Recent trends in infrastructure-based sectors

E. ten Heuvelhof, M. de Jong, M. Kars, H. Stout (2009)

1. Introduction

In this document we will zoom in on the network-based industries. We will do so by first setting out the characteristic features of the network-based industries. We will focus on the features that present an opportunity for, or give rise to, strategic behaviour. We will then describe the change processes that manifest themselves in these sectors, again in so far as they are related to strategic behaviour.

2. Characteristics of network-based industries

Network-based industries are not ordinary industries. They are special. The core of this special status lies in the great and often irreplaceable importance of utility services for the well-being of citizens and for the functioning of the economy and in the fact that an infrastructure or network forms part of the production chain. In more detail, the following characteristics are typical of network-based industries:

- Many utility services facilitate other economic activities. Many of them are even necessary for conducting other economic activities. A reliable energy supply is indispensable for industrial activities; a good transport infrastructure is a necessary condition for trading activities. In other words, network-based industries have positive external effects on the economy as a whole. Strategic behaviour that would endanger the functioning of these industries poses a threat to the economy as a whole.
- Utility services are essential for running a comfortable and hygienically responsible household. Clean drinking water, telephony, television and a sewer connection form part of the standard equipment of homes. The quality of these facilities should always be safeguarded at the same, very high level. Citizens are therefore sensitive to the sub-optimal functioning of these industries.
- The importance of the utility service requires universal coverage. In a geographically defined service area, the service should be universally available to a uniform technical standard with sufficient quality for the consumers. Not all consumers are equally profitable for the service providers. Commercially thinking providers might thus be tempted to reconsider the supply of unprofitable services.
- The great importance of the utility service for consumers and the consequent desirability for everybody to actually buy the service make it necessary for the service to be affordable for all consumers. For a number of utility services, fully passing on the costs would lead to such high tariffs that the sales of the facility would remain below critical levels. This is a reason to support the facility financially from the public funds, which makes it possible to charge consumers a lower tariff and brings the facility within the budget of more people (*merit good* nature of the utility service). For example, many public-transport services are subsidised. Fully passing on the costs of building and operating the rail infrastructure would make fares so expensive that few people would use public transport. This is societally undesirable. The merit-good nature of many utility services also causes many of them to have a universal tariff, irrespective of the actual costs incurred to deliver the service to an address. The mail is an example of this. Irrespective of the distance between the addressee and the sender of the letter, the mail

company charges one rate. A rate system in which rates, cost prices and value for consumers are not identical offers room and opportunities for strategic behaviour.
- Because of the great importance of the service, the government imposes demanding requirements on the quality of the service and its continuity. An example of this is the quality of drinking water. A strategically operating provider can exploit this, too.
- In many cases, the output of utility services demands infrastructural facilities the building of which entails high costs. Besides, many of the investments are *sunk costs*: they are very specific and cannot be used for purposes other than the output of the utility service. (Guthrie [2006]) The costs tend to be so high and so specific that the building of more infrastructural networks is considered societally irresponsible. The electricity network is an example of this. Building several parallel transport networks or distribution networks is far too expensive. The high building costs combined with the sunk nature of the investment also present an opportunity for strategic behaviour. On the one hand, having made his investment, the investor in infrastructure is vulnerable to the behaviour of service providers (business opportunism) and regulators (regulatory opportunism). Once the investment has been made, they can put pressure on the infrastructure operator by telling him that they are only willing to pay low tariffs for the use of the infrastructure. This behaviour is highly likely to succeed because the investor/operator has no alternative application possibilities for operating the infrastructure. On the other hand, the infrastructure operator is a monopolist with the attendant possibilities for exploiting this comfortable position.
- An additional reason to settle for only one network is that utility companies have considerable economies of scale and scope. In other words, the marginal costs of an extra service over the network or an extra connection to the network are very low. The marginal proceeds easily exceed the marginal costs. To put it more strongly, the new service and new connection increase the value of the other connections and other services. The higher the number of connections on the network, the higher the value of each telephone connection. This so-called St Matthew effect ('winner takes all') (network effects) makes infrastructure operators aggressive in their acquisition behaviour. (Varian and Shapiro [1998])

The conclusion is that network-based industries have a number of special characteristics that cause or present an opportunity for strategic behaviour.

