

INCENTIVE METHODS OF REGULATION IN NETWORK INDUSTRIES

Alena BAŠOVÁ

Abstract

Incentive methods of regulation provide appropriate incentives for regulated monopolies that provide them with return on the investments and protect all consumers from unwarranted increases of energy prices. Consumer protection has become one of the main policy objectives in Europe. This paper aims to characterize regulation in energy sector in EU. Most of European countries use two basis incentive methods of regulation: price cap and revenue cap, which set maximum of price or maximum of revenues for provided goods or services. These two methods are stimulated method. Price cap sets the price according to price cap index, which reflects the rate of inflation within society and increasing in input prices. This method allows regulated entities to retain profits made when they cut costs and improve efficiency. It is a method that uses a system of incentives - rewards for efficient behavior of monopolies or on the contrary a system of penalties where monopolies do not reduce their costs and do not follow society-wide goals.

Keywords

regulation, incentive regulation method, price cap, revenue cap, energy sector, provided goods and services.

JEL Classification: G31, G38, G33

Introduction

Regulation in general we can define as the control, guidance and of steering economic activities of the private sector, by State, to ensure economic efficiency, justice, security and health. This is basically an effort of state through legislative measures to prevent unwanted the enforcement of activities of companies, or on the contrary encourages certain activities. Incentive methods of regulation provide appropriate incentives for regulated monopolies that provide them with return on the investments and protect all consumers from unwarranted increases of energy prices. Consumer protection has become one of the main policy objectives in Europe. Protect the most vulnerable consumers, apply each Member State individually, taking into account the specific conditions of the member country.

Theoretical approaches to regulation

Aim of regulation is the correction of negative influence of natural monopolies in a market economy so that it designed the regulatory rules for the reduction of energy inputs.

As the authors Baldwin, Scoot, Hood reported:

1. Widest concept of regulation includes all the mechanisms of control of the company,

2. The regulation is seen as way of governing (governance), while the government agency taking care of the control and management of the economy,
3. Regulation as a specific form of government, with the use of a summary of the rules in solutions to the economic problems.

Baldwin states that the reasons for the economic regulation are: externalities, transaction costs, asymmetric information, monopolies, scarcity of goods, the need to provide public goods and, finally, the need to protect the interests of future generations. Regulation on macro level is an application of macro-economic elements of planning which are in market economies known as indicative planning.

Regulation on micro level aims to create business rules and their subsequent control. The aim is to create a legislative framework for business activities and eliminate information asymmetry in the relationship between the producer and the consumer, further support the competitive environment, preventing abuse of dominant monopoly position by applying the subsequent penalties for their illicit behavior.

In theoretical level a new point of view on the regulation introduced Stigler (1971) that he analyzed the benefits of the regulation. To Samuelson's conception of regulation in the public interest, or in the interest of regulator, Stigler adds the interest of the regulated subjects. The most widespread form of regulation is the regulation of the public interest, which is aimed to correct market failures, eliminating

information asymmetries and limit the impact of powerful interest groups.

The theory of public interest intertwined with the Olson's theory, which analyses interest groups or the theory "regulatory capture" which was elaborated by Stigler, Peltzman and others. The theories which are based on an analyze of the interests is developing by Chicago's school,. In Europe this point of view represents the Toulouse School - the main representative is Laffont whose refuse the regulation because it is a tool to gain political power.

This problem is solving by the institutional economics, which is oriented on social relationships and institutional arrangements. The theory of transaction costs is connected with problem of asymmetric information, as Allen refers. In this case, the regulator has a different level of information as regulated enterprises (information about costs, revenue, and demand) and the effective regulation must set up the new rules for providing adequate information from regulated companies. The negative consequences of regulation are: Regulatory Capture, information asymmetry and regulatory risk.

Regulatory Capture

The biggest danger of regulation is the possibility of abuse, control of the regulatory body by regulated, monopolistic companies. These regulated companies deform the aim of the regulatory policy according their own interests. Regulated entities, enterprises offer closure of tacit agreements and regulatory regime is adjusted for their benefit, while sometimes also offer remuneration to staff of the regulatory body, Next problem of the effective regulation are cross-subsidies and unclear, obscured costs. Large companies their losses from unprofitable activities compensate from more profitable services and therefore their costs are unclear.

Information asymmetry

Truthful information is the basis for the correct setting of regulation. While the regulated subjects have information predominance because they know their cost conditions more detail as the regulator, they can earn monopolistic profits from these unclear information. The reason is that the same regulatory

conditions must be offered to all enterprises and thus the firms with lower unit cost earn more than others. The solution is to find a compromise between allocative efficiency (when the price is close to marginal costs) and reducing the "information profits."

The regulatory risk results from these factors:

1. If monopolistic company expects further entry of competitors to the industry and assumed that the creation of prices will be closer to marginal costs, the monopoly company's is discouraged from a new investments to new technologies and innovations, because the rate of return of these costs is is threatened .
2. Stricter rules to protect the environment.
3. Restructuring of monopoly companies to increase competition in the sector. The regulator may recommend the restructuring of monopoly companies to more divisions or more companies and according to activities or regions - horizontal or vertical separation.

