

Competition Policy for Natural Monopolies in a Developing Market Economy¹

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1. Introduction

Policy-makers in the post-socialist countries of Eastern Europe face the challenging task of designing appropriate competition policies for the key infrastructure sectors of their economies - energy, transport, and communications - sectors whose efficient functioning is vital to sustained economic development in these countries.

The task of facing the policy-makers is especially difficult for several reasons. First, state-owned enterprises (SOEs) operating in these sectors were often heavily subsidized by the socialist governments in order to keep the prices of their products and services artificially low. Consequently, price liberalization in these sectors is likely to have, and in fact already has had, serious economic impacts on buyers.

Second, these sectors are often characterized by production technologies, and concomitant cost relationships, that favor high concentration. (And this is on top of the fact that industries in formerly planned economies are already overly concentrated and excessively vertically integrated.) Consequently, competitive forces cannot readily be relied upon to ensure that SOEs in these sectors, even if they are privatized, will keep prices close to costs and will have incentives to keep costs low.

Third, these sectors as a rule produce and sell goods and services that are non-tradable internationally. Consequently, international trade cannot be relied upon to create the needed competitive pressures.

Fourth, and perhaps most importantly, SOEs in these sectors often employ extremely outdated technologies.² Consequently, competition policy in these sectors must create incentives for investment in new technologies.

There are several broad types of competition policy that might be applied to these "infrastructure" sectors. First, post-socialist countries may continue with public ownership of SOEs coupled with non-transparent price setting, a policy which combines both economic and other objectives and includes the potential for subsidies for both current operations and future

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² This is especially true in telecommunications where, for political reasons, socialist governments tried to restrict the public's access to the means of production and dissemination of information.

investments from the state budget. In our view, this option carries great risks. In particular, as we argue below, it is unlikely to impose significant burdens on state budgets, something that these countries can ill afford. Moreover, it is likely to discourage direct foreign investment. This type of policy has, however, been used frequently in Western Europe (and other market economies).

The next two policy options presuppose that enterprises in the relevant sectors are motivated primarily by the profit motive. This is because they have been either privatized or converted into joint-stock companies (perhaps owned by the Treasury) and have been effectively cut off from subsidies that enabled them virtually to ignore market signals.

The behaviour of the “marketized” enterprises in the relevant sectors can be influenced either by regulation of prices (or output) or by application of antitrust statutes aimed at restraining abuse of market dominance.

In this paper, we argue that during the transition period to market economies, antitrust scrutiny may in some circumstances offer an effective and reasonably low-cost method of restraining undue exercise of market power by firms in the “infrastructure” sectors. In this regard, it must be noted that the antimonopoly statutes of post-socialist countries tend to follow EC law more closely than U.S. law seeks to prevent merger that are likely to facilitate or enhance the exercise of market power (Section 7 of the Clayton Act) and unfair or anticompetitive behaviour by firms with large market shares (Section 2 of the Sherman Act), but firms which achieve large market shares through lawful means are granted wide latitude in their actions. EC law is more restrictive with regard to actions by firms with large market shares that may create a disadvantage for suppliers, customers, or less efficient competitors.³ We also argue that if antitrust scrutiny is deemed undesirable on an ongoing basis, independent regulatory agencies should be established.

We suggest that, with the assistance of international agencies, incentive regulation is preferable when world prices are available. However, because of the unsettled economic situation in economies in transition and other factors, in other cases traditional rate-of-return regulation is likely to be preferable to incentive regulation.

In short, there are few microeconomic issues of greater importance now in the post-socialist countries than those surrounding the privatization and the design of competition policies for infrastructure sectors. In this paper, we address four aspects of this issue, focusing on the lessons learned from the U.S. regulatory experience and their relevance in the Eastern European context. These aspects are the following:

- privatization,
- the appropriate sectors for regulation
- the appropriate treatment of unregulated subsidiaries of regulated firms, and
- the appropriate regulatory regime for regulated sectors.

We begin with a brief discussion of Eastern European economies in which we highlight some of the differences from developed economies that are relevant to the analysis of this topic.

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See, e.g., Hawk (1985), pp.565-658.

2. The Economic Environment in Eastern Europe

Policy analysis for infrastructure industries in former socialist countries will differ from policy analysis for those industries in developed countries because of the current economic condition of former socialist countries. The absence of a profit motive has led to a number of distortions (from a market perspective) in former socialist countries. These distortions create some problems that do not exist in developed economies and exacerbate some problems that do exist.

Perhaps the most important problem is that prices in some sectors of former socialist countries do not reflect the cost of the product to society. This results in an inefficient input mix and, often, overuse of costly resources. Public utilities, in particular, generally charge rates that are too low to cover resource costs.⁴

Another important problem is that the capital needs of infrastructure industries are proportionately greater in former socialist countries than in those sectors of developed economies. An operating profit earned by a public utility in former socialist countries went directly to the Finance Ministry, and the enterprise had no particular claim on it for maintenance and depreciation expenses, much less for modernization and expansion.⁵ Public utilities will therefore require substantial investment to narrow the gap between their often obsolete physical

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"The communist systems preferred to keep the prices of these services at artificially low levels. ... the governments concerned must spare no time to readjust the price scales." (Vissi, 1992b, p.3.)

Evidence that prices in infrastructure industries have been too low is abundant. In Slovakia, the authorities considered shutting down the railroad at the end of 1993 because of a lack of funds. (August 5, 1993.) At this same time, prices for electricity were to rise 48 per cent as a step toward liberalization; natural gas prices were to rise 25 per cent. (October 20, and December 30, 1993, respectively.) In Hungary, passenger train fares covered about one-third of costs. (August 26, 1993.) In Poland, passenger train fares covered 20 per cent of the costs for local and suburban trips and 70 per cent of the costs for longer trips. (January 17, 1994.) In early 1992, prices for natural gas, electricity, and heating rose 70 per cent in Poland. Some prices have had to rise even further since then. (January 8, 1992.) In the Czech Republic, electricity prices were to rise 35 per cent to "further approach the levels of expenditures". (Oct. 18, 1993.) And in Bulgaria, heating prices covered only one-half of costs, while rail fares covered about one-third of costs. (November 11, 1993, and February 15, 1994, respectively) (All information can be found in Reuter Textline on the date in parentheses.)

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"By the early 1990s, the backwardness of the infrastructure in most public service sectors had become a major obstacle to the development of the economy in general. ... Catching these services up will require sizeable investments." (Vissi, 1992b, p.2.) The Washington Post describes the situation in the former East Germany: "The infrastructure demands are staggering. ... Three-quarters of the east's highway system was built before 1950; half its ... coal-fired power plants need refurbishing; most canals are too narrow and shallow for modern European barges, and a majority of locks are at least 80 years old; railways and bridges need wholesale renovation." ("E. Germans Update the Party Line: Fixing the Phone System A Slow, Massive Task", August 18, 1993, p.A23.) The Financial Times reports that "Western Europe has an average of 43 telephone lines *per* 100 people. In Eastern Europe, only the Baltic states and Bulgaria have more than 20, while most of the region has between 10 and 15." ("The West rings the chagnes in Eastern Europe", October 1, 1993, p.21)

assets and state-of-the-art technology.⁶ This need for capital is amplified by the dramatic increase in capacity of public utilities these countries will need as their economies develop.⁷

The problem of raising capital will be exacerbated by the lack of developed financial markets. In the past few years, Hungary, Poland, Slovakia and the Czech Republic have opened exchanges of some sort. However, even in these countries, capital markets are in their infancy, with relatively low levels of liquidity and a great deal of uncertainty as to regulation of the exchanges in the future. All of this leads to higher transaction costs in countries in which private savings will not be substantial to begin with, and, thus, to a limitation on the role of private domestic investment.

