

Telecom development and state capacity
in transition countries
A framework for analyses

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Preface

The present research report is to form the basis of a series of case studies that examine state capacity in Central and Eastern Europe as seen through the lens of telecommunication (telecom) development. Telecom is critical from this perspective because it represents a policy area where traditional ideas and interests are ruthlessly challenged by the demands of the new knowledge economy, of which telecom is the very central nervous system. From a policy perspective it is critical because it is situated in the interface between domestic developmental objectives and traditional interests and ideas, and strong international regimes and actors. Starting with a survey of alternative approaches to telecom development and a comparison of developments in Central and Eastern Europe in the decade from 1989 to 1998, the report proposes two arguments. First, 'the policy complexity argument' claims that if a state is capable of handling the telecom sector, it is also likely to be able to handle issues in less complex policy areas. This argument will be pursued in the impending case studies. Second, 'the globalization argument' claims that institutional design will gravitate towards a universal (Western) model, and that this design will prove superior in all national contexts. Preliminary statistical analyses support neither aspect of the globalization thesis. Central and Eastern European institutions in the telecom sector have not adopted a universal model, and there is no relation between adaptation to a Western institutional model and telecom development. Nor do other alternative institutional strategies explain the observed differences in development. Developments in the telecom sector are rather still mainly shaped by the institutional legacies of the incumbent systems.

1. State capacity, public policy and telecom development

While interest for the state for obvious reasons declined during the heyday of the free market, attention to the factors that constrain or empower states re-emerged when social scientists and international organizations began to recommend that the state be 'brought back in' during the late 1980s and the 1990s. This paper upholds the focus on the state and in particular the ability of states to design, pursue and implement policies in critical policy areas. Capability and efficiency (at the level of the state and government) refer to the ability to undertake and promote collective actions, whatever their nature and consequences. Capacity and effectiveness (at the level of the state and government) refer to the ability to meet the concerns and objectives of society.¹ The definition of what represents 'the genuine needs and concerns of society' must of course be stipulated exogenously to these definitions.²

The capabilities and capacities of states may be approached from different perspectives and at different levels of analysis. First, state capacities and capabilities may be approached from the political angle where the focus is on how well the institutional setup handles collective action dilemmas and overcomes the power of vested interests or the constraints of entrenched institutions (state autonomy) that may produce suboptimal or (in the present terminology) ineffective outcomes. Second, we may approach the state from the technical angle by examining the knowledge, skills and competencies of civil servants, bureaucracies and specialized politicians in designing policies in their fields of endeavor (technical capability). Third, we may start from the administrative angle, focusing on the loyalty and ability of executive institutions at all levels to implement policies despite vested interests, organizational cultures, and institutional veto points (from the perspectives of capacity and capability).

Instead of focusing on separate segments of the policy making process when assessing state capacity, however, we may choose to focus on policy processes and their eventual outcomes. Our hypothesis may be that certain types of institutions better than others produce desirable (effective) outcomes. We may even worship certain democratic procedures for their own sake, irrespective of outcomes. If we are to continue to support those institutions, however, we as citizens expect our political and administrative institutions (in short 'the state') provide the collective goods that we have chosen to prioritize through the democratic process. When applying this perspective to the question of state capacity we engage in a cross-institutional and at times cross-sectoral analyses to try to understand why public policy in certain fields developed the way it did, attaining or failing to achieve the

political goals, while in the process accounting for all the factors that determine the eventual outcome. In such analyses, following in particular George (1973), we must include the effect of formal and informal institutions, actors' strategies, and the structural endowments of a particular field in a concrete country, as well as the effects of such factors at different levels of analysis – from national contexts to international regimes and actors.

When relating this approach to the more general theoretical question of state capacity we can choose two venues. We may choose a sector or policy area where the state has a long track record and the resources required for good performance. If the state then proves to be unable to handle policy in this area, we infer that it does not have the capacity to manage policy in other more intricate areas either. In contrast, we may choose a policy area in which the state is unprepared to meet new challenges that will expose it to all sorts of hazards, international pressures, strong particularistic interests, technical complexity, and rapid development. If the state is capable of handling affairs in this sector, we infer that it is also able to perform well in less complex areas. In both cases we apply what has been termed 'the crucial case approach' as a means of relating a case study to theory by inferring the general applicability of a theory to a sample or subset of cases from the detailed examination of a single case (Eckstein, 1975). In this sense a case study has the potential to be comparative and theoretical if 'the analysis is made within a comparative perspective [which] mandates that description of the particular be cast in terms of broadly analytic constructs' (Scarrow, 1969, here quoted after Peters, 1998, 148-49). From this perspective telecommunications (in the following telecom) is an excellent example of the latter type 'crucial case' examination of state capacity from two perspectives: one focusing on telecom as a very complex and, in terms of consequences, critical policy area that will reflect state capacity in other less intricate areas (the policy complexity argument), and another focusing on the impact of globalization on national institutions (the globalization argument).

The first policy complexity perspective sees telecom as a hub that today mediates reforms in all other sectors of economic, political and administrative systems. First, in the economy it was gradually recognized during the 1980s that information had become a fundamental factor of production alongside capital and labor (Wellenius and Stern, 1994: 3; 1999: 2), although the causal mechanism linking telecom and development is something that in most works is assumed or asserted rather than explored. In particular telecom technologies are gaining increasing importance in decision-making, creation of markets, reduction of transaction costs, decentralization of organizational hierarchies, and in controlling the patterns of distribution, consumption, and

production (Singh, 1999: 6). Stanford economist Poul Romer has for the last decade pioneered studies over the role of information technologies in economic development. His idea is that the means to produce goods and services (i.e. information technology) have become more valuable than the simple act of producing goods (Romer, 1993, p. 70–72). He argues that:

‘..our knowledge of economic history, of what production looked like 100 years ago, and current events convinces us beyond any doubt that discovery, invention and innovation are of overwhelming importance in economic growth and that the economic goods that come from these activities are different in a fundamental way from ordinary objects’ (Romer, 1993a: 562).

These observations also imply that ‘idea gaps’ become as important as ‘object gaps,’ and that ‘idea gaps’ become crucial when explaining underdevelopment (in the third world) and misdevelopment in post-communist countries. This perspective suggests that the development of modern telecom becomes an important parameter for development and growth because it fosters the spreading of ideas about ways to produce old goods more efficiently, generates whole new classes of goods, and ultimately transforms the way the economy functions and grows (Duesterberg & Gordon, 1997, p. 7; World Bank, 1999).³ This implies that countries and firms without access to modern telecom systems cannot participate effectively in the global economy.⁴

Second, in political and administrative systems the new advances in telecom technologies offer new prospects for democratic participation and engagement – or (alternatively) control and manipulation. Third, the new technologies cause increased social differentiation between those who can adapt to the new and more demanding working environment and those who cannot. On the other hand, the new technologies also offer new solutions, for example when telecom is perceived not only as a major means of communication between people, but ‘also as a cornerstone for exchange of the information and security for the elderly and the handicapped’ (OECD 1997: 7).

In conjunction with these economic, political and social implications, telecom as a policy area is exposed to very strong competing interests (from national producers and residential user groups to national security concerns and transnational companies) and characterized by extremely complex technical issues. Telecom is in that sense an excellent test case for a state’s capacities in other less intricate areas because of its political, administrative and technical complexity. In administrative terms there are no easy solutions because public control is, for political and economic reasons, likely to play a

much greater role than in the rest of the economy. So at issue here is not merely a change to market institutions, but rather how to design a mix of market forces and regulations which, in a specific country context, will be appropriate for achieving the politically defined objectives. At the same time, technological developments are proceeding at an incredible speed, and the matrix of interests and institutions is therefore in a permanent state of flux that confronts regulators and the political system with a constant stream of new challenges.

These observations are applicable to telecom development on a global scale. It may nevertheless be argued that the immediate demands on the telecom sector differ in various stages of societal and sector development, and that the problems are especially manifest in countries undergoing rapid institutional change. A number of studies have shown this to be the case in developing countries (Cowhey, 1994; Singh, 1999; Molano, 1997; Levy and Spiller, 1996; McDowell, 1996; Sinha, 1994; Wellenius and Stern, 1994; Petrazzini, 1995), while only a few studies have addressed the same issue with regard to post-communist countries going through a period of even more profound and rapid institutional change (Bruce, Kessides & Kneifel, 1997; Schenk, Kruse & Müller, 1997; Henten & Skouby, 1995; Campbell, 1995; Bruce, Kessides & Kneifel, 1999).

The second crucial case perspective (the globalization argument) addresses the impact of global forces on the speed and form of institutional change. The literature here presents two opposite views. One view holds that global competition drives national institutions towards a common standard, necessary for economically optimal outcomes. This vision is epitomized by the economists' neoliberal vision of an ideal market with minimal state interference and the transfer of Western type formal institutions to other societies with different traditions and cultures. A second view upholds the relevance of nationally distinctive institutions and asserts the need to consider the local context when designing effective institutions. From this perspective the states that emerged from the communist world after 1989 represent the most extreme examples of sudden exposure to the forces of globalization. During the years following the demise of the incumbent systems, institutional collapse and uncritical adoption of neoliberal ideologies, policies and institutions provided few obstacles to the intrusion of global forces. The telecom sector was one in which global and transnational forces were destined to play a major role, because fundamental changes had to be implemented in systems that were both underfinanced and structurally tailored to a world that had ceased to exist. In this process, the changes not only required massive investments and structural changes beyond the reach

and competence of local governments, but also challenged existing institutions, vested interests and ideologies.

The combination of telecom development and post-communist states thus presents an ideal test (crucial) case for the effects and institutional lessons of globalization. According to the rationale of institutional globalization (the globalization argument) we would expect Eastern institutions to converge to a common standard disseminated by transnational institutions and corporations, and to give in to the 'totalizing logic of globalization' (Singh, 1999: 28). And we would – if we follow the rationale of neoliberalism – expect those institutions that adapt to the universal standard to produce desirable outcomes. We would further expect this process to be especially evident in sectors where global forces – technical and political – put very strong pressure on local institutions. In other words, if the tenets of institutional globalization hold in established democracies with strongly embedded institutional capacities, such tenets should be even more true for the fragile new Eastern democracies. And further (and in contrast), that if the tenets of institutional globalization do not hold in the telecom sector, we infer that they will also fail to hold in sectors that are less exposed to global forces and more embedded in local institutions.

This working paper is to form the basis for (comparative) case studies to be undertaken by the DEMSTAR program of reform in the telecom sectors in a number of post-communist countries. It represents an attempt to take the first two steps in a three-step venture aimed at answering questions about a state's political, technical and administrative capacity using telecom development as a lens, and to find the institutional lessons to be gleaned from a policy area that is both a consequence and carrier of globalization. The two steps entail 1) a survey of existing literature and the construction of an analytical model that will guide the subsequent analyses; 2) a survey of telecom development in post-communist countries, including a search for structural causes behind country differences. This is to be supplemented by a third step involving in-depth country studies focusing in particular on the politics of telecom restructuring. By applying this research design that combines large-n and small-n studies, we hope to eventually obtain robust results (King, Keohane & Verba, 1994; Nissen, 1998; Coppedge, 1999; Nørgaard, 2000).

With this overall design in mind, section two of this report presents and assesses alternative theoretical approaches and proposes a general analytical framework. Section three contains a review of the legacies of the communist era, and provides an overview of developments in the telecom sector in post-communist countries after the transformations began. It also explores preliminary structural explanations for developments, testing in particular

the globalization argument, while the policy complexity argument is left for the case studies.⁵ Findings are summarized in section four, which also proposes an agenda for the case studies. Basic statistics on sector structure, development and investment are provided in the appendix.

2. Approaches to telecom reform

Telecom has been studied from a variety of angles that reflect the changing role of the sector in society, the normative focus of the researchers, the general level of development in the countries under scrutiny, and the general conceptual and theoretical development in the social sciences. Different perspectives are represented by those who focus on the social and political implications of telecom development (communication studies), and those for whom telecom development as such is the issue to be explained. Within the latter perspective, analyses from the 1960s of telecom developments emphasized engineering and finance. In the 1970s the focus shifted to economics and institution building, and in the 1980s sector policy and regulation were included as independent variables. Thematically, the field has been divided between those who sought to explain e.g. privatization and structural reforms as resulting from microeconomic inefficiencies in state owned enterprises (SOEs), or as being consequences of macroeconomic factors such as fiscal deficits, debts or pressures from multilateral lending agencies. Finally, a political approach has tried to explain institutional change and outcomes in terms of the impact of interest (user) groups ('clubs') within an existing structure, or as partners or contestants in collective actions that challenge (or underpin) the institutional setup. The next two sections maintain the political perspective and focus on telecom development from two analytical angles: one that includes factors that are endogenous to the restructuring process in each country, and another that takes in factors that are important causes of development, but may be considered a general framework for (or exogenous to) developments in most countries, in particular global technological developments and pressure from international regimes.

2.1 Endogenous factors

The first analytical level deals with telecom development as an integral part of changes in each country. On this level, telecom development is approached from three theoretical perspectives: as a cause (or effect) of macro changes at the societal level; as a consequence of the rational behavior of utility maximizing groups or individuals, and as a consequence of interaction between actors and nationally embedded institutions.

2.1.1. Telecom and modernization theory

Research based on modernization theory treats telecom development as an integral part of the general process of socioeconomic modernization. In some versions telecom is seen as a dependent variable whose development and functions are contingent upon the socioeconomic context in which it occurs, whereas others treat it as an independent variable in a general modernization process.

Claire Milne (1998), for example, who has listed the tasks, constraints and adequate public policy demands on the telecom sector at five stages of development, belongs to the first category of research. Table 2.1 summarizes the basic features of each stage and the focus of public policy concerns on industry level, and on the level of politically motivated universal service goals.

Table 2.1. Stages of Telecom development.

Stages	1: Network establishment	2: Wide geographic reach	3: Mass market takeup	4: Network completion	5: Service to individuals
Features					
Tasks	Large scale capital investment in basic network	Technical network improvement, general public service	Expanding the network	Increase revenues through marketing	Increase profitability
Constraints	Investment funds, appropriate technology and skills.	Limited demand due to high prices (low incomes) and use of alternative communications	Manpower for plant installation to meet mass demand (waiting lists)	Affordability of service for poorer households; cultural acceptability of telephony	Market appeal of new services. Protests over deregulation and privatization from vested interests
Public policy measures (Telecom industry)	Investment incentives	Govt. control (national security and economy); geographically uniform charges.	Installation and rental charges kept low to stimulate line demand	Network competition (perhaps privatization); cost oriented tariffs.	Free and fair competition
Universal service goal type	Technological (acquire new technology)	Geographic (maintain regional parity)	Economic (stimulate economy)	Social (achieve political cohesion)	Libertarian (individual right to communicate)
Public policy (universal service)	License conditions on network rollout)	Profitable licenses subject to unprofitable obligations)	Control speed of price rebalancing	Targeted subsidies	Identify and meet non-market demand

Source: Based on Claire Milne (1998), 'Stages of universal service policy', *Telecommunication Policy*, Vol. 22, No. 9, pp. 775-780.

The first stage consists of the establishment of a basic network and hence requires large-scale capital investments. The basic concerns in this stage are funding and acquisition of the necessary technology and skills. At the second stage, geographical expansion is undertaken. The focus here is technical network improvement and general public service. The primary constraint in the second stage is limited demand due to high prices and public use of alternative means of communications. The government can here demand that charges be regionally uniform. The third stage is the creation of a mass market through expansion to individual households. The government may try at this stage to keep installation and rental charges low to stimulate demand, economic growth being the long-term perspective. The public may, on the other hand, experience unfulfilled demands and long waiting lists because of limited capacity in the industry. The network is completed in the fourth stage by expansion to even the poorest households through targeted universal service policies, and competition and cost oriented tariffs are assumed to lead to lower prices. This stage thus has a social objective. At the fifth stage a competitive market in advanced telecom services has been established that ultimately satisfies individual needs through the market. This stage may give rise to protests against deregulation and privatization from vested interests in a situation where government objectives are free and fair competition and consumers are guided by what they perceive as their right to free communication. The focus of public policy instruments will differ according to stage, as will the social (and economic) concerns included in the universal service measures.

The five stages reflect an implicit modernization perspective modeled on the historical development of the US telecom sector, and they are thus not directly applicable to other countries and continents. New technologies and accelerated economic transformations among late reformers may lead to overlap or even change the sequence. Deviation from the 'classical' sequence may, for example, occur in developing countries where stages may develop concurrently, with overlapping – and often conflicting – policy objectives and crosscutting political implications. In transitional countries, outmoded basic networks are up against increasing demands for advanced services, social considerations in universal service ambitions overtake network completion, and individual demands for universal availability of advanced services outpace the construction of adequate market structures, thus confronting governments and regulators with impossible policy choices.