These dangers in the regulatory process require new rules for effective regulation. In economic literature, as I have mentioned, there are four main reasons why state interferes to economy. There are:

1. The existence of public goods
2. Externalities (the polluted environment, development of transport infrastructure, etc.)
3. The information asymmetry (as a single economic entity prevails over the other in decision making)
4. The existence of natural monopolies.

The aim of optimal regulation is profit maximization of regulated firms (π). Net profit of the company is:

$$\pi = p * q - TC(q),$$

where:

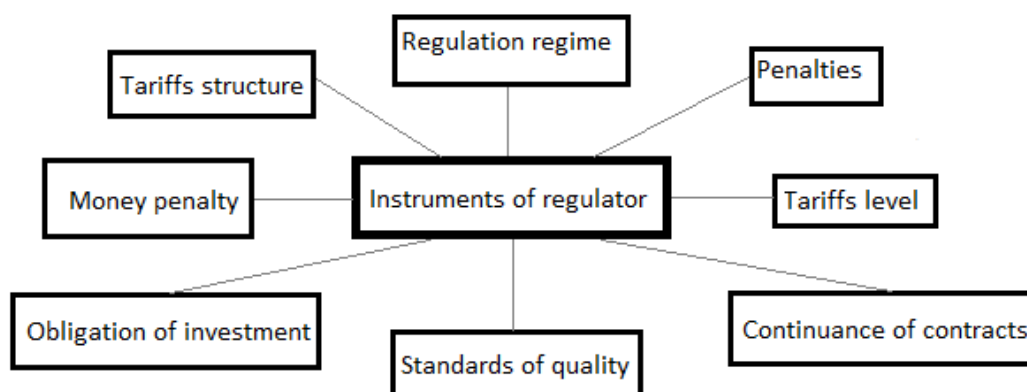
p = unit price of production

q = quantity of production

TC = total cost of production.

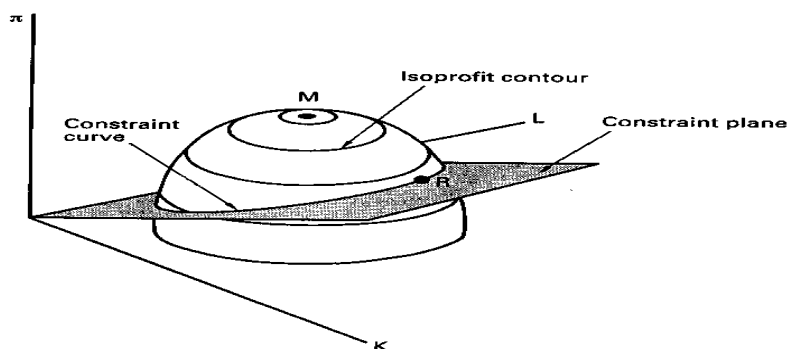
The main objective of the regulator is achieved through partial objectives: eg. ensure the fullest possible coverage of the territory of a given service at the lowest price and in the shortest time. Achievement of these objectives leads the regulator to the application of various regulatory tools.

Diagram 1: Tools the regulator



Source: own processing according to studied literature

Chart 1: Constrain plane



Source: Train.K.E.:*Optimal Regulation. Theory of Natural Monopoly.* University of California, Berkley.s.36. 1995. p 33 .ISBN 0-262-20084-8

Regulator to achieve their goals used mainly price regulation which tools can be divided into three groups:

1. The cost regulation of services (rate of return regulation or direct price fixing)
2. Regulation - based on incentives ("incentive regulation").

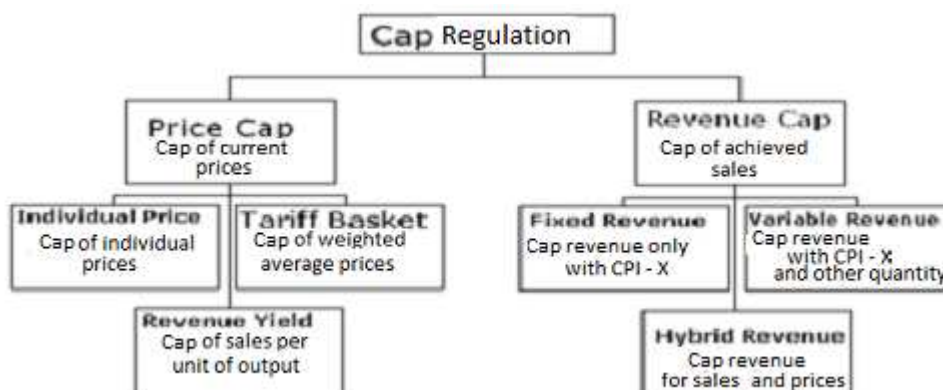
This includes:

- Cap regulation - the determination of ceiling for prices
 - Yardstick regulation - Regulation of standards
 - Performance regulation - regulation based on performance
 - Franchise regulation - regulation under the concession.
3. The hybrid control modes.