3. Change processes in infrastructure-based sectors

In the network-based industries, a number of drastic change processes are manifesting themselves, such as convergence, liberalization, hiving-off/privatization and re-regulation.[1] The change processes are strongly related and often, but not always, occur simultaneously. We will briefly discuss these processes below and focus on the room they create for strategic behaviour.

3.1 Convergence and divergence

In the telecom sector, convergence is a dominant trend. In the transport sector, a cautious shift towards divergence is visible.

Convergence is technical in the first place. Infrastructures that used to be *dedicated* to a product or service are finding more applications and mono-functional infrastructures are becoming multifunctional. The once different infrastructures are going to resemble each other increasingly from a functional perspective. The electricity cable and the television cable can also be used for telephony or the internet. The manifestations of technical convergence differ. We speak of convergence when the same technical infrastructure can also generate other products or services, but even when a second infrastructure is built in or beside existing infrastructures. An example of the latter form of convergence is the building of a fibre-optic cable through a sewer or through the gas or water mains. Expectations are that technical developments will promote further convergence.

In addition, organizational convergence has taken place in recent years, some of which was due to this technical convergence. Companies that used to offer only one product or service are seeing commercial opportunities for offering several products of services. In recent years, this has led to the rise of the "*multi-utilities*".

Another change is that companies always want to sell a customer more than one service at once. In *triple play*, a company sells the customer telephony, the internet and TV in one transaction.

Divergence occurs in other sectors, although less than convergence in telecoms. On roads, types of traffic can be separated and the various types of transport can be given their own *dedicated lanes*. This leads to separate bicycle tracks, separate bus lanes and separate lanes for trucks. Some divergence is found in rail transport. There are more and more dedicated tracks for freight transport and for high-speed trains. These trains have an infrastructure that differs from that of the ordinary trains.

Convergence causes the bundling of once separate markets. For example, until recently telephony and television were fully separate markets. The companies that were active in these two markets had nothing to do with each other. They had different owners and did not compete with each other. The two sectors each had their own regulations. The two sectors also had their own specialized infrastructure. Convergence has bundled these sectors. The once dedicated infrastructures can now be used for both services. TV images can be transported over the telephone line and voice can be transported over the TV cable. The consequence of this convergence is that the cable companies offer telephone services and the telecom companies try to sell television images. As a result, once monopolistic markets are opening up to competitors.

A side effect is uncertainty about the scope of rules. Do the rules that used to apply to TV and the TV cable also apply to telecoms now? Do the telecom rules apply to the TV sector? And what is the scope of the regulator's powers? Is the telecom regulator now also responsible for what happens on the market for TV images or is it not?

Convergence brings together formerly separate markets, giving rise to numerous uncertainties. Companies that until recently were "locked up" in a sector suddenly see opportunities to spread their wings and conquer new markets. The vagueness of the rules in force will soon lead to a debate on whether this market conquest is good and is taking place fairly. In other words, to what extent is there strategic behaviour?

3.2 Liberalization

A second group of change processes is the changes that are mainly legal and economic. In this connection, liberalization, hiving-off and de-regulation are often mentioned in one breath. However, a sharp distinction should be made between these three processes.

Liberalization focuses on opening up the market to new entrants, who can then compete for the favours of the consumer. (Ehrhart and Burdon [1999]) Where only one organization used to be active, several organizations are operating after liberalization. The competition arising between the providers should eventually result in more efficiency, a stronger customer-orientation and lower prices.

Until recently, these sectors were organised as monopolies. One company owned all the links of the production chain. Therefore, there was a vertically integrated monopolist. The fact that particular technical facilities have the nature of a natural monopoly[2], in many cases the infrastructure, justified the monopolistic nature of these links, because it would be far too expensive to duplicate these infrastructures. A second requirement was the "technical integrity". This requirement implied that all the links of the production chain had to be united in one hand for technical reasons. The combination of the natural monopoly with the vertical integration caused a monopolist to own all the links of the production chain.

In the second half of the last century, many economists observed that the productivity and the innovation of these sectors lagged behind that of other industries. They attributed this to the absence of competition. They also argued that is was no longer necessary to order these sectors in a way that differed from other sectors institutionally. The remedy they suggested was the introduction of competition also in these sectors. They thus broke the tradition prescribing that these sectors should be ordered as vertically integrated monopolies. Three main reasons are often given why competition could be introduced also in these sectors.