⁶ AloisRuta from the communications and safety division of the Czech railway admits that the large sections of unusable railway track are the fault of 40 years of neglect. Maintenance equipment built in the 1930s is common, and there is some equipment in place from 1897. (April 20, 1993.) János Csaradi, managing director of the Hungarian railway, says that 1993 was the first year in fifteen that important investments were made in the Hungarian railways. (January 8, 1994.) Polish authorities anticipate that they will need between 800 million and one billion USD investment *per* year for eight years in order to modernize and develop the country's telecommunications sector. (December 17, 1993.) (All information can be found in Reuter Textline on the date in parentheses.)

⁷ Polish authorities hope to increase telecommunications service from the current ratio of 9 line per 100 citizens to 30-35 *per* 100 citizens by the year 2000. The Czechs hope to increase that ratio from 17 *per* 100 in 1994 to 36 *per* 100 in 2000(Reuters Textline, Nov. 15, 1993.) See also Šíp (1992).

Rigorous accounting procedures and accepted accounting principles are also lacking in most post-socialist countries. As a result there are limited historical accounts of value, and a lack of professional trained to develop and analyze such records.⁸

At this early stage in the development of these economies, laws that clearly articulate property rights are lagging behind. In some Eastern European countries, ownership rights on assets as basic as land are not yet known.⁹ In the extreme, the lack of well-defined property rights alone can be sufficient to strangle any development attempts. While the situation is not that bleak in most post-socialist countries, the lack of well-defined property rights does increase the cost of operating a business in these countries, dramatically so in some cases.

Finally, the ability of the government to commit to a given set of property rights is likely to be much more limited in former socialist countries than in economies with a longer history of a free market. This increased uncertainty raises the cost of operating a business in these countries and therefore increases the required return. The cost of the inability to commit will vary across industries and, in the area of natural monopoly, across types of regulation. In industries characterized by natural monopoly where technology tends to be capital intensive and investments tend to be largely "sunk", the result of this inability to commit can be both severely suboptimal investment levels and a channeling of the investment that does take place toward inappropriate, less appropriable technologies.¹⁰

⁸ Evidence of this can be found in Bulgaria, where electricity sector losses for 1993 were 96 million USD according to the accounts of the National Electricity Company and 197 million USD according to international accounting standards as estimated by Arthur Anderson. (Reuters Textline, January 20, 1994.)

⁹ For a brief summary, see "Property Laws in Central and Eastern Europe", Central European Business Weekly, March 4-10, 1994; for a more thorough survey, see Gray (1993). Rental rates in Bratislava, Slovakia are as high as they are in Washington, D.C. This is in part due to uncertainty regarding a landlord's freedom to charge a rate he or she pleases. Potential investors in housing are justifiably concerned that they will not be allowed to receive a sufficient return on their investment and are therefore hesitant to increase the supply of housing.

¹⁰ For an excellent discussion, see Spiller (1993).

3. Should Public Utilities in Post-Socialist Countries be Privatized?

The empirical evidence concerning the relative efficiency of publicly owned and privately owned enterprises does not seem to support the notion that, in a developed market economy, the privatization of infrastructure industries will necessarily yield significant public benefits. Kay and Thompson (1986) and Vickers and Yarrow (1988, 1991) summarize the findings of this literature in similar ways:

Privately owned firms tend, on average, to be the more internally efficient when competition in product markets is effective (Vickers and Yarrow, 1988, p.40)

Privatization will tend to improve performance in a company only if supported by liberalization; and if the two conflict, liberalization is decidedly to be preferred. (Kay and Thompson, 1986, p.25)

Vickers and Yarrow address specifically the issue of the infrastructure sector:

Subject to the ... condition about competition and provided that other allocative inefficiencies associated with market failures are not substantial, we would agree that the available evidence supports a presumption in favor of private enterprise. However, when market power is significant, and particularly when company behaviour is subject to detailed regulation, there is little empirical justification for a general presumption in favor of either type of ownership, and case-by-case evaluation of the various trade-offs is therefore in order. (Vickers and Yarrow 1988, p.40)

However, the empirical evidence upon which these statements are based concerns almost exclusively the US, the UK, and Canada. The "case-by-case evaluation" called for by Vickers and Yarrow suggests a reformulation of the question that forms the title of this section: Is there something special about the public utility sectors of the post-socialist countries that makes their privatization more likely to lead to improvements in efficiency that has been the experience in the West?

We believe that the answer is yes. One of the most important advantages of privatization is that, by placing both residual control rights and residual cash flow rights in the hands of private shareholders rather than the government, it renders short-term political intervention in the day-to-day operations of the enterprise more costly and so allows the enterprise to focus on long-term economic efficiency.¹¹ Put another way, privatization represents a commitment by government - a commitment made credible both by these transfers of rights and by the prospect of future privatizations - not to overturn or otherwise interfere with the basic operational decisions of management. We believe that the gap between the current and efficient levels of operation has been so large in the infrastructure sectors of the post-socialist countries - and so much larger than in Western countries - that this "constitutional" change may be especially powerful

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"The important difference between public and private ownership, in our view, involves the residual rights of intervention. Under public enterprise, the government retains some authority to intervene directly in the delegated production arrangements and implement major policy changes when it is deemed necessary to do so. Under private ownership, special rights of intervention are afforded creditors (in the event of bankruptcy) and major financial interests (who can gather the resources necessary to finance a takeover of the private firm); but the government's right to intervene is more limited than under public ownership." (Sappington and Stiglitz, 1987, p.568) Boycko, Shleifer, and Vishny (1992 and 1993) make essentially the same argument, while Shapiro and Willig (1990) base this difference in the costs of government intervention on "an informational barrier between ... the regulator and the owners and managers of the enterprise."

in this setting. We discuss here four areas in which we believe a strong case can be made that private ownership will result in dramatic improvements in the performance of the infrastructure sector in these countries. These areas are the following:

- ability and incentive to raise rates
- ability and incentive to raise capital
- ability and incentive to utilize the efficient mix of inputs
- adaptability to change in the future

3.1 Ability and Incentive to Raise Rates

As discussed above, public utilities in the post-socialist countries charge rates that are too low. They are below average cost and below marginal cost, sometimes dramatically so. It is a standard result of welfare economics that, in general, this sort of income redistribution policy would be effected more efficiently through direct transfers of purchasing power or targeted subsidies than through broad subsidization of the price of particular goods. The direct result of this policy has been and will continue to be shortages and the overuse of inputs that are, in fact, costly to society (especially energy); a less direct result has been and will continue to be a lack of funds for capital upkeep and modernization; a still less direct (but ultimately very important) result will be that new businesses will hesitate to invest if they require dependable utility service.