To Milne's second stage belong those theoretical perspectives that base causal or normative models on macro developments reflected either in economic or sociological categories, and in which telecom development is seen

as the independent variable fostering economic and social change. Table 2.2 summarizes the major perspectives within this general approach on three dimensions: the normative implications, their causal assumptions, and policy implications. On the last point we in particular focus on the role of the telecom sector in development. First, a number of analyses focus on new technology as the fundamental driving force of development, because new technologies can spur economic development and challenge the power of traditional groups and interests. In political terms the classical modernization theory (Lipset, 1959) represents the most comprehensive theory linking technological and socioeconomic development because it is seen to undermine the power of traditional elites and institutions. The contemporary version of modernization theory has been reformulated in the parlance of economic neoliberalism, representing both a normative theory and a theory of economic and social development. The assumption here is that economic liberalization and deregulation generate growth and development because they stimulate technological innovation, which in turn stimulates socioeconomic development. Within this perspective economic and political freedom is perceived both as ethically 'good' principles and as necessary elements in the causal model that will yield modernization. In telecom it is assumed that liberalization will (and should) change values, attitudes, beliefs and habituated actions (informal institutions) that impede development. In some versions it is even accepted that liberalization should be implemented by authoritarian means, if necessary.

In contrast to the technological determinism and implicit normative bias in the neoliberal version of modernization, theories have been formulated that include a number of so-called 'political approaches.' These approaches are all based on the assumption that development can and should be controlled and managed by political means, and that telecom should be organized and managed to serve political objectives. The different schools within this category of approaches are distinguished by the weight they ascribe to alternative political objectives and the means by which these objectives are to be achieved. One group of researchers (for an introduction to these works, see McDowell (1997), chapter 2) emphasizes the need to structure the telecom sector in such a way that national values are prioritized and the population shielded against the diffusion of alien values. This perspective implies a protest against the methodological and normative individualism that characterizes the neoliberal approach, and an argument for a communitarian approach to solving developmental problems.

Table 2.2. Macro approaches to development of the Telecom sector.

Dimension Approach	Normative models	Causal models	Policy implications
Neoliberal approaches	Individual liberties and rights	Liberalization and deregulation generate growth and development by technological development and its social consequences.	Liberalization, deregulation, and privatization.
Modernization	Secularization and abolition of traditional institution is positive	A liberalized TC-sector as a conduit of ideas that change values and attitudes and foster development.	Liberalization may be implemented by authoritarian means
Political approaches	Priorities are politically decided.	Political goals can be reached through telecom policy	Dependency on the goals chosen
Participatory democracy	Political participation a good because it promotes national solutions	Telecom can create broad access to information and be a channel for broadly based political participation	Application of new TC technologies may promote national solutions to development based on popular participation

Source: Based on Steven D. McDowell (1997), *Globalization, Liberalization and Policy Change: A Political Economy of India's Communications Sector*, Macmillan Press, New York.

A significant example of the latter approach is McDowell's 1997 book on telecom development in India. His core argument is that communications policy liberalization has implications for democracy because the collective national project dissipates under the impact of global information structures (1997: 85) and is replaced by notions of a market equilibrium that allegedly promotes growth. From this perspective he argues that understanding the liberalization of the telecom sector as resulting simply from emerging interest groups pursuing their own interests is too narrow, although such groups certainly do play a role. The state plays – and should play – an independent role because it structures the access of competing interests and because state officials have interests of their own. He then goes on to argue for 'development communications,' where the democratic and developmental needs of the country are defined and pursued by the state as an independent collective actor, in effect applying Vogel's argument (1996: 262) that the liberalization pressures are not universal laws of the marketplace but subjective interpretations of what they should produce – i.e. normative. His

perspective implies that the state should have autonomy to formulate policies that transcend the power of individual interest groups. The links between interest groups and policies become more intricate because it is the ideological and institutional context in which state actors operate that determines both how they interpret the public interest, and how they pursue it (ibid.: 269).

2.1.2 Telecom and rational actors

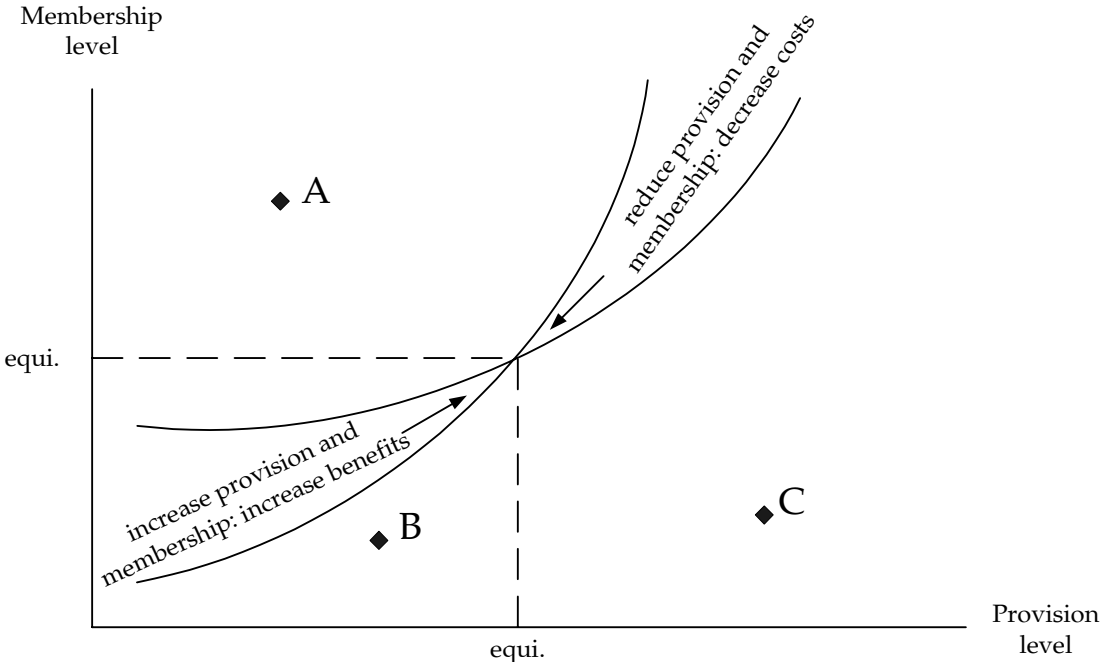
A second theoretical perspective on telecom development is informed by the behavior of rational actors in the competition and provision of what is partly a public, partly a private good. The impact of these actors has been analyzed at three levels. The first level focuses on competition between user groups or 'clubs' (what Mancur Olsson (1965: 36 ff.) called 'exclusive groups') in the provision of telecom services within an existing structure. The second perspective deals with the ability of individual groups to form coalitions that may change (or protect) the overall branch structure. The third level put clubs and coalitions into national contexts and accounts for how institutional reforms in other sectors spill over into telecom restructuring.

The 'Club goods' theory examines how the size of a 'user group' or 'club' is related to a good that is neither fully private (individually consumed and supplied) nor public (accessible to everybody in a community). If, for example, a special telecom service (a data network or internet portal) is reserved for business users, it is neither a private (more than one user) nor a public good (the number of users is limited) (Buchanan, 1968). In this context, a club is a group of individuals: '... deriving mutual benefit from sharing one of more of the following: production costs, the member's characteristics, or a good characterized by excludable benefits' (Sandler & Tschirhart, 1980: 1482; Sandler, 1992: 63 ff). As observed by Singh (1999: 34), telecom provision is a club good because it can '... be jointly supplied by its members who can share the costs of provision of the good (for example through installation costs) and exclude nonmembers'. Economic club theory then deals with how to define Pareto optimality in the balance between provision of a certain good (general or specialized services) and size of the user group (club membership), as illustrated in Figure 2.1.

The figure illustrates how it under stable institutional conditions is rational to increase membership in the user group, as long as the marginal benefits from an increase in membership are greater than the marginal costs. It is also possible to increase services as long as they are supported by an increase in membership.⁶ Each line in this sense represents a partial equilibrium constructed independently and based on the relative costs and benefits of

provision and membership – both technological and organizational (ibid., 1999: 35). The point where the two lines cross provides us with what is called the general equilibrium for a given ‘club’ good – the point where neither provision nor membership can be changed without reducing the aggregated utility of the good.

Figure 2.1 Provision and membership conditions for club goods.



Source: Singh, 1999: 36; Sandler & Tschirhart, 1980.

In the real world, however, the provision of club goods rarely (or never) follows the economists’ criteria for efficiency. The real provisions of goods and membership of clubs are instead determined by politics consisting of, on the one hand, the contest for influence between user groups with vested but conflicting interests in the provision of goods in the sector and, on the other hand the state, which is as a regulator is assumed to cater for the collective good, but is in reality often itself one (or several) user group(s) with its own agenda.

In this context, two types of factors contribute to outcomes in telecom that ‘deviate from optimal provision to yield second, third or fourth best solution’ (ibid., 1999: 216). First, specialized constituencies like business (domestic and foreign), the military, government organizations and international organizations tend to be more aware of the advantages of state-of-the-art telecom. In contrast, it is traditionally a field in which the broad public has little awareness. Second, the specialized constituencies also tend to be better organized, have more resources, and better access to decision makers.

The third factor is the role of the state. Ideally we might expect the state to launch regulations that will push either provision or membership toward a general equilibrium. This is what Singh (1999) terms the 'catalytic state'. In the real world, however, states are not ideal creatures but political actors in their own right. They have their own agendas and are in many cases internally divided between competing political factions and administrations. As a consequence they are in varying degree able to cater for the collective interests of society. Only under rare circumstances have they been able to be both effective (caring for the general development objectives of the state) and efficient (implementing the appropriate policies). Singh denominates this ideal type of state the 'catalytic state', the East Asian tigers being the best approximate examples. In most cases, however, states have either been 'dysfunctional' in the sense that they are subject to influence by particular groups, or 'predatory', which in Singh's terminology implies that the state has been captured by particular interests that exploit it for their own purposes. Whatever the cause, asymmetric power among interest groups or the nature of the state, suboptimal outcomes will result where either both provision and membership are kept below the general equilibrium (point B), where provision but not membership is restricted (point A), or where influential users are able to reserve the use of a particular service for themselves (point C). In Singh's summary of his case studies (*ibid.*: 222), the paradox is that regardless of how dysfunctional the state may be when it adopts structures that produce suboptimal outcomes, the state in a pluralistic environment must in the ideal sense ultimately forge a broad consensus to achieve sustainable outcomes.

Club politics by definition work within an established structure where individual groups try to maximize their own benefits, exploiting their resources and institutional position. Change will therefore be slow and incremental, typically reflected in increased service provision for specialized groups, and gradual improvement of general services due to new technologies. Rapid development in conservative systems occurs only when new services are introduced that do not have established interests (like cellular phones).

While these observations hold for democracies and autocracies alike, states under authoritarian communism were beset by a number of pronounced characteristics of the 'dysfunctional state' that significantly distorted the establishment of telecom infrastructures. First, the absence of a (not just a weak) democratic public left the influence solely to specialized interest groups (clubs), providing them with privileged access to telecom services at the expense of the public that was exposed to infinite waiting lists

(point B). Second (and negating the vision of communist societies as strictly controlled), large monopolized enterprises and sectors were in a position to cater for their own narrow interests and establish closed networks and specialized services inaccessible to any other group. (extreme positions of C's in Figure 2.1). Third, the political control produced a structure in the telecom sector that was completely unsuited for a democratic market economy. We return to the issue of the legacy of the communist era in the next section.

While club politics cause slow and piecemeal changes, collective action can produce radical changes of structures that in turn alter the relative position, power and access of user groups. There is an extensive literature on why and under what circumstances radical changes occur and why rational actors engage in collective action, but that lies outside the scope of this introduction.⁷ The process of institutional change engenders the same asymmetry between actors that we observed when we focused on club politics. Some actors are better positioned, and in particular the incumbent operator has more resources and better access to decision-making bodies than others do. In most cases where states are either dysfunctional or outright predatory and special interests are able to form a structure that limit provision or membership – or both – we find institutional structures that pave the way for (new) suboptimal outcomes, as described in Figure 2.1. Research in developing countries has shown that institutional change in the telecom sector either favors a pro-restructuring coalition that includes business, exporters, international organizations and foreign governments, or an inward-oriented coalition headed by the department of telecom, its workers and those businesses that continue to profit from the hangover of prior economic strategies (*ibid.*, 1999: 215). It has been observed in transition countries that major players in telecom development have been the incumbent operator (former state enterprise) and interest groups formed by companies and inhabitants of rural areas with extremely underdeveloped telecom infrastructures. Also telecom customers, trade unions, the European Union, the national and foreign telecom equipment industry and international financial institutions have to varying degrees been parties to the conflicts surrounding the development of national telecom industries (Prössdorf, 1997). Only in rare cases is the state (the 'catalytic' state in Singh's terminology) able to institutionalize a new structure that may (more or less readily) produce effective outcomes.

Institutional change in the telecom sector cannot, however, be analyzed independently from what occurs in other sectors of a polity, especially if that polity is concurrently going through a comprehensive phase of institutional

change. In this context, national institutional strategies will combine pace (fast/slow), scope (comprehensive/piecemeal) and phasing (sequencing) of restructuring initiatives (Nørgaard, 2000: 24-25; Sing, 1999: 3), and the actual pace, scope and phasing will determine which groups benefit from the restructuring initiatives. The national institutional reform strategy sets the overall policy goals, the order of policy initiatives and the pace. In general terms, by configuring the political institutions it also defines the policy style and balance of power between competing political forces. We may to some extent expect that this national strategy is matched by similar institutional strategies in specific sectors. The expectations of political actors about the way in which a sector should be governed and their access to decision-making will, of course, reflect the general political mood in society (Singh, 1999: 215), and a general strategy will in some cases (e.g. liberalization and privatization) have direct implications for any sector. There may also be instances where outcomes in one sector will spill over and affect outcomes in other sectors, producing 'nested games' (Tsebelis, 1990). Yet, there may also be persistent differences between sectors. Traditional sentiments and concerns may set other standards for specific sectors, as when a number of countries despite liberal economic policies bar foreigners from buying land. Sectors will also have different constituencies and levels of public awareness. The institutional setup will hence result in different asymmetries, and corporatist or technocratic interests may, for example, play a disproportionate role in policy areas where public awareness is low. Leadership may also set different standards for participation in different sectors.

Hence, a country's national institutional strategies serve as a starting point for analyses of institutional reforms in the telecom sector, but they cannot stand alone. In particular, we must trace the constituencies (user groups/clubs and coalitions) behind (and against) reforms, how and by whom the policy objectives have been formulated, and the extent to which the state (political institutions and leadership) has been able to mediate the access and power of competing interests, both domestic and foreign. But we should also trace the capacity of the state to formulate effective policies irrespective of pressures from coalitions and groups within and outside the state apparatus.

2.1.3. Institutional approaches

Institutional theory explicates how formal and informal institutions constrain or induce specific actors and actions (Nørgaard, 2001). This approach occupies the methodological middle ground between the macro approaches (described in section 2.1), and the individualism represented by club and

collective action theories described in the previous section, but also by classical behavioralism, which in institutional theory is formulated in what Peters (1998) terms 'empirical institutionalism'. Within institutional theory, cultural (or sociological) and rational institutionalism have during the last two decades occupied opposing positions based on alternative assumption about how actor preferences are formed and how institutions change. Rational choice theory perceives preferences in purely instrumental terms as being exogenous to institutions as structures that determine the relative weight of actors' resources and define rational actors' strategies. In contrast, cultural (or sociological) approaches assume that preferences are formed within institutions, and that the individual by joining an institution (or organization) will gradually adapt to its internal code of behavior and change his or her personal preferences accordingly. Historical institutionalism occupies a middle ground between rational and cultural institutionalism, in that it focuses on how historically formed institutions create path dependencies that at later stages assume independent roles, both as structures that form actors' strategies and as cultural identities pursuing independent collective goals.

Cowhey's (1994) comparative analysis of the role of political regime types in institutional change in the telecom sector is one example of theoretically less ambitious empirical institutionalism. His point of departure is his argument that '... identifying the model of telecommunications regulatory and ownership system prevailing in a country is only a first step; the second step is to understand this model within the context of the political institutions and the incentives of that country'. In his comparison of two Latin American countries he explores the effect of three institutional variables on telecom sector reform strategies: division of government power, voting and party system and degree of federalism. He then applies this typology to telecom reform in Mexico and Argentina, countries that are relatively industrialized and require massive extensions of their communications infrastructure but implemented different institutional solutions. Both chose to privatize and permit foreign ownership. But they split over whether to retain a single company for basic phone services, and their strategy for privatizing differed significantly. His analysis shows that part of the answer is to be found in the relative power of competing interests as mediated by political institutions. He summarizes his finding quite briefly, stating that, 'economies and technology propose, but politics dispose' (ibid.: 564). Molano (1997) also works within the empirical institutional tradition when he focuses on the concrete character of the political institutions that structure the access of competing interests. In particular, he distinguishes between weakly/

strongly organized policies and a weak/strong leadership, establishing four categories that he uses to explore a number of country studies. In conclusion, he observes that especially a strong national executive has the potential to implement privatization of the telecom sector, and particularly during the honeymoon period following an election.