The first is the unbundling of the links in the production chain. It proved to be quite possible to have the various links of the production chain operated by different companies. (Kessides [2004]) Contrary to what many had expected, unbundling the links did not prejudice the quality of the service provided. A separation made in many sectors in many countries is that between the infrastructure and the service. As a result, another company than the one operating the services over the infrastructure began to operate the infrastructure. On the level of service provision, competition proved easy to organise. Nevertheless, this did not yet affect the monopoly on the level of the infrastructure.

The second reason is the convergence (see above), which has brought competition, also on the level of infrastructures, particularly in the telecom sector.

The third reason is the introduction of the concept of the *contestable market*. (Baumol, Panzar and Willig [1982]) This involves competition *for* the infrastructure. When there is competition *for* the infrastructure, a network owner periodically organises a process in which a number of parties bid for the exclusive right to operate the infrastructure for a certain period. The idea is that, although the winner of this process is the monopolist for this period, his competitors are breathing down his neck, ready to take over this exclusive right in the next round. This keeps the winner on the alert, ensuring a better performance than in a permanent monopoly.

These changes provide ample opportunity for strategic behaviour. They posed a threat to a number of parties, particularly the incumbents, who looked set to lose their comfortable position. Even more parties might have felt threatened by these changes, such as those involved in the "public interests" looked after by these companies. They might think that in a situation of competition the competing companies would no longer see any room to look after these interests. Parties that feel threatened by such changes might easily be tempted to delay the changes or deflect them into a less radical direction.

These changes might tempt not only vested parties to behave strategically. Also companies that see opportunities for themselves can regard these changes as a reason to enter the arena and join "the fight". These entrants and potential entrants, too, may therefore be expected to show strategic behaviour.

3.3 Hiving-off/privatization

Hiving-off involves widening the distance between government and 'the utility company' and has several degrees. The lightest variants imply internal hiving-off. The utility companies are given some operational freedom. They can also be hived off externally. The former government agencies are given a private legal format, the shares of which are owned by public bodies (i.e. a government-owned private limited company or a government-owned public limited company). Recent decades have seen a marked shift from utility companies as government agencies to government companies.

One step further is privatization: the sale of the utility companies to private enterprises, in many cases foreign enterprises. Freeing up the market, in combination with the break-through of new technologies, forces the utility companies to make substantial investments. Currently, governments are not easily inclined to bear the related risks. It is generally expected that this is different for private enterprises that see plenty of new market opportunities here.

Hiving-off, particularly privatization, can be seen as a catalyst for strategic behaviour. We should by no means assume that state-owned firms would not behave strategically and that private parties would. That would be an inadmissible simplification, contrary to the reality, which shows that state-owned firms also behave strategically. However, the advantages gained by a public company with its strategic behaviour have diffuse effects. They eventually benefit the public shareholder and thus the public funds. This is different as regards private parties. Rather than having diffuse effects, the advantages are concentrated with the private shareholder, who will therefore feel a strong incentive to display this behaviour. This catalysing effect of private ownership on strategic behaviour is more or less compensated for. Since the advantages of strategic behaviour of public companies eventually benefit public funds, this behaviour will be accepted and legitimated sooner than similar behaviour of private parties. These private parties will not be granted this room. They will face strict rules and/or a strict regulator, which decreases the possibilities for strategic behaviour. On the one hand, privatization catalyses strategic behaviour. On the other hand, it creates the arrangements that counter this behaviour.

3.4 Re-regulation

A free market and hived-off companies are easily associated with de-regulation. This association occurs because liberalization and hiving-off on the one hand, and de-regulation on the other hand have a common denominator: less government. De-regulation aims at reducing statutory constraints that the government imposes on infrastructure-based sectors.

The idea behind de-regulation is that companies are given more room to actually take the wishes of the market into account. The question is, however, whether hiving-off, liberalization and de-regulation are such a logical trio. Liberalization and hiving-off tend to require more regulation. A large number of new rules prove to be necessary to actually get competition off the ground. In addition, hiving-off is accompanied by new rules, if only because it is not self-evident that the privatized utility company is willing to define its utility function. In short, liberalization and privatization are, on second thoughts, not a logical combination with de-regulation at all. This has already been observed in the literature and the phenomenon has been referred to as the re-regulation paradox. (Bergman et al. [1998]) Thinking in terms of re-regulation rather than de-regulation is more fruitful. (Vogel [1996]; Hulsink and Wubben [2003])

This paradoxical nature of re-regulation offers possibilities for strategic behaviour. Many parties are uncertain about the desirability of regulations and about the nature and intensity of the desired regulations. This offers room for parties to influence the introduction of rules, because parties that realize that their interest is at issue in the institutional changes will try to serve their interest by influencing the rule, particularly its content and timing. All this might lead to a delay of regulations and possibly sub-optimal regulations.

