments in the national carriers in Argentina, Venezuela and Chile. The U.K.'s Cable & Wireless has long been a transnational carrier, providing local service in Hong Kong and the Caribbean and international services, with the strategy of linking the world's major financial centers. It participated in fiber optic cable projects crossing the Atlantic, Pacific and North America, and established with US Sprint a global virtual private network service.

U.S. firms, specifically the Bell companies, have also sought to transnationalize their operations. Nynex provides telephone service in Gibraltar. Bell Atlantic and Ameritech acquired Telecom New Zealand. Southwestern Bell bought a stake in Mexico's TelMex. US West sought to join a coalition providing trans-Siberian service. Several U.S. companies were involved in cellular services in Western and Eastern Europe, and won cable television franchises in Britain.

## 8. International Alliances

International alliances offer another method for PTOs to expand their markets. Across Europe, most PTOs have entered joint ventures and service consortia. Such partnerships allow PTOs to gain some access to heavily monopolized markets where they are not allowed to compete with the local operator. Alliances also spread the risk of new service ventures across multiple participants. This has traditionally been the case with consortia such as Intelsat and Eutelsat for satellites and the TATs for transoceanic cable. The participation of multiple PTOs ensures a larger target market and customer base for new services, and helps PTOs to acquire expertise, and provides a defense against the entry of established foreign carriers into domestic markets. For example, competition between France Télécom and DBP Telekom is less likely if they are engaged in multiple joint ventures and alliances.

Many advanced PTOs, for example, participate in the Infonet consortium. Infonet, whose largest shareholder is MCI, provides value-added services worldwide through 11 member PTOs which might otherwise be competitors. Other joint ventures include those between AT&T, BT, KDD and France Télécom, and between Cable & Wireless and US Sprint. Sweden's Televerket and PTT Telecom Nederland formed a joint venture, Unicom, to serve large users and for international presence. AT&T and PTT Telecom Nederland teamed up to provide long distance service to the new Republic of Ukraine.

**9. Harmonization**

Harmonization is the coordination of telecommunications policy among countries. Harmonization may include the creation of common standards for equipment or the development of common policies for provision of service. Harmonization can be managed through regional bodies such as the European Commission and multilateral groups such as the International Telecommunications Union and its coordinating body CCITT, as well as through bilateral negotiations. It may lower barriers to entry in markets by providing a single set of regulations. But such rules may also be set in a restrictive fashion, such as a cartel-like prevention of certain forms competition to monopolies. For many years, harmonization was a code word for international restrictiveness, as exercised by PTT organizations such as CEPT and CCITT. For example, the harmonized rules of the CCITT prevented competition in telex service from indirect routing through cheap service countries. It took a challenge before the European High Court to abolish this coordinated restriction. Such challenges have multiplied in recent years. Other international organizations, such as the EC, the GATT, and the OECD have pursued harmonization on a more liberalising basis.

## D. Competitiveness Strategies

**11. Industrial**

In almost every country, telecommunications policy is set within larger industrial development, and PTOs were given a major role in national high-technology. These industrial policies tended to support the establishment of "national champion" electronics firms, and implicitly assured them major shares of public procurement contracts at prices that often shared in the monopoly profits of the operator. In some cases, direct financial support for the electronics and telecommunications sectors was provided by PTTs. They also deployed and supported proprietary technologies and protocols.

France, Singapore, and South Korea have been particularly active in developing industrial policies for telecommunications. In the French government's high-technology agenda for the IT sector, the "filière electronique," France Télécom was assigned a central role. It provided a market for 45 percent of the French equipment industry's production and demonstrations to potential foreign buyers. The government already heavily subsidizing the nationalized electronics firms Bull and Thomson forced France Télécom to take managerial control of Bull's private data network.

In Spain, similarly, the government assigned to Telefónica a role of locomotive in high-technology development. In Singapore, the telecommunications infrastructure was funded as a platform for other high-technology industries. Even in the United Kingdom, the government spent £350 million on information technology development at the same time it espoused free markets.