Can and will these utilities raise rates to more efficient levels if they remain under direct government management? Certainly, this has occurred in some instances (as noted above), but it seems doubtful that it will occur systematically. The redistributive effects temptation - where "constitutional" provisions do not impede - for politicians to prevent to prevent them.¹² Furthermore, so long as utility managers are employees of the state who earn no residual income streams from profitable operation, they will have the incentive not to raise prices to market-clearing levels but rather to maximize their side payments (either explicit or from so-called "secondary [barter] markets") by maintaining prices below those levels.¹³ On the other hand, the process of privatization of a particular enterprise may provide a propitious time for a simultaneous institutional restructuring, in which management is replaced, price controls are removed (perhaps gradually), and a regulatory mechanism (where necessary: see below) is set in place.¹⁴ New private management, allowed a degree of freedom from interference in day-to-day operations unavailable to public management, will raise prices to a level at least sufficient to cover costs. Robinson summarizes the British experience with electricity privatization:

Despite the good intentions of the founding fathers ... , it proved impossible to have "arms-length" relationships

¹² See, e.g., "Hungarian utility expects losses", *Central European Business Weekly*, August 27 - September 2, 1993: "MVM cannot currently raise the price of district heating energy due to government limitations. And with elections next spring, a hard-pressed government is unlikely to allow any increases in domestic heating [prices] during the next six months."

¹³ Wiseman (1991); Shleifer and Vishny (1992).

¹⁴ Indeed, Robinson (1992a) argues that "the main argument for privatization is that it provides the quickest and most effective means of liberalization in many markets."

between the nationalized corporations and government. Instead, governments of both major parties found irresistible the temptation to interfere with the decisions of state-owned industries so that, in practice, the corporations had little control over pricing and investment decisions ... An independent regulatory body is capable of providing the industry with a much clearer set of ground rules which avoids much of the confusion between commercial and political objectives associated with nationalization. (Robinson, 1992a)¹⁵

3.2. Ability and Incentive to Raise Capital

Infrastructure industries are among the most capital-intensive industries in a modern economy. They need to replace the decrepit and obsolete physical plants and the need to provide for dramatic increases in demand as the transforming economies expand raise an important question for former socialist countries: Where will the money for expansion and modernization come from?

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See also George (1991). Bös (1993) is less optimistic: "A *priori* it is not clear why the state, failing to run the firms as owner, should now suddenly have become an efficient regulator."

If the enterprises remain in public hands, there does not seem to be a likely source for the massive funds that will be required. Rate increases by the enterprises would be helpful in this regard, but, as argued above, they do not seem likely to be forthcoming. Most of the post-socialist countries have serious government budget deficits resulting from badly underdeveloped systems of public finance.¹⁶ Expansion of these deficits, even if desired by the government, is typically constrained by agreements with international lending bodies. And this gap in funding is, for reasons described earlier, unlikely to be filled by domestic private investment.¹⁷

This suggests that the enterprises must be privatized, and that if they are to attract the investment funds required, they must be open to foreign investment.¹⁸ Certainly the issue of foreign investment in infrastructure industries is a controversial one politically, and there will be differences between countries in the feasibility of this outcome and the volumes of investment that are politically acceptable. Still, as has

16 See, e.g., Bolton and Roland (1992); Kornai (1992); Tenebaum, Lock, and Barker (1992); Hussain and Stern (1993); Newbery (1993); "Tax Evasion: An Auditor's Nightmare", *Warsaw Voice, Financial Voice*, December 1992, p.1.

17 See, e.g., hare (1991); Heald (1992).

18 This has become a commonplace observation in the post-socialist countries. The *Warsaw Voice* quotes a private consultant on telecommunications to the Polish Ministry of Ownership Changes: "the industry does not have the money for either research or to buy new technology, which means it needs foreign capital to modernize.: "Poland's Telephone Network: Uncrossing the Wires", March 7, 1993, p.B8. Similarly, "what is needed to modernize Eastern Europe's power plants is money. ... The former Eastern Bloc countries simply do not have the money. Assistance from the West is needed, not only financially but also technically." "Nuclear Energy in Eastern Europe: Poison Power?" *Warsaw Voice*, March 7, 1993, p.B4. "The question for managers of water supply and sewage installation companies is where to find the money to improve water systems. Polish water users are reluctant to foot the bill, while municipal and state coffers are nearly empty." "Water in Poland: Crystal Clear Crisis", *Warsaw Voice*, January 31, 1993, pp.12-13.

been demonstrated in both the UK and France, it is quiet possible for the government to privatize an enterprise and open it to foreign investment while still maintaining some discretion over its ownership structure.¹⁹ Indeed, Tenenbaum, Lock, and Barker (1992) argue that the “special” nature of infrastructure enterprises - used in the past as a rationale for nationalization - may now be the best reason for privatization:

One of the major factors that drove many electric system nationalizations earlier in this century, the industry's central or infrastructural role in the country's economy, now mandates its privatization in debt ridden countries if economic growth is to continue. (Tenenbaum, Lock, and Barker, 1992, p. 1135.)

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The British “golden share” and the French “hard core” have both served especially to prevent the purchase of a controlling interest in the privatized firm by a party unacceptable to the government. See Graham and Prosser (1991), 138-174.

Along these lines, the Financial Times reports the "Hungary is set to open up infrastructure development to western investors." At his parliamentary confirmation hearings, finance minister Iván Szabó said that "foreign companies could finance the construction of motorways, airports, railways, and eventually mines."²⁰ A decree of the Hungarian government permits private (including foreign) acquisition of partial ownership interests in various infrastructure enterprises - up to 40 per cent in electricity, broadcasting, and telecommunications, up to 74 per cent in gas distribution.²¹ Foreigners have invested heavily in the modernization and expansion of Poland's telecommunications network.²² And in a pilot project in cooperation with the World Bank, two Scandinavian power generating utilities have announced a commitment to invest \$25 million each in the modernization of a heat and power station in Krakow, Poland.²³

20 "Hungary to seek finance for projects", Financial times, February 25, 1993, p.2. See also "Foreigners may buy Hungarian power", Financial Times, February 24, 1994, p.17, and "Hungary awards phone contract", Financial Times, March 1, 1994, p.4; "Gas companies now ready to join privatization queue", Central European Business Weekly, April 15 - 21, 1994, p.7.

21 Hungarian Governmental Decree 126.1992 [August 28], "Decree on the Enterprises Remaining Partly or Completely in the Possession of the State on a Long-Term Basis."

22 "Expanding the Telephone Network: Dial C for Chaos", Warsaw Voice, April 12, 1992, p.B4.

23 "Two Scandinavian utilities give backing for Polish power station", Financial Times, March 9, 1993, p.5.

3.3 Ability and Incentive to Utilize the Efficient Mix of Inputs

Publicly owned firms operate under constant political pressure to utilize input mixes that would not be chosen by profit-maximizing managers. Such firms have demonstrated repeatedly a tendency toward bloated labor forces,²⁴ but they may be forced by political considerations to favour other inputs as well.²⁵ Boycko, Shleifer, and Vishny (1992, p.4), may well be correct in arguing that “the greatest reason for the inefficiency of state firms is not managerial problems, but rather the insistence by the state that the firms produce inefficiently.” Private management, responding both to its own direct incentives and to the profit-maximization dictum of capital markets, and insulated from government intervention in its day-to-day operations, would be expected to produce its output at significantly lower cost to society - though, to be sure, a fundamental challenge facing those designing regulatory institutions for transforming economies will be to ensure that regulation does not blunt these incentives for efficiency. (We discuss this issue below).

²⁴ See, e.g., Pint (1991); Zank (1991); Tenenbaum, Lock, and Barker (1992). The latter authors cite a report that the UK's National Power cut staff by 47 *per cent* following privatization.

²⁵ For example, such considerations have led electrical generation in the UK to use both more coal and more nuclear energy than cost minimization would dictate. Robinson (1992b), pp.124-128. “Public enterprises are inefficient. They employ too many people, produce goods that consumers do not want, locate in economically inefficient places, do not upgrade their capital stock, and so on. While these problems are particularly severe in Eastern Europe, public enterprises throughout the world are conspicuous for their inefficiency, as well. This observation is no longer controversial.” (Boycko, Shleifer, and Vishny, 1993, pp.141-142.)

