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TARIFF MODEL FOR COMBINED TRANSPORT

ABSTRACT

By analysing the current situation on the Croatian transportation market, and considering all parameters needed for the development of combined transport, measures are suggested in order to improve and stimulate its development. One of the first measures is the standardisation and introduction of unique tariffs for combined transport, and then government incentive for the organisation and development of combined transport means and equipment. A significant role in this should be set on adequately defined transport policy.

KEY WORDS

unique tariffs, government incentive, combined transport, container flows

1. INTRODUCTION

A precondition for the development of combined transport and ensuring its harmonised development is the introduction of unique standards by standardisation of the means and equipment of all the necessary technical and technological conditions.

The technological conditions influencing harmonised development of combined (integral) transport foresee the introduction of a single document of carriage and unique tariffs in the transport of goods on the whole transport route.

The existing tariff system, especially regarding railways, reduces the economic effects of implementing containerisation, at the same time making it difficult to use containers, due to high prices of container transport in loaded condition independent of the load weight, as well as when empty, regardless of whether the container is reused after unloading or not, since carriage is not considered in the context of overall expenditures related to the carriage of goods in containers. Therefore, when speaking of integral tariffs, these are still regarded as a sum of all the prices regarding goods and container transport in individual trans-

ports, rather than unique tariffs shared by all the transportation service providers on the transportation market.

Before developing a model of integral tariffs, at least some of the major experiences found in the area of developing integral transport need to be remembered, the condition and relations on the transportation service market need to be considered, and attention should be paid especially to the organisation of service providers and users, since all these represent assumptions needed to start developing integral tariffs.

The basic starting points should be based on the determined criteria, influencing the reduction of overall costs of social reproduction by reducing the transportation costs, as well as by determined measures stimulating development of advanced aspects of manipulating and carrying the goods, and stimulating the development of the means of integral transport and terminals.

Inadequate organisation of the container transport management results in empty rides which influence the overall carriage. Solutions should therefore be found which would reduce the share of empty container transport, as well as their share in carriage. In this way the integral tariffs would become competitive with conventional transport, both in direct or combined transport.

2. PRECONDITIONS FOR FORMING OF INTEGRAL TARIFFS

For introducing unique transportation tariff in combined rail-road traffic, the following is required:

- implementation of goods classification in railway traffic, and based on it, adequate carriage attitudes on the whole relation in rail-road traffic,
- price of reloading shipments from rail to road vehicles and vice versa, according to a tariff issued by the Agency for Integral Transport - AGIT,

– determining the difference in transport of goods, according to the difference in carriage by rail and the average transportation price per one ton of goods in road traffic.

In the same manner it is possible to organise combined transport for rail and other road traffic companies, provided they join this combined tariff and that reloading from rail into road vehicles and vice versa is ensured, and that it is possible to establish a system of joint accountancy between HŽ and each of the respective road traffic companies. This is also true for the river transport companies, provided river ports take on the function of reloading under the same conditions, and that it is possible to establish an adequate calculation system for all the subjects participating in this joint task.

This also includes then the problem of issuing a unique document of carriage, that is the waybill, which is used in combined transport.

The principles of the International Railway Union (UIC) need to be applied, and for the transport in international railway traffic it applies the "International Waybill" according to which every railway realises its revenues from international traffic. According to this model, every participant in combined transport could, based on an adequate single document of carriage, realise its share of revenues from such joint transport.

The same basis can be used in establishing an integral tariff, in using containers in combined transport, provided its structure differs only in the tariff treatment of the goods. This refers also to the implementation of a unique document of carriage. Therefore, one may speak of a single tariff for transport in combined and integral transport.

3. BASICS OF POSSIBLE INTEGRAL TARIFF MODELS

The basic effects of implementing containerisation lie in the fact that manipulation of individual "piece" material goods is realised only twice, at the beginning and at the end of the transportation chain, thus reducing the risk of damage and breaks, negative influence of adverse temperatures on the quality of goods is reduced to minimum, the risk of theft is reduced, the packaging costs are reduced, stay of shipments at handling places is shortened, the transport costs are reduced and the whole transportation process is faster. Besides, the advantages are also in the fact that containers can be sometimes used also for storage.

The economic effects of containerisation are significantly greater if evaluated from the aspect of total national economy. However, these are easier to notice when they are considered separately per participants in the transportation process.

The possibility of introducing such unique tariffs can be checked on the versions of possible models of integral tariffs, but prior to this in the approach of the selection of possible models of integral tariffs, i.e. in considering the versions of possible solutions, it is necessary to start from the manner in which the container carriage is regulated within the transportation price system. It should be noted here that at HŽ the international and internal tariff is applied in the container transportation price systems.[1].

3.1. Types of combined transport

The following types of combined transport exist with respect to tariffs:
a) Terminal-terminal combined transport,
b) Fragmented combined transport.

Combined terminal-terminal transport represents transport of intermodal transport units in the following cases:
– between container terminals,
– between container terminals and the state border crossing, and
– between state border crossing and the container terminal.

Fragmented combined transport represents transport of intermodal transport units in the following cases:
– between the container terminal or the state border crossing and the railway station open to traffic of wagon shipments (without container terminal), and
– between railway station open to traffic of wagon shipments (without container terminal) and the container terminal or the state border crossing.

3.2. Main parameters for carriage calculation

The carriage is calculated for every intermodal transport unit separately, on the basis of:
– total mass of intermodal transport unit (for the loaded ones: (tare + net), for the empty ones: tare),
– lengths and types of intermodal transport units – tariff distances,
– type of goods transport (internal traffic, import/export, transit), and
– wagon ownership (railway ownership, private wagons and rented wagons).

The prices for container (cases) manipulation at terminals, and delivery to and from by road vehicles have been published in the AGIT d.o.o., Zagreb, pricelist.

Beside these two systems, the price system for transport of big containers in the Intercontainer regime is also applied in international transport with the ex-USSR countries.

The carriage for intermodal transport units is calculated so that the transport price is differentiated by scheme depending on the length or weight of the shipment.

The carriage for U.T.I.[2] loaded on wagons owned by the railway is calculated so that the basic carriage for the respective tariff distance and type of goods transport from the "Table of Carriage for basic intermodal transport units U.T.I.-1" is multiplied by the respective coefficient from the "Table of coefficients for intermodal transport units U.T.I.".

The basic intermodal transport unit U.T.I.-1 represents a unit measure for container, changeable truck case or semi-trailer 9.16 m – 13.75 m long and gross mass of over 16.5 tonnes (coefficient 1.00 from the "Table of coefficients for intermodal transport units U.T.I.").

U.T.I. represents coefficient which is determined regarding type, length and gross mass of the U.T.I. (e.g. for a loaded container of 40 feet, gross mass of 15,000 kg, U.T.I. coefficient is 0.75).

Intermodal transport units, regarding type and length are denoted by length codes[3].

From the model of integral tariffs or versions of possible models of integral tariffs, it should be found to which extent the increase of unit weight decreases the transportation price per unit of transported goods and vice versa. It is precisely here that the tariff principle of differentiating transportation price depending on the level of capacity exploitation is best proved. Statistically looking, the comparable price of goods transportation in containers, with the price of conventional transport is significantly in favour of conventional transport, since combined transport calculates also the reloading costs and costs of road transport. However, it is precisely because of these big differences, as well as the big number of possibilities of determining various amounts of carriage for conventional transport, that the models of integral tariffs cannot be based on any averages, but on the examples of concrete goods, with indication as to their type and mass, necessary container categories and the transport relation with the transport length per types of traffic. Only based on this, and based on the comparable costs analysis of transport in various combinations per transport modes, a model of integral tariff may be constructed. And this only for those transportation cases where the price of transport per unit by means of integral transport is the same or lower than the transport price by other transport modes.

Emphasising also this possibility that the price in integral tariff could be the same or lower than others, although not the case at the moment, numerous possibilities have been foreseen of causing decrease in values of individual elements of transportation price per integral tariff, but particularly:

– by better organisation of using containers, thus avoiding transport of empty containers (which should be provided by tariff regulations as well) and
– greater exploitation of container capacity.

The tariff policy in integral transport has to be reduced to the need of determining joint offer of unique integral tariff by all transportation participants in realising joint income.

4. CALCULATION OF CARRIAGE EXPENSES

Costs[4] are calculated on the basis of the expression:

$$T_t = cse + cpt \times d,$$

furthermore

$$T_t = 13.67 + 0.41 \times d$$

(d – represents the distance in km) according to the data for 1999.

The average path of the goods in 1999 amounted to 161.00 km, and further calculation yields:

$$T_{161} = 13.67 + 0.41 \times 161.00 =$$
$$= 13.67 + 66.01 = 79.68$$
$$17.2\% \quad 82.8\% \quad 100.0\%$$

where:

13.67 – costs of start-end activities (cse),

66.01 – costs of pure transport (cpt).

transportation costs = 1 t of goods per km

e.g.:

a) $T_{50} = 13.67 + 0.41 \times 50 = 13.67 + 20.5 = 34.17$
$$40.0\% \quad 60.0\% \quad 100\%$$

b) $T_{500} = 13.67 + 0.41 \times 500 =$
$$= 13.67 + 205 = 218.67$$
$$6.3\% \quad 93.7\% \quad 100.0\%$$

The mentioned examples show that the costs of start-end actions per unit are significantly reduced on greater transportation distances, whereas on shorter relations these costs per unit (ntkm) are much higher.

5. CONCLUSION

The movement analysis in the development of combined (integral) transport in the previous period has shown that the tariff policy, expressed in transport prices for goods transported by advanced transportation means is one of the most significant factors stimulating the usage of integral transportation means.

In spite of huge advantages for the transport users in using integral transport means, its development in the Republic of Croatia has had a somewhat slower tempo. This is evident in railway traffic, where statistically looking in the last 3 years the share of combined transport in the total railway transport amounted to

7%. Furthermore, the ratio of freight quantities transported by road and combined transport amount to 10 t : 1.3 t, which means that road traffic carries about 7.7 times more goods than combined transport. Comparing carriage in combined transport and the whole railway cargo transport in the EU countries, it may be noticed that the share of combined transport is about 25% of the total cargo transport (Austrian Railways 22%, French Railways 25%, German Railways 30%).

Through the development of combined transport in the Republic of Croatia, with the implementation of state incentive measures, certain investments and organisational and regulation measures could increase over a mid-term period the share of combined transport in the total railway traffic to 7% - 12% by the year 2005, and over a long-term period to 15% - 20%, by the years 2015 and 2020.

When using integral transportation means, the problems of inadequate level of competence of transportation means are present, and this is reflected in a poorer service quality, which is in turn a consequence of inadequate organisation of integral transport. By using unique integral tariffs, as well as the unique document of carriage, the transportation process will be faster, thus increasing the level of utilisation of integral transportation means.

SAŽETAK

MODEL TARIFA ZA KOMBINIRANI TRANSPORT

Analizirajući trenutnu situaciju na hrvatskom transportnom tržištu, te sagledavajući sve parametre potrebne za razvoj kombiniranog transporta predlažu se mjere za unapređenje i poticaj njegova razvoja. Jedna od prvih mjera je standardizacija i uvođenje jedinstvenih tarifa za kombinirani transport, zatim državna stimulacija za organizaciju i razvoj sredstava i opreme kombiniranog transporta. Značajnu ulogu treba imati adekvatno definirana prometna politika.

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