

Incidental Paper

**Communications Networks
for Finance and Trade in the
USSR and Eastern Europe**

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Program on Information Resources Policy

Harvard University

Center for Information
Policy Research

Cambridge, Massachusetts

An incidental paper of the Program on Information Resources Policy.

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June 1991, I-91-1

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**Communications Networks for Finance and Trade
in the USSR and Eastern Europe**

Executive Summary

Morris E. Crawford

- Soviet and East European hopes for a place in global markets rest on making fundamental changes in their domestic economies. Telecommunications is a key sector, particularly for business networks that are the nerve systems of global trade and finance. But their systems are outdated. Eastern telecommunications institutions are as obsolete as the equipment. The East Europeans and Soviets face problems like those the West has dealt with for three decades - problems arising from changing economics and technology.
- The response in the West has been a worldwide movement away from the hierarchical structures of national telecommunications and toward an intensely competitive and decentralized international industry. But decades behind the Iron Curtain has done little to prepare the East for the types of communications economics that are shaping the 1990s. Isolation from global technological developments and from market economics produced bureaucrats and businessmen lacking experience with networks and unfamiliar with the corporate world that runs them.
- Eastern governments are now beginning to rehabilitate their telecommunication infrastructures. Despite endless problems, from systems design and management to jobs and finance, they are all undertaking major communications programs. Their officials recognize that modernization must be accompanied by some degree of institutional reform, for instance, that competition be allowed in a traditionally monopolistic industry. But as recent entrants to the "information age," these countries are uncertain about what this means and politically divided about how to organize for such changes. Policy making thus has to operate on a "learning as you go" basis.
- The Soviet bureaucracy has shown little zeal for reform of its institutional structures. Although restructuring has impressive advocacy in the Supreme Soviet and the Republics, the central bureaucracy has become increasingly aggressive in heading off reform proposals. Hungary, Poland, and Czechoslovakia have gone farther. Motivated by hope of membership in the European Community, these countries are aligning their telecommunications structures and standards with those in the Community, and taking the

first steps toward competition in telecommunications services and open access to the system. Reform for East Germany is a part of unification and its PTT is being assimilated into Bonn's Deutsche Bundespost Telekom.

- Although telecommunications modernization has been launched in the East and international commerce is likely to show growing returns in the near future, there is little prospect for any of these countries to close its communications gap in the 1990s. Decades of command communications have left these countries with little choice but a step-by-step approach that might in time provide the market communications necessary for global trade and investment.

Commercially minded governments in the USSR and Eastern Europe hope to make themselves prominent players in world investment and trade and to become a part of an increasingly dynamic and wider European Community. But attainment of these goals will remain limited until they upgrade their telecommunications systems. "You can't develop a market economy and attract foreign investors", a leading reformer in Czechoslovakia says, "if you can't get a telephone call through or receive a fax".¹ Even more important are the business information networks that cannot be presently provided by telecommunications systems in the East.

Lack of a suitable framework probably presents more difficulties for the East than does its outmoded equipment. Although there are great difficulties to be overcome, ways can be found to update equipment. The real problem is that these countries have been on the outermost fringes of the information age from its beginnings four decades ago, and are only now developing instincts for business networks and telecommunications systems as enterprises for production and investment. These countries thus have the dual problem of compensating for past isolation and of restructuring for market communications and market economies.

The Changing Economics of Telecommunications

The business communication networks that are commonplace in competitive markets are a rarity behind the recently fallen Iron Curtain. No financial or industrial multinational can compete effectively without access to the information networks that western banking executives find so necessary that they call them "the key determinant of success or failure". A fully integrated information and communications staff, say such officials, will be necessary for any multinational that intends to compete globally in the 1990s.

However, the Eastern central planners have insulated their economies these several decades not only from the uncertainties of banking and commerce, but also from the institutional changes of financial and communications technologies. Elsewhere, telecommunications and

information services have been in transition for a decade or more, creating systems to more effectively service the trade and finance networks of a computerized and digitized world.² These changes have been psychological as well as technological, and have involved the reshaping of corporate cultures and conventionalized relationships at least as much as the acquisition of computer banks and networking software. The institutional restructuring in the West has been accompanied by endless social, legal, and economic battles. Although they can ill afford further delays in restructuring their economies, the countries of Eastern Europe and the Soviet Union are ill-prepared to take on such traumatic institutional reform.

Changing communications economics in the West demonstrate why restructuring is crucial in Eastern countries that seek to become market centered. In the West, such changing economics have forced the "natural monopolies" in communications to share power and decision making with multinational corporations and financial institutions. The evolution from "natural monopoly" to market communications is a consequence of complex and very basic changes in the economics of Western telecommunications industries. Three techno-economic forces are breaking down the hierarchical structure and leading to a decentralized, intensely competitive industry.³ First is the falling cost of switching relative to the cost of transmission, second is the proliferation, in both number and variety, of terminals and their associated uses, and third is the emergence of new telecommunications channels.

Relative Costs

Costs of both transmission and switching are declining, making telecommunications services cheaper and thus the demand for them greater. Less well recognized is a shift in the relative costs of switching and transmission. When switching costs were high relative to transmission costs, it was economical to use switches sparingly, a system where terminals were connected through a vertical hierarchy of switches with a "natural monopoly" at the top being the least costly. But digital switching using high capacity microchips has now brought switching costs spiralling down more rapidly and more radically than

transmission costs,⁴ and has made it economical to use switching much more abundantly. Low cost digital switches can be installed in terminals at any location without having to rely on a central office to connect other terminals. Inexpensive switches have made possible inexpensive networks connected horizontally and in endless variety. This shift has created a radically different cost environment and is taking Western telecommunications away from its hierarchical past to a decentralized future. The countries of the East who will wish to compete globally must do so in this changed environment.