In his major study of telecom reform in developing countries, Petrazzini (1995) observes that telecom privatization and liberalization are more successful in developing countries with a high degree of state autonomy and power concentrated in the executive branch of government. The puzzle for Petrazzini is that he reaches the opposite conclusion of Raymond Duch's (1991) study of telecom reform in a number of developed countries. Duch, who analyzed the preconditions for telecom reforms in developed countries, found that open, pluralist political systems are more prone to liberalization and privatization than are closed, corporatist systems, which provide the least promising environment for interests demanding reform. Petrazzini finds the apparent contradiction between these two explanations in the different genesis of reforms in the two types of countries. In less developed countries, reform initiatives have been exogenous to the sector, deeply rooted in economic and financial crises, and governments, especially the executive branch, were primarily responsible for placing reform on the political agenda. In most developed countries economic pressures for telecom reform tended to be endogenous to the sector, to be induced by technological innovations, and carried out by large corporate users. In effect, similar institutional arrangements may affect policy processes in different ways, depending on the political context.

In Mark Thatcher's (1999) study of telecom development, 'national institutionalism' is in the historical institutionalist tradition. The book is essentially a comparative case study of telecom reforms in Britain and France, describing the era from the 1960s state monopolies to the liberalization movement of the 1990s. He describes his study as a sort of '... critical case study' of national institutionalism, perceived in broad terms as institutional legacies of the past that condition present policy making. Thatcher defines national institutionalism as (ibid., p. 8): '... persistent patterns [that] exist in nations' policies and policy formation, lasting for decades and even longer.' Institutions have an impact because they structure decision making. They form the framework within which actors operate, and shape social action by providing incentives, opportunities, and constraints and rules that structure behavior (ibid., p. 15). That definition brings him close to the standard tenets of historical institutionalism where policies of the past lead to the institutions that constrain present day actors. He identifies four key institutional

features in national patterns of policy making in telecom (*ibid.*, p. 309): the organizational position of the network operator, including the creation of autonomous spheres of decision making and ownership; the powers of elected politicians; financial instruments and rules applicable to sector policy; the existence and powers of an independent regulator. It was these traditional institutions that produced dissimilar institutional outcomes in England and France, two countries exposed to otherwise identical exogenous forces (technological and international). Paradoxically, but in full agreement with later findings in this paper on transitional countries, he in general finds no effect on economic performance of institutional change or setup in the sector.

The observation that institutions are country specific and that the effectiveness of particular formal arrangements varies with national context, is also the principal message in Levy and Spiller's (1996) comparative analysis of investments in the telecom sector in six countries. One of their main arguments is that if institutions in a particular sector are to be effective and stable, they must 'fit' into the context of the other political, legal and social institutions of the country in question. Stable institutions are essential because they can inspire confidence among prospective investors that their investments are safe and not exposed to administrative or political expropriation. Only if such confidence exists will it be possible in the context of a liberal market economy to attract the investments that are essential for growth and development. Levy and Spiller distinguish between 'regulatory governance' defined as 'the mechanisms a society uses to restrain the discretionary scope of regulators', and the 'regulatory incentive structure' described as 'the rules governing pricing, subsidies, competition and entry, interconnection, etc.' Levy and Spiller perceive both as 'choice variables' – rules and institutions that are subject to political decisions. However, the effect of both is conditioned by the specific national context. This context consists of five historical institutions, so-called 'institutional endowments': legislative and executive institutions, judicial institutions, custom and other informal but broadly accepted norms that tacitly restrain the actions of individuals or institutions; the character of the contending social interests; and the country's administrative capabilities. Performance (measured as investment and development) is best when there is a fit between governance structure and institutional endowments in the sense that they actually work to restrain the regulator, and at its worst when regulations are imposed irrespective of local conditions and without effectively restraining the regulator.

While Levy and Spiller's analyses are based on historical examples, they also attempt to design a normative theory about which institutions will be most effective in a given national context. Their point of departure is a game

theoretical diagram involving alternative institutional arrangements that – assuming rational actors – produce three different outcomes: a stable system based on simple rules; a stable system based on complex rules (depending on the administrative capacity of the country); and an outcome where existing institutions make it impossible to generate trust and commitment. In this case a government must apply other mechanisms to obtain the necessary investments, for example international guaranties. On a more general level Levy and Spiller conclude that effective ‘regulatory incentives’ and good ‘regulatory governance’ may be competing objectives because a national institutional context requires suboptimal solutions if confidence in the regulatory system is to develop. The ‘best’ institutional solution will therefore be different for different countries, depending on national institutional endowments. It is thus the national institutional endowments that ultimately determine if it is in any way possible to design an effective regulatory system.

2.2. Exogenous factors

The three approaches charted in the previous section delineate various aspects of the internal restructuring process. A second level of analysis includes two sets of variables exogenous to – but important for – telecom development in most countries: technological development and international regimes.⁸

2.2.1. The role of technological development

The communist countries were on the global frontiers of technology and science in isolated fields. This expertise, however, was applied in the military sector (and space exploration). Because of systemic constraints and obsession with military security, this expertise was never put into the service of civilian society, which for the telecom sector implied that although some countries (in particular Czechoslovakia and Poland) had a significant production of public switching and transmission equipment (PSTN) and customer premises equipment (CPE), they used outdated technologies that most Western countries had abandoned a decade before. Moreover, restrictions imposed by the Coordinating Committee for Multilateral Export Controls (CoCom) had barred imports at a time when the global telecom market was undergoing rapid change driven by technological developments. Hence, when the borders were opened after 1989, the technologies that came to set the new market conditions had already been developed and adapted to the needs of the Western markets economies. In that understanding, the technologies that triggered the East European policy changes in the telecom

sector during the next decade were exogenous to the region. They had been developed for and adapted to the needs of Western type systems, and were now imposed on countries that were only beginning to restructure. Because these technologies and their policy implications were exogenous to the post-communist countries, they afforded an opportunity to assess 'the effects of national institutions on policy in the face of powerful supranational forces', as noted by Thatcher (1999, p. 47). Technological pressure for change is one such powerful supranational force. This section summarizes the major technological changes in the telecom sector that preceded the opening to the East, and the economic consequences experienced by local telecom sectors.

The telecom industry was up to the late 1960s very restricted, as in most countries it was a public or private monopoly. Its primary (and in the majority of cases only) activity was to operate telecom networks and manufacture and supply public switching and transmission equipment and customer premises equipment – in most cases only telephones. The networks consisting of fixed lines with analogue transmission offered very few advanced services and costs were strictly related to distance.

The structure of what had become an increasingly conservative industry embedded in national institutions and interests was nevertheless challenged by the technological developments that from the late 1960s completely changed the modus operandi of the industry. The increased capacity of microchips, miniaturization and digitalization soon outstripped the electro-mechanical exchanges, increased quality, lowered costs, made costs less related to distance, and opened for a wide range of new services. On the demand side the use of telecom exploded. First, the use of computers paved the way for a whole new range of services: fax, e-mail, databases, videotext systems, mobile communications, visual services and networks – to mention but a few. Also customer premises equipment became an expanding field and provided a host of new business opportunities. Second, the well-known correlation between wealth, income and use of telecom services became a growth factor when domestic demand – from firms and the public at large – increased the size of the industry. Also the demand from businesses that depend on having the capacity to handle large amounts of information (finance, banking, international trade etc.) boosted demand. The increasing dependency of all sectors of society on the quality and scope of telecom meant that the industry had become a strategic sector with implications for the economy and for society in general.

Not only the role of the industry in the economy was transformed by the technological changes. The boundaries between the telecom industry and other sectors also became increasingly blurred in the 1980s and 1990s, when

microelectronics and digital technologies (and the internet) made it possible for broadcasting and audiovisual entertainment services to compete with the telecom companies in their core business areas. The entry of new companies further boosted competition and dynamism in the sector.

These changes, all fueled by technological developments, had fundamental implications for the structures of the telecom industry. The new technology offered enormous opportunities for new business and profit, but it also required huge investments in fixed installations and research and development (R&D). These capital requirements led to the wave of cross-national alliances, mergers and acquisitions that came to characterize the industry in the 1990s. The flip side of the coin was that network operators became increasingly dependent on a small number of business users, in particular transnational corporations who generated a considerable share of telecom earnings. This again opened for asymmetric influences because the narrow needs of these companies clashed with the more diffuse public needs.

The trends described above had broad social and political implications for each country in which new technologies clashed with local priorities and institutions,⁹ but the situation was necessarily more acute in the post-communist countries. First, local network operators did not stand a chance in the evolving global competition. They not only had but a fraction of the capital required to invest in the new technologies. Their organizations and personnel were also unqualified for the new tasks. Hence, the only solution available to local governments was to search for foreign partners that could bring in capital and organizational and technical know-how. Second, when they formulated their development priorities and objectives, the new telecom companies came to depend financially on the new business class, transnational corporations and the emerging urban middle class, and this in societies comprising large regions that still lacked basic services, and where purely developmental tasks were high on the public agenda.

2.2.2. The influence of international regimes

International regimes are another exogenous factor in the post-communist countries. During the 1980s a comprehensive international regulatory framework for national telecom policies was agreed to. When the Central and Eastern European countries opened up their economies in the beginning of the 1990s, they immediately came under strong pressure for change from these external forces. Integration into the international telecom market requires adaptation to the rules developed in supranational bodies like the EU and WTO. This section provides an outline of the development in international telecom policy in order to assess the consequences for Central and

Eastern Europe. An overview of the common challenge will make it possible to assess the various countries' ability to maintain different national strategies and institutions in the face of international pressures (the globalization thesis).

The increasingly powerful supranational economic institutions led to a global political economy in the beginning of the 1980s, reflecting the fact that trade in services is difficult to regulate on the national level. This development was accompanied by a growing awareness of the economic importance of telecom as input in the production of many other services. It was recognized that the European industry was unable to keep up with such developments within the current market structure (Steinfeld, Bauer & Caby 1994, p. 53). On the agency level the United States, having implemented early reforms of its national companies, pressured for liberalization of equipment, services and tariffs through the International Telecommunications Union (ITU) and the General Agreement on Trade and Tariffs (GATT).

On this background, the EU began trade negotiations on telecom services in the mid 1980s. As many of the Central and Eastern European countries are either candidates for EU membership, wish to apply, or to make trade agreements with the EU, the EU regulatory framework is highly relevant. The idea that trade in services was a pertinent international subject was rather new. The Commission released in 1987 a so-called green paper on telecom that proved to be the decisive step toward a European telecom policy. The message was that engagement at union level was needed to facilitate a common telecom market with 'fair and effective' competition (Thatcher 1999, p. 81). The paper defined the areas in which community action was called for, mostly exempting basic services from regulation. Still, the paper on the whole anticipated a much more active role for the Commission in telecom. The major proposals included the following (Steinfeld, Bauer & Caby 1994, pp. 55-56):

- Liberalization and elimination of restrictions on competition in value-added services and in the supply of terminal equipment
- Common principles of open network provision as a precondition for market access
- Community wide standards to ease entry for new operators
- Separation of operator and regulatory authority
- Consistent Community positions in international negotiations to enhance EU negotiating power

The green paper left considerable room for interpretation by the member states. Because of different interpretations of what comprises basic and value-added services, and hence differences in the ways in which services should be regulated, there were variations in national competitive levels in the implementation. In addition, a wide range of instruments were used for implementation, creating different effects. The member states are entitled to defining national public service goals, because telecom is seen as an important input in the supply of many other services. These goals not only varied but also created diverse demands on the industries (*ibid.*, 1994, p. 58). The members were also free to create different institutional regulatory arrangements, for instance varying degrees of independence of the regulatory authority from the government, and varying degrees of monitoring to prevent anti-competitive practices. Hence, after 1987 the EU member states were required to live up to certain general criteria, but important areas were left out and each criterion leaves room for interpretation.

The debate in the EU and the USA continued under the auspices of the WTO in the Uruguay Round in 1991. Even though other difficult topics overshadowed the telecom negotiations, certain general agreements were reached. The countries adopting the agreement committed themselves to granting suppliers from other member states access to and use of public telecom transport networks and services on a non-discriminatory basis (OECD, 1999, p. 4), and were therefore obliged to open their markets. However, WTO obligations only included value-added services, while basic services remained in the hands of state-owned operators. Incumbent operators would thus in practice be able to block market access. In 1997 more precise and comprehensive regulations were developed. First, they obliged the countries to prevent anti-competitive practices, including cross-subsidization, the use of information obtained from competitors, and withholding technical and commercially relevant information. Second, rules were elaborated to ensure interconnection possibilities. They required the provision on a non-discriminatory basis of terms, conditions and rates that are transparent and reasonable and of a quality no less favorable than those of the incumbent (*ibid.*, p. 7). Thus, objectives that guarantee both liberalization and competition are now included in the WTO requirements. However, member states still have significant room for making national policy choices. The WTO agreement contains problems similar to those in the EU framework concerning what should be subject to regulation and what should not. Moreover, the agreement does not specify which suppliers those 'major suppliers' are that governments must intervene against in case of anti-competitive practices (*ibid.*, p. 10). Like in the EU, the member states also have the right

to define specific public service obligations they wish to maintain. All in all, the Commission and the WTO agreed on a number of neoliberal principles, thus liberalizing important parts of the telecom industry. However, the questions about public ownership and national monopolies over infrastructure and basic services were left untouched by the reforms.¹⁰

2.3. A framework for analyses of telecom development

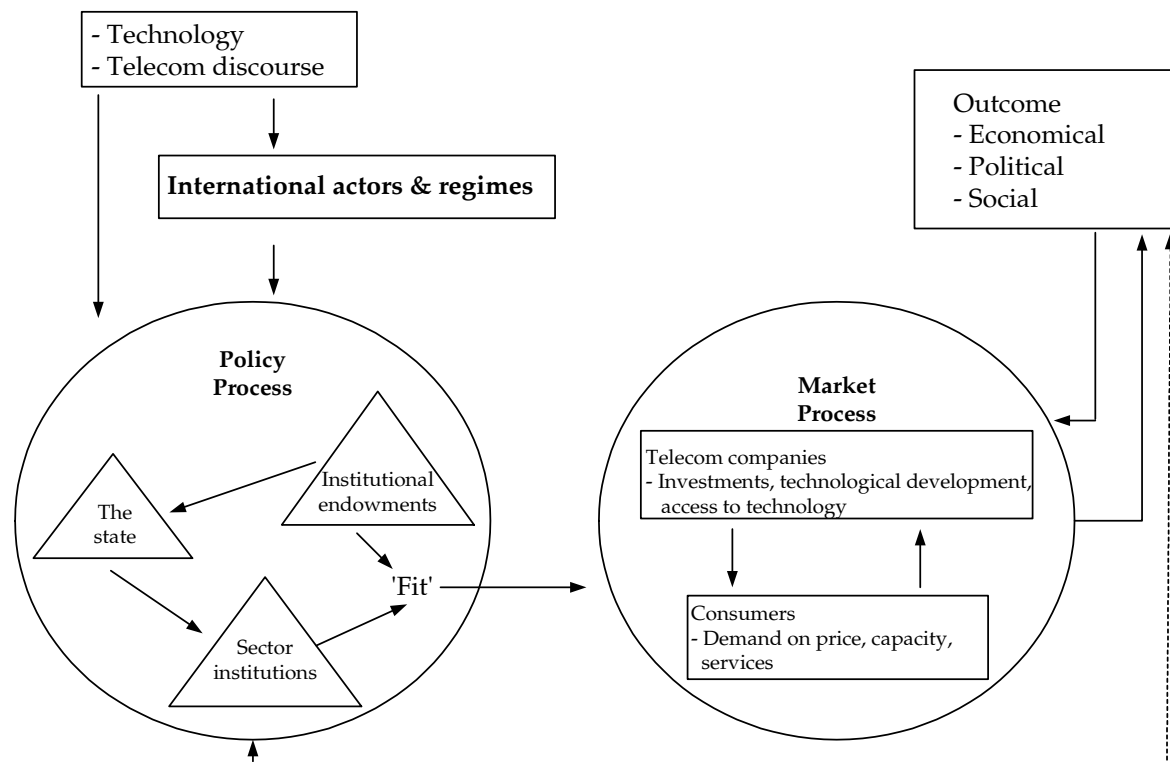
The previous sections examined a number of approaches to analyzing telecom restructuring in post-communist countries. The approaches were treated as mutually complementary rather than competitive in the sense that they focus on different sets of factors that may influence telecom restructuring. Which approach or set of factors is most important in specific cases can be determined only through empirical analyses. This understanding is reflected in the analytical model outlined in Figure 2.2. The model illustrates how the exogenous variables (technology, telecom discourse and international regimes and actors) set the parameters within which the internal policy processes around telecom restructuring take place. These policy processes are in turn formed by three domestic sets of variables. First, they include the institutional endowments that characterize each country. Endowments comprise at least the categories defined by Levy and Spiller: legislative and executive institutions, the judicial system, social and political cleavages (addressed in section 2.1.3), social norms, and administrative capacities. Both the clubs that are attached to an existing structure and the coalitions and actors that may change this structure are included, as are the formal institutions and informal norms that frame any conflict. Secondly, they include 'the state' and its ability to formulate and implement effective policies. One way of categorizing these capacities is to use Singh's broad distinctions between 'catalytic', 'dysfunctional' and 'predatory' states. Finally, the institutional setup that formulates the rules for the telecom sector are also considered. These rules comprise the regulatory and ownership structures focused directly at the telecom sector, but also other legislation of a broader scope that applies to this sector.

