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TRANSPORT MARKET AND ITS STRUCTURE

ABSTRACT

Market is the integrity of relations between supply and demand of traffic or some other service (goods) which at a certain place and location, at a certain time affect the supply and purchase of certain products, including services, stocks, money, and the set of all institutions, areas, devices and instruments that act on the sale and other transactions realised at that point. It is the main resource allocator (→resource allocation) in the systems of free private ownership economic and transport systems.

KEY WORDS

market, market structure, market elements, traffic supply and demand, resource price

1. INTRODUCTION

All the way until the thirties there had been three market conditions: *unlimited competition, monopoly and government intervention*. The development of goods manufacture and at the same time of traffic resulted in overcoming of such uniform morphology, thus beginning the work on determining new market structures and of their classification on the basis of one or more selected criteria. The simplest criteria for classification of market structures in traffic is the number of participants in the supply and demand (whether in offering their services or goods of various types).

In the transport of goods and passengers, the transport service users can use transport means in all the traffic branches. Therefore, the entire complex of transport means represents one whole and a system which form the supply of transport capacities on the transport service market. The integrity exists both on the side of the supply and on the side of traffic demand.

2. DEFINING THE TRANSPORT MARKET

If general definition is taken as the starting point, stating that the market is an economy space where

supply and demand of goods, services, stocks and money collide, then it may be said that it is a complex of relations that are formed between the supply and demand of transport services.

The extent of the market for certain products - services that are absolutely necessary for the living, are related to transport means. Therefore, every manufacturer will compensate the relative surplus of their product or service and the relative shortage of some other goods needed for consumer purposes on the market using transportation means.

The essence of the economy in this context is the exchange of what represents the surplus for one man (and shortage for others) by what is shortage for another (and which is a surplus to others). The need to exchange relative surpluses by relative shortages makes individual producers so dependent on one another regarding satisfying their consumer requirements. Their wishes - demands are met by means of the market. The extent of the market or the volume of demand for certain goods (capability of exchanging certain surpluses) depends on the gap between producer and consumer, and the availability of transportation means to fulfil all the wishes. In spanning the gap there are three variables which are connected in such a way as to provide minimal gap between the producer and the consumer. The greater the efficiency of transportation means spanning the gap, the wider the market (the higher the level of specialisation among producers, and the higher the living standard of the community). In other words, the gap between the producer and consumer can leave the market extent unchanged if the gap is accompanied by the modernisation of transportation means. The diffusion of urban population into suburb and the surrounding area may increase the gap between the producer and the consumer, but if transport modernisation compensates for the economic effects, then the extent of the market may remain the same.

Or else, if another change occurred, e.g. reduction of transportation means, the extent of the market would decrease. However, consequences would be negligible in case there were no major gaps between producers and consumers. If the gap is decreased, the extent of the market may remain the same.

The characteristic of the traffic service as goods, is of specific property:

- a) it has no physical form;
- b) its production process and consumption process is unique;
- c) traffic service cannot be stored nor realised on other markets;
- d) there is no materialised service as during material production;
- e) by the completion of the production process or traffic service flow the automatic value surplus generated during the production process is not realised, but rather the charging for the traffic service represents the act of realisation (value surplus).

Traffic agencies do not offer readymade goods on the market¹, but rather a work process in which the service is yet to be produced (consumed). Only at the beginning of the working process will it be known to which level the capacities are going to be used or else the transportation means will drive empty. Users, on the other side, will not be aware of the service quality until the working process begins, since they are not able to see the goods in advance. They cannot change the market if their needs for transport are related to a certain realisation. Similarly, they cannot change the market because they cannot store their goods (services) to sell them at another market. On the contrary, they are in the position to invest their work in the transportation process, not having to realise the transportation service.

Therefore, the specific characteristic of transport service market has a double effect on its understanding. On the one hand, regarding the traffic role in social reproduction, the relations between supply and demand for traffic services cannot be left to market automatism, which means that social intervention is necessary. On the other hand, under conditions of developed traffic system, they require clear definition of the transportation market, which means, it has to be defined in the physical space.

In the reproduction theory, traffic plays an extremely important role, both as a part of reproduction and as a factor which allows undisturbed traffic flow, especially regarding territorial aspect of the reproduction process. Already in the natural form of production it may be stated that all production factors do not exist at one place and that they have their territorial distribution in space. The core of the reproduction process results in the necessity of connecting these factors so that the products, as production results, would acquire their natural forms and so that finally the whole reproduction process could be completed.