Proliferation of Terminals and Uses

The computer is a natural partner of the telecommunications system, and it has proliferated in many forms over the past few years. Wide varieties of computers and terminals permit complex operations to be performed at great speed, and this lies at the heart of commercial and financial transactions and industrial management. Computer programmed operations have expanded at explosive rates as business firms search for ways to use them in national and international markets.⁵ The role of the corporate user and the ownership of terminals are the new things relevant here. Computerized terminals are often no longer arms of telecommunications administrations. Many are proprietary networks which are the property of banks, financial institutions, and multinationals. Such organizations employ telecommunications in worldwide information systems and this involves large capital investments in unique equipment and software. Along with investments, these companies have gained countervailing power which they do not hesitate to use against telecommunication operators in the market place, in legislatures, and in international forums. The countries of the East will have to compete with these forces under constantly new and swiftly changing conditions.

New Telecommunications Channels

Traditional administrations were formed when channels were simple wired telephone lines or wireless telegraph circuits. But other telecommunications channels have now been added, including microwave

circuits, independent cable systems, optical fibre circuits, satellites, and mobile and cellular systems. During the next decade, still others, such as the Integrated Systems Digital Networks (ISDN) and the broadband systems, will be moving increasingly onto the market.⁶ Thus, the traditional Western telecommunications administrations are contending against both innovative competitors who are producing substitute technologies, and against aggressive multinational customers who are establishing their own networks. The reorganized telecommunications companies, like AT&T, Deutsche Bundespost Telekom, NTT, and British Telecom, may have more intrinsic power now than before, for they are more central to the mainstream of economic activity and are extending their services for the first time to international markets. However, they must contend for that power with an ever expanding group of internationalized industrial and financial institutions.⁷ And, again, the institutions of the East will be required to contend with all of these.

The Lag in the East

As the Eastern nations move closer to a market culture, they expose their institutions as well as their productive machinery to the economic forces of the world market. But the vertically organized systems of East Europe and the USSR are the antithesis of decentralized structures in global telecommunications now current in the West. For years, Eastern regimes followed as Party Doctrine the principle that communications was an instrument of government decision making and party control. Ideologically, the system stood for a single point of view, and control of telecommunications provided a convenient means to that end. In this scheme of values, serving the public and supplying a productive resource for finance and industry were near bottom in importance.

This fundamental principle of communications policy - the need for close control - has been overturned by recent political reforms, and a more open philosophy has begun to take hold. But the effect of decades of Party Doctrine cannot be erased overnight. Nor can these countries escape the consequences of that past - systems that senior officials say are "outdated, outmoded, and inadequate," and whose physical

backwardness is matched by institutional obsolescence and managerial habits left over from central planning economics.

Telecommunications remains a state monopoly throughout the East, with facilities being owned and services provided by the State. The most able of the business economists and executives in these countries have only a limited understanding of the telecommunications revolution and are unpracticed in coping with it in the market place. Public oversight is rudimentary and inexperienced. Parliaments are novices in legislating telecommunications matters, and bureaucrats are neophytes in administering standards for open communications.

Telephone service in these Eastern countries is among the weakest in the industrialized world. Technology for transmission, networking, and central office lags by two decades, many western observers estimate, and digital technology is employed only to a limited degree.

The business networks that are the nerve systems of western banking and commerce are virtually non-existent. To a limited extent, executive networks of simple technology are in operation that were set up for Government officials and were used primarily by party leaders, with access restricted to a privileged group. Military and police administrations have their own closed networks, usually based on archaic technology. Satellite communications systems, where Soviet technology is relatively well advanced, have been mainly dedicated to military and official applications, or to broadcasting by State controlled radio and television. Industry, banking, and trade have had little access to these systems, and have had neither the authority nor the means to establish their own systems. Bankers, industrialists, and tradesmen in the East have had scant opportunity to gain experience in these vital communications uses.

Their recent exposure to the world economy has brought a startling awareness of their deficiencies in telecommunications to Eastern leaders, and a recognition of the vital need to correct what is lacking. Such leaders are now looking into what to do and asking Western consultants to advise them. They are giving first attention to physical needs, which will require enormous investments for many years. But they are also recognizing that investment in equipment and new technology is not enough, and that whole institutional structures and standards must

also be revamped. They are discovering that, if their aspirations in trade and investment are to be fulfilled, alignment with international telecommunication systems and compatibility with other systems -in particular those of the European Community - will be essential for attracting capital.

Thus, the East is now confronting the same institutional issues that Western telecommunications administrations and industrial and financial users have been struggling with, and working out, over years.⁸ These include:

- How should basic telephone service be offered? Through a state monopoly as in Austria and Germany, through a partly competitive, mixed enterprise system such as that in the United Kingdom, or through a collection of private companies as is the case in the US? Should other services be offered in competitive markets or reserved for a monopoly service operator? Should alternative systems, such as cable or mobile, be permitted to offer basic services in local markets?
- How should the telecommunications sector be regulated? Should regulatory authority be separated from operations? How much regulatory authority should be delegated to international bodies like the European Community, the ITU, and the GATT?
- How can market criteria be employed in regulating basic telephone services? What is the dividing line between reserved and competitive services? Should other market groups subsidize residential service? Should universal service include services other than the telephone?
- How can open access to the system be assured for value added and other information service suppliers? Should the basic service monopoly be permitted to participate in the competitive markets? Should any limitations be allowed on resale of lines leased for networks of a private company?
- Should national telephone monopolies be required to have open procurement of equipment and supplies? Should procurement be open to international bidding? Are anti-trust protections needed to prevent concentrations of market power in manufacture of telecommunications equipment?

This is an agenda that Eastern reformers cannot deal with effectively at present. Cooperation with the European Community and compatibility with its standards and directives can be started. But it cannot be fully accomplished until Eastern internal systems are technologically modernized, capacity increased, and regulatory standards and institutions have been cast in a more competitive framework. The East

Europeans and Soviets lack both the entrepreneurial and the institutional know how necessary to move decisively into the new systems. Moreover, factionalism and ethnic divisions permeate decision making in every country. This gives even clearly technical problems a political and nationalistic coloration that complicates their resolution. Each nation faces a unique domestic environment that at the beginning stages of reform leaves it with little choice but to approach its particular set of problems pragmatically.