These are the rules that set the parameters within which the market processes occur. In a market place regulated by an institutional setup, the actual interaction processes between the state and the companies, between companies, and between companies and consumers will lead to success or failure in achieving the economic, political and socially defined goals. If the state manages to design adequate institutions we may ideally obtain Pareto optimality on the telecom market place. In most cases where particularistic (club) interests have affected policies and institutional choices, the market

process will give certain actors (and groups within the state) a privileged position, producing suboptimal outcomes in terms of a country's development objectives. The realization of development goals is ultimately related to the stage of development (as defined by Milne) and specific national priorities that demonstrate the capacity of the institutional setup to meet its goals (Bychkova, 2001). Schenk (1997, p. 44) has here identified four objectives reflecting policy preferences in all transition countries: network access, quality improvement, sustainable financing and interoperability with European networks. He calls these preferences the 'magic quadrangle' after the German economic policy objectives.¹¹

The research model that will guide the following analyses is presented in Figure 2.2. The framework is primarily applicable to developing and transition countries with urgent investment needs. It is less applicable (or needs further specification) if it is to be applied to developed industrial countries (Milne's 4th and 5th stages of telecom development), where the issues are not so much basic investment resources as modes of privatization and how to design regulatory systems that promote sector development in basic and advanced services in the context of a dynamic market while meeting individual market based and non-market based social demands.

Figure 2.2. Analytical model for understanding telecom development.



The model is descriptive but includes two related hypotheses (or alternative hypotheses) about what fosters successful telecom development, both related to the globalization argument. First, who (what) are the agents of change? Are they international actors (the realist approach), the international discourse (the constructivist approach) or it is the state itself? Actors operate within the institutional endowments of the particular country, which may in turn be either conducive or detrimental to reforms. Second, which institutional model is most conducive to growth and development? Is it a neoliberal universal model as epitomized by the globalization argument? Or is it rather an unspecified national model that must consider national endowments if it is to be effective, as argued by the different versions of historical institutionalism and as specified in a national context by, for example, Levy and Spiller. These are the questions we will pursue in the next section.

3. Telecom under post-communism

'In 1990, the former Soviet Republic of Georgia gave an exclusive contract to erect an elaborate international telephone company to Videotel, a seven-person New York firm that had never installed a telephone system. Three years later, the system could handle only six international calls simultaneously. When the government of Georgia terminated the contract and sued the U.S. firm, the firm responded with a breach-of-contract lawsuit against Deutsche Telecom, claiming it was trying to steal Videotel business. The New York firm's counterattack was led by lawyers that included former U.S. Defense Secretary Caspar Weinberger, a former adviser to President Clinton, and a former State Department official. The U.S. State Department defended the U.S. firm and pressured the World bank to withhold a \$40 million telecommunications loan to Georgia'.¹²

The tale of Georgia's misfortune in one of its first encounters with international finance better than any theory illustrates the challenges faced by the governments of the emerging democracies in the East if they attempt to leapfrog into the brave new world of globalization and liberal economies. In this case the incipient understanding by local reformers that a modern communication infrastructure is critical for economic restructuring was not matched by the necessary understanding of and capacity to handle the harsh realities of international business. The result was that desperately needed investments and structural reforms were delayed.

This section narrows the focus of telecom development to those countries that until a decade ago were part of the communist (or socialist – or whatever label is preferred) world with all the institutional ramifications character-

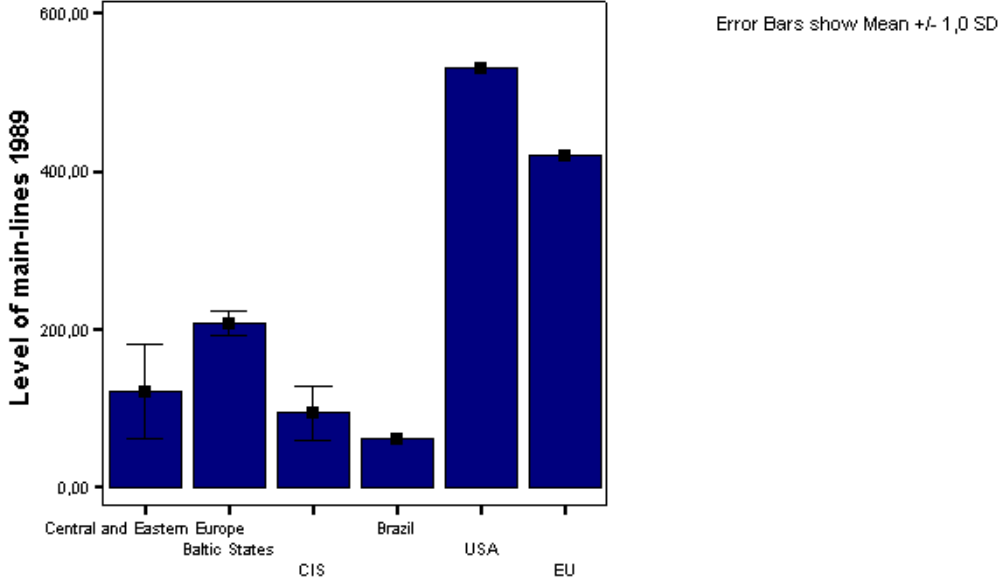
izing this type of governance. The first section looks into the institutional legacy of the incumbent systems, while the second section summarizes the achievements since the beginning of the transformation. Section 3 makes a preliminary attempt to identify structural factors that may explain the different levels of institutional change and answers the questions stipulated in section two.

3.1 Post-communist Telecommunications: Legacies of the Past (Institutional endowments)

Telecom is an area in which post-communist governments now face huge challenges. It is a field where a combination of outmoded technologies, structures and management routines form serious obstacles to economic and political development. During the communist era telecom was for several reasons neglected. First, services – including telecom – were in the Marxist economic orthodoxy regarded as non-productive and were therefore last in line in the eternal battles over investment resources. As a result the post-communist countries inherited an entire industry run by inefficient procedures and based on outmoded technology and underdeveloped, worn-out networks. Consumers had to put up with conspicuously poor services, endless waiting lists and a distorted pricing system (including major cross-subsidization of prices), that in no way reflected real costs or any deliberate political development strategy. The resulting undeveloped telecom network is illustrated by the gap in the number of main lines between East and West, as shown in Figure 3.

First, the post-communist countries generally had less than half as many main lines per 1,000 inhabitants as did the EU and the US. In the CIS penetration rates were only one fifth of this rate. The figure in general confirms that the Central and Eastern European countries and the Baltic States were ahead of the CIS, although there were exceptions. In the CIS especially the Russian Federation and Armenia had penetration rates above average. In Central and Eastern Europe, Hungary and (to an extreme degree) Albania were below the regional average, while Bulgaria stood out as the regional leader (see appendix, Table 6). Still, in spite of its isolation from the surrounding world, the region was ahead of a comparable country like Brazil. Productivity measured by the number of main lines per employee was less than one third in Central and Eastern Europe compared to the EU and USA in 1989, and less than half in Bulgaria, which had the most developed network in the region (see appendix, Table 1).¹³

Figure 3.1. Level of main lines per 1,000 people, 1989.¹⁴



Source: World Development Indicators, 2000.

Note: Data is not available for Bosnia-Herzegovina and Slovenia.

Second, the telecom structure also reflected the persistent attempts to control and structure information. Public media were strictly controlled and hierarchically managed, and telephone (and data) lines thus reflected the hierarchical political and administrative systems. As subsequent development proved, the political elite held that liberalization of telecom was a threat to the fundamental institutions of the existing system (Dizard & Svensrud, 1987). Horizontal communication (especially with the countryside) was difficult, while closed lines connecting privileged users (enterprises, administrations, and political institutions) often were as numerous as the lines in the public network (Campbell, 1995: 9). Foreign lines, in particular, were very limited and – in the most rigid systems – tapped by security agencies. Hence, the backwardness of telecom in communist systems was not due to policy errors. It was of a systemic nature and reflected the basic priorities, political and administrative structures and ideologies of those systems. While these systemic factors (with a few exceptions) led to an overall and growing technological gap in telecom compared to Western systems, they simultaneously reflected (and served) the existing systems. Technological systems are in this sense, as also observed by Henten and Skouby (1995), socially designed. This social design also applied to the basic architecture of networks. Most communist countries had ‘star-like networks’ in that a call

from one provincial city to another in most cases was routed via the capital. International calls from all Soviet republics went through Moscow. The tariff system also reflected social priorities. In Lithuania, for example, the ratio between local and international tariff was 1:3000 (ibid.). In most Western countries the relationship is around 1:60. This again reflects a closed society, but also a society that emphasizes low prices for basic needs. The technological backwardness was further reinforced by the autarchic economic development strategy that restricted economic contact with the surrounding world. And in the 1980s, when Western telecom systems were revolutionized, the CoCom restrictions¹⁵ prevented exports of the new technology to the communist world.

On the level of institutions, telecom under communism was, as all components of the economy, an integral part of the state administration, managed by state officials and subject to political tutelage. This had to be changed when telecom began to operate in the emerging market place. New systems of management and control responsive to the demands of the customers in the emerging market and democracy had to be introduced. The problem was solved by using various combinations of deregulation and privatization. We here follow Eliassen and Sjøvang (1999, p. 6) and define 'deregulation' as the loosening of restrictions on entry or exit from the market and on price setting. 'Liberalization' involves both 'deregulation' and 'privatization', i.e. the sale of the controlling public share in a firm or governmental body. In this context the post-communist countries faced the same challenge as did Western Europe, where telecom companies in most countries until the 1990s had been public institutions, acting both as operators, regulators and – in many cases – policy makers. Liberalization also here required that regulatory regimes or governance structures be established, similar to those existing in the US, where the telecom sector traditionally had been a private regulated monopoly. However, in the post-communist countries economic decline and the existence of domestic enterprises based on outdated technologies and production procedures created tensions that were much harder to overcome than what the Western European countries had experienced. Consideration for external pressures had to be weighed against domestic interests. One option was to base network modernization on domestic producers in order to maintain employment. Also, shortages of hard currency set strict limits to the amount of equipment that could be bought in the West. This strategy, though, had the disadvantage of having to cope with outdated technologies and production procedures. A second option was to engage a strategic foreign investor. Various sorts of licensing arrangements would then provide the country with the needed foreign

investments and organizational know-how. Such a strategy can entail various long-term costs, as Hungary experienced after the reforms in the beginning of the 1990s. When Deutsche Telecom bought a majority share in the national telecom company Mátav, Hungary lost the option of making independent policy-decisions in the telecom sector. The reason was partly the substantial market share controlled by a foreign company, and partly the fear of how the German government (that owns a majority share in Deutsche Telecom) would react to reforms that might weaken Mátav's position. Such tensions between the interests of domestic and foreign industry constitute a central dilemma in the liberalization process in the post-communist countries.

Institutional changes also had implications for the access, power and privileges of social and political groups that had been, or were to be, associated with the telecom sector. Some user groups (clubs) stood to lose from the changes, others to win. As summarized by Bauer (1994, p. 30): 'Once established, policies, by favoring particular groups, may generate vested interests in the status quo that have to be overcome in attempts to reform existing policies. Policy reforms, therefore, are always constrained by the status quo ante and, hence, by policies of the past.' In this process the telecom sector in post-communist systems faced, as did almost all other sectors of the economy, the basic problem of political asymmetry. The losers (and expected opponents of reforms) in the process, bureaucrats in the old ministries, equipment producers and incumbent operators, possessed massive political resources. In short, the institutions that in the past performed all three functions as operator, regulator and policy maker all stood to lose in the liberalization process. Their loss of income, power and prestige was immediate, they were concentrated in established organizations, and they had access to decision-makers. The winners (and supporters of reforms), new companies, international companies and organizations, and the emerging middle class, were inefficiently organized and they would in any case discount gains that only were to emerge in an unspecified future.

An additional political conflict exists between competing priorities (and political interests) under the new order, reflecting the overlapping of Milne's 5 stages of telecom development. On the one hand, we find those defending the general public good or developmental goals that prioritize the development of backward areas, especially the countryside, where telecom services are in a sorry state. On the other hand we have urban interests, new businesses, international companies, government institutions and an emerging middle class that will articulate the immediate need for international communications, and for advanced value added services (VANS)¹⁶ like data transmission and upgrading of the urban networks. In a context of scarce

investment resources, these contradictory objectives obviously confront decision-makers with delicate political choices. To these concrete institutional and political concerns should be added the more intangible need for a change of mentalities and routines of behavior, which applies to everyone working in the new market economy.

While decision-makers are under cross-pressures from domestic actors and interests, they also have to comply with demands from an international community where they aspire to become full members. This especially applies to the liberalization of the service sector brought onto the agenda of international organizations (GATT and WTO) from the mid-1980s, as outlined in section 2. This emerging regime challenges traditional views of telecom as a natural monopoly and has put services in general and telecom in particular on the liberal agenda. Post-communist countries that aspire to EU membership also have to meet the demands of the EU aquie that emphasizes competition, deregulation and privatization of the telecom sector.

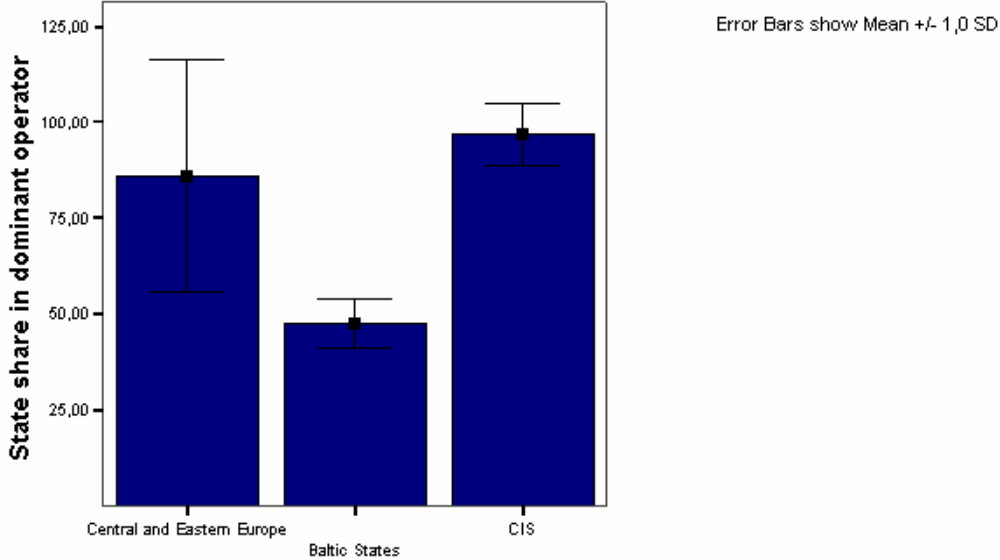
3.2. Development of Telecom in Central and Eastern Europe, the Baltics, and CIS¹⁷

This section describes the development of the telecom sector in post-communist countries during the last ten years from four perspectives: institutional change, network development, economic efficiency and effectiveness in meeting demand.

3.2.1 Institutional reforms

Institutions in post-communist countries have changed a lot since the days when public monopolies dominated the sector. Many countries have started to privatize their telecom operators and to separate operators from regulating authorities. Yet, most countries are still far from a complete restructuring (for details, see appendix, Tables 4 and 5). Most Central and Eastern European countries are planning to set up independent regulators, while Hungary, Albania, Latvia, and Lithuania have already completed their reforms. In the CIS only the Kyrgyz Republic separated operator and regulator. Hence, only a few countries have actually implemented one of the most important market reforms. Regarding privatization, the Baltic States made fewer reforms while the CIS on average privatized the most. As shown in Figure 3.2, Central and Eastern Europe also privatized to a large extent. However, the regional averages hide large differences between the countries, with the Hungarian state owning only 6 percent of the dominant operator and the Czech Republic 51 percent, compared to most other dominant operators that are 100 percent state owned.

Figure 3.2. State ownership in dominant operator.



Source: EBRD Transition Report 1998.

The telecom sector in the post-communist countries generally does not work on a market basis. This demonstrates the difficulties of making major changes in a sector of crucial importance. Overall, there is more competition and a higher degree of privatization in mobile telephony, indicating that mobile telephony as a rather new area is less subject to conservative interests. Most countries have more than one operator and at least one private one. Mobile telephony is thus a significant competitor for domestic fixed line monopolies.