Along this line, a Warsaw Voice report on the process of partial privatization of the polish airline LOT concludes that:

The most visible result has been streamlined employment. At the end of 1990, LOT employed more than 7,300 people. Currently, employment stands at about 4,800.²⁶

Indeed, the report quotes an officer of the company on the rationale for this partial privatization (in which 49 per cent of the firm's stock will be placed in private hands, probably those of a large western air carrier): 'The company doesn't need capital or a change of strategy as much as it needs joint work with a partner to improve, for example, corporate management.'²⁷

3.4 Adaptability to Change in the Future

Many infrastructure industries change in important ways over time. Two important kinds of changes may be noted here: change in the technology of production and distribution of a particular sector, and change in the competitive conditions facing producers in a particular sector. (The first kind of change may lead to the second.) Both kinds of changes - perhaps especially the first - may have such large welfare impacts over time that a policy that facilitates and enables dynamic efficiency has much to recommend it, even if it is not the policy that reaches the highest level of static efficiency.²⁸ In this case, we believe that the post-

²⁶ "Prelude to Privatization: New Legal Status for LOT", Warsaw Voice, January 17, 1993, p.B1. Sceptics might note that this reduction in employment has occurred simultaneously with the spin-off from LOT of some "peripheral" businesses. One may answer that 1) such concentration on core businesses likely represents an efficiency gain in itself, and 2) in any case LOT is in the process of reducing employment still further through the introduction of operating efficiencies.

²⁷ *Ibid.*

²⁸ Of course, this is an idea most closely associated with Joseph Schumpeter, especially Schumpeter (1942).

socialist countries are in the fortunate situation where the same policy encourages both static and dynamic efficiency.

The case of technological change offers perhaps the most striking example. Assume that there are innovations in the process of production that would dramatically lower costs but would also entail some risk of failure. Assume further that this risk, or the consequences of failure, are small enough that a social welfare maximizing enterprise would adopt the innovation. Which form of ownership, public or private, is more likely to result in adoption?

The answer seems clear. It is true that private managers may face inadequate incentives to innovate if regulators tax away part of the benefit of successful innovation. (Again, we shall discuss this issue below.)

But at least with private ownership there is an important constituency - the shareholders - favouring innovation that increases profits by reducing costs. On the contrary, the only incentive that public managers face for successful innovation stems from the desire of the sponsoring ministry for a smaller budget deficit - likely a decidedly less powerful stimulus.²⁹

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"In recent decades, many economists have returned to the Schumpeterian view that the advantage of the market economy (relative to its alternatives) lies more in its facilitation of innovative activity than in its allocative efficiency. The system of central planning is surely deficient in both respects, but its shortcomings seem to be much greater in the area of innovation than in allocative efficiency ... Innovative activity usually carries a high risk of failure, and bureaucracies normally are incapable of providing the high-powered incentive ... that induce some people to become entrepreneurs in market economies." (Clague, 1992, p.3.)

A change in competitive conditions facing an infrastructure industry may also have important welfare implications. As we will discuss below, several sectors in the U.S. that were once regulated were later substantially deregulated as a result of the appearance of competition. (Two good examples are railways and long-distance telecommunications.) Privately-owned, regulated firms may resist this competition, to be sure, and may seek to use the regulatory process to impede (as was the case in both of the sectors just cited), but it seems clear that an enterprise owned by the state will be able to resist more strongly and use the force of government more successfully in doing so.³⁰

3.5 Conclusion

We believe that all of the factors just discussed - rate levels, capitalization, static operating efficiency, and dynamic allocative efficiency - argue in favour of the privatization of infrastructure industries in the post-socialist countries. We have not addressed the issue of what form the privatization should take; there are many possibilities, and it may be feasible in some circumstances for a less-than-compete privatization (like the Hungarian plan noted above) to address public concerns while still achieving the goals discussed here.³¹

We have also not yet addressed the issue of whether and how to regulate such enterprises following privatization. It is to this important issue that we now turn. First, how does one decide which sectors need regulation? Second, if part of the operations of a privatized infrastructure firm may be deregulated but part must be regulated, should ownership of the two parts be separated? Finally, what kind of regulatory regime seems most appropriate to the post-socialist economies?

4. The Appropriate Sectors for Regulation

It is by now commonly recognized that direct regulation of prices should be confined to those sectors of the economy that exhibit natural monopoly characteristics.

A natural monopoly may be defined, semi-technically, as a firm that employs a given technology for which the output demanded can be produced most cheaply by a single firm. Often this occurs because the average total cost for a firm using this technology declines continuously over the existing range of demand. The problem, of course, is that this one firm with lowest costs, if not regulated, may be expected to act as a monopolist and to increase its profits by

³⁰ "Public enterprises have a comparative advantage relative to private enterprises in regulatory capture, in which the industry captures those parts of the legislative process that can protect it against competition." (Newbery, 1992, p.18.)

³¹ Sappington and Stiglitz (1987), pp.579-580; Bös (1991), pp.192-193; Hussain and Stern (1993), p.66.

reducing output in order to raise prices. An efficient regulatory regime seeks to ensure that output is maintained at or near the competitive level at the same time that single-firm operation allows the highest level of technical efficiency to be reached.

It is important to note, however, that just because a firm is a natural monopoly, it does not follow that government regulation is either appropriate or necessary. This is so for two principal reasons.

First, regulation imposes costs upon regulated firms. The firms must hire attorneys and experts to interact with the regulators. They must delay taking actions while they consider their regulatory implications and await regulatory reaction. They must optimize under constraints imposed by the regulators - some of which may not be well understood at the time of their imposition, and some of which may reflect bureaucratic interest rather than public interest. Such burdens can be justified on a welfare basis only where the costs to the economy of the firm acting in an unregulated manner would be large.³²

Second, a natural monopoly may not, in fact, be a monopoly in a sense that matters for prices (and levels of output). That is, even if a firm operates as a natural monopoly in producing a certain product with a certain location, it may face competition from firms producing competing products, or the same product with a different technology, or the same product at a different location, and, thus, not require regulation.³³ Recent U.S. examples of this phenomenon include the following:

- There has been a general consensus in the United States that both the local distribution of electricity and the long-distance transmission of electricity from one point to another are natural monopolies. However, technological change has made possible the economical construction of a large and small generators of electricity including as a by-product of industrial processes).³⁴ This means that there may be situations where rates for wholesale energy³⁵ need not be regulated.³⁶ But it means more than that: if a particular location is served by more than one long-distance line from more than one generating location, then it may be that the transmission service no longer needs rate regulation, either.
- Similarly, the long-distance transmission by pipeline of petroleum between two points may well be a natural monopoly. However, in the United States the Department of Justice has argued for years that certain pipeline destinations that have multiple sources of petroleum - say, from a pipeline from another origin or from water or truck transportation - do not require regulation to protect them from monopoly pricing.³⁷ Similar considerations

³² For a discussion in the context of developing economies, see Bradburd (1992). For a more general discussion of the costs of regulation, see Coase (1960, 1989a).

³³ This consideration will play an important role in the decision about the form privatization should take - that is, whether to privatize the enterprise in parts or as a whole.

³⁴ Robinson (1992a), p.8; Robinson (1992b), pp.118-124.

³⁵ These are the rates that the producer of energy charges the retail distributor.