Planning for Telecommunications Modernization in the USSR

In the USSR, a plan for systems rejuvenation was initially conceived in 1985 as a scheme for modernizing government and military systems. This plan has been periodically revised and its purpose broadened in the Perestroika initiatives of President Gorbachev. It currently envisages renovating the system and doubling its size in the mid-1990s by raising expenditures from about \$7 billion in 1986, to about \$12 billion in 1990, to about \$15 billion in 1995.⁹

The Soviet plan has been advanced and elaborated by the Ministry of Communications. It has been moved significantly from its early focus on military and government systems toward improvements in commercial and public telecommunications. Highest priorities are accorded to large capacity digitization of central office systems and to transmission networks that will upgrade the quality and capacity of the public system. New international lines are envisaged, doubling by the end of 1990 and adding two gateways, in Kiev and Leningrad, to the present single gateway in Moscow. A new trade center in Moscow, for example, will provide high quality access to international networks, at least on a limited scale.

The plan also calls for development of computer networking, data processing, value-added, and other services that are of importance to industry and banking, as well as to home communications services. In conjunction with telecommunications upgrading, the Soviets are attempting to computerize all parts of the economy, including education and training for a computer literate society.¹⁰

The Soviets expect to domestically manufacture the lion's share of the equipment requirements for meeting their targets. They will look to home grown technology and production where Soviet competence is high, and only when domestic technology is deficient will they buy and license foreign technology and rely on import suppliers. Imports at peak are likely to be less than 10 percent of overall outlays, and will consist primarily of capital equipment or supplies for domestic manufacturing. A major part of the national system will be serviced by the Intersputnik Satellite system, for instance. Plans were announced in April 1990 to launch three giant satellites for more extensive television and radio services as well as telephone services. The Soviets expect to improve foreign earnings through satellite communications, for instance in contract proposals to AT&T and MCI for international telephone service, and to Northwest Airlines and Honeywell Inc. for a navigational network.¹¹

Since the broad Soviet plan was laid out in 1985-86, many of its internal quantitative targets have been at least partly achieved. The waiting list in applications for telephones has been shortened a little. Several military factories for communications hardware have been successfully converted to civil products. And deployment of satellite systems has gone ahead pretty much on schedule.

But the program for technological upgrading has been slow in forming and several key contracts for getting foreign technology are either unformulated or still in negotiation. Planning staff inadequacies is a factor. Financial shortages, a non-convertible ruble, and restrictions on repatriating earnings are important deterrents. Ideological overhang has left a bureaucratic gauntlet intact that often leads foreign investors to give up and move elsewhere. Unreliable systems for supply of parts and components is a handicap, cited for instance by Alcatel executives as a reason for the failure of ten years of effort to reach the production targets of a digital equipment factory built under license in 1979.¹²

Western concerns about technology security, particularly in the US, have also delayed Soviet efforts to overhaul its communications systems. COCOM restrictions have held up contracts with Siemens and Alcatel for many months and have denied, at least for the present, a joint venture

with nine western companies to lay down an optical fibre cable across the USSR.¹³ Easing of the COCOM restrictions has been under review for many months and, in the aftermath of the Middle East War, they will be reviewed again during 1991.

Despite the contention over the export of telecommunications technology to the USSR, several contracts and agreements that are crucial to Soviet telecommunications aspirations are moving ahead. These include:

- AT&T has signed a broad agreement with the Soviets covering telecommunications services, equipment manufacture, and research and development. Although the State Department objected to a minor portion of the agreement that called for AT&T to use the Soviet Intersputnik satellite system for voice and data communications between the USSR and the US, a modified agreement was approved by the US.¹⁴
- Alcatel Bell, the Belgian subsidiary of Alcatel, and Krasny Zarya, a Leningrad based industrial association, have agreed on a joint venture for manufacturing the Alcatel System 12 digital switching and telephone lines. The joint venture, called Len Bell Telephone, has a Soviet share of 60 percent and an Alcatel share of 40 percent. It is planned to attain full production of 1.2 million lines per year in five years. The Ministry of Communications has contracted for 250,000 lines in 1991-92 and expects to buy \$2.8 billion in equipment over the next 20 years. A second Alcatel joint venture is to be formed for making the VLSI chips that go into the System 12 switches.¹⁵
- Sprint International, a subsidiary of US Sprint, is entering a joint venture, Telenet USSR, for establishing a Soviet commercial data communications network. Under agreement with the Soviet Ministry and the Latvian Academy of Sciences, Sprint will provide packet switches for installation in a center that the Soviet side will build and operate near Moscow. The switching center will be connected with the Sprint international data network and used to control traffic in voice, facsimile, and digitized data transmission. It will operate through new and dedicated satellite lines that will augment the congested lines that now service the USSR.¹⁶
- Siemens has entered a joint venture with Po Korolov, a Ukrainian based communications company and the Ministry of Communications. The venture will be set up in Kiev and begin manufacturing Siemens switches for long distance and large exchanges and Soviet designed switches for local networks in 1991. Siemens executives say that initial capacity will be one million lines a year and will rise to three million over a 10 year period. Both Siemens and Soviet designed switches are intended for eventual sale in export markets.¹⁷

Soviet telecommunications planning is moving ahead in slow steps that will in time provide more telephone lines and better quality service, especially international service. The USSR has not, however, diminished the sizable communications gap between itself and the West. By centering the program on physical requirements for a modern system, the Soviets have failed to spark the dynamism and leveraging that have been vital to telecommunications reform in the West. The Soviet program does not envisage reformation of the system, either in its operation or its administration and control. The Ministry of Communications has continued to run the system as a State monopoly and has shown tenacity in maintaining its grip on the operating and production infrastructure.¹⁸ The preeminent role of the Central Bureaucracy is being challenged in demands for reform in the Supreme Soviet and in the capitals of several constituent Republics, but so far without notable success.