The most widely used cost regulation is the regulation of the Cost - ROR - Rate of Return Regulation, which belongs to the Non stimulant methods of regulation. Income of the company is defined as a allowed percentage of invested capital or total cost. In this method of regulation is secured return on investment and the creation of a reasonable profit, which does not exceed specified limit controller. The disadvantage is that it does not stimulate the regulated company to save.

The maximum allowed profit is located on the constrain plane and it is the point A. The company can achieved profit, which is below the constrain plane. Regulation based on incentives (incentive regulation) arose as an alternative to the previous cost regulation. It is a type of regulation that determines the upper limit. For the first time was applied in the UK in the 80s of the 20th century for companies providing public goods. The diagram of this regulation is below.

Diagram 2. Cap Regulation



Source: own processing according to studied literature

Price cap regulation has several forms, but for purposes of this article we will describe by Acton a Vogelsang, who consider the Price Cap (regulation ceiling) subject to the following conditions:

- State or his nominee regulatory authority determines the maximum price that can be realized in the market.
- upper maximum limit is determined for the basket of consumer goods and services,
- maximum limit prices are exchanged at regular intervals = regulatory period,
- After determining the maximum price should not change the way pricing.

Where:

q_{ij}^{t-1} = quantity sold (provided) goods, of services ij in period t-1

p_{ij}^{t-1} = price of goods ij in period t-1

p_{ij}^t = price of goods ij in period t+1.

Method "Revenue Cap" (maximum yield) can be:

$$R_t = R_{t-1} * ((\alpha * (O_t/O_{t-1}) + \beta(C_t+C_{t-1}) + \theta)^{\pi} * (1+CPI_t - X_t)).$$

Price Cap determines: Price cap determines:

1. The unit price of products or services according to the formula

$$P_{ti} = (1+CPI_t - X_t) * P_{t-1i},$$

Where P_{ti} is the price per unit of the i th of services (production) in the previous regulatory period.

2. The aggregate price of all products or services, use the following formula :

$$(1 + CPI - X) \geq \frac{\sum_{i=1}^n \sum_{j=1}^m p_{ij}^{t+1} q_{ij}^{t+1}}{\sum_{i=1}^n \sum_{j=1}^m p_{ij}^t q_{ij}^{t-1}}$$

Revenue cap - fixed - determined by the maximum individual revenues of goods or services by the formula

$$R_t = (1+CPI - X) R_{t-1}.$$

Revenue cap – variable:

Where: R_t = revenues in period t

R_{t-1} = revenues in period $t-1$

Q_t, Q_{t-1} = the quantities of product made in period $t, t-1$

C_t, C_{t-1} = selected cost items in period $t, t-1$

α, β, δ = formula parameters that express the weight of indicators such as the number of delivery points, amount of the harvested of the product, losses.

Table 1: SWOT analyze of Price cap

STRONG	WEAK
Reliability Orientation of companies to reduce costs Increasing the efficiency of the invested capital Higher profits Benefit of consumers (lower prices) Benefit of the shareholders (dividends above)	Declining quality of goods and services The problem with setting the X factor Preference short-term investments
OPPORTUNITIES	THREAT
Prices stable in the regulatory period Appropriate determination X Factor Compliance with quality standards	Undercutting of productivity growth Unclear formation of prices

Source: own processing

Conclusion

The widest concept of regulation includes all the mechanisms of control of the society, while some authors state that the most important form of regulation is economic one. The reason for economic regulation are a few, are the most important externalities, transaction costs, asymmetric information, natural monopolies, scarcity of goods, the need to provide public goods and, finally, the need to protect the interests of future generations. The most widespread form of regulation is to regulate in the public interest, which monitors the welfare of all citizens, focusing mainly on correcting market failures, removal of information asymmetry and mitigate the effects of powerful interest groups.

One of the possible negative consequences of regulation is information asymmetry, when the controller has a different level of information than a regulated entity, such as information about costs,

revenues, demand. Another problem of the effective regulation are cross-subsidies and unclear, obscured costs. Consequences of the information asymmetry are mainly used by large companies that losses from unprofitable activities compensate from the more profitable services, and therefore their costs are unclear. So effective regulation must establish rules for the provision of sufficient information from regulated entities. In order to increase competition in the sector, the regulator may impose a monopoly on the division of more companies and by activity or regions.

For setting the effective regulation is important also regulatory mode, while the EU prefers incentive regulatory methods that bring economic effects for also regulated entities in the form of return of investment. It brings Benefits for consumers of this form of regulation are overview of energy consumption, the possibility of changing supplier as well as continuous price reductions.

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Contact

Ing. Alena Bašová, PhD
Katedra financií, Národohospodárska fakulta
Ekonomická univerzita Bratislava
Dolnozemská 1
852 35 Bratislava
e-mail: alengkabaso@gmail.com