**11. Vertical integration**

In some countries, PTOs integrated vertically into the manufacturing of telecommunications equipment. In Spain, Telefónica holds a large stake in Standard Electrica, Spain's largest electronics firm, as well as several other high-tech firms. In North America, AT&T, GTE, and Bell Canada had far-reaching manufacturing operations. Eventually, the divestiture separated AT&T from the local exchange companies, GTE sold its equipment business, and Northern Telecom was partly spun off. In Italy, the network operator and largest equipment manufacturer are owned by the same partly-privatized government holding company. Sweden's Televerket owns the major domestic equipment firm, Teli. Under the new wave of corporatization and privatization, other PTOs, having gained freedom have sought to expand vertically. British Telecom bought the ailing Canadian PBX manufacturer Mitel, yet could not turn it around. Equipment manufacturers also entered service markets. Alcatel, DEC, and IBM, for example, offered value added services.

## III. Old Wine in New Bottles?

These eleven strategies constitute the primary policy menu in the 1980s. They are often described as major steps of reform. Yet how much difference did they really make to the power of the PTOs?

In the area of market structure, liberalization had its limits. The notion of an infrastructure monopoly still has substantial political support almost everywhere. Basically, only the US, Japan, the UK, Sweden, and New Zealand permit alternative physical non-mobile networks. Similarly, PTOs most everywhere have also found political support for their monopoly over voice service, and its resale is rarely permitted. Brussels did not attack the PTOs control over "basic services," which included both the provision of voice service and the physical telecommunications infrastructure. This has turned the debate over liberalization into nitpicking arguments over what constitutes "value-added".

The actual reduction of monopoly thus tends to be exaggerated. A Danish political agreement illustrates the doublespeak: "There will be competition within all spheres of telecommunications in the next few years, apart from telex, ordinary telephony, radio-based mobile services, satellite services, the infrastructure and the use of the telecommunications network for broadcasting radio and television programmes." (Danish Ministry of Communications, 1990). In other words, "everything" is liberalized, except for the remaining 95 percent. Similarly, though EC laws instituted in principle the right to offer value-added services in any country, the details in many countries tended to be restrictive.

Another limit on liberalization is the pace of its actual implementation. After eight years in the U.K. market, Mercury has under 3 percent total market share and its core business remains serving firms in London's City as a second source for data transmission capacity, and the carriage of trunk calls for businesses. Its residential service failed to gain even one percent of the market (Oftel, 1991). Where no entrenched incumbent existed, competition is better developed. For example, BT's competitor in the cellular service duopoly, Racal Vodafone, holds over 50 percent market share. Because the value of a headstart, the launch of second cellular carriers in competition with the national PTO was delayed in Germany, Italy, and Spain. The EC community has likewise suffered numerous delays in its efforts to implement liberalized rules for service provision. Thus, where competition with a monopoly exists, it is often a David versus Goliath contest. (Kramer, 1991). In such a situation, deregulation strengthened PTOs, because restrictions on them were lifted while competition was still embryonic.

In the equipment market, the liberalization of procurement sources actually enhanced the power of the monopoly PTOs. By opening the public procurement process to additional vendors, PTOs are in a better bargaining position to obtain favorable contract terms. They are no longer tied in to the technology developed by national champion equipment firms. Yet the larger PTOs can still dictate technical specifications to manufacturers.

Only the liberalization of terminal equipment has reduced PTO powers, but such liberalization was largely an accommodation to reality. The market had already liberalized itself by numerous consumers simply but illegally buying cheaper and more varied equipment outside the official PTT distribution.

Similarly, devolution did not touch PTOs. Only the US has divested its monopoly into several pieces. Similar attempts elsewhere have been resisted by PTOs. On the contrary, several countries attempted to make their carriers stronger by consolidation, such as Denmark, Italy, and Portugal.