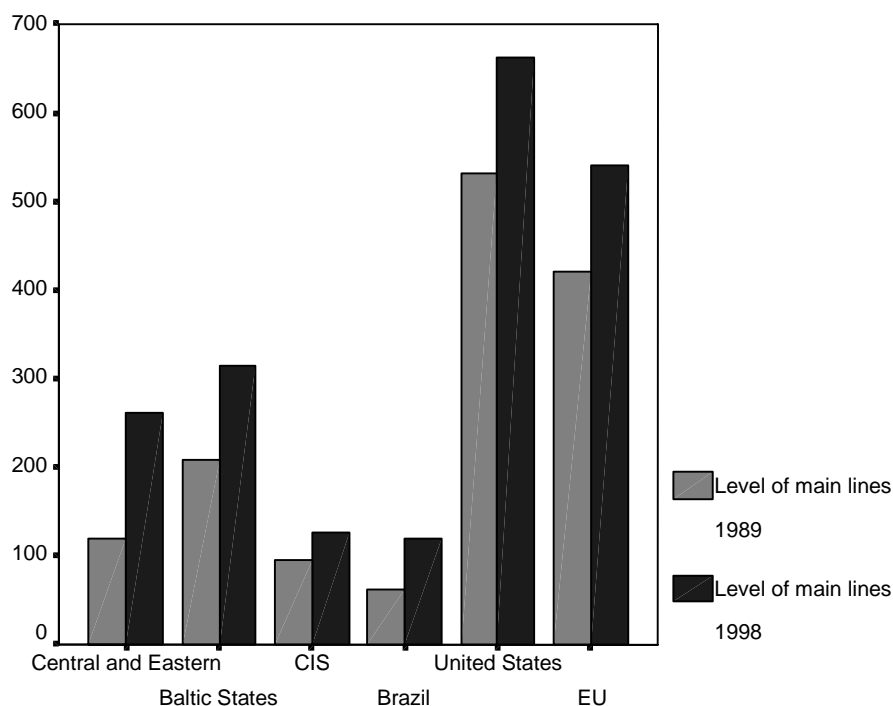
3.2.2. Development and Modernization of the Telecom Network

When the Central and Eastern European countries opened up their economies after 1989, they urgently needed to expand and modernize their networks and introduce new technologies like mobile phones, digitalization and internet connections in order to provide the basis for producing other goods and services. The countries had different starting points, and they have shown varying ability to meet this challenge.

As seen from Figure 3.3 (for details, see appendix, Table 3), the countries situated the closest to Western Europe had better initial conditions than did the CIS. The Baltic states had more than twice as many main lines as did the CIS, and they now have the most extended network. In Central and Eastern Europe Albania, having been ravaged by civil war, has a lower penetration rate than the rest, lowering the average regional level. Croatia, however, has the highest penetration rate despite being placed in the same troubled area.

There has been a general and growing trend in amount of main lines, especially in Central and Eastern Europe and the Baltic states, as shown in Figure 3.4. Again there are large differences in Central and Eastern Europe, with Hungary as the front-runner.

Figure 3.3. Level of main lines per 1,000 people, 1989 and 1998.

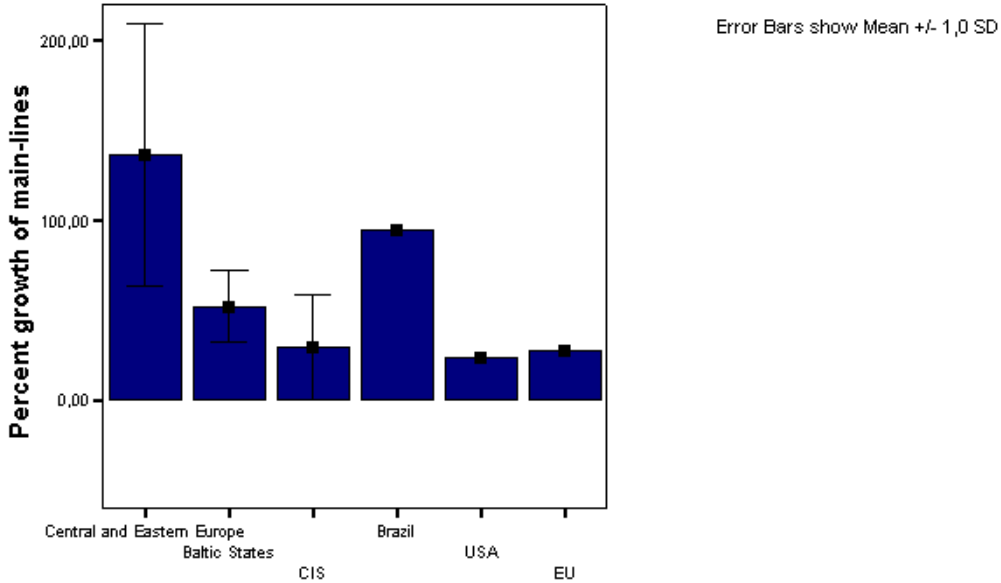


Source: World Development Indicators, 2000.

Note: Bosnia-Herzegovina, Macedonia (FYR) and Slovenia are not included in this graph as no data are available.

The increase in main lines indicates that these regions are gradually reaching a West European level. This picture may nevertheless be unduly optimistic. In 1998 most of the post-communist countries had penetrations rate of only half the average of the EU and the US. Eastern Europe is chasing a moving target also in this field. That the target is moving is reflected not only in the increasing main line coverage, but also in the less easily quantifiable quality of connections, for example the number of internet connections and VANS. The CIS, which has not even managed to catch up in the area of main lines, is in fact now getting caught in its position as one of the losers of the information technology race, thus increasing the cleavage dividing the post-communist countries.

Figure 3.4. Growth of main lines 1989-1998.



Source: World Developments Indicators, 2000.

Note: Data not available for Bosnia-Herzegovina, Macedonia (FYR), and Slovenia.

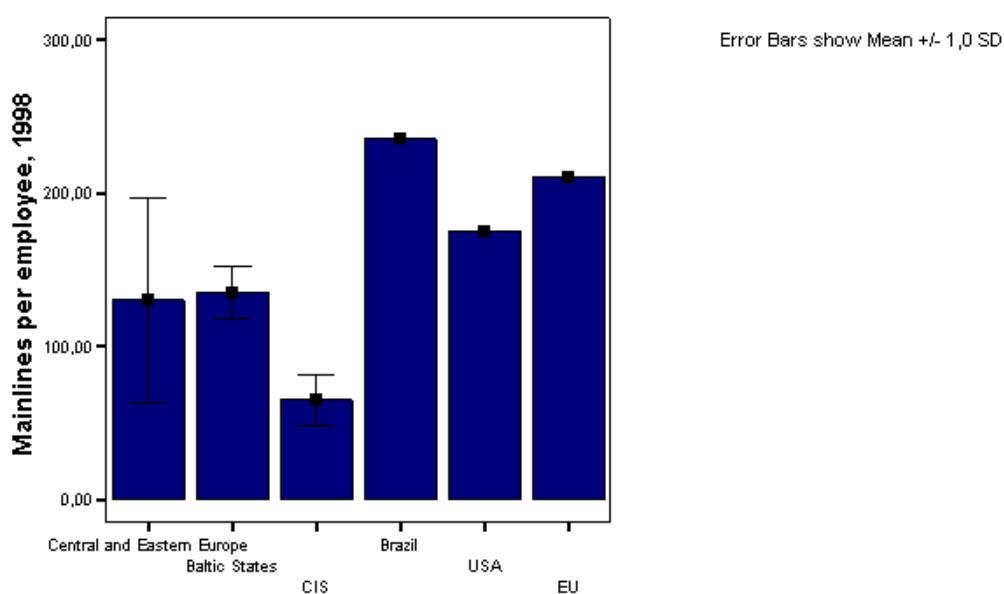
3.2.3. The Twisted Economy of Telecom

The socialist economy provided little incentive for the telephone operators to increase productivity because there was no internal or external competition and no independent regulatory control. At the same time, the tariff structure combined cheap local calls with expensive foreign calls, reflecting the political goal of isolating the societies from the outside world. This section assesses whether the Central and Eastern European countries have managed to catch up with Western European productivity and tariff structures. Figure 3.5 shows the level of productivity in 1998 illustrated by number of main lines per employee.

The countries have also in this area shown varying capacity for developing and adapting to West European standards (for details, see appendix, Table 6). In 1998, most Central and Eastern European countries had increased productivity, but the CIS had not managed to follow suit. Yet, we do find a remarkable difference between the level of productivity in East and West. In 1998, there were less than half as many main lines per employee in Central and Eastern Europe as in the EU, although there were large internal differences, with CIS lagging yet further behind. Only Slovenia stands out as very productive, exceeding the EU average. None of the regions was able to

match Brazil, which now manages more main lines per employee than both the EU and the US. In sum, the countries situated the closest to the capitalist centers of Western Europe have proven to be best able to catch up with developments even though the gap is still wide.

Figure 3.5. Main lines per employee, 1998.



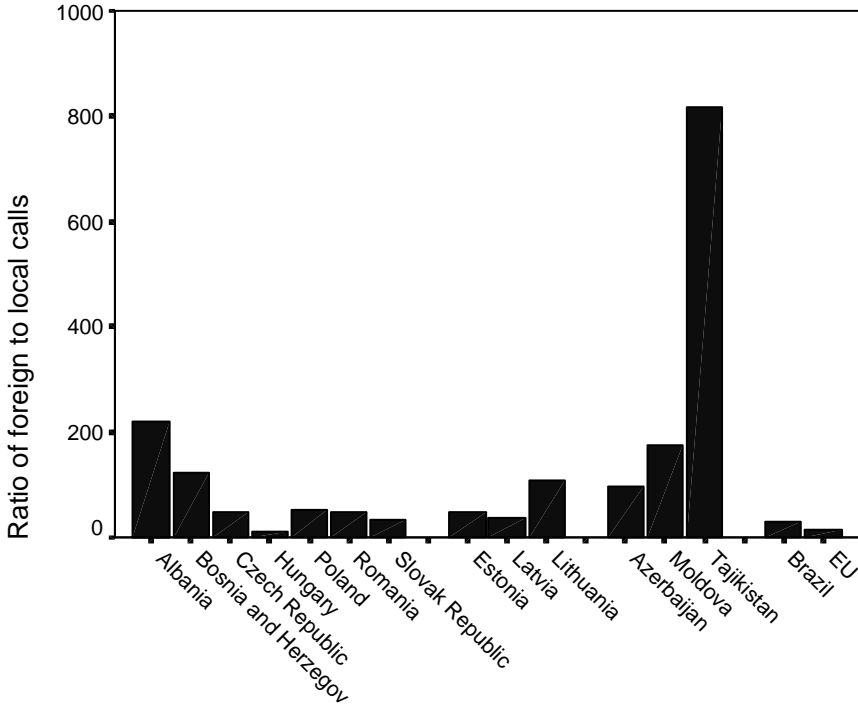
Source: World Development Indicators, 2000.

Note: No data available from Macedonia (FYR) and Slovenia.

Looking at the difference between foreign and local calls, we see large intra-regional differences, as shown in the overview of consumer prices presented in Figure 3.6 (for further details, see appendix, Table 9).

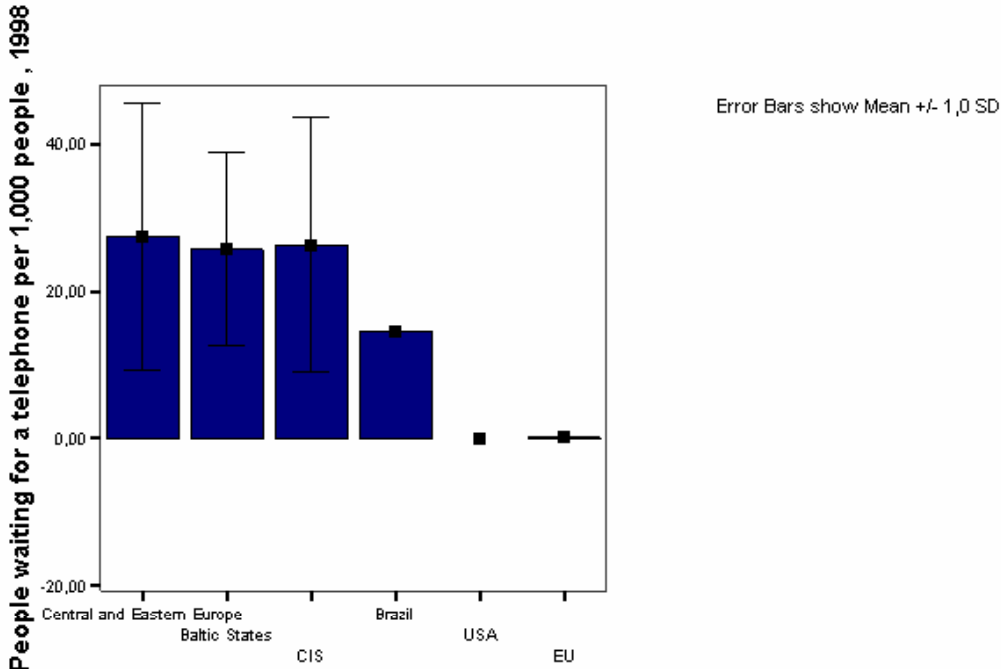
Some countries still show large price differences between domestic and international calls. Tajikistan is an extreme outlier that may be matched by other countries from the Central Asian region, for which no data are available, however. Price structures in other countries are less skewed, and only Hungary matches Western Europe, because rates for foreign calls have been significantly lowered. This could be due to the fact that in many Central and Eastern European countries, only local telephony has been liberalized and the dominant domestic operators therefore compensate by charging high prices for long-distance and international calls.

Figure 3.6. Ratio of foreign to local calls, 1998.



Source: World Development Indicators, 2000.

Figure 3.7. Waiting lists, 1998.



Source: World Development Indicators, 2000.

Note: Data not available for Bosnia-Herzegovina, Croatia, and Macedonia (FYR).

3.2 4. The gap between supply and demand

When looking at the length of waiting lists, we see a picture that is very different from the other indicators treated in this section. The regional averages are almost the same, but there is significant intra-regional variation as illustrated in Figure 3.7. Nor is there a discernible connection with the reforms instituted in the different countries.

3.3. Explaining outcomes¹⁸

The previous sections described the major parameters of telecom development in the post-communist countries without trying to identify the causes of the observed variance in success. While telecom development in each country of course has its own story, the present section makes a preliminary attempt to identify a set of common causes of these differences, referring in particular to the variables introduced in section 2. Below we compare the effect of three types of factors (parameters) behind telecom development that were defined in section 2 (summarized in Figure 2.2): structural legacies (institutional endowments) of the incumbent system, choice variables (in Levy and Spiller's terminology) reflecting the institutional setup (regulatory governance), and foreign influence. For each set of causes we reflect over the political aspects of the causal mechanisms that link variables to outcomes, and in particular over the role of the state in the designing and implementing policies. For these three sets of variables we further select proxies that we assume reflect the properties of each parameter. These variables are in turn used as regressors when attempting to explain eight major indicators of telecom development: absolute level of main lines, increase in number of main lines through the last decade, the development of mobile telephony, internet access (nodes per 10,000 persons), productivity measured by main lines per employee in 1998, increase in productivity, restructuring of pricing policy measured by the price ratio of foreign to local calls, and length of waiting lists. The structural legacies (institutional endowments) of the incumbent system are operationalized by three variables:¹⁹

- The level of development of the telecom industry at the beginning of the changes measured by main lines per 1,000 people in 1989. We may conceive initial development as a proxy for the existence of user groups/clubs with vested interests in the existing sector structure advocating piecemeal changes rather than radical structural changes
- Level of overall monopoly in the industry when reforms were initiated (indicating the economic and political effects of industrial structures). While it is probably impossible at this stage to identify coalitions with a potential for collective action that may change the existing

sector structure, we hypothesize that the existing overall industry structure (enterprise size) may be applied as a (reverse) proxy for conservative coalitions with vested interests in the existing structure and a potential for collective action to maintain this structure

- Level of education (as a proxy for general level of modernization). Here we assume that level of education may be used as a proxy for the existence of a middle class with a keen interest in the development of a modern information system

The results are reported in Table 3.1, which shows that the initial level of main lines in 1989 and level of monopoly in industry correlate negatively with growth as anticipated in our theory. As expected, the general level of development (indicated by educational level) is also a significant predictor

Table 3.1. The impact of structural legacies on telecom development (multiple regression. Beta weights and explained variance. T-values in parentheses).