Within the Supreme Soviet, the legislative arm of the USSR, its Subcommittee on Communications and Information has developed a proposal for a 15 year plan. Yuri Gulyaev, Chairman of the body, is urging a legislative program that is more ambitious in many respects than that of the Communications Ministry. Gulyaev's group is, in particular, calling for separating production and manufacture from control of the Ministry of Communications and for permitting independent operating organizations to provide telecommunications and information services. His proposals were first placed before the Supreme Soviet in early 1990 and will likely be taken up during the 1990-91 sessions.¹⁹

Communications Ministry officials in the Russian Republic, as well as other republics, are regarded by western professionals as "much more open to change" than their USSR counterparts. Several republics have already declared themselves to be "sovereign states" and are establishing departments to autonomously govern and operate economic institutions, such as telecommunications and other public utilities. President Gorbachev has proposed a "new Union Treaty", which would convert the "Union of Soviet Socialist Republics" to a "Union of Sovereign Soviet States" and realign relationships between the central government and the republics. His proposal would appear to radically tip the balance of power away from Moscow and towards the republics.²⁰

The draft treaty, however, has been bitterly disputed by both Communist Party loyalists, who consider it to be "too much," and by reformers and independence leaders in the republics, who say it is "too little."

The outcome of the USSR's constitutional crisis is quite uncertain. Predictions range from a federated nation, with the republics having greater independence, to a breakup with several republics establishing a wide range of independent states - and the possibility of serious and prolonged armed violence in some of the republics. Thus, the prospects for telecommunications reform are a part of this larger issue of the future of the Soviet Union.

Reforming Telecommunications in Eastern Europe

Telecommunications reform in Eastern Europe follows politics and is closely correlated with political reform. In East Germany, telecommunications policy has been overtaken by reunification with the Federal Republic. Czechoslovakia, Hungary, and Poland have moved toward multi-party leaderships that are taking urgent action on telecommunications modernization.²¹ Bulgaria and Romania remain under control of hardliners that have not significantly departed from central planning economics. Their telecommunications planning, though beginning to move, has not deviated significantly from the past. It is not included in this summary of East Europe.

A compelling factor for all aspects of economic policy for Poland, Czechoslovakia, and Hungary is their desire to establish stronger ties with Western Europe. Membership in the European Community is a major goal. East Germany has already become a part of the Community by virtue of its unification with the Federal Republic. The others have notified Brussels of their desire for membership. Aligning their telecommunications with Community standards and adopting institutional structures that are compatible with those of the EC is a first order of business in their planning.

East Germany had paid little attention to telecommunications until recently, and entered the reunified Germany with a dilapidated system, a swollen work force in its operating and administrative units, and a collection of inefficient factories for producing equipment.²² The

Minister of Communications in Bonn, Christian Schwarz-Schilling, has described the shortage of telecommunications links as the biggest practical problem in merging the two economies.²³ Current demand for traffic between the Eastern and Western sectors is estimated at four times existing circuitry. An all-out effort is underway to double traffic capacity between the two areas by the end of 1990. First priorities are to install new lines, to reduce the waiting list, and to upgrade transmission quality. Bonn's long run estimate is that it will cost about \$35 billion to bring East Germany up to the West German level by 1997, when the number of telephone lines will be quadruple the present level. The Ministry of Communications expects to recover the full cost through service revenues. For immediate financing, Deutsche Bundespost Telekom (DB Telekom) is drawing on its revenues and international finance, placing Telekom bonds on the London market in fall 1990 for the first time.²⁴

Long term planning is primarily in the hands of DB Telekom. Much of the systems improvement is expected to come through equipment produced in joint East-West German ventures. For example, Standard Elektrik Lorenz (SEL), has agreed to build a plant in Arnstadt, in combination with four East German firms to produce the SEL digital switch. Siemens has a contract for making and installing telephone exchanges in six East German cities. Joint ventures such as these are encouraged to stimulate the East German economy and, in some cases, to provide a surplus for export to other parts of Eastern Europe that had been buying through COMECON. Despite the large cost of communications unification, which has been given great attention, the firms involved have strong expectations of profit making. Andreas Zimmerman, a Siemens Vice President, anticipates that his company will be making a profit within two years, indicating that much of the expansion in the East is being carried out because of "capacity restraints within West Germany".²⁵

Bonn's aim is to make services in East Germany virtually indistinguishable from those in West Germany. Assimilation into DB Telekom means that the East German system will progressively shift from monopoly for all services to the mixed system of the Federal Republic. Legislation passed in Bonn in 1989 overhauled DB Telekom, opening up many services to competition. The main operating entity, Telekom,

continues as a part of the Ministry of Posts and Telecommunications. Regulatory duties have been separated from operations, though they too remain within the Ministry. Telekom has monopoly rights over the infrastructure as well as telephone and telex, but has been shorn of exclusive rights over other services, including mobile.²⁶

However, the changes called for in the legislation have barely been started and much of the German business community suspects that DB Telekom is using unification to slow down a more competitive telecommunications.²⁷ Merging the two systems has, for instance, made it easier for DB Telekom to equivocate and more difficult for the EC Commission in Brussels to pressure Bonn for action on competition and liberalization Directives. Practical arrangements for unification are dominated by DB Telekom, which has tended to extend its own control over facilities management and operations in the Eastern provinces, rather than to bring in competitive service suppliers. This tendency has produced a great deal of frustration for businessmen attempting to set up investment and financial arrangements in the East, and they are inclined to blame DB Telekom for making a difficult problem even more so.²⁸

The inadequacies of Eastern Germany have proved a much greater handicap than originally anticipated. Impatient and frustrated executives, rightly or wrongly, are pointing to DB Telekom's reputation for stodginess and urging it to become more creative in dealing with its problems. They persuaded the Government of Saxony, for example, to set up its own satellite link for voice service, in defiance of DB Telekom prohibitions. Such pressures led Minister Schwarz-Schilling in December 1990 to consider offering licenses to private companies for east-west services whenever DB Telekom is unable to respond to a request within two months.