³⁶ Tenenbaum, Lock, and Barker (1992), p.1139; Bös (1993), pp.8,14. See also Hammond (1992).

³⁷ U.S. Department of Justice (1986); Untiet (1987).

may hold for some natural gas pipelines.

- The operation of a railway from a particular origin to a particular destination may sometimes be a natural monopoly, especially in locations where the density of traffic between the two points is low.³⁸ However, it is widely accepted in the United States that government regulation of this natural monopoly is unnecessary in those situations where the transport of the commodities via road or water is an economic substitute for their

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See, e.g., Keller (1983); Caves, *et al.* (1985). John Stuart Mill reached the same conclusion nearly 150 years ago: "In the case of railways ... no one can desire to see the enormous waste of capital and land (not to speak of increased nuisance) involved in the construction of a second railway to connect the same places already united by an existing one." (Mill, 1848, Vol. 2, p.142).

transport by rail, and in those situations where the origin is served by other railways (to other destinations) and the destination is served by other railways (from other origins), so that shippers and customers have access to competitive sources of supply or demand.³⁹

To summarize: each of these is an example of a sector which is arguable a natural monopoly but where some form of competition - from another product, from another technology, from another location - makes government regulation unnecessary. This may occur because natural monopolies are defined with respect to technologies, not with respect to consumer preferences. The latter are relevant to market definition but not to natural monopoly characterization.

5. The Appropriate Treatment for Unregulated Subsidiaries of Regulated Firms

One of the most controversial issues in the regulatory arena in the United States is the degree to which regulated firms should be allowed to compete in unregulated markets. Many people fear that if a regulated firm is allowed to compete in unregulated markets it will be able to divert a portion of costs directly attributable to activities in these markets onto the customers of its regulated operations, thus, "cross-subsidizing" its unregulated customers and unfairly and inefficiently putting its competitors in unregulated markets at a disadvantage.⁴⁰ This may be

³⁹ Friedlaender and Spady (1981); Pittman (1990); Winston, *et al.* 1990; Ordover and Pittman (1994). Irwin (1992) conjectures that the telecommunications sector may be an example of this phenomenon at some point in the future: How long will the premise of price cap regulation remain valid? If wireless telecom, digital packet switching, fibre optics, satellite relay and a cornucopia of information appliances are on the horizon, then is it possible that scale economies and the concept of franchise exclusivity will be rendered obsolete? Will, in short, price cap regulation be superseded by the open market?

⁴⁰ It is not a simple matter to ascertain whether such cross-subsidization exists. Another complication ensues when buyers of the regulated service benefit from quality-improving investments made because of competitive conditions in the unregulated service.

especially harmful in those situations where the unregulated sector offers the only competition, however, imperfect, to the regulated firm takes advantage of economies of scope by producing and competing in both kinds of markets.⁴¹

Because of the economically irrational industry structures inherited from the socialist economies, some of these decisions are not difficult ones. It requires no econometric study to conclude that there are probably no important economies of scope in the simultaneous operation of a local telephone company and a vacation resort, or a railway and a local vegetable distributor. If the telephone company and the railway are to be regulated as natural monopolies, the separation of the vacation resort and the vegetable distributor from their common ownership will eliminate the necessity of carefully ensuring that the firms are not using profits from their regulated operations to subsidize their unregulated operations, to the harm of competitors there.

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For an interesting treatment of the trade-off between cross-subsidization and economies of scope, see Brennan and Palmer (1991); see also Brennan (1987; 1990). Special problems ensue if the regulated product is an essential input into the unregulated product (discrimination) or if the unregulated product is an input into the regulated product (inflated pricing). An example of potential discrimination especially dangerous in a transforming economy would be the refusal of the firm to sell the regulated product to its rivals in the unregulated market. See Pittman (1992), pp.497-98.

But there is no evading the fact that sometimes the trade-offs involved are difficult. In fact, there is a certain inherent difficulty to the trade-off, since it is in precisely those areas where there are economies of scope between the provision of regulated and unregulated services that the separation of the costs of the provision of regulated and unregulated services may be the most complex task (or may be, in fact, logically impossible). Few in the United States would deny that there would be real economies of scope to the provision of information services by regulated providers of either local telephone or local cable television service, but few would deny also that this is a situation in which the possibility of cross-subsidies - and hence unfair competition to other providers of information services - is a matter of real concern, in the absence of regulatory safeguards. In a variety of circumstances, policy-makers in the United States are seeking to balance these considerations just now.⁴²

If cross-subsidization is a matter of concern in market economies, it may be even more of a danger in the post-socialist economies. This is so for two reasons.

First, the prevention of cross-subsidization requires that firms keep careful accounts according to well-accepted accounting principles and that regulators be well-trained in the interpretation of these accounts. Since none of these preconditions exist in the post-socialist countries (nor are they likely to for many years to come), the accounts of regulated firms are likely to be kept in such a way as to make the detection of cross-subsidies difficult.

Second, the careful interpretation of firm accounts to prevent cross-subsidization, inevitable, requires important judgements to be made by individual regulators. Whenever such judgements are required, there is the possibility of corruption and conflict of interest on the part of regulators - what is sometimes termed "regulatory capture". Economists have noted an unfortunate tendency in the West for regulatory bodies to protect regulated firms from competition as much as they protect the public from the abuses of monopoly.⁴³ As Tirole (1991) notes, the post-socialist economies may be especially susceptible to this problem:

Strong safeguards must be put in place to prevent governments from serving the interests of specific groups. Many of these safeguards did not exist under the previous regimes and will take time to install: organization and rotation in the civil service, administrative procedures and regulatory hearings, independent administrative

⁴² See section 6.2, above, on how different regulatory regimes affect the incentives for cross-subsidization.

⁴³ Stigler (1971); Posner (1974); Peltzman (1976). A useful review of recent developments in this literature is provided by Noll (1991).

courts, checks and balances in government, development of a tradition of investigative reporting by the media, *etc.*⁴⁴

For these two reasons, it seems likely to be especially difficult in the post-socialist countries for regulators to prevent firms from subsidizing unregulated operations from regulated operations, and, thus, it seems appropriate to hold a strong bias in these economies toward the separation of ownership of regulated and unregulated businesses. (The most likely exception may be when the regulated service and the unregulated service are the identical service offered in different markets - for example, the cases of deregulation described below in section 6.6).

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Tirole (1991), p.240. One example of the problem is complaints that advisors to the Czech Ministry of Privatization will be able to use confidential information for their personal gain (Tereza Nemessanyi, "Privatization's Loopholes May Allow Future Abuses", Prague post, August 25-31, 1992).

Early developments in this area do not appear especially promising. Both Poland and Hungary have chosen to allow their monopoly providers of local telephone service to enter into the provision of related services that may not be natural monopolies, such as mobile radio, cellular telephone, paging, packet data transmission, and electronic mail. Since these kinds of services provide the only likely competition to local telephone service in the near future; since there is little chance that in the near future demand in either country can support more than one or two providers of these services; and since regulation to prevent cross-subsidization is likely to prove ineffective - indeed as of this writing it is contemplated that Hungary will privatize local telecommunications with no regulation - this joint ownership raises the likelihood that cross-subsidization will be used as an entry deterrent, to the detriment of competition and consumers.⁴⁵

6. The Appropriate Competition Regime for Natural Monopoly Sectors

6.1 Background

For the last hundred years, the predominant form of regulation in the United States has been “rate of return” regulation. This form of regulation operates in the following manner. At a particular point in time, the regulated firms estimates the value of its capital stock. For a particular period of time (perhaps one year), the firms estimates the quantity of its products that will be demanded by customers. It then estimates the costs that it will incur in satisfying this demand, including the cost of depreciation of its capital stock. The regulatory body calculates the amount of surplus, net of both operating costs and depreciation, that must be allowed the firm if it is to earn a “normal” rate of return, or profit. The body then permits the firm to set such prices as the body calculates will yield that return.