	Absolute level of main lines per 1,000 people, 1998 (1)	Per cent growth of main lines 1989-98 (1)	Mobile phones per 1,000 people 1989(2)	Internet hosts per 10,000 people (2)	Productivity (Main lines per employee) (1)	Increase in productivity (Main lines per employee) (1)	Ratio of foreign to local calls (1998) (1)	Waiting lists (1,000 persons) 1998(1)
Initial level of main lines per 1000 persons, 1989 (2)	0.58** (5.245)	-0.60** (-3,546)	0.170 (0.860)	0.11 (0.395)	0.12 (0.531)	-0.29 (-1.374)	-0.85 (-2.014)	0.30 (0.906)
Level of industrial monopoly the beginning of reforms(3)	-0.22* (-2.260)	-0.34* (-2,319)	-0.23 (-1,266)	0.13 (-0.536)	-0.23 (-1.195)	-0.23 (-1.275)	0.813* (2.381)	0.14 (0.464)
Level of education (average years of schooling)(3)	0.450** (3.917)	0.78** (4.490)	0.61* 2,768	0.56 (1.972)	0.63* (2.773)	0.80** 3.691)	-0.22 (-0.654)	0
R-square (adjusted)	0.88	0.73	0.57	0.32	0.55	0.58	0.74	0
N	18	19	18	17	18	18	10	18

** significant at the 0.01 level.

* significant at the 0.05 level.

1. Source: World Development Indicators, 2000.

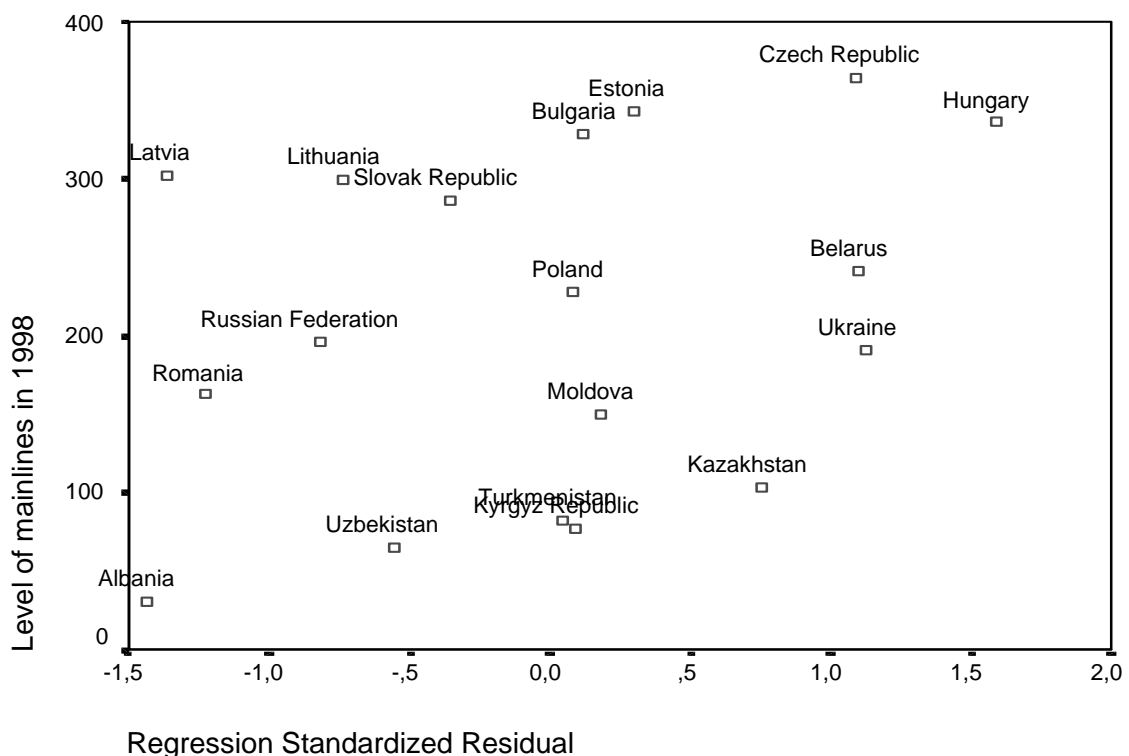
2. Source: EBRD Transition Report, 1998.

3. As reported by Ole Nørgaard (2000), *Economic Institutions and Democratic Reform*, Edward Elgar.

of both the general development of main lines in 1998, and of the relative growth in main lines in the previous decade. Those who had developed their network prior to 1989 slowed down. As indicated by the table, one major structural factor explaining this variance has been the general distortion of the industrial structure, here used as proxy for the social costs and concentration of conservative political groups that we may expect in the wake of the transition. The only other discernable pattern in the table is the positive connection between education and both productivity and increase in productivity, indicating that conservative industrial structures correlate with maintenance of traditional pricing policies.

Figure 3.8 visualizes the linkage in Table 1. Even though the model shows a relatively good fit (adj. R-sqr. 0,88), Hungary is a positive outlier because it has attained a much higher level than predicted by the model.

Figure 3.8. Absolute level of main lines 1998 as predicted by initial level of main lines (1989), monopoly in industry and level of modernization (dependent variable vs. residuals of model).



In Figure 3.9, showing the relative growth in main lines as the dependent variable, Hungary stands out even more clearly as an overachiever. With a fairly good R-square of 0.73, Hungary has a positive residual value of almost 2 standard deviations above the residual mean, and is thus the only country

that has truly been able to transcend the structural legacies (institutional endowments) of the previous regime.

To explain what caused this deviation from the general pattern, we may either turn to the role of external actors and regimes or to political decisions made within the country (state capacity). As is the case with the initial structural factors (institutional endowments), also international regimes and international actors are assumed to be outside the control of decision makers in the transition countries. In this context, it is assumed that in particular two variables may be important for the ability to develop the telecom sector:

- Status as an accepted EU candidate implies that a country has to adapt to the community Aquis, including the telecom regulations described in section three²⁰
- Foreign direct investment is a precondition for development in all countries because of the absence of domestic finance. Once established in a country, foreign companies become an important user group (club) pressuring for development of advanced telecom services

Figure 3.9. Growth in main lines 1989-1998 (percent) as predicted by initial level of main lines (1989), monopoly in industry and level of modernization (dependent variable vs. residuals of model).

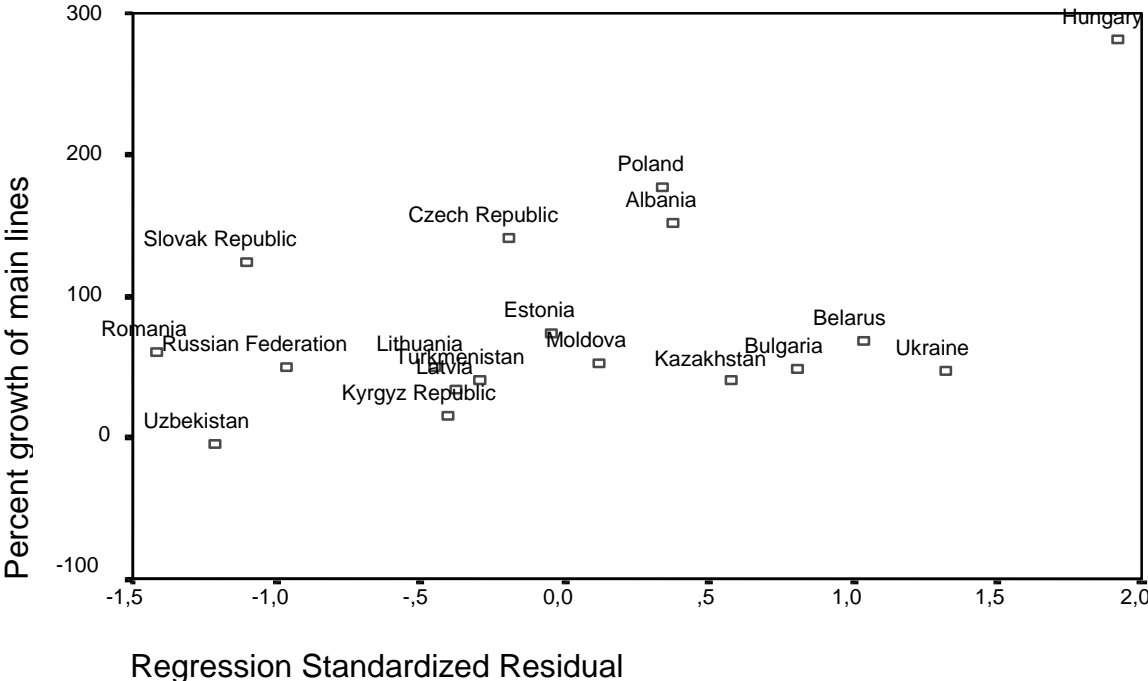


Table 3.2 indicates the impact of the two external factors. Status as an EU candidate country is the major performance predictor of all indicators for telecom development, and is clearly related to the EU telecom regime, a requirement in the pre-accession process. Foreign direct investment correlates

only with growth in main lines, indicating a two-step process where foreign investment brings finance into the country, and foreign companies thus also have an interest in the modernization of the information infrastructure. We may also expect some interaction between the two variables because EU candidacy may be a factor in its own right behind investment flows.

Table 3.2. The impact of international regimes and actors on telecom development (multiple regression. Beta weights and explained variance. T-values in parentheses).

	Absolute level of main lines per 1000 people, 1998 (1)	Per cent growth of main lines 1989-98 (1)	Mobile phones per 1000 people 1998(2)	Internet hosts per 10,000 people(2)	Productivity (Main lines per employee)(1)	Increase in productivity (Main lines per employee) (1)	Ratio of foreign to local calls (1998) (1)	Waiting lists (1000 persons) 1998 (1)
EU candidate country (dummy)	0.74** (5.035)	0.50* (2.672)	0.79** (6.134)	0.67** (4.156)	0.68** (4.097)	0.64** (3.698)	0.70* (-3.004)	0.05 (0.218)
Foreign direct investment as percent of GDP (1998) (1)	-0.07 (-0.471)	-0.23 0.23- 1.199)	0.11 (0.856)	0.06 (0.394)	-0.05 (-0.289)	-0.08 (-0.486)	-0.40 (-1.714)	-0.7 (-0.324)
R-square, adjusted	0.51	0.23	0.60	0.40	0.40	0.35	0.43	0
N	24	23	25	24	23	23	12	23

** significant at the 0.01 level.

* significant at the 0.05 level.

1. Source: World Development Indicators, 2000.

2. Source: EBRD Transition Report, 1998.

The political choice variables are finally those that were produced by political developments within the state that formed the new institutional environment (or governance structure) of the Telecom sector in each country. The choice variables that are subject to (political) decision in each country indicate the influence of the state on development and are summarized in 4 variables:

- The general institutional development as measured by the EBRD Transition Index, measuring in general terms the rapprochement to a Western type market economy

- The institutional development of the telecom sector given by the EBRD Telecom Index, measuring the liberalization of the telecom sector and level of rapprochement to a West European type of regulatory system²¹
- The state's share of the dominating operator as a separate aspect of institutional development, reflecting the role of the state vis-à-vis coalitions in society in the formation of sector policies
- The existence of an independent regulator (dummy variable), reflecting the stability of the institutional regime vis-à-vis user groups in society

Table 3.1 describes the correlation between the institutional variables and the dimensions of telecom development that were introduced in section 2. The institutional variables are subject to (political) decision in each country, and thus demonstrate the role (capacity) of the state to lead development. The table gives rise to three observations:

1. The relatively high association between the telecom index and the absolute level of main lines has to do with the simple fact that the most 'modern' countries (in Central and Eastern Europe) are those with the highest telecom density.
2. Institutional development of telecom, the EBRD Transition Index and the existence of an independent regulator all contribute to growth in the number of main lines, the three variables representing a cluster where the positive effect of one also engenders a positive effect on the others, where institutional development appears to be the most important aspect.
3. As for the remaining indicators, the signs of the beta weights are positive, indicating an association between institutional development and telecom development.²² In particular the beta weights indicate that globalist institutional reforms (general or sectoral) may have a positive effect on development (and implicitly on investments) in the new mobile and internet markets, on productivity and on tariff structure reform. The correlation between waiting lists and institutional development indicates that institutional reform not only improves developments – it also heightens consumer expectations!

These observations indicate that the globalization thesis does have some explanatory power. Institutional development along the principles in the EBRD general and telecom institutional indexes may impact sector development.

While bivariate correlations provide an overall picture of which variables may influence outcomes, they can also conceal linkages between the independent variables, creating spurious correlations and a false understanding

of what causes outcomes. A path model was thus specified to get a more precise picture of the relations, time sequence and relative effects of the three groups of independent variables with respect to the growth of main lines (the only variable that shows significant relations with all three sets of independent variables).²³ Operating with three groups of variables at different levels of abstraction, the path model is analytical rather than rigorously causal. We had a very small degree of freedom because the total number of observations serving as empirical foundation for the analysis is limited to 18, so we chose to not rigorously test for interaction effects because of the possibility of wrongly obtained sample specific fit. Furthermore, a binary variable (dummy for EU candidacy) is used in the path analysis as a dependent variable, which in this case is not a serious violation of the statistical assumptions of path analysis, because the proportion is 0,385 and the shape of the underlying probability distribution for this value is approximately linear.

Table 3.3. The impact of institutional choice variables on Telecom development (multiple regression. Beta weights and explained variance. T-values in parentheses).²⁴

	Absolute level of main lines per 1000 people, 1998 (1)	Per cent growth of main lines 1989-98 (1)	Mobile phones per 1,000 people 1998 (1)	Internet hosts per 10,000 people 1998 (1)	Productivity (Main lines per employee) 1998 (1)	Increase in productivity 1993-1998 (Main lines per employee) (1)	Ratio of foreign to local calls 1998 (1)	Waiting lists per 1000 persons 1998 (1)
EBRD Transition Index 1998 (2)	0.04 (0,149)	0.52 (1.606)	0.11 (0,430)	0.19 (0,657)	-0.20 (0,599)	0.18 (0,588)	-0.20 (-0,342)	-0.28 (-0,858)
Institutional development of Telecom 1998 (2)	0.77* (2,733)	-0,03 (-0,008)	0.56* (2,123)	0.45 (1,465)	0.67 (1,868)	0.32 (0,999)	-0.46 (-0,663)	0.89* (2,556)
The state's share of dominating operator 1998 (2)	0.008 (0,466)	0.06 (0,298)	-0.04 (-0,218)	-0.76 (-0,389)	-0.13 (-0,592)	-0.12 (-0,628)	-0.32 (-0,672)	0.51* (2,288)
Existence of an independent regulator (dummy) (2)	-0,01 (-0,050)	0.27 (1,300)	0.17 (1,058)	0.06 (0,288)	0.08 (0,362)	0.27 (1,438)	-0.28 (-0,773)	-0.36 (-1,676)
R-square (adjusted)	0.49	0.30	0.523	0.38	0.27	0.41	0.05	0.25
N	24	22	25	24	23	22	12	22

** significant at the 0.01 level.

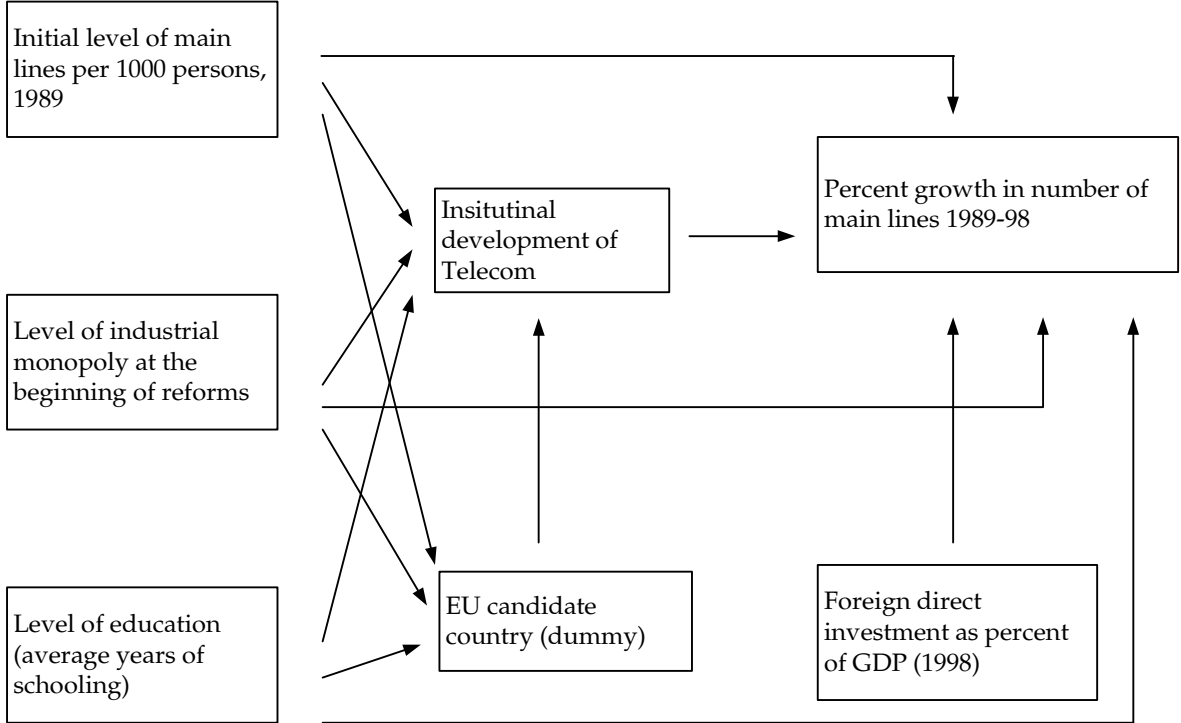
* significant at the 0.05 level.