Privatization - and increased competition for DB Telekom - could become a more prevalent means of communications unification because of the attraction of alternative funding. Since looking closely at the system inherited from the East German regime, the Bonn Government has had to double its estimate of the huge costs of modernization, and many observers are calculating that the current \$36 billion figure will prove overly optimistic. Chancellor Kohl, who has promised that taxes will

not be increased for unification, is now conceding that taxpayers may have to dig deeper in their pockets. He may find private funding an attractive alternative for financing a part of telecommunications modernization in the Eastern territories.²⁹

Other East European Nations. Communications problems faced by other East Europeans are no less daunting than in Germany. Poland and Hungary are deeply indebted internationally, in need of debt relief and with no prospect of financial strength in the near future. Czechoslovakia has less debt and a relatively stronger financial position. All three nations are threatened by ethnic unrest and political instability. Consensus on market economics and privatization in these countries is thin and does not extend to consensus on how to carry it out. They have yet to show foreign telecommunications interests that they can assure the legal protections that investors seek. They are, nevertheless, taking the first important steps toward telecommunications modernization and institutional restructuring.

Poland. The Polish Government of ex-Prime Minister Tadeusz Mazowiecki embarked on a crash program of economic reform for a market oriented economy in 1989-90. The program was centered on bringing inflation - running at 80 percent a month in 1989 - under control in a short period of time. Along with measures for monetary and fiscal control, Mazowiecki's government lifted price controls, devalued the zloty, removed currency controls, dropped many protections from its foreign trade, and began to break up and privatize some of its state production monopolies. The "shock therapy" aroused bitter opposition because of the hardships that would inevitably result. Nineteen ninety turned into a crisis year in which the program was bitterly debated and in many instances revised, though not substantially altered.

As a part of the sweeping program, the Government proposed a reform of the telecommunications system. The Plan calls for an investment of \$14 billion over 10 years, doubling the number of telephone lines, and raising the saturation level to about 15 per 100 population, still far below European standards. The Polish PTT is to be divided into telecommunications, television, and postal services, and the basic telephone system is to be decentralized in regional units for local service and a long distance network. The proposal provides for a system

that operates as a State enterprise. It also calls for licensing of private companies for international, long distance, local telephone, and data services, in competition with the main Polish Administration.³⁰

Polish telecommunications planning is the most open in Eastern Europe and could represent the birth of an important breakthrough for the nation's economic aspirations. The proposal for reform is intended to speed up modernization by modest opening up of telecommunications and making investment a more attractive opportunity. Some important investors have come into the country, such as Siemens, which has joined with ZWUT, Poland's largest manufacturer of telephone networks, in a joint venture for making Siemens EWSD switching systems.³¹ But the inflow of telecommunications investment has been disappointing. Poland's large foreign debt, which makes hard currency payment a questionable proposition, is partly to blame. Institutional and legal barriers are also principal factors in the reluctance of large scale investors to undertake long term risks in Polish telecommunications. The reform legislation is intended to deal with these problems by providing a legal framework that investors can rely upon.³²

But getting Parliamentary approval of the program has been stormy and targets have been lowered, even for international and long distance networks that will be partly financed by a World Bank loan of \$100 million. Public service advocates have obtained assurances of more lines and subsidized rates for households and rural areas, at the cost of commercial networks. The terms under which foreign companies will be allowed to offer services have been revised, and conditions added under which they will be asked to offset costs for local services. Legislation that would open markets to foreign investors has generated political heat because of the fear of losing national control over a critical economic sector.

Parliamentary debate has also raised questions about the impact on job levels as the system moves to greater usage of automated equipment. The Polish PTT is overstaffed even with its present labor intensive infrastructure, and the plan envisages substantial cutbacks in jobs, perhaps as much as 50 percent. Digitization and automation will further reduce the need for staffing. None of this sits well with PPTT employees or with old line Solidarity members.³³

Telecommunications reform, like much of Poland's effort to move away from the shackles of control economics, has been under fire throughout 1990. This has not prevented "shock therapy" from being implemented, despite the growing resentment over the real and imagined hardships. The controversy has suspended decision making for onward action, however, on such issues as privatization of public property, and legislation on telecommunications reform.

The stalemate may be coming to an end. Prospects for these controversial issues look much improved since Lech Walesa's clear victory in the Presidential election of November 1990. Shedding the enigmatic Jaruzelski in the Presidential office and taking on the charismatic hero of the new era, has lifted the spirits of the Poles. Questions regarding Walesa's injudicious decision making have been held in abeyance by his temperate actions since his election. Walesa's triumph has been followed, to everyone's relief, by establishment of a centrist government representing moderation and balance, and a commitment to continue the main policies for transition to a market economy of the previous administration, asking only for minor revisions.³⁴

Signs of improvement on the economic front have helped. The shopping queues of the past are no longer seen, as more and better quality goods are becoming available in private market stalls.³⁵ The 25 percent plunge in recorded production for 1990 has been largely offset by an estimated 50 percent increase in unrecorded private market production, and the threat of inflation has been greatly lessened, although it is still high by Western standards, at 4-5 percent a month.³⁶

Increasing evidence of economic stability coupled with a somewhat more settled political climate within the country has had a favorable impact internationally, leading Western creditors to believe that the time has come to offer debt relief. In January 1991, Poland's new Prime Minister, Jan Krzystof Bielecki, reached an agreement with the International Monetary Fund that is expected to clear the way for a writedown of the country's foreign debt by 50-60 percent.³⁷ Thus, the prospects for Poland's transition to a market economy and for the "shock therapy" policy begun in 1989 look promising. The telecommunications

legislation is expected to be approved and signed by the President in early 1991.³⁸

Implementing the reform act, when it becomes law, will pose further difficulties that won't be easily overcome. Managerial competence is a major gap throughout the East, and Poland is no exception. Some managers hold jobs by virtue of their political standing rather than administrative or technical competence. Even competent administrative and planning engineers have been out of touch and have little familiarity or experience with the advanced equipment that the country expects to install. Administering licenses for value added service, for instance, requires detailed knowledge and experience, as well as legal and political traditions that Polish officials do not now possess. Defining a regulatory framework, to say nothing of making it work, will stretch existing capabilities. Dealing with managers schooled in the "control communications" of the past while bringing into play administrators and engineers adaptive to "market communications" will require both retraining and the fostering of a new managerial spirit. Understandably, managerial training and professional rehabilitation is a high priority for the Polish plan.