4. A paradigm shift

Remarkably, the processes of convergence, liberalization, hiving-off and re-regulation are developing in so many infrastructure-based sectors at the same time. This justifies the proposition that the changes are systematic and related. The above-mentioned changes concern almost all activities in the production chain: the relation with the consumers, the way of funding, ownership, the perspective of the technology and the relation with governments. All in all, reason enough to speak of a *regime change* or, to put it more strongly, a paradigm change. (Hunt and Shuttleworth [1996]; Kwoka [1996]; Bauer [1998]) Below, we will describe the classic paradigm and the modern paradigm. Both paradigms combine the variables described above. Figure 4.1 shows this in a table.

4.1 Classic paradigm

Characteristic of the classic paradigm is the full integration of activities in the production chain. This integration is justified by the fact that particular technical facilities have the character of a natural monopoly, in many cases the infrastructure, combined with the argument of the required technical integrity. Infrastructures are marked, among other features, by sustainability, indivisibility (or their network character), high investment risks, advantages of scale and the absence of regular market incentives. This is why it is economically unacceptable to duplicate this infrastructure. This justifies a monopoly, one that covers the entire production chain.

The US has opted for regulated private monopolies. Europe has opted for public monopolies.

4.2 Modern paradigm

According to the modern paradigm, the thinking in monopolies should be opposed and room should be found for competition. As we set out above, the idea is that some of the traditional characteristics of infrastructures do not apply, or apply far less, in the present era. Besides, the idea of competition *for* the infrastructure was introduced.

In addition, the modern paradigm explores the possibilities for organizing competition *on* the infrastructure. Although the infrastructure itself cannot be duplicated, there are possibilities of having companies that need the infrastructure for their services compete with each other. The heart of the matter is that more service operators use the infrastructure at the same time and side by side and compete with each other for the favour of the consumer.

The key feature of the modern paradigm is the unbundling of activities and roles in the production chain and the introduction of competition where possible: natural monopolies should be unbundled of activities that can be offered in competition, and conflicting roles, such as that of owner and that of regulator, should not end up in the same organization. According to the modern paradigm, the facilities should be privately owned where possible.

Unbundling, competition and private effort should eventually guarantee in particular an improvement in efficiency and transparency in infrastructure-based sectors. (Joskow [1998]; Crew and Kleindorfer [1999]) Where there is an exclusive position in the production chain, adequate regulation should prevent abuse of this position.

The recent changes in the sectors are considerable for all the organizations involved. The companies that used to operate as vertically integrated, monopolistic public companies in the old paradigm now, more or less decoupled from their consumers and suppliers, have to compete with newcomers on the market. Other companies see an opportunity to extend the *scale* and/or *scope* of their activities and enter the formerly closed market. Governments also see their position in the arena changed. The role of the parent ministry is changing. In many cases, the legislator calls a regulator into being that operates at a relatively great distance from the parent ministry.

The ministry is starting to look for a new role. The role of politicians is also changing. At first sight, the dominant movement points towards greater aloofness on the part of the politicians, but it repeatedly appears that the politicians still wish to intervene when major problems arise in the newly formed markets.

5. Effects of institutional changes

Efficiency
The institutional changes were launched to improve the performance of the sectors. Economists generally define "improved performance" as higher efficiency. Two kinds of efficiency are important, i.e. static and dynamic ones. (Motta [2004]) Allocative efficiency means that price and quantity produced are such that they reflect the wishes of consumers. How has this worked out in practice? However difficult it may have been, a great deal of empirical research has been conducted in recent years that tries to answer this question. These studies have, in turn, been summarized in a number of general studies.[3] Although the empirical studies differ strongly from each other (different economic sectors, variety of countries/continents, different periods, divergent methodologies), a number of conclusions are possible. The dominant picture is that in a large number of cases, but not always, privatization and liberalization have led to better-performing companies. Particularly the introduction of competition has positive effects, but privatization, either in combination with the introduction of competition or otherwise, generally also has positive effects. The next question is who benefits from this higher efficiency. Do these benefits manifest themselves in lower prices for consumers, in pay rises for employees, in more investments, in pay rises for management or in a higher value of the shares of the enterprise? Although sloppily launched change processes lead to a higher efficiency, they may result in disappointments,

for example because management and the stock-exchange value of the enterprise benefit one-sidedly from the efficiency drive. This explains why some privatization operations are regarded as failures, despite a rise in allocative efficiency.