Critics of this system of regulation have charged that it is both costly and inefficient. It may be costly because there is a sufficiently large number of difficult judgements required of regulators in administering the system that a particular decision may result in expensive and time-consuming lobbying, deliberation, and litigation. It may be inefficient because some of the principles involved may provide poor behavioural incentives to the profit-maximizing firm.

Examples of the difficult judgements required include the following:

1. What is the exact value of the capital stock of the firm? (Those who have studied Marxist economics will have a special understanding of the difficulties involved here.) Exactly how much of that capital stock depreciates in a single year? Natural monopoly sectors tend to be among the most capital-intensive sectors of the economy, so that small changes in the answers to these questions may make large differences in the prices charged by and

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An ironic related development: electricity privatization in the former German Democratic Republic resulted in the ownership integration of previously separate enterprises for power generation and power distribution. (Bös, 1991, p.185.)

return earned by firms.

2. What is the “normal” rate of return to capital that should be allowed by regulators? This rate - which is the rate that the firm must be allowed to earn if it is to attract funds from investors - should be determined in a particular industry largely by the riskiness of investing there. But exactly how risky is investing in a particular natural monopoly sector? Again, the capital-intensity of the typical natural-monopoly sector makes this a very important question.
3. The capital intensity of many natural monopoly firms is accompanied by the problem of “common costs”: a significant portion of the capital costs incurred by the regulated firm is not sensitive to the level of output, or to the output mix, of the firm. Thus, while these costs may be large in magnitude and must be recovered if the firm is to earn a return on its capital, it is logically and operationally impossible to assign them to particular units of output of the firm. How they are recovered then may become as much a matter of “fairness” - hence of lengthy discussion and persuasion - as of economics.

Examples of poor incentives provided by the terms of the system include the following:

1. If the firm reduces its costs, the regulatory body will respond in the next period by reducing the prices that the firm is allowed to charge, since less revenues will be required to cover operating costs and still allow the normal rate of return. Conversely, the firm knows that if its costs increase as well. Thus, the incentives of the regulated firm to seek to operate more efficiently are attenuated.
2. The higher the level of capital intensity of the firm, the higher the level of surplus that must be allowed by the regulator to achieve the normal rate of return on capital. Thus, firms may have an incentive to increase their capital intensity beyond the most efficient level.

The widespread perception of these kinds of problems with rate-of-return regulation has = besides supporting the arguments in favor of the sectoral deregulation discussed earlier in this paper - stimulated a search for new forms of regulation that do not impose the costs and inefficiencies that may accompany rate-of-return regulation. In some sectors of U.S. and other Western economies, regulated firms have been allowed to set their prices in such a way that a particular long-term revenue path is not exceeded, without regard (in principle, at least) to the costs incurred by the firms in a particular year. For example, the firm may be told that its revenues may increase each year at the same rate as the rate of inflation in the economy, minus a predetermined allowance for increased operating efficiency. These kinds of regulatory regimes have been labelled “incentive” regulation, because - again, in principle - they do not penalize a firm for lowering its costs by forcing it to lower its prices as well.

6.2 The Appropriate Regulatory Mechanism

For those firms in the post-socialist countries that require government regulation, what is the appropriate regulatory mechanism? At least three broad categories of mechanisms would seem to be candidates:

- dominant-firm oversight under an antimonopoly statute;
- cost-of-service regulation, as traditionally used in the United States; and
- incentive regulation

Government oversight under the first category would simply treat the natural-monopoly firm as one more firm with market power whose possible “abuse of dominance” is to be guarded against by the antimonopoly authorities. (The defined abuses typically include price discrimination, tying, charging “excessive” prices or earning “excessive” profits, and withholding output to increase prices.)⁴⁶ Under the second category, a regulatory authority would be created to set detailed prices for the firm, based principally upon the costs that it incurs, with an objective to ensure an adequate rate of return on the firm’s assets. Under the third category, this regulatory authority would also set some prices - though perhaps in less detail than under cost-of-service regulation - but would base these prices upon some factors not tied directly to the past and present costs incurred by the firm.

⁴⁶See, *e.g.*, Fox and Ordover 91992); Pittman (1992); Slay (1994).

Each of these types of mechanisms has advantages and disadvantages relative to the others, and some of these advantages and disadvantages take on a special importance in the context of the post-socialist economies of Central and Eastern Europe.⁴⁷ The World Bank has encouraged the use of incentive regulation schemes in many sectors in the post-socialist countries. As in the Western economies, different mechanisms may be more appropriate to one industry than to another; in addition, different mechanisms may be the most important of these advantages and disadvantages may be included in one of three broad categories: the cost structure of the firm, changes in industry technology, and changes in industry demand.

6.3 Cost

As practiced in the West, cost-of-service regulation has been based upon detailed information and analysis concerning the costs already incurred by the regulated firm.⁴⁸ This has had the advantage of rendering rate-making an exercise of some predictability and routine, removing the scope for much regulatory discretion; it has had the disadvantage of requiring massive regulatory staffs to analyse massive volumes of data, and of tempering the incentive of the regulated firm to minimize its costs. Incentive regulation schemes originated as a means of restoring the cost-minimization incentive by severing the direct connection between a regulated firm's costs and its prices, but they do so at the expense of requiring a prediction of the future costs facing the firm.⁴⁹

Consider separately the issues of costs already incurred and costs to be incurred in the future. A full-information application of either dominant-firm scrutiny or cost-of-service regulation would require data on firm costs far more detailed and accurate than is available to enforcers in the post-socialist economies, with their lack of a tradition of cost accounting and capital budgeting. The President of the Polish

⁴⁷ There is a broad literature comparing cost-of-service with incentive regulation. Recent examples include Brennan (1989), Schmalensee (1989), Brown, *et al.* (1991), Pint (1992), and Liston (1993). Tirole (1991) makes the comparison in the context of Central and Eastern Europe. One advantage of incentive regulation not discussed in the current paper is that it is designed to reduce or eliminate the incentive for the regulated firm to engage in cross-subsidization (Brown *et al.*, 1991, p.331); one disadvantage is that it creates an incentive for the regulated firm to reduce service quality (Brown, *et al.*, 1991, p.332).

⁴⁸ See generally Kahn (1971).

⁴⁹ See, *e.g.*, Beesley and Littlechild (1989); Schmalensee (1989).

Antimonopoly Office recently described the difficulties encountered by her office in trying to use the dominant-firm provisions of the Polish law to regulate prices charged by the automobile manufacturer FSO:

In FSO case nothing could be done. It was even impossible to calculate costs of one car - simply the FSO did not know them - and on this basis to reckon monopolistic profit that was earned by the Factory. Eventually the [Antimonopoly] Court decided the proof is not sufficient.⁵⁰

Under these difficult circumstances, the practice of price regulation, where necessary, will likely focus on changes in prices as a function of changes in already-incurred costs. That is, the relevant authorities may take current prices as being reasonable and assess only increases from those prices. Thus, the Competition Council of the Hungarian office of Economic Competition recently judged a price increase for thermal water supplied by Budapest Swimming Pools Management to be excessive:

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Poland, Antimonopoly Office (1992a).

