# STANDPOINTS OF RAMSEY PRINCIPLES FOR PRICING OF TELECOMMUNICATION SERVICES

## Daniel Salava[1]

**Summary:** This article deals with initials assumptions and construction of Ramsey optimal price in pricing process of telecommunication services. Its construction and usage supposes certain initial conditions, its application in telecommunication services sector is preferred before other methods, on the opposite it is more complicated and more demanding in some own input variables.

**Key words**: Ramsey optimal price, marginal costs, demand elasticity.

## 1    Introduction

In terms of defining the market for telecommunication services may be noted that this is a market of imperfect competition, because of course not all conditions are fulfiled for perfect market. First, there is asymmetry of information between customers and operators, the product is heterogeneous, thus differentiated, the number of offering subjects is limited and costs of changing suppliers of services are considerable. Operators on the supply side of the market in imperfect competition sell at a price that exceeds the marginal cost, and the production does not meet the minimum level of total average costs.

## 2    Marginal costs base

Socially optimal production and distribution requires social benefits last unit produced, therefore marginal social utility was just equal to the social cost of production of this unit, i.e. the marginal social cost. If there are social costs of communication effectively spent all their components and services are underused, then the balance of the marginal social benefit and marginal social cost can be

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[1] Ing. Daniel Salava, Ph.D., University of Pardubice, Jan Perner Transport Faculty, Department of Transport Management, Marketing and Logistics, Studentská 95, 532 10 Pardubice, Czech Republic, tel.: +420 466 036 394, E-mail: daniel.salava@upce.cz

achieved if the telecommunication system of fares and rates corresponds to the marginal production costs.

Applying the principle of pricing and tariffs based on marginal costs can be complicated by real situation on the market and in society. For example, if there are external effects due to individual consumers, e.g. social benefits of public information may result in the support media, etc., then the price of the service may be reduced so as to stimulate future consumption until marginal benefit consumers and marginal external utility company. In the event that income distribution is uneven and there are no direct income transfers, prices must be applied directly to the effective allocation of income. Tariffs and prices subject to inspection by the public institution can include some compensation given to sectors that are not subject to such control.

## 3    Assumptions for use of Ramsey optimal prices

In enterprises, respectively in sectors that achieve significant economies of scale, prices set by the marginal cost of production can not ensure an adequate level of income to cover the full (total) production costs. If in this case the government does not provide direct subsidies to these enterprises, respectively industries, can implement pricing based on Ramsey optimal pricing, that set prices to maximize the welfare of a subject in terms of funds. Marginal cost price may become optimum according to Ramsey, if they provide the net income to satisfy financial requirements. On the other hand, the optimal Ramsey prices deviate from marginal costs in a way that minimizes the welfare loss due to the financial needs of the business. These deviations are a manifestation of the specific demand conditions in which it is possible that prices exceed marginal costs.

In terms of deregulation of certain sectors in which prices were traditionally determined by the regulator, they are these prices determinant in selecting the optimal rules for pricing to secure effectiveness at a given price elasticity of demand. This approach is consistent with pricing based on marginal costs of providing services. A strategic approach to pricing in an unregulated environment requires a sensitive analysis of demand and the cost of providing services. Pricing regulation in terms of company or sector must naturally be based on social preferences related to individual preferences.

## 4    Principles of Ramsey pricing

Approach to determining optimal pricing, used by Frank Ramsey, based on maximizing the utility of a set of services for consumers while minimizing the reduction of the company's profit or sector. The basic idea of Ramsey pricing is based on the realization that it should be equal to the marginal cost. In certain regulated sectors, as a result of achieving economies of scale and scope must be set optimum prices above marginal cost, in order to ensure a certain minimum prosperity of the company. The size of the difference between price and marginal cost depends on the price elasticity of demand for a given product or service. Therefore, it should be value for money and the highest marginal costs for those products for which demand elasticity is low, the increase of goods and services that have high demand elasticity, it is necessary to determine the optimal price at marginal cost (Čorejová et al., 2006).

To avoid a loss, the amount of deviation from the price of the marginal cost must be inversely proportional to the elasticity of demand. Services with high elasticity of demand have Ramsey optimal price levels close to marginal cost, whereas services with inelastic demand have optimal price set above marginal costs. Size deviations express about the extent to which demand factors affect the price. It is actually a measure of economies of scale in individual technologies. The purpose of this rule is to steer the company in the prices above marginal cost, it is only a limited possibility of interference with the efficient allocation of resources. Such prices are often referred to as the "second best", therefore, although not optimal, contributing greatly to the efficiency, as they depart and allow to offset budget constraints (Ramsey, 1978).

## 5    Construction of Ramsey optimal price

Function utility services for consumer can be expressed by simplifying Bergson-Samuelson's function as a function of a vector of prices of services provided by the telecommunication operator, vector prices of other goods and services in the company after, and the income levels of this consumer.

This function expresses optimal utility reached the by realization of consumer purchase prices, which are expressed by vectors and after a while consumer budget is determined by the level of income.

For the total profit of the company *TP*, respectively industries must pay inequality $TP > P$, where *P* denotes a minimum profit level, including the case of

*P = 0*, which means that the company must not be in deficit, in case of *P < 0* is permitted a certain degree of deficit bounded value *P*.

The resulting formulation and conditions for Ramsey optimal pricing comprises following input parameters:

- price of good,
- price of telecommunication operator,
- marginal social utility of an additional unit of income (profit),
- definition of firm, respectively consumers,
- volume of net production of certain good within certain firm,
- total production volume of good,
- marginal costs of the firm, consumers for certain output,
- external marginal social utility of good,
- set of all services provided by telecommunication operators,
- definition of the individual objects included in the assessment, in addition to telecommunication services,
- definition of telecommunication services.

Part of this formulation express the changes in net production and total production of good caused by a change in telecommunication services price including direct effects and effects caused certain changes in the prices of other goods caused by changes in telecommunication prices.

This relationship assumes that there is only one price for a product or service on the market and that companies are trying to minimize production costs. At the same time it is not possible to achieve a direct transfer of income redistribution (Graham, Rothschild and Spencer, 1990).

## 6    Conclusion

Efforts to optimize the structure of tariff systems often results in the use of policy instruments and the structure and calculation of the rates and tariffs can be complicated. Empirically agreed pricing rules require a description of many social benefits that arise from the level of charges. One means of simplifying the periodic changes in fares and rates to the consumer price index CPI. Using changes in the index, it is possible to quantify the changes in tariff rates. The advantage of this

approach is its relative simplicity and understandability for consumers, easier and better predictability of changes in rates of individual companies. The main shortcomings and risks include maintaining the structure of fares and rates, the default option, respectively base period for the index and low sensitivity to subjective factors when setting fares and rates.

Ramsey method, on the other hand, has a relatively complicated structure, which is also considering the interactions and effects used telecommunication services for other goods for their utilization, pricing and usefulness, but in terms of the competitive nature of the market due to aspects of price elasticity of demand for telecommunications services and other the aforementioned aspects of the fares and rates for telecommunication services more usable and its application should bring relevant basis for the construction of these fares and rates.

Pricing according to Ramsey optimal pricing is currently used eg. in the mobile networks. Currently, the national regulator authority for telecommunication services on the recommendation of the European Commission's preferred method of long-term incremental costs (ie. LRIC method). This methodology, however, can face a problem that can not be allocated to any service provided any costs.

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