In direct flow of the reproduction process the capital moves in a circle with constant transformations of monetary into goods capital, goods into production,

production into goods and goods into monetary, according to the formula for circular capital movement:

$$N \rightarrow R \rightarrow P \rightarrow R' \rightarrow N'$$

which in the transportation process or in transport industry has a somewhat modified form:

$$N \rightarrow R \rightarrow P \rightarrow N'$$

From the aspect of reproduction financing, especially from the aspect of defining the source for funding the concrete reproduction process, we are interested in the value N' , i.e. the value of the money capital which will be first transformed into the goods capital R due to the reproduction process.

If the traffic process is organisationally separated into an independent economic organisation, and the production of traffic services is performed as production of goods, i.e. as production of products which are intended for market exchange, then the value of the traffic service appears as an independent value of an independent product regardless of the value of the item if this item also, as a product is intended for market exchange.

Market is, therefore, the basic allocator of resources in the systems of free, private-ownership economic systems and it performs three basic functions in this system: allocation, selection and distribution. Market is a mechanism of disturbing and establishing economic-traffic balance within one branch or area, i.e. within the entire national and world economy.

The basis which is the starting point in considering the transport market compared to the markets of material production, is the treating of integrity or heterogeneity of the market regarding space, branches and transport. In this sense Voight² starts from the assumption that one single market of transport services does not exist since even every departure of a transporter can be considered as separate market, nor is there one single market of complex railway traffic in one country, but rather a complex system of substitution possibilities.

If the traffic process is dislocated, separated into an independent economic organisation, and the production of traffic services is performed as production of goods, i.e. production of products intended for market exchange, then the value of traffic service appears as independent value of a separate product regardless of the value of the traffic item, if this item as a product is intended for market exchange.

According to the definition, market is a complex of relations between supply and demand in a certain area and at a certain time. Herewith, the basic functions of the market are expressed as follows:³

1. The produced goods are realised on the market, which means that they arrive on the market with a value created during the production process on the basis of spent individual working hours. Its market

value is formed on the market, i.e. market price on the basis of the socially necessary working hours.

2. Market is the main form of connection among goods manufacturers. It is on the market where one sees whether individual work was really socially necessary, whether it corresponds to the average productivity, whether the manufacturer is gaining or losing, and whether the total production meets the social needs, which makes the market affect the regulation of production,
3. By bringing into contact numerous manufacturers and consumers, based on the supply and demand law, the market balances the total demand and supply.

If on one market with a certain pre-determined price, the demand for certain goods increases in relation to the supply or if supply decreases regarding the existing demand, the price of the goods will rise. However, if the demand is reduced, and the supply is increased, the price of the goods (service) will fall. Prices are the main factor which affects supply and demand on the transportation market. They have the tendency to stabilise at the level at which supply and demand of certain goods is balanced. Every increase in the price reduces the demand and increases the supply, and every price reduction increases the demand and reduces the supply.

Considerations of the production of traffic services as goods that are exchanged on the market, and these functions of the market on which the supply and demand law is valid, mean that one can speak of the existence of the transport market and that it should mean the relation complexes that are formed between supply and demand of traffic services.

4. MARKET STRUCTURES

The position of traffic service providers (suppliers) and users (buyers) on the market determines the market structure, which affects the way of pricing but also the business policy of traffic entities, i.e. the behaviour of traffic service users.

Regarding the scope of products (or traffic services), the following are distinguished:

- a) a single product market (e.g. production of a single automobile part or production of wheat),

- b) market of related products (several parts for different automobiles or several cereal crops in agriculture).

According to a German economist, Stockelberg⁴, market has been divided into two big groups, depending on whether there is independence or not, price of goods or services. If there is interdependence between the price of several different goods, then it is a market of limited competition. In case of simple markets there is no relation between pricing of individual goods, and any such market can be studied separately.

The greater the number of participants, it may be assumed that every one can be small and weak, and if only three numerical possibilities were studied according to Stockelberg, that there were many participants, only few or just one, these data may be the basis for developing a scheme of market conditions⁵.

Starting from an empirical fact, that the number of participants and their power can be considered as values with opposing flows, and taking into consideration the three mentioned possibilities, that there are many, few or only one, the market scheme is presented:

Definitions of monopoly, monopolistic competition and oligopoly have been considered from the aspect of the product supplier. Analogue types of market structure can be defined also from the aspect of traffic service buyers or input. Such structures are monopsonistic competition and oligopsony. Monopsony refers to market environment with only one buyer of the product - traffic service or input which has no close substitutes. Monopsonistic competition and oligopsony are defined in a similar way. They appear more often on market inputs than on the goods market. They sometimes appear on the labour markets on which one supplier or several big ones dominate, e.g. on local agricultural markets, in transport for personal needs, or in purchasing big defence systems for the government.