Hungary, like Poland, is undertaking legislative reform of its telecommunications, but is still formulating a specific proposal. In the past, Hungary has been a front runner in experimenting with market answers to its economic problems, earning itself a reputation as pacemaker in liberating East European economics from the shackles of Stalinism.³⁹ Actual achievement has been modest, remarkable only in comparison with other Eastern nations and in the novelty of its actions. Hungary led in accepting foreign joint ventures and in permitting private ownership of property. It was first to permit prices to reflect market conditions and first to set up a stock exchange.

But Kadar and the other Marxist reformers didn't do much to improve economic performance. They retained 90 percent of industry in state controlled factories, continued to concentrate on heavy industry, accumulated an external debt of \$20 billion, and allowed inflation averaging 22 percent a year. The principal accomplishment of "Reform Communism" was to give the country a better feel for a market economy and to begin an embryonic entrepreneurial movement. It also convinced

the nation that, as President of the Academy of Science Ivan T. Berend has said, "one cannot introduce a new economic model without a major change in the political model".⁴⁰

Hungary's political model was changed by the election in the spring of 1990, when the Democratic Forum, a center right party, formed a coalition Government and moved the Socialist Party into opposition. The Democratic Forum coalition rejected shock therapy and, indeed, any sharp departure from its predecessor, opting for a long term program that is meant to show a studied determination to achieve economic reform. In setting policy for selling off state owned property, for instance, the program calls for a long range effort that after four years would place about one-half of economic production in private hands.⁴¹ In the first step, 400 enterprises are to be privatized, commonly by sales of shares in companies that will continue to be partly state owned. Joint ventures with foreign interests will be a major objective. A Blue Ribbon Commission on transformation concluded that since foreign owners held only 2 percent of Hungarian industry "there is ample room for expansion".⁴² A hindrance to foreign sales has been concern that a too hasty effort would result in too low prices. As a result, privatization has fallen behind expectations despite keen foreign interest. Many ventures that are lined up, moreover, are delayed or fall apart because potential foreign investors are skeptical of official valuations and unable to establish firm estimates of their own.⁴³

Reform in telecommunications has shown this same studied approach. The costs of telecommunications deficiencies are well recognized, for instance in frustrating plans for computerized banking, automatic teller machines, and a credit card system. But the Government is reluctant to enact a radical reform of the basic system, and is inclined more at present to look on the traditional PTT system of neighboring Austria for precedent. Thus, Hungary is retaining State ownership of the main system and limiting reform for the moment to selling some shares of Magyar telephone to the public, and to separating postal from telephone services. Legislation that will provide a solid base for correction of the deficiencies is being drafted in Budapest. According to the Director General of Hungarian Telecommunications, the draft bill will be "characterized by liberalization, deregulation, and privatization".⁴⁴

The bill will call for maintaining the state monopoly for the main service, but will provide for deregulation and competition for other services. Hungarian Telecommunications will be authorized to establish "daughter companies" to compete in many of these services, often in joint enterprises, comparable to the system recently adopted in France.⁴⁵ Although the main service monopoly will be privatized, 100 percent of the shares will initially be held by the Government. Later the general public will be offered shares, and eventually foreign investors as well.⁴⁶

Currently, Hungary's telecommunications program is moving forward on the basis of a pragmatic plan of action which envisages investments of \$7-8 billion during the 1990s. It will add two million lines and raise the country's saturation to 30 lines per 100 population - still less than present levels in most of Western Europe. Steps have been taken to design and install a more effective system. The PTT has entered joint ventures with foreign investors for mobile services, including a venture with US West to build and operate a cellular system, initially in Budapest and eventually in other parts of the country.⁴⁷ Under a World Bank loan, this joint venture has contracted with Ericsson of Sweden for installing in Budapest a mobile switch, radio base stations, and mobile telephones for completion during 1990. CoCom hearings in 1990 resulted in more lenient standards for Eastern Europe. This has already loosened contracting and is expected to speed up materially the procurements and technical exchanges in the Hungarian program.⁴⁸ Contracts have been signed with Austria Telecommunications, Alcatel, and Northern Telecom to supply digital telephone exchanges.

Czechoslovakia's market orientation has never been in doubt since Vaclav Havel and his Civic Forum Government took control of the reins of government in December 1989. But while Havel held the power, he was hesitant to enact reform legislation pending the June 1990 elections. Civic Forum made important changes in budget control and obtained legislative approval for joint stock companies. It did not, however, spell out an overall program and phasing for its implementation until the Presidential elections gave it the formal mandate that Havel considered as essential for his conception of democratic government.⁴⁹

Since his election, President Havel has been more active in drawing up a coherent program, but has not been wholly successful in getting his government to agree on one that could be enacted. Civic Forum has given highest priority in its legislative program to reform in banking and finance, price stabilization, and privatization of state properties. Advancement of a program has gone slower than was anticipated by the most zealous of the reformers. The most contentious issues have concerned the pace and sequence of market reform, and the extent to which social objectives should be taken into account. Havel has insisted, for instance, that economic reforms should not cause great hardship or excessive dislocation, while Vaclav Klaus, the Minister of Finance, and an ardent reformer, has pressed avidly for rapid reform, although he has frankly admitted that dislocation and hardship would be unavoidable.⁵⁰ Although Klaus' proposals have been compared to the "shock therapy" of Poland, the analogy is not wholly accurate. The Czechoslovak economy has the same dislocations of a command economy, but supplies of goods are more adequate and inflationary pressures are reasonably under control. Thus, the differences between the policy makers in Czechoslovakia pertain almost exclusively to the pace of privatization of government assets, and the nature and extent of regulation over enterprises dealing with finance, banking, trade, and production.