While not pronouncing on the correctness of the prices the Jury decided that Defendant did offend the law when increasing their prices far beyond what would seem reasonable ...⁵¹

All of this argues in favor of an inviting and arguable economically correct alternative: use world prices where available. Many of the inputs in public utilities are traded on a world market. Energy and capital equipment, for instance, are frequently traded across borders at world prices. For economies in transition, world prices have a number of advantages over domestic prices: 1. they are relatively stable; 2. they more accurately reflect the resource cost; and 3. they reduce the scope for regulatory capture, by establishing an independently determined yardstick.

Either an antimonopoly authority or a regulatory agency could use the available cost data to control prices. In cases where the bulk of firm costs are determined by the costs of one or a small group of inputs, an antimonopoly authority may well be able to monitor and interpret the cost increases and to ascertain whether price changes are indicative of the exercise of market power. In cases where the firm's cost function is more complex and not a function of such a small group of inputs, effective regulation might require the developing of industry-specific expertise by a specialized regulatory body.

Incentive regulation regimes seek to eliminate or minimize the necessity of detailed analysis of the cost of experience of regulated firms, and to restore the incentive for firms to minimize their costs.⁵² However, initial prices to which automatic price adjustments will be applied must still be determined. More importantly, all such regimes rely to some degree on the prediction of costs and productivity. For many industries, such predictions based on domestic data will be every bit as difficult in the post-socialist economies as would be the detailed analysis of costs already incurred - first, because of rapid economy-wide inflation, second, because of the deregulation of the prices of important inputs.

As with cost regulation, these problems suggest incentive regulation would benefit from the use of world prices. World prices for final products traded across borders (e.g., electricity) would allow the regulatory authority to realize all of the advantages described above,⁵³ and, in contrast to cost-of-service

51 Hungarian Office of Economic Competition, case Vj-74/1991/17, National Sports Swimming Pool v. Budapest Swimming Pools management. See also Vissi (1992a), p.70. More recently, the Polish Antimonopoly Office limited the percentage price increase planned by the Polish Telecommunications Company ("Telephone Rate Hikes on Hold", Central European Business Weekly, August 13 - August 19, 1993).

52 Lewis and Sappington (1989); Sibley (1989); Brown, *et al.* (1991).

53 Price stability is particularly important with incentive regulation: "Without uncertainty, price caps are

regulation, there would be no need to rely on *any* domestic prices in the industries in which world prices are available.

Probably the most important detractor from incentive regulation is the ability of the government to commit to a given price path. That is not to say the ability to commit in cost-of-service regulation is unimportant (who is to say that the government will allow a pre-specified return after the investment has been made?⁵⁴); it is simply that credible commitment is probably necessary for incentive regulation to have an advantage over cost-of-service regulation. The political pressure to renege on a commitment will be

generally optimal; with uncertainty they almost never are." (Schmalensee, 1989, p.418.)

enormous. This pressure can be expected to be particularly pronounced in a country in which the population is still waiting for the fruits of capitalism to accrue to them.⁵⁵ Conversely, the pressure from the regulated enterprise to increase the allowed price when there are sizeable losses will be significant.

These pressures combined with post-socialist governments' already limited ability to commit would seem to handicap incentive regulation beyond serious consideration. However, organizations like the World Bank may help post-socialist countries deal with this problem. Financial aid from these organizations which is conditional upon the government adhering to the commitment may be sufficient to alleviate any fears of potential investors. The World Bank's independence from domestic political pressures and special interest group pressures puts them and organizations like them including IMF, European Bank, and USAID) in a potentially useful position.

6.4 Burden of Regulation

We mentioned earlier the costs that regulation imposes upon regulated firms and upon the economy in general. These costs may be greater under cost-of-service regulation than under incentive regulation, but the latter cannot eliminate them entirely.

In this regard, reliance on dominant-firm provisions in anti-monopoly statutes by the antimonopoly authorities may be an acceptable "middle way" in some circumstances.⁵⁶ These authorities lack the large staffs necessary to impose upon firms the kinds of large, day-to-day burdens just described. Just as important, they may have less of a will to do so. Both the Polish and the Hungarian antimonopoly authorities have stated publicly their distaste for heavy involvement in price regulation:

Price control would hinder the transition from a command economy to a market one. In practice, we react to only the most aggressive price behavior of our monopolists.⁵⁷

We ... sensed an illusory expectation that the Competition Office would, in the course of its investigations, determine "proper" prices for monopolistic or superiority situations. In fact, we have always done our best to

55 "The failure to recapture efficiency gains for consumers can seriously reduce the desirability of an incentive mechanism." (Brown, *et al.*, 1991, p.328.)

56 Obviously, other types of conduct by dominant firms, *e.g.*, exclusionary practices, fall readily within the purview of antitrust authorities and are not discussed here.

57 Fornalczyk (1991), p.8.

resist such pressures. The Competition Law must not be allowed to reintroduce the *quasi*-official pricing of goods in areas which Parliament exempted in the price law. There may be - and in fact there were - cases when we were able to tell which part of a concrete price increase was justified and which was not, but these instances were exceptional.⁵⁸

58 Hungary, Economic Competition Office (1992a), § 15.

Dominant-firm regulation by the antimonopoly authorities institutionalizes price scrutiny with a body whose existence does not depend on regulating that industry; cost-of-service and incentive regulation institutionalize regulation with a body created, staffed, and dedicated to that purpose. It seems likely that the former will impose the smaller burden.⁵⁹

Furthermore, a generalized enforcement agency, such as an antimonopoly authority, will be less susceptible to regulatory "capture" than a regulatory agency; the staff and management of the former must deal with a variety of industries and interests on a day-to-day basis and are likely to develop neither the rapport nor the institutionalized interdependence with the regulated industry that may develop under the latter.⁶⁰

There are responses to these arguments in favor of the use of the antimonopoly authority as regulatory agency. If the antimonopoly authority lacks the resources to impose a long-term regulatory burden, it also lacks the resources to develop the extensive industry expertise required of a regulator. If a generalized antimonopoly authority may be to some degree protected from "capture" by a particular industry, so may be a generalized regulatory agency; one need not create a regulatory agency for each regulated sector. There may be a spillover costs from using the antimonopoly authority as a price regulator in natural monopoly industries if the authority thereby develops expertise in the science of price regulation and begins to favor that remedy over remedies that create or promote the process of competition in its antimonopoly enforcement regarding the unregulated sectors of the economy. And the existence of a competition authority free of any regulatory power ensures that there is an advocate for efficiency within the government which is free of special interest group pressure.⁶¹

These factors suggest that the most appropriate circumstances for the use of antimonopoly authority as regulatory agency will be not only where regulation is relatively straightforward (as discussed in section 6.3, above) but also where regulation is deemed necessary on only a short-term basis as competitive forces develop in a particular sector. Where long-term regulation is contemplated, an agency dedicated only to regulation is probably in order.

59 Nor should the general prejudice against setting up a new government regulatory body at a time of overall deregulatory transformation be ignored. "The public is highly suspicious about the newly established authorities. For obvious reasons, the first impression tends to be 'uh, another bureaucratic body.'" (Vissi, 1992a, p.11.)

60 Stigler (1975), p.166.

61 It should be recalled that in the United States the Federal Communications Commission resisted the opening of telecommunications to competitive forces from new entry, while the Department of Justice was taking steps to ensure that competition prevailed.

6.5 Changes in Industry Technology

The transformation of the post-socialist economies will result in large, discontinuous changes in the technologies used in virtually every natural-monopoly industry. The issues discussed in the previous two sections - the cost structure of the regulated firm and the burden of regulation - are especially important in the presence or anticipation of such technological changes.

The likelihood of such changes increases the importance of firms facing the proper incentives to use the appropriate production technology at all times - increases the advantage of incentive regulation, in other words, over rate-of-return regulation, which responds to a lowering of the firm's costs by a lowering of its allowed price.

Furthermore, such changes increase the importance of regulatory decisions, at the same time that they increase the scope of regulatory discretion, and, thus, may significantly increase the likelihood of regulatory discretion, and, thus, may significantly increase the likelihood of regulatory capture. A regulator faced with large, discontinuous technological changes must make decisions on a variety of issues with far-reaching implications: how the regulated firm is to adopt the new technology, the cost treatment of obsolete capital, whether the new technology changes the optimum number of firms in the industry (i.e., whether and to what extent entry may be permitted), whether the new technology removes the need for government regulation.

In industries in which final product world prices are available, and assuming the commitment problem can be solved by an international agency, incentive regulation seems to be the clear choice. In addition to its direct incentive advantages, incentive regulation may take some judgements out of the hands of the regulator, thereby reducing the problems associated with regulatory capture.

If final product world prices are not available or if international agencies are unwilling or unable to mitigate the commitment problem, the prediction and commitment problem would seem to hold trump over the incentive problem. Incentive rates will, rightly, not be taken seriously if likely changes in industry structure mean that a commitment to announced rates could lead to either huge profits or ruinous losses for the regulated firm. The capture problem serves to strengthen the argument for mechanisms to control regulatory discretion in these economies - through more explicit legislative direction where that is feasible, in general through a strengthening of safeguards against the use of government agencies to further the interests of particular groups.⁶² It also serves, on the basis of the argument that generalized agencies are less susceptible to capture than are specialized agencies, to strengthen the argument for reliance on antitrust provisions in those sectors where the structure of cost and production is not so complex as to definitively require a specialized agency, or a generalized rather than a specialized regulatory agency. The "burden of regulation" argument also points toward the use of the antimonopoly agency (though with the same caveats noted above): an antimonopoly authority may be less inclined to micro-manage the evolution of the infrastructure sectors of the economy.

6.6 Changes in Industry Demand

If the transformations of the post-socialist economies are to be successful, changes at the micro level will be as sweeping and dramatic as changes at the macro level. New plants and shops will be built. Old plants and shops will go out of business or will change their input requirements. Managers, old or new, will require a new dimension of service flexibility as they seek to satisfy customers rather than the requirements

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Levy and Spiller (1993) offer an extensive and valuable discussion of this broad issue.

of a long-term plan. The success of all of this will depend in part upon the owners and managers of infrastructure industries facing the correct incentives to provide these new services and new packages of services.

What kinds of regulatory structures will be most effective at providing these incentives? Clearly this is another example, like that of the previous section, where the incentive properties of incentive mechanisms - the fact that firms and managers are rewarded directly, monetarily, for performing in a socially beneficial way - seem well suited to solving the problem at hand. (Cost-of service regulation, and to a lesser extent dominant-firm scrutiny by antimonopoly authorities, could discourage such innovative behavior by seeking to remove and "excess" profits received.) But what about cases in which incentive regulation will not work? Is there a way to use the incentive properties of such regulation without requiring overall government commitments that cannot be made credible?

The answer is yes. The solution - not applicable in all settings, but promising in some - is first, to require the regulated firms to maintain their current service offerings presumably under continuing regulation, while second, allowing the regulated firms to contract with customers to provide new services at mutually agreed upon, unregulated prices and terms. The first half of this proposal ensures that existing customers continue to be protected from monopolistic abuses by the regulated firm, while the second provides the regulated firm with the profit incentive to offer new services and attract new customers as the economic transformation progresses.

How might this work in practice? Consider the three industry settings discussed in the first section of this paper.

- Owners of electrical transmission lines would continue to face regulation in their service to locations without competing sources of generation and/or transmission (or without enough competing sources that rate deregulation would be in order.) They would be required to continue to offer the same level of service - perhaps an increasing level as population and the economy grow - under rates and terms regulated by an electricity regulating authority or - less likely in this complex sector - the antimonopoly authority. However, the subject to their satisfying these requirements, they would be free to contract to provide new service to new industrial locations or towns that they had not previously served, under terms to be mutually agreed upon by customer and supplier and subject only to the regulatory requirement that they not interfere with the duty of the firm to supply its existing customers.⁶³
- Owners of oil pipelines would continue to face regulation in their service to locations without competing sources of oil. They would be required to offer the same or an appropriately improving level of service under the terms regulated by appropriate authority. However, subject to their satisfying these requirements, they would be free to contract to provide new service to new industrial locations or towns that they had not previously served, under terms to be mutually agreed upon by customer and supplier and subject only to the regulatory requirement that they not interfere with the duty of the firm to supply its existing customers.
- Owners of railways would continue to face regulation in their service to locations without sufficient competing transport options. They would be required to offer the same or an appropriately improving level of service under terms regulated by the appropriate authority. However, subject to their satisfying these requirements, they would be free to contract to provide new industrial locations or towns that they had not previously served, under terms to be mutually agreed upon by customer and supplier and subject only to the regulatory requirement that

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Tenenbaum, Lock, and Barker (1992) discuss a similar proposal, p.1141.

they not interfere with the duty of the firm to supply its existing customers.

Note that in all three of these situations the provision of service to new customers may require major capital expenditures. This proposal would require that such expenditures be accounted for separately from the capital and improvements serving the “core” customers, so as to avoid artificially inflating the rate base under rate regulation.⁶⁴ For that matter, by allowing firms to offer services in both regulated and unregulated markets, this proposal raises the problems of potential cross-subsidization discussed in section 4, above. As noted in that section, it will not do to be doctrinaire in seeking to prevent or eliminate all such potential problem situations; circumstances in which the regulated service and the unregulated service are the same service (but in different locations) seem especially likely to be those circumstances where the economies of joint service provision will outweigh the costs of possible regulatory evasion. The policy described here would in many cases provide the correct incentives for important new capital expenditures to be made, and could, thus, make an important contribution to the economic transformation and development of the post-socialist countries.

7. Conclusion

Privatization can be an important component of the restructuring and modernization of the public utility sectors in post-socialist countries. In order that the forces of competition may work in as powerful a way as possible in furthering the economic transformation, government policy-makers should set up economic regulatory schemes in only those industries where competition clearly cannot work: those industries that both have the production structure of a natural monopoly and do not face significant competition from other producers or industries. Policy-makers can protect against the inefficient, anticompetitive, and unfair use of the regulatory process to subsidize unregulated operations by requiring that regulated firms sell off unregulated operations in those instances where this would not entail a huge sacrifice of scale or scope economies. In those sectors where regulation is likely to be necessary only temporarily. Where formal regulatory mechanisms are created, the new incentive schemes are preferable if international agencies can make the government commitment to price paths credible. If the commitment problem cannot be overcome, cost-of-service regulation may be preferable. However, even in these cases, regulated

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Under some circumstances it would increase the importance of the monitoring of product quality by a regulatory body. This proposal may give some firms an incentive to degrade product quality on their existing regulated service and offer a high quality substitute unregulated service at a higher price.

firms can be provided with the proper incentives to provide important new services by deregulating such services, subject to the firm's continuing to satisfy its "core" responsibilities.

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