What have been the impact of changes in ownership and control ? Here, too, reforms have increased PTO power. Corporatization substituted managerial and financial autonomy for the direct governmental operational control of PTOs and the political accountability that came with it. At the same time, the government ministries which assumed regulatory power tended to be ineffective. These ministries have only a handful of experts to confront the huge telephone organizations. In Sweden, Televerket had 42 thousand employees, and the regulative ministry a telecom staff of only six. Most of those perished in a single plane crash in 1989.

Similarly, privatization has strengthened PTOs. The presence of shareholders to which the PTO must answer has added new incentives for improved performance which were largely absent in the past. Privatization also curbed some market liberalization by creating a wide constituency of shareholders who oppose sweeping reforms. This used to be the case in the US in the past, and is now with Telefonica and British Telecom. Similarly, NTT's remaining shares have not been sold by the government in order not to depress the share price and hence hurt millions of investors.

The international strategies of PTOs, such as transnationalization and alliances have similarly strengthened their position. The PTOs are becoming far-flung global organizations, involved in numerous activities that cease to be transparent to governments. Competitors assert that these activities are supported by the monopoly profits from basic service. At the same time, many PTOs have also formed alliances among themselves, often as a market sharing arrangement.

Such cooperation is also manifest in policy harmonization, which also often leads to a continuation of the traditional stability. While harmonization may eliminate restrictive national rules, it is just as likely to be used to prevent competitive behavior by establishing a policy cartel.

Virtually all countries still assign an important role in developing high technology to their telecommunications organizations. As electronics and information-intensive service industries succeeded heavy industry as key determinant of national economic advancement, PTOs are an increasingly important lever to develop these sector. In some cases, regional programs, such as the EC's RACE and STAR, supplement the national efforts.

## IV. Conclusion : The End of a Golden Age?

What have these strategies and reforms meant to the traditional telecommunications organizations? They have not been harmed, and indeed, they have benefitted. PTOs enjoy a dominant position in the market. They have been energized. Their competitors are tiny, regulatory authorities are frequently underperforming, and their role is enhanced by national industrial policies. (This is not to say that some users and competitors have not also benefitted. Telecommunications are a growth field rather than a zero-sum game.)

This suggests that reforms, instead of being instituted from the outside to curb the traditional monopolies, were rather sought by the PTOs themselves. Reforms were originally advocated from outside and at first resisted by the PTTs, which then reshaped them into accommodating forms.

Will the present PTO dominance last?  Given the dynamic forces of the telecommunications market, this is unlikely. In time, PTO market share will decline as their competitors will grow in size and gain interconnection right; presently unprepared regulators will become more effective; the PTO's national role in industrial development policies will be shared with other firms; PTO cartel collaboration will change to more head-to-head competition. New domestic entrants will seek opportunities in specialized and general markets, as will foreign entrants, some of them PTOs themselves. Liberalization at home will become critical to PTOs seeking reciprocal market access abroad. Other entrants will be specialized carriers, such as cellular companies, cable TV providers, and VAN resellers.

The notion of the single territorially defined carrier for an entire country's electronic information flows is not sustainable in the long run. The strategies followed in the 1980s and 1990s have set forces in motion that will in time assert themselves. What we are witnessing today is the golden age of PTOs, but it will not last.

Bibliography


Danish Ministry of Communications, 1990, Political Agreement on Telecommunications Structure," Press Release, 22 June.

Garnham, Nicholas, 1991, Telecommunications Policy in the United Kingdom, London: Fabian Society.

Kramer, Richard, 1991, A Faith That Divides: Competition Policy in European Telecommunications, Philadelphia, PA: University of Pennsylvania, Annenberg School for Communication.

Oftel, 1991, Annual Report, London: Her Majesty's Stationery Office.

Noam, Eli, 1992, Telecommunications in Europe, New York: Oxford Univ. Press.


aw:glob:1.29.91