1. Source: World Development Indicators, 2000.

2. Source: EBRD Transition Report, 1998.

Initially we expected the correlations to show whether the initial structural variables (the institutional endowments) and the international factors provide the constraints or the opportunity space in which the political actors (the state) can operate. We further expected this space to be influenced by the role of the external regimes, in particular the demands from the EU to candidate countries regarding general institutional reforms. The pattern revealed by the path model is much more complex, however.

First, the model using all six regressors on the growth of main lines revealed a strong collinearity with respect to EU candidacy vis-à-vis telecom density in 1989, level of industrial monopoly at the beginning of the reforms and, to a certain extent, level of education. As expected, telecom density and



the level of education are positively related to the probability of EU candidacy, and the level of industrial monopoly negatively related.²⁵ Second, an initial bivariate analysis of telecom density in 1989 and growth of main lines shows a Durbin-Watson statistic of 0.9. This may in part be due to heteroscedasticity, but it is still an indication of a regional effect (the Baltic states, CEE, and CIS). This is supported by an auxiliary regression using regional dummies, in which the Durbin-Watson statistic is 2.2. The main point is that the Durbin-Watson is around 2 when the other two structural variables are added. It therefore seems plausible that level of education and level of industrial monopoly express the regional variation. Third, when

dealing with the multicollinearity problem we have to exclude either the EU candidacy dummy or the structural variables. Choosing the former option we assume that decisions outside the country are essential (EU candidacy). In choosing the second option we assume that there is only a potential indirect effect between the structural variables and telecom development through institutional development, and no direct visible effect of EU candidacy and telecom development. In view of the relation between EU candidacy and the structural variables, the latter model is used in the further analysis. This option allows us to deal with the regional factor as accounted for by the structural variables.

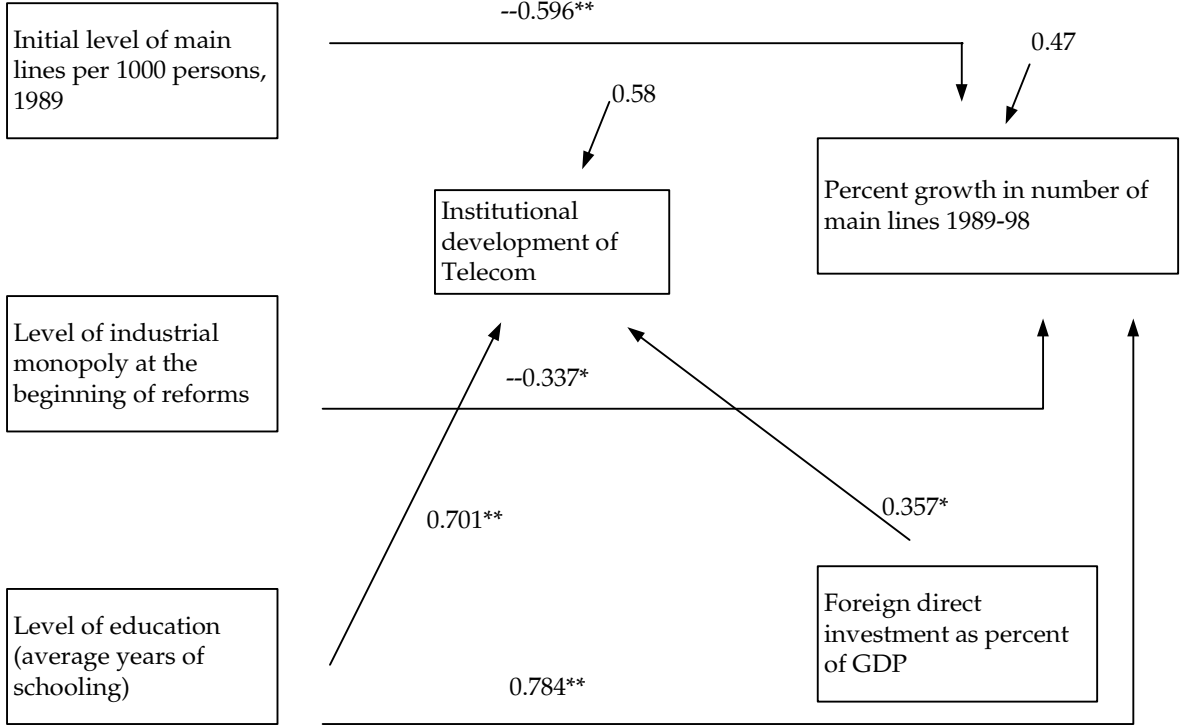
Model 3.11 shows the empirical results of the path analysis,²⁶ and it shows that all paths are very strong, indicating real relationships that support the hypotheses presented in the beginning of this section. However, although we in statistical terms have to choose between the two versions outlined above, the multicollinearity in relative terms describes a process where the structural variables (institutional endowments) are important aspects of the explanation for countries being accepted as EU candidates and their subsequent adaptation to EU institutional standards, which in turn may have an independent effect on development in the telecom sector. From Table 3.2 we know that there is a moderately strong significant positive correlation between EU candidacy and growth in main lines. (The beta weights of the structural variables below may in fact differ slightly in absolute and relative size due to the omission of the EU candidacy variable.) However, as we know the nature of the correlation between EU candidacy and the structural variables, the signs will remain the same and we will still have a fairly clear picture of the flow of variance.

The structural variables are strongly significant for explaining the growth in main lines, leaving no room for the institutional variable (Institutional development of Telecom), and for explaining the influence of external actors (foreign direct investment). The most interesting aspect here is that institutional development of Telecom was significant when controlling for other institutional choice variables, cf. Table 3.3, but this effect disappears when it is controlled for the structural variables. There is a positive, moderately strong significant effect from level of education to institutional development of Telecom controlled for the other structural variables, but this effect is not related to the real development in telecom. An auxiliary regression with growth in main lines as the dependent variable and structural variables except education and the institutional variable shows that monopoly still renders the institutional variable insignificant. The lack of significant effect of the institutional variable for development in

telecom is therefore not due to the strong relation between education and the institutional variable.

If we relate these paths to the two questions presented in section 2 we can conclude that institutional endowments (structural legacies) were the most important factors for explaining telecom development. International factors (international regimes and actors)²⁷ and institutional strategies formed within the state mattered little in that respect. It was also shown that adaptation to a universal institutional model (the EU model of telecomm regulation) did not directly explain development.

Model 3.11. The final empirical path model. (Beta weights, residual paths and explained variance.)



** significant at the 0.01 level.

* significant at the 0.05 level.

R-sqr. 0.779, Adj. R-sqr. 0.731.

n=18: The countries are Albania, Bulgaria, The Czech Republic, Hungary, Poland, Romania, Slovakia, Turkmenistan, Ukraine, Uzbekistan, Belarus, Kazakhstan, Kyrgyz Republic, Moldova, and Russia.

However, structures (the institutional endowments) do not act. They only become visible through the political actors, in this context defined as clubs (user groups) taking advantage of an existing institutional arrangement, or coalitions that change (or defend) this arrangement. If such attempts to change an existing institutional structure succeed as described, it is partly

due to the relative strength of the collective actors, partly to the nature of the state. In particular the nature of the state becomes critical if we want to explain why some countries have been able to perform better and others worse than predicted based on institutional endowments, because the state structures the access and resources of clubs and coalitions.

4. Conclusions: outline for case studies

The point of departure for this article was that telecom development is a critical case of state capacity in post-communist countries from two perspectives: as an indicator for the state's ability to handle a particularly difficult and economically critical policy area (the policy complexity argument), and as an indicator for the effects of globalization on national institutional development (the globalization argument). From these perspectives the second section outlined major and complementary approaches to explain telecom development. First, a modernization perspective focusing on the impact of structural variables – what in a broader context was termed institutional endowments, second, rational actor approaches focusing on the role played by clubs/user groups within existing institutions, and on coalitions wanting to change or defend institutional arrangements, and third, institutional approaches focusing in particular on the alleged need to 'fit' new institutions into a specific national context. These complementary perspectives informed the establishment of an analytic model and two questions related to the globalization argument that were derived from this model. It was not deemed feasible to examine the policy complexity argument, which has been left to the case studies. The subsequent survey of telecom development in 25 post-communist countries illustrated that within the ten year perspective applied in this paper, the institutional arrangements in the region are still widely different and so far no adaptation to a universal model can be observed. When cross country statistical analysis was applied to telecom development (development of main lines), the result demonstrated that institutional and structural legacies had the most impact, international regimes only indirect impact, and institutional choices no impact on outcomes. The analysis also demonstrated that adaptation to a universal model for telecom restructuring did not explain development. We also concluded that if we are to explain development, we must consider the role of the state both as an actor and as a mediator. Finally, we hypothesized that the capacity and nature of the state, the extent to which it is effective (or catalytic!) in achieving society's objectives, explains whether society's demands fueled development in the economically critical telecom sector. Our conclusion thus leads us back to where we began: to a hypothesis about the state as a critical institutional

structure for explaining telecom development. It is in this context we have perceived telecom as a 'crucial policy complexity case', and thereby as a proxy for the overall political, technical and administrative capacities of the state.

In pursuing this project, we may ideally envisage (and hope for) what Singh (1999) calls the 'catalytic state' but still expect to find dysfunctional (and in the worst cases predatory) states whose policies and institutional setups are influenced by or designed to accommodate special interest groups (user groups/clubs), or are transformed by political coalitions. State capacity will be reflected in the telecom industry based on state ability to install and uphold a regulatory regime that supports growth and development and meets the infrastructural needs of a country while balancing the demands of different constituencies with the overall development goals of society. In the post-communist context, specific state capacities will in the telecom sector be expressed as ability to liberalize and to establish the regulatory framework needed to foster an industry that serves the needs the emerging market economy and the infant democracy. In that process the state should be able to withstand pressure from specific interests groups (user groups/clubs), be they national or international, and establish a regulatory system (or a governance structure) for the sector that encourages investment, growth and development. But it must consider the broader developmental (including regional) needs of the country, the 'national project', as argued by McDowell and described by Milne in her universal service concept sequence.

How and if such 'national projects' come about cannot be answered on the basis of quantitative analyses alone. In this context the applied quantitative methodology has a least four limitations. First, using main lines as the only available proxy for statistical analyses of telecom development and density may obscure other, and perhaps more, important aspects of development. New technologies, and in particular the development of cellular networks and advanced services, may be better indicators for telecom developments in some countries as they may take the place of fixed networks. Second, each country's restructuring process is a specific case, because the various aspects of the restructuring process (scope, pace and phasing) will have different consequences in specific country environments. Particularly the impact on clubs and the resources of coalitions will be affected. So even if the statistical analysis has demonstrated persistent aggregated patterns it may conceal a variety of underlying causal mechanisms. To reveal these mechanisms we need case studies, especially to explain the roles played by groups inside and outside the state at different stages and in different dimensions of the restructuring process.

In more concrete terms the case studies should address the following three issues:

1. To what extent have the development objectives for the sector been realized in each country. In a theoretical perspective we may stipulate these objectives in terms of the equilibrium point in Figure 2.1. In policy terms we may conceive these objectives in each specific country version as the objectives inherent in the 'magic quadrangle'.
2. What were the scope and mechanisms of influence of exogenous factors on sector development in each country – technological development and international factors? Were the changes results of new norms (discourses) imposed by new technologies and/or international regimes? Or are they rather outcomes of rational actors adapting to new technological opportunities and international regimes?
3. On the domestic level we may ask what were the scope and mechanisms of influence of groups (clubs, coalitions) endogenous to sector development: Were changes engendered by normative pressures caused by changing norms that have set a new policy agenda (the constructivist approach)? Or are they the outcome of rational actors pursuing selfish interests and forming (and exploiting) new institutions?

The arguments and policy implications of questions 2 and 3 are summarized in Table 4.1.

Table 4.1. Preconditions for institutional efficiency. Alternative views.

Actor assumptions/ levels of analyses	Exogenous factors (international and technological)	Endogenous factors (domestic groups and institutional endowments)
Rational actors	Conditionality changes behaviour	Rational actors adapt to institutional endowments
Normative actors	Changing norms change behaviour	Actors adapt to normative endowments

Regarding exogenous factors (technology and international actors and regimes) these categories of causal mechanisms reflect the divide between 'soft' normative recommendations and advice, and 'hard' conditionality related to loans, investment and – in the present context – conditions for accession to the European Union. In domestic politics the divide reflects in the degree of 'institutional fit': one based on the assumption of rational actors pursuing their own interests within established institutional endow-

ments '(rational fit'), and a second assuming that norms dominating a society also must apply to individual sector and institutions, if such are to be efficient ('normative fit').

Finally, and returning to the 'policy complexity' thesis, we will in a comparative perspective eventually have to explain why some states better than others have been able to design institutions that produce effective outcomes from one of the two perspectives. Is it political or sector leadership? Is it the historically formed financial and administrative competences of officials and state administrations? Is it the autonomy of the state vis-à-vis society? Is it the degree of state embeddedness in society? We do not yet know, but the answers are likely to be different for individual countries at different stages of development, and must await the completion of the case studies.

Notes

1. This is the standard distinction applied i.a. by the World Bank (1997: p. 3). See also Nørgaard and Hansen (2000, pp. 5-6).
2. A similar, although somehow confusing terminological distinction is applied by Singh (1999: 222), when he distinguishes between state maneuverability (its capability and autonomy to act independently from societal interests) and responsibility (its effectiveness in meeting the societal agenda).
3. Nørgaard has recently applied the same perspective on knowledge transfer in science and technology on West-East scientific cooperation in different disciplines (see Nørgaard, 2001).
4. A recent OECD report gives this description of the strategic economic advantages of advanced telecommunications: 'any industry today, whether manufacturing, finance, or services, is dependent on TC. Competitive power depends on the extent to which a firm can rely on and utilize modern, efficient telecom services. As an example, a manufacturing company that has access to a high-capacity digital technology, such as Integrated Services Digital Network (ISDN) can connect its different branches and exchange high-quality information' (OECD, 1997).
5. It would in theory be possible to make a statistical test of the policy complexity argument by correlating telecom development with overall economic growth. The assumption would be that a state able to successfully manage the telecom sector would be able to manage similarly well over a wide range of policy areas, and that telecom itself has a positive impact on growth. While a positive correlation between telecom development (growth in main lines) and economic growth in the 10 years between 1989 and 1998 does exist, the line of causation is, however, far from clear. Is it telecom development that produces growth and indicates the ability of the state to handle reforms in less intricate areas? Or is it economic growth and reform success in other areas that make it possible to deal with the telecom sector? This deceptive link between infrastructural development and economic development replicates observations from other studies of infrastructural development. It was, for example, for a long time assumed that the railroad brought development to the American West. However, case studies have shown that the rails followed industrialization - not vice versa (Fishlow, 1965). Whether the policy complexity argument holds, i.e. that telecom fosters development and indicates broader state capacities, can thus only be tested by careful case studies of individual countries. This uncertainty about the direction of the causal links does not apply to the globalization argument where we may safely assume that the countries involved are influenced by global trends, while the opposite direction is unlikely.
6. The exact form of each curve of course depends on the type (technological and organizational) of good (service type) in question. In most cases, following general club theory (Sandler & Tschirhart, 1980; Sandler, 1992: chapter 3), it is, however, assumed that while marginal utility of additional services may remain stable when

membership increases, costs will at some point begin to rise, producing curvilinear functions. The same logic applies to the provision level, where a service provision may be expanded up to a certain point without generating increased marginal costs. But at some point organizational or technological capacities will be exhausted, requiring additional investments.

7. The issue of institutional change under alternative institutional ontologies is discussed in Nørgaard (2001). For an introduction to the collective action literature, see for example Sandler (1992).

8. Only in countries with a dominant position in international economy and politics may these factors be considered endogenous to the domestic restructuring of the telecom sector. The major (and maybe only example) is the USA.

9. The best introductions to the impact of new information technologies on social and political relations are found in Xiudian (2000), Loader (1998) and Bellamy (1998).

10. In theoretical terms we here, of course, face the question whether an observed influence on domestic institutions from international regimes comes from norms (the constructivist approach) or from implicit or explicit conditionality (the realist, rational actor approach). Because the present report so far has failed to demonstrate any systematic influence from international regimes on sectoral institutional development in the region, it is not feasible to address this question. The issue, however, is to be addressed again in the course of the case studies and dealt with theoretically after these have been concluded. For an introduction to the theoretical questions pertaining to the relationship between international regimes and domestic institutional development, see Sørensen (2001), chapters 4 and 5.