Scheme presented in Table 1 shows nine market conditions, with the extremes being unlimited competition, and which characterise participation of numerous suppliers (providers of traffic services and other goods), and users buyers, but also bilateral monopoly, in which on both sides, both supply and demand, there is one participant each. The matrix is symmetrical, since monopoly corresponds to monopsony, oligopoly to oligopsony, and quasi-monopoly to quasi-monop-

Table 1 - Scheme of Market Conditions

Supply (Suppliers)	Demand (Buyers)		
	Many	Few	One
many	unlimited competition	oligopsony	monopsony*
few	oligopoly*	bilateral oligopoly	quazi-monopsony
one	monopoly	quasi-monopsony	bilateral monopoly

Table 2

Market conditions	Number of traffic participants	Flexibility of substitution	Cross flexibility demand
unlimited competition	big	-	0
monopoly	one	limited number (few)	0
oligopoly	small	-	limited number
limited competition	big	limited (big) number	limited number

sony. The symmetry can be further noticed in considering conditions below and above the main diagonal (unlimited competition - bilateral oligopoly - bilateral monopoly). These combinations do not use up the complexity of economy (industry) in the capital-ownership relations. For instance, along with pure monopoly and quasi-monopoly there is also partial monopoly. Partial monopoly occurs when there are several outsiders on the transport market (or market in general), and it depends on their number and power whether the monopoly is acting independently or is subjected to influences. If in a transport branch, apart from one big supplier, there are several others, who have no major (or none) influence on the price, then such partial monopoly is economically not different from pure monopoly. Similarly, in case of bilateral monopoly, there may be other participants as well, but the first two (supplier and user-customer) have influence on the forming of the traffic service

By increasing the number of suppliers and users - buyers of the service or goods, the influence of the first two is reduced, and the condition tends to be more that of bilateral oligopoly.

External conditions in traffic are unlimited competition, with many buyers, or in our case, many carriers, and bilateral monopoly with one carrier or one participant regarding economic activities.

The symmetry is noticed when monopoly is matched by monopsony, oligopoly by oligopsony, and quasi-monopoly by quasi-monopsony.

The symmetry is also noticed when considering market structures below and above the diagonal, i.e. unlimited competition, bilateral oligopoly and bilateral monopoly.

If two or several factors (traffic service providers) suggest homogeneous prices on the transport market, the attempt by any of them to raise the service price would mean its elimination from the market, since transport users contact those who have kept the old (lower) prices.

Apart from unlimited substitution, oligopoly is characterised also by certain cross flexibility, since every supplier (there are but few), has adequate space, storage etc. The pricing policy acts very strongly on the rise or fall of demand for services of other oligopolists on the transport market. Restrictions appear when there is a greater number of suppliers, who offer relatively differentiated goods for transport, similar to

monopoly, but not in the same volume. Higher prices of services do not reduce demand due to proportional inflexible demand, but with flexibility higher than in monopoly. Further difference between limited competition and monopoly can be seen in the fact that cross flexibility of demand is greater than zero (0) and that pricing policy of one of the competitors has certain influence on the demand flow of others.

Classification is presented in Table 2.

Apart from the number of factors (transport participants), as criterion for market structure classification, there is also the diversity of products and goods offered for transport, flexibility and mobility of transport demand, flexibility of prices, etc.

In his classification of market conditions, P. Samuelson⁶ starts from the following criteria:

- number of participants,
- diversity of products,
- price control level,
- production method.

5. MARKET ELEMENTS

Market elements are represented by traffic demand, supply and price of the transport services.

Although causally interdependent, they can be considered and analysed separately.

In the traffic system the relations between traffic demand and price are studied and analysed, on the other hand, supply and price, and finally integrally.

The price of traffic service is a kind of input in the pricing structure of all other products and services. The integrity of economic movements distributes the change of traffic service prices to all other systems (sectors).

On the other hand, products sold by a company can be interrelated as substitutes or complements. For example, Oldsmobile and Chevrolet manufactured by General Motors are substitutes, whereas various accessories (such as air-conditioning, automatic window control, etc.) produced by GM, are complementary to its cars. In pricing of the interrelated products, the company has to consider the influence of the change of price of one product on the demand for other products. The reason lies in the fact that if a price of one product is reduced (e.g. of Oldsmobile) such reduction will cause reduction in the demand for its substi-

tute (Chevrolet), sold by the same company, but requiring increase in demand for complementary products (Oldsmobile accessories).

If maximisation of profits was considered, the level of production and prices of various products of the same company would be determined on the common basis.

According to E. Seyffret the following market factors exist:

- a) goods,
- b) production,
- c) purchase,
- d) needs,
- e) sales,
- f) advertising,
- g) competition.