Many of the conditions under which the reformed economy will function have yet to be determined and clarified. The emerging program has been described as "credible gradualism". Reordering of the banking system and a two-stage stabilization program were approved for 1990. Privatization of state owned production and trade enterprises was put off for a few months. Auctions of smaller state companies began in January 1991, though most of these enterprises are not expected to be in private hands before 1993-94.⁵¹

Foreign investors will be allowed to participate in the auctions, provided they work in conjunction with Czechoslovak partners. Investor interest is stronger in Czechoslovakia than elsewhere in the East, reflecting the country's sounder fiscal position and its reputation for productive efficiency. With 20 joint venture inquiries coming to Prague

a day, more than 500 agreements have been signed since the country opened up, though not all will be consummated.⁵²

Czechoslovakia's telecommunications system is antiquated, and inadequate for the economic expectations of the new democracy. But it is comparatively a cut above others in the East in the quality and reliability of its service. Czechoslovakia has a slightly higher density than other Eastern Europeans, about 14 telephones per 100. In major cities like Bratislava and Prague the density is higher, about 30 to 41. Its international systems are a decade or more behind in digital technology, yet are well maintained and provide direct dial service to more than 40 countries. About \$300 million has been allocated for telecommunications investment in 1990, the highest per capita expenditure in East Europe. Western communications experts estimate that in 5-10 years, Czechoslovakia can overcome its major deficiencies and be able to offer a wide range of commercially competitive international service; reaching world standards in domestic service will take longer.⁵³

The Czechoslovak reformers don't intend to make radical changes in organization of telecommunications and other public utilities, and expect to keep the main telephone system under state ownership. Like other East Europeans, Czechoslovakia is permitting development of competitive services and developing a regulatory administration to assure their access to the basic infrastructure. The Ministry of Posts and Telecommunications in Prague has described policy goals comparable to those of the European Community. That is, demonopolization and liberalization of the PTT services market, reorganization of the status of PTT enterprises and their privatization, and modification of state regulation to enable the development of services, technology, standardization, and economics of PTT operating agencies.⁵⁴ A fundamental principle of the Czechoslovak policy is to ensure that basic services will be available under equal conditions to all of the country's inhabitants.

Implementation of the modernization plan has not been as rapid as hoped for, in part because of inability to attract foreign investors. Discussions are underway for developing a competitive cellular network with American and European partners in joint ventures with local

interests. Bell Atlantic and US West have already entered a joint venture with the Czechoslovak PTT for setting up a cellular mobile system and modernizing the existing telephone system. Service on the cellular system is expected to begin in mid-1991. US West expects it to tie into other mobile systems in the East, serving as "a firm base from which to build a wireless network serving Eastern European customers".⁵⁵ Czechoslovak telecommunication authorities hope to accelerate the inflow of foreign capital and technology as reform achieves legislative approval, and a liberalized regime develops that will be attractive to outside investors.

Conclusion: It's a Long Way to Market Communications

All of the Eastern nations are trying to build up and modernize their antiquated communications systems, but they are following different routes to that goal.

Poland, Czechoslovakia, and Hungary, as well as East Germany in its now unified state, have taken important actions to overcome decades of isolation and neglect of telecommunications by replacing "command communications" systems with "market communications". Their programs give high priority to business systems and to the international requirements of bankers and other information intensive users of communication networks. They have begun to open their systems to western investors and professionals, especially those who are willing to transfer technology. They are looking to North American and West European models for institutional precedents. Insofar as possible, they are seeking compatibility with European Community standards and patterning their reform on European models.

The Soviet Union is also making progress in modernizing its telecommunications, for example in upgrading facilities for international commerce. Like their East European neighbors, the USSR is crossing the physical threshold of modernization. Unlike the East Europeans, the Soviets have set stricter limits for changing the control structure of their system. They have brought into play some elements of "market communications", for instance, reducing some subsidies and introducing cost based pricing. They have negotiated joint venture

agreements with major western firms that may instill a deeper managerial sense of "market communications".

The USSR has not, however, undertaken the institutional restructuring of its neighbors. The Soviet Government does not look on the European Community in the same light as the East Europeans and, consequently, does not sense this important motivation for structural reform. It does not have the same membership aspirations as its smaller neighbors. For Soviet policy, compatibility and interconnectability between systems looks sufficient. Adapting Western Europe's institutional rules and regulatory standards is less compelling to the Soviets than to the East Europeans.

The Soviet perspective on European unity bolsters the bargaining position of its central bureaucracy against an impressive group of advocates of structural reform, enabling the bureaucracy to resist and beat back reform proposals in Moscow and the capitals of the republics. Moreover, the Communist Party machine has intensified its resistance against institutional restructuring in 1989-90 in all areas of economic policy.

How much continued Soviet indifference to institutional reform will damage performance remains to be seen. At present, several of the Eastern nations, including the USSR, are beginning to benefit from telecommunications improvements. Their programs for upgrading transborder circuitry are paying initial dividends in international commerce, and these can be expected to grow in the 1991-95 period. But none of these nations can expect to reach world standards in international services for many years, and parity in domestic service may be a decade or two away. A concomitant disadvantage in global investment and trade should be expected that is not likely to lessen much before the late 1990s.

"The point is", a Hungarian leader has said, "that this Government carries the burden of forty years of Communist rule. That is why we must take a step by step approach".⁵⁶ This is also true of other Eastern European countries. Step-by-step policies may not accomplish overnight miracles, but they may, in time, permit these nations to achieve market communications of sufficient strength for competitive performance in global trade and investment.

NOTES

1. Deputy Prime Minister Vladimir Dlouhy of Czechoslovakia as quoted by Steven Greenhouse, "In Search of Capitalism", New York Times, May 20, 1990, p. E-3.

2. See eg. Oswald and Gladys Ganley, To Inform Or To Control?, Ablex, Norwood, New Jersey, 1989, esp. Part I, p. 13-33.

3. See eg. Professor Sir Bryan Garsberg and Robert Priddle, UK Perspectives On International Communications, Center For Strategic and International Studies, Washington D.C., March 1989, p. 4-6.