11. Schenk (1997, p. 44) sets out a number of general 'starting' points. He claims that different arrangements and with different weights, reflect the policy preferences in the telecom area of politicians in the transition countries. 1) Access to the network for potential users on the waiting list; 2) improvement of the quality of network services (and of the functions of the latter to the users); 3) sustainable financing of the network services (and of the latter to the users); 4) interoperability with developed European networks on the basis of bilaterally agreed principles and standards.

12. Quoted from B. Mody, J.M. Bauer & J.D. Straubhaar (eds) (1995), *Telecommunications Politics*, p. xv, Mahwah, New Jersey: Lawrence Erlbaum Associates.

13. Data available only from Central and Eastern Europe.

14. In all figures and tables the EU average includes all 15 countries that are members in 2001.

15. The Coordinating Committee for Multilateral Export Controls (COCOM), was created in 1949 to prevent transfer of militarily useful technology to the communist world. It was disbanded in 1994.

16. These new services ('value added network services' – (VANS)) include, for example, broadband networks; leased lines and specialized networks; videotext services, satellite services; public mobile telephony and paging network/services.

17. In this group we have included (in alphabetical order): Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia FYR, Moldova, Poland, Romania, Russian Federation, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

18. Tom Y. K. Nielsen assisted with the statistics in this section.

19. We also tried to measure the impact of executive relations by inserting the Index of Presidential Authority variable (measuring the relative strength of the presidency vis-à-vis the legislature (see Nørgaard (2000) Chpt. 6). The data analyses indicated no such relationship and the variable was excluded from further analyses.

20. If we include the aquis into the hypothesis, we conceive of institutional adaptation as a rational response to the conditionality in the accession conditions. The alternative (constructivist) argument, that institutional adaptation is a response to normative pressures, cannot be tested in the present context because of the lack of data. This dimension will therefore be pursued in the case studies.

21. The index was developed by the European Bank for Reconstruction and Development (EBRD Transition Report 1998), and aggregates country ratings on commercialization, tariff reform and institutional design in the telecom sector, ranging them from 1 to 4+ (+ is measured as 0.5). Commercialization encompasses the introduction of hard budget constraints and competitive pressures, including all types of private sector participation, from management service contracts to full private ownership of asset and operations. Tariff reform comprises costs-reflective tariffs that eliminate cross-subsidies and improve collection ratios. Regulation and institutional design include establishment and implementation of independent regulatory institutions that protect consumers by limiting the power of monopolies and protect investors by ensuring entry and fair competition in liberalized markets. Hence, the index measures institutional adaptation to a liberalist blueprint.

22. Because we are dealing with a non-sample data set, significance levels are not decisive.

23. It may, of course, be objected that growth of main lines is an inadequate proxy for telecom development/telecom density, because it does not include mobile networks and advanced services. For the time being, however, this is the only dependent variable for which we have comparative data. The extent to which this variable is a valid indicator will be tested in the case studies.

²⁴ There is severe multicollinearity between the EBRD Transition Index (institut), Institutional development of Telecom (instttele) and the existence of an independent regulator (independ). This is revealed by the fact that no individual variable in the equation is significant, and yet the entire model is significant. The pairwise bivariate correlations between percent growth of main lines, the EBRD Transition Index and Institutional development of Telecom are all positively related and, as expected, significant but significant and negatively related to the state's share of dominating operator (share). The control for institut, instttele and share still shows

a significant negative relation, while the control for insttele, institut and share is not significant, but still has the expected negative sign. The substantial interpretation of this pattern is that Institutional development of Telecom, the EBRD Transition Index and the existence of an independent regulator all contribute to the growth of main lines, and the positive effect of one also signifies the positive effect of the other, insttele still that yielding a positive effect of its own, (seemingly) rendering it the most important.

25. In a regression using EU candidacy as the dependent variable and Telecom, Education and Monopoly as regressors, the beta weights are 0.515; 0.276 and -0.622 respectively. Not surprisingly, in bivariate regressions the beta weights are even larger. The relations are significant for all regressions.

26. This analysis has not considered the impact of geographical conditions on growth rates and that for example Hungary's success may be partly attributable to the settlement structure in Hungary, which simplifies network development. The Hungarian population is centred around Budapest, where about 20 percent of the population live (Prössdorf, 1997: 226).

27. We did not in this context test for the more elusive arguments about the role of technology and discourses as driving forces of telecom development.

Appendix

Table 1. Scope of main lines, revenue and productivity, 1989.

	Telephone main lines (per 1000 people)	Mainlines, waiting list (thousands)	Revenue per main line (current US\$)	Telephone main lines per employee
Central and Eastern Europe				
Albania	12.1	..	..	..
Bosnia-Herzegovina	..	..	..	..
Bulgaria	222	..	180.6	74.9
Croatia	167	207	..	..
Czech Republic	151	..	..	..
Hungary	88	552	321.2	42.7
Macedonia, FYR	140	..	..	..
Poland	82.3	2350	131.1	48.1
Romania	101	754	300.9	45.2
Slovak Republic	128	..	..	..
Slovenia	..	..	..	..
Average	122.1	965.8	358,9	52,7
Baltic States				
Estonia	198	..	..	..
Latvia	225	..	..	..
Lithuania	200	194	..	..
Average	207.7	194		
CIS				
Armenia	160	..	..	..
Azerbaijan	84	..	..	..
Belarus	144	..	..	..
Georgia	93,5	..	..	..
Kazakhstan	74.1	727	476	..
Kyrgyz Republic	66.4	90	..	..
Moldova	98.3	..	..	..
Russian Federation	131	..	..	..
Tajikistan	45.1	..	..	..
Turkmenistan	58.6	..	..	..
Ukraine	130			
Uzbekistan	68.1	310	..	..
Average	79.1	375.7	476	
Comparison				
Brazil	61.8	360	673.7	84
USA	531.7	0	981.1	148.4
EC average	420	112	661	148.7

Table 2. Main indicators for development of the telecom sector, 1998.

	Telephone main lines per 1000 people	Mobile phones per 1000 people	Internet hosts per 10,000 people
Central and Eastern Europe			
Albania	30.5	1.5	0.2
Bosnia-Herzegovina	90.7	6.9	0.9
Bulgaria	328.9	15.2	7.4
Croatia	347.7	40.7	13.6
Czech Republic	363.9	93.9	63.8
Hungary	335.9	105	73.2
Macedonia, FYR	..	15.3	2
Poland	227.6	49.8	25.6
Romania	162.4	28.6	6.1
Slovak Republic	286.3	86.5	26.3
Slovenia	374.8	83.6	91.2
Average	254.9	47.9	28.9
Baltic States			
Estonia	342.9	169.9	130.7
Latvia	301.6	68.1	33.1
Lithuania	299.6	72.3	23.6
Average	314.7	103.4	62.5
CIS			
Armenia	157.2	2	1.2
Azerbaijan	88.7	8.5	0.3
Belarus	241.4	1.2	0.6
Georgia	115.5	11	1.2
Kazakhstan	103.6	1.7	0.9
Kyrgyz Republic	76.4	0.3	0.4
Moldova	150.8	1.6	..
Russian Federation	196.6	5.1	8.9
Tajikistan	36.8	0.1	0.1
Turkmenistan	82.2	0.7	0.6
Ukraine	190.7	2.3	2.6
Uzbekistan	64.7	0.7	0.1
Yugoslavia, FR (Serbia/Montenegro)	218.1	22.6	5
Average	132.5	4.5	1.8
Comparison			
Brazil	120.5	46.8	9.9
USA	661.3	256	975
EU average	539.4	285.3	207.2

Source: World Development Indicators, 2000.

Table 3. Telephone main lines per 1000 people.

Central and Eastern Europe				
	1989	1993	1998	1989-1998
Albania	12.1	12.3	30.5	18.4
Bosnia-Herzegovina	..	144	90.7	..
Bulgaria	222	285	328.9	106.9
Croatia	167	220	347.7	180.7
Czech Republic	151	191	363.9	212.9
Hungary	88	145	335.9	247.9
Macedonia, FYR	140	166	..	..
Poland	82.3	115	227.6	145.3
Romania	101	114	162.4	61.4
Slovak Republic	128	167	286.3	158.3
Slovenia	..	265	374.8	..
Yugoslavia	..	182	218.1	..
Average	121.3	167.2	251.5	130.2
Baltic States				
Estonia	198	231	342.9	144.9
Latvia	225	266	301.6	76.6
Lithuania	200	231	299.6	99.6
Average	207.7	242.7	314.7	107
CIS				
Armenia	160	156	157.2	-2.8
Azerbaijan	84	84.1	88.7	4.7
Belarus	144	175	241.4	97.4
Georgia	93.5	105	115.5	22
Kazakhstan	74.1	117	103.6	29.5
Kyrgyz Republic	66.4	82	76.4	10
Moldova	98.3	120	150.2	51.9
Russian Federation	131	158	196.6	65.6
Tajikistan	45.1	46.9	36.8	-8.3
Turkmenistan	58.6	61.5	82.2	23.6
Ukraine	130	150	190.7	60.7
Uzbekistan	68.1	70.6	64.7	-3.4
Average	96.1	110.5	125.3	29.2
Comparison				
Brazil	61.8	74.6	120.5	58.7
USA	531.7	573.9	661.3	129.6
EU average	420.3	473.5	539.4	119.1

Source: World Development Indicators, 2000.

Tables 4 and 5. Institutional development.

	Fixed line services		Mobile operators	
	State share in dominant operator	Independent regulator	Total	Private
Central and Eastern Europe				
Albania	100	Yes	1	0
Bosnia-Herzegovina	100	No	1	0
Bulgaria	100	Planned	2	2
Croatia	100	No	2	0
Czech Republic	51	Planned	2	0
Hungary	6	Yes	2	2
Macedonia, FYR	100	No	1	0
Poland	100	Planned	3	2
Romania	100	Planned	3	2
Slovak Republic	100	Planned	2	0
Slovenia	87	Planned	1	0
Baltic States				
Estonia	51	Planned	3	2
Latvia	51	Yes	2	1
Lithuania	40	Yes	3	2
CIS				
Armenia	10	No	1	1
Azerbaijan	100	No	2	1
Belarus	100	No	2	0
Georgia	100	No	3	2
Kazakhstan	45	No	2	1
Kyrgyz Republic	90	Yes	1	1
Moldova	100	No	2	2
Russian Federation	75	No	>160	Na
Tajikistan	95	No	1	0
Turkmenistan	100	No	1	1
Ukraine	100	No	4	3
Uzbekistan	100	No	4	3

Source: EBRD Transition Report, 1998, p. 34.

Table 6. Ownership, competition and privatization, 1997.

Country	Separation of regulation and incumbent ownership	End of incumbent monopoly by end of year	Privatization of incumbent	State's share in incumbent
Bulgaria	High	2002	1999	100%
Czech R.	Low	2001	1995	51%
Estonia	Low	2000	1998	27%
Hungary	High	2001	1993	6%
Latvia	Low	2013=>2003	1994	51%
Lithuania	High	2002	1998	40%
Poland	High	2002 internat. 1999 national	1998	80%
Romania	High	2002	1998	65%
Slovak R.	Low	2002	2003	100%
Slovenia	Low	2000	1998	74%

Source: PHARE indicators 1997: http://europa.eu.int/comm/scr/evaluation/evinfo/phare/951536_ev.html (10.08.2000).

Table 7. Main lines per employee.

Central and Eastern Europe			
	1989	1993	1998
Albania	..	9,2	26
Bosnia-Herzegovina	..	..	189.8
Bulgaria	75	93.6	103.9
Croatia	..	114	142.5
Czech Republic	..	78.4	152.7
Hungary	43	80.7	257.3
Macedonia, FYR	..	150.6	..
Poland	48.1	61.9	120.7
Romania	45.2	48.5	74.8
Slovak Republic	..	56.8	103.6
Slovenia	..	220.7	..
Yugoslavia, FR (Serbia/Montenegro)	..	172.3	153.5
Average	52.8	98.8	132.5
Baltic States			
Estonia	..	80.4	135.8
Latvia	..	98.1	151.6
Lithuania	..	88.1	117.9
		88.9	135.1
CIS			
Armenia	..	83.1	66.1
Azerbaijan	..	45.9	53.5
Belarus	..	67.4	92.7
Georgia	..	40.8	68.6
Kazakhstan	..	43.7	46.8
Kyrgyz Republic	..	46.9	53
Moldova	..	73.7	84.8
Russian Federation	..	55.2	65.3
Tajikistan	..	50.9	45.4
Turkmenistan	..	40.8	47
Ukraine	..	65.3	75.5
Uzbekistan	..	70.3	53.1
Average		57	62.7
Comparison			
Brazil	84	120.7	235.5
USA	148.4	168.5	175
EU average	148.7	186.5	210.6

Source: World Development Indicators, 2000.

Table 8. Foreign direct investments, percent of GDP, 1998.

	Foreign direct investments
Central and Eastern Europe	
Albania	1.48
Bulgaria	3.27
Croatia	4.01
Czech Republic	4.53
Hungary	4.05
Macedonia, FYR	4.73
Poland	4.01
Romania	5.32
Slovak Republic	2.76
Slovenia	0.84
Average	3.5
The Baltic States	
Estonia	11.17
Latvia	5.58
Lithuania	8.63
Average	8.46
CIS	
Armenia	12.20
Azerbaijan	26.06
Belarus	0.66
Georgia	0.98
Kazakhstan	5.27
Kyrgyz Republic	6.40
Moldova	5.26
Russian Federation	1
Tajikistan	0.83
Turkmenistan	5.49
Ukraine	1.70
Uzbekistan	0.98
Average	5.56
Comparison	
Brazil	4.10
USA	2.35
EU average	3.25

Source: World Development Indicators, 2000.

Table 10. Telephone average cost of a local call and a call to US (US\$ per three minutes).

	Local call, 1998	Call to US, 1998	Ratio of foreign to local calls
Central and Eastern Europe			
Albania	0.02	4.37	218.5
Bosnia-Herzegovina	0.03	3.69	123
Bulgaria	0	..	
Croatia	..	..
Czech Republic	0.07	3.28	46.9
Hungary	0.13	1.68	12.9
Macedonia, FYR	..	4.13	
Poland	0.07	3.65	52.1
Romania	0.09	4.29	47.7
Slovak Republic	0.12	3.97	33.1
Slovenia	..	..
Yugoslavia, FR (Serbia/Montenegro)	0.02	12.08	604
Average	0.06	4.57	76.7
Baltic States			
Estonia	0.07	3.41	48.7
Latvia	0.08	3	37.5
Lithuania	0.05	5.49	109.8
Average	0.07	4	57.1
CIS			
Armenia	0.12	..	
Azerbaijan	0.13	12.49	96.1
Belarus	0	..	
Georgia	..	..
Kazakhstan	..	2.68	
Kyrgyz Republic	..	15.48	
Moldova	0.02	3.53	176.5
Russian Federation	..	6.12	
Tajikistan	0	8.16	816
Turkmenistan	..	..
Ukraine	0.01	..	
Uzbekistan	..	..
Average	0.05	8.1	162
Comparison			
Brazil	0.1	2.8	28
USA	0.1	..	
EU Average	0.096	1.46	15.2

Source: World Development Indicators, 2000.

Table 9. Main lines, waiting list per 1,000 people.

Central and Eastern Europe			
	1989	1993	1998
Albania	..	..	21
Bosnia-Herzegovina	..	..	..
Bulgaria	..	72.2	50.4
Croatia	43.4	42.1	..
Czech Republic		55.4	13.7
Hungary	53.1	75	7.9
Macedonia, FYR		9.8	..
Poland	61.9	59	46.6
Romania	32.6	58	42.9
Slovak Republic	..	33.5	32.4
Slovenia	..	35	4.7
Yugoslavia, FR (Serbia/Montenegro)	..	46.4	11.6
Average	47.8	48.6	35.1
Baltic States			
Estonia	..	91.3	40.7
Latvia	..	56.6	16.3
Lithuania	52.5	47.8	20.1
Average	52.5	65.2	25.7
CIS			
Armenia	..	..	29
Azerbaijan	..	25.3	18.5
Belarus	..	67.3	47.6
Georgia	..	42	24.6
Kazakhstan	44.7	45.2	18.8
Kyrgyz Republic	20.8	22.6	10.6
Moldova	..	48.4	38.9
Russian Federation	..	73.2	48.5
Tajikistan	..	13.	8
Turkmenistan	..	21.2	14.2
Ukraine	..	67.5	54.7
Uzbekistan	15.4	15	2.9
Average	27	40.1	26.4
Comparison			
Brazil	24.7	6.5	14.6*
USA	0	0	0
EU Average	4.7	1.5	0.1

*1997

Source: World Development Indicators, 2000.

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