If freightage for individual goods is analysed, but also transport regarding costs, it may be concluded that these are based on the principle of discrimination. Discrimination has occurred for two reasons:

1. There is no equal flexibility of demand for every transport service;
2. Monopoly and independence from the demand value do not allow considering flexibility variations.

If there was equal flexibility in demand for all traffic services, the freightage would differ only by the difference offered by the costs "from the pocket" for instance, and every transported goods would contribute proportionally to covering of general costs. The price that is charged for the performed service depends mainly on the volume of that service. Therefore, it is not important how much the user is really paying for that service, but how much he would have paid otherwise, had this been required for a new transport. Realistically, the value of the traffic service would equal the maximally required price.

Market elements are produced through technological factors, factors of market environment which refer to national economic conditions (meaning monetary foreign-currency system and pricing policy) and naturally, to the international funding system.⁷

Market elements in the traffic system are classified into:

- a) general, and
- b) specific.

General market elements include:

- a) advancement of technology,
- b) traffic service provision,
- c) development of trade (spare parts, tools and re-production material),
- d) development of traffic and traffic infrastructure,
- e) formation and development of transport companies.

Specific market factors are:

- a) fashion,
- b) habits,
- c) various life requirements, and other.

Apart from these, some other can be listed, such as e.g. needs according to the purpose of products and services, measurability (measurable: traffic supply and demand, and the price of services, and immeasurable: which are reflected through fashion, habits, reasons, etc. e.g.) origin (economic-traffic advertising, prices, and supply and demand, and other), operation intensity (relevant market-traffic factors and irrelevant), duration (continuous and discontinuous performance of market activities) according to the dependence (dependent and independent market factors) etc.

6. CONCLUSION

Market is an economic space which represents an interface of the supply and demand of goods, traffic services, stocks, money, where their volumes sold and purchased are determined, as well as the respective prices.

The development of the modern way of communication and connections (post, telephone, teleprinter, and radio waves, as well as computers), physical presence of the buyers and suppliers is substituted by various means and methods of advanced remote communication, and the presence of goods is substituted by samples, specification standards, as well as various usages in the goods transport.

Therefore, market is then the integrity of relations between the supply and demand of traffic or other services (goods) which at a certain place and location, at a certain time influence the supply and purchase of certain products and services. It is the basic allocator of resources in the systems of free, private-ownership, economic and traffic systems (→resource allocation). As such, it has three basic functions in the system: allocative, selective, and distributive.

Market is a mechanism of disturbance and re-establishment of balance within one (traffic) and some other branch. The position of suppliers and buyers on the market determines the market structure, which again influences the method of forming prices and management of the business policy of production, economic, traffic and other subjects, that is, the behaviour of consumers. The market structure refers to the concrete environment in which buyers and suppliers act. Usually four different types of market structures are identified. These are: perfect competition on one end, pure monopoly on the other, and monopolistic competition and oligopoly in-between. Traffic demand and supply, and their prices represent market elements.

SAŽETAK

PROMETNO TRŽIŠTE I NJEGOVA STRUKTURA

Tržište je cjelokupnost odnosa ponude i potražnje prometne ili neke druge usluge (robe) koje na određenom mjestu i prostoru (lokaciji), u određeno vrijeme utječe na prodaju i kupnju pojedinih proizvoda ali i usluga, vrijednosnica, novca, te skup svih ustanova, područja, uređaja i instrumenata koji djeluju na kupoprodajne i druge transakcije koje se tada ostvaruju. Ono je temeljni alokator resursa (→alokacija resursa) u sustavima slobodnih privatno vlasničkih ekonomskih i prometnih sustava.

NOTES

1. Market (German: Markt, French: Mareke, Italian: Mercato, Russian: Rynok, etc.) The term market comes from the word market place denoting goods that are traded, or it is a place where various goods are sold and bought (S. Jurin, J. Sohinger: *Teorija tržišta i cijena*, "Globus", Zagreb, 1990, p. 115).
2. V. Voight: "Untersuchung der Elemente des Bedürfnis unter Berücksichtigung der Nachfrage", paper at the 2nd International Symposium on Theory and Practice in the Transport Economy, München, 1967
3. Group of authors: "Ekonomika prometnog sustava", FPZ, Zagreb, 2000
4. H. Stockelberg: "The Theory of the Market Economy", pp. 218-219
5. ditto, p. 242
6. Samuelson, A.P. - Nordhaus, W.: *Ekonomija*, XIV edition, "Mate" Ltd., Zagreb, 1992
7. see: O. Rafajac "Investiciona politika poduzeća", Ekonomski fakultet, Osijek, 1973

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