Dynamic efficiency.
Allocative efficiency is a static concept. What also matters in the daily course of business is dynamic, i.e. technological development. Technological development can realize great advances in quality improvement. The effect of the institutional changes on dynamic efficiency is not unambiguous. On the one hand, competition and privatization also stimulate dynamic efficiency. The reason is that it may enable a company to build up a major advantage over its competitors, which is attractive, of course. On the other hand, it is doubtful whether a company that is involved in a fierce competition battle will be given the time and room to work on substantial technological innovations requiring large investments and a long return time. Probably, subtle combinations of competition and monopoly are optimal. On the one hand, such a situation creates the room for investment, but the enterprise on the other hand feels the incentive to take action. (Scherer and Ross [1990])

Public values.
Efficiency is not the only criterion for the functioning of network-based industries. Network-based industries constitute a special category of companies, for example because public values are at issue in their operations. One judgement merely by efficiency would be too one-sided for these companies.

Hardly any overarching studies have been conducted into the consequences of the institutional changes for performance with regard to public values. One of the public values that plays a part in all sectors is the reliability of supply of the service. De Bruijne concludes in a survey that the relation between these institutional changes and performance as regards reliability is not unambiguous. (De Bruijne [2006]) The hypothesis obvious to many is that the institutional changes are likely to decrease reliability. In general terms, this hypothesis has not yet come true.

The conclusion is that, in terms of outcomes, the effects of the institutional changes are ambiguous both as regards efficiency and as regards public values. This is hardly surprising, given the multitude of variables that are at issue in these institutional changes. Convergence, liberalization, privatization and re-regulation together encompass the room for change, which means that the amount of potential changes is very large and that no institutional change is identical to any other. Besides, these changes are launched in starting situations that tend to differ. Sectors happen to differ and countries are also structured in different ways. In short, every starting situation is different, every change is unique and the combination of starting situation and change makes a situation even more unique. Unsurprisingly, the outcomes differ.

To avoid problems in establishing the outcomes we choose another way to establish the consequences of the institutional changes. We examine what strategic behaviour is to be expected after, and as a consequence of, the changes launched. We will *not* evaluate the consequences of strategic behaviour for the outcomes in terms of efficiency, the allocation of potential benefits of higher productive efficiency and performance as to public values.

6. Entries for strategic behaviour in network-based industries

As we have seen above, the network-based industries have undergone a paradigm shift providing players in the emerging oligopolistic markets with more specific types of

opportunities for operating strategically. We have decided to call these opportunities in the network-based industries 'entries'. These entries can help us to identify the entrance doors actors have at their disposal for deploying strategic behaviour. Below the following entries will be presented:

a) Strategic use of rules: Legal rules and contracts,
b) Strategic utilization of intertwined relations with government agencies and other actors,
c) Strategic use of control over so-called 'bottleneck facilities' and other crucial technical facilities and standards,
d) Strategic use of the essential and indispensable nature of infrastructure utilities,
e) Strategic use of the factor 'time' through delays and accelerations in decision and production processes,
f) Strategic use of financial resources to buy off rivals thus restricting competition.

These six entries for strategic behaviour will now be discussed one by one.

a) Strategic use of rules: Legal rules and contracts

More often than not is the meaning of language ambiguous, because linguistic phrases have been consciously or unconsciously formulated to allow for various interpretations. In case of conflict or disagreement players tend to refer to formal legal documents, such as public regulations, informal organisational rules and standards and contracts. In many occasions the chosen wordings make it possible for actors to adopt a take on their meaning which benefits them most, even when the intentions behind the original formulations clearly was a different one. This selective, warped and self-interested interpretation of language in important documents can be done both pro-actively in order to strengthen one's own position or weaken that of one's opponent, and in self-defence against complaints of abuse of one's power position.