4. The most lucid explanation is in Peter Huber, The Geodesic Network. Report On The Telecommunications Industry, Department of Justice, Washington D.C., 1987.

5. Anthony G. Oettinger, "Information Resources: Knowledge And Power In The 21st Century", Science, June 1980, p. 191-195. See also "Born Again Technology", Economist, August 22, 1981, p. 3-17, and Carol L. Weinhaus and Anthony G. Oettinger, Behind The Telephone Debates, Ablex, Norwood, New Jersey, 1987, esp. p. 85-86.

6. NTIA, Telecoms 2000, Charting The Course For A New Century, NTIA Publication 88-21, National Telecommunications And Information Administration, U.S. Department of Commerce, Washington D.C., p. 445-483.

7. Herbert Ungerer and Nicholas Costello, Telecommunications In Europe, Commission of the European Communities, Brussels, 1988, p. 35-42.

8: See Note 5.

9. "Talking With Comrade Bell", Economist, December 19, 1987, p. 60.

10. Wilson Dizard and S. Blake Swensrud, "USSR: Glasnost And The Information Revolution", Intermedia, January 1988, Vol.16, No. 1, p. 10-19. See also Wilson Dizard and S. Blake Swensrud, Gorbachev's Information Revolution: Controlling Glasnost In A New Electronic Era, Center For Strategic and International Studies, Significant Issues Series, Vol. IX, No. 8, Washington D.C., 1987, p. 105. Also personal communication.

11. Hugo Dixon, "Moscow To Launch Giant Telecom Satellites", Financial Times, April 3, 1990, p. 2.

12. Steven Greenhouse, "New Lure of Eastern Europe", New York Times, May 29, 1989, p. 31.

13. William Dawkins, "Alcatel In \$1 Billion Moscow Deal", Financial Times, June 14, 1990, p. 2. See also Nancy Dunne, "Bush Backs Off From COCOM Deal On Fibre Optics", Financial Times, August 18, 1990, p. 3.

14. John J. Keller, "State Department Opposes AT&T Plan To Use Intersputnik For Phone Traffic", Wall Street Journal, May 25, 1990, p. B-4.
15. William Dawkins, "Alcatel In \$2.8 bn. Deal With USSR", Financial Times, op cit, p. 3.
16. Eduard Lachica, "Sprint To Supply Soviet Venture With Switches", Wall Street Journal, September 17, 1990, p. A-7C.
17. Charles Leadbeater, "Siemens Plans DM 160m. Soviet Union Joint Venture", Financial Times, June 22, 1990, p. 24.
18. "A Survey Of The Soviet Union", Economist, October 20, 1990, p. 10-12. Also personal communication.
19. Hugo Dixon, "Moscow To Launch Giant Telecoms Satellites", Financial Times, April 3, 1990, p. 2.
20. "A Survey Of The Soviet Union", Economist, op cit, p. 9. Also personal communication.
21. While Czechoslovakia has been renamed as the Czech and Slovak Federal Republic (CSFR), the more familiar designation of Czechoslovakia is retained throughout this paper.
22. Advisory Committee on International Communications and Information Policy, Department of State, Report of The Task Force On Telecommunications and Broadcasting In Eastern Europe: Eastern Europe: Please Stand By, Washington D.C., March 1990, p. 49-55.
23. Steven Greenhouse, "Communications Problems Hinder German Unity", New York Times, March 15, 1990, p. D-1.
24. See Note 22. See also David Marsh, "The Costs of Unity Keep On Mounting", Financial Times, November 13, 1990, p. 24.
25. David Goodhart, "Siemens Sees Profit In East Germany Within Two Years", Financial Times, December 14, 1990, p. 22.
26. Morris H. Crawford, The Common Market For Telecommunications And Information Services, Program On Information Resources Policy, Harvard University, Cambridge, Massachusetts, 1990, p. 24-26. See also Report of Task Force on Telecommunications and Broadcasting In Eastern Europe, op cit, p. 49-55.
27. "A Survey Of The New Germany", Economist, June 30, 1990, p. 9.
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29. "Indigestion For Germany's Bond Market?", Economist, November 24, 1990, p. 83-84. Keith Bradsher, "German Defense On Phone Fees", New York Times, November 13, 1990, p. D-2.

30. Hugo Dixon, "Poland Plans Sweeping Telecommunications Reform", Financial Times, April 6, 1990, p. 2.
31. "Siemens In Polish Telephones Venture", Financial Times, June 29, 1990, p. 8.
32. Steven Greenhouse, "Poles Seek Reversal Of Fall In Output", New York Times, November 19, 1990, p. D-7.
33. Christopher Bobinski and Martin Wolf, "Radical Options For Privatisation", Financial Times, August 2, 1990, p. 10.
34. Charles Wolf, director of Rand Corporation research in international economics, has argued convincingly that the Polish economy is much better off than is generally believed. Wolf has suggested that economic statistics in Poland are still tied to past non-market modes of measurement, which show falling output in the formal production sectors, but give inadequate weight to rising production in the more difficult to measure market sector. Product quality and availability, for instance, have improved, yet these factors do not enter into comparisons in output between the pre-market and the present. See Charles Wolf Jr., "Less Pain, More Gain For The East Bloc", Wall Street Journal, November 9, 1990, p. A-20.
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36. Steven Greenhouse, "Poles Seek Reversal Of Fall In Output", New York Times, op cit, p. D-1 and Charles Wolf Jr., "Less Pain, More Gain For The East Bloc", Wall Street Journal, op cit, p. A-20.
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42. "Recipe for a Free-Market Hungary": Wall Street Journal, April 6, 1990, p. A-18.
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44. Pal Horvath, "Telecommunications In Hungary", Transnational Data and Communications Report, op cit, p. 13-16.
45. See Morris H. Crawford, op cit p. 28.
46. See endnote 44.
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48. "Ericsson Wins Phone Order From Hungary", Financial Times, March 20, 1990, p.6.
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