

No. 2
VOLUME 1/2016

Acta Economica Et Turistica

ACTA ECONOMICA ET TURISTICA (1) – No. 2 – pp. 113-212, Zagreb, May 2016

DE GRUYTER
OPEN

ISSN 1849-8469 (tisak)
ISSN 1849-921X (online)

Izdavač / Published by

Libertas međunarodno sveučilište / Libertas International University
Trg J. F. Kennedyja 6 b, 10000 Zagreb, Croatia
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Dizajn / Design: McCann-Erickson, Zagreb

Prijelom / Layout: Alias, Zagreb

Tisak / Printed by: Cerovski Print Boutique, Zagreb

Pretplata godišnje (dva broja): 200 Kn

Annual Subscription Rate (two issues): 50 EUR

ISSN 1849-921X (online)

ISSN 1849-8469 (tisak)

Radovi objavljeni u časopisu referiraju se u sekundarnim publikacijama: Hrčak, Zagreb i De Gruyter, Poljska.

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**UTJECAJ TRANSPORTA NA
RAZVOJ MEĐUNARODNE
TRGOVINE**

**THE IMPACT OF TRANSPORT
ON INTERNATIONAL TRADE
DEVELOPMENT**

SAŽETAK: Međunarodna trgovina podrazumijeva transport određenih količina roba na (često) velike udaljenosti, a uspjeh posla ovisi o sigurnosti i brzini isporuke. Sigurnost i brzina isporuke u velikoj su mjeri uvjetovani kvalitetom transportnih sredstava i infrastrukture. Zbog toga je razvoj međunarodne trgovine uvjetovan transportom, a razvoj transportnih sredstava i infrastrukture u velikoj je mjeri uvjetovan zahtjevima za međunarodnom isporukom različitih dobara. U radu se propituje međuzavisnost međunarodne trgovine i transporta te se pokazuje kako je i u prošlosti i danas transport imao velik značaj za razvoj međunarodne trgovine, a međunarodna trgovina na razvoj transportnih sredstava i transportne infrastrukture.

KLJUČNE RIJEČI: međunarodna trgovina, transport, transportna infrastruktura, robna razmjena, carinske barijere

ABSTRACT: International trade implies transport of specific quantity of goods to (frequently) large distances, the success of which depends on the safety and speed of delivery. These are greatly conditioned by the quality of means of transport and infrastructure. This is why international trade development is affected by transport, and the development of means of transport and infrastructure is, to a great extent, influenced by demand for international delivery of various commodities. This paper looks at the interdependence of international trade and transport, showing how transport played a very significant role in international trade development in the past as it does today, commensurate to the role of international trade in the development of carriers and transport infrastructure.

KEY WORDS: international trade, transport, transport infrastructure, commodity exchange, tariff barriers

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UVOD

Liberalizacija međunarodne trgovine putem smanjenja ili potpunog ukidanja carinskih i necarinskih barijera posljednjih je sedam desetljeća glavna preokupacija GATT-a i Svjetske trgovinske organizacije. Uz sve zastoje i probleme u pregovorima o tim pitanjima, posebno na relaciji razvijene zemlje – zemlje u razvoju, od zaključivanja GATT-a 1947. do danas u pogledu smanjivanja barijera i poticanja međunarodne trgovine učinjeni su, ne samo putem GATT-a i Svjetske trgovinske organizacije, veliki pomaci. To je rezultiralo brzim rastom međunarodne razmjene roba, ali i usluga. Rast svjetske trgovine u drugoj polovici 20. i prvom desetljeću 21. stoljeća bio je znatno brži od rasta BDP-a. Tome je, uz već spomenutu liberalizaciju uvjeta odvijanja međunarodne razmjene, u velikoj mjeri pridonijelo i smanjivanje transportnih troškova.

U 17. i 18. stoljeću (i ranije) za kvalitetnije poslovanje u udaljenim krajevima nedostajala su dva čimbenika – razvijeni transport i mogućnost brze komunikacije. Tek je razvoj željeznice omogućio značajnije kretanje roba, kapitala i ljudi na kontinentalnom planu, a pojava parobroda na svjetskom. Razvoj transportne infrastrukture te transportnih i komunikacijskih sredstava omogućio je u drugoj polovini 19. stoljeća ono što mnogi smatraju počecima procesa globalizacije.

Unatoč dvama svjetskim ratovima, svjetskoj ekonomskoj krizi i naftnim šokovima, rast transporta u 20. stoljeću i u kvantitativnom i u kvalitativnom pogledu bio je spektakularan. Taj rast, praćen velikim padom cijena te transportnih usluga i usluga komunikacija, doveo je do smanjenja prostora (*shrinkage of space*), uzrokujući brojne promjene u organizaciji proizvodnje, međunarodnoj robnoj razmjeni, pružanju usluga i općenito životima ljudi.

Globalna konkurencija porasla je temeljem međunarodne standardizacije i homogenizacije

INTRODUCTION

The liberalisation of international trade through the reduction or complete abolishment of tariff and non-tariff barriers has been the main issue under consideration by GATT and the World Trade Organisation for the last seven decades. Despite all the intermittences