b) Strategic utilization of intertwined relations with government agencies and other actors

In many cases hiving off capacity management of infrastructure and the services around it do not immediately lead to a situation where the organizational and personal networks of regulators and incumbents or infrastructure managers and service providers are completely separated. Rather the opposite, it remains functionally and politically quite advantageous for old monopolists to foster these connections and make tactical use of them. During the transition some specialists have come to work for the one side, while others found employment on the other side. Who would give up such excellent and valuable possibilities to effectively lobby for one's own interests? In this way, old friends in other organizations can still be instrumental in serving in one's own interests, while new players do not have such good access to these organizations, since they do not know the relevant people equally well. Applying this 'intertwinement benefit' naturally involves 'quid pro quo' relations in the long run, which implies that the favours are to be returned at some future point. On the other hand, it is also true that maintaining such relationships make players vulnerable to accusations of unfair competition or even abuse of power from rivals or the outside world.

c) Strategic use of control over so-called 'bottleneck facilities' and other crucial technical facilities and standards

Since many network-based facilities are costly to construct and simply unaffordable for newcomers to the market, single infrastructure connections and networks are used by several suppliers at the same time. And yet, one player, usually the former monopolist, is in charge of the technical facilities. Having control over those bottleneck facilities has an enormous impact on access to and use of them, because special technical equipment is needed to provide the services. Newcomers, however, have neither the knowledge nor the

financial resources to buy or develop this by themselves. By blocking or complicating access to these facilities by means of intricate devices or tricks or influencing their quality negatively, the attractiveness of providing services can be substantially reduced for competitors. And it is often not obvious for rivals or outsiders what the reasons for these complications are, thus making it very hard to provide evidence of power abuse or illegal actions.

d) Strategic use of the essential and indispensable nature of infrastructure utilities
As said before, the social and economic dependence on network-based infrastructures is enormous. This gives players that own or control these facilities an influential means to put pressure on regulators. If the regulator threatens to make institutional, price-related or operational interventions harming the interests of the incumbent, only the latter has the relevant knowledge and information to artificially decrease infrastructure performance to influence the position of the regulator. To justify this fall in service quality the former monopolist will invariably point at the measures taken by the regulator and keep it under pressure through complaints aired by the dissatisfied end user. No other actor is capable of demonstrating the precise reasons for the quality failure or the veracity of the claims made by the former monopolist, which makes strategic use of the situation very appealing. On the other hand, due to the indispensable nature of the utility, the incumbent is always obliged to deliver, while newcomers can selectively choose to provide those services that offer the highest profit potential.

e) Strategic use of the factor time
Actions that promote or discourage full competition, implementation of legislation and respecting agreements that have been reached for the delivery of technical facilities can be both speeded up and delayed. Timing can be a crucial factor for the profitability of a particular service the technology of which requires frequent updates, and also decisive for the survival chances of newcomers to the market. Dominant firms in an imperfect market can fruitfully make use of this phenomenon by stretching out legal procedures as long as possible, deliver equipment with considerable delay or withholding crucial information until the moment when an adequate response to it is hardly possible any more. Toying with 'time' is a promising strategy. Information asymmetry does not allow weaker players to establish to what extent the delays were really necessary, how much the dominant player did to prevent them from occurring and how much truth there is in the arguments it uses in its defense.

f) Strategic use of financial resources
Dominant players in markets for network-based industries usually have many more financial resources at their disposal than newcomers do. They can obviously make much larger investments in better infrastructures or high quality services than these newcomers can, but this is not always sufficient to protect their dominant positions. In cases where small players realize technological or other innovations that can shake up the market or revolutionalize the products or services that are sold, these financial resources can also be utilized to buy up those smaller players. Or alternatively, the money can used to pacify them by buying off the technological threat and preventing them from deploying this new technology against their interest. Since owners and/or shareholders of these smaller firms are normally not completely insensitive to the enormous amount involved in such transactions, this strategy is often used with remarkable success.

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[1] By the term hiving-off, we refer to the various levels of reduced government control (also see section 4.2.3).

[2] An industry is said to be a natural monopoly (also called technical monopoly) if only one firm is able to survive in the long run, even in the absence of legal regulations or predatory

measures by the monopolist. This is the result of high fixed costs of entering an industry which causes long run average costs to decline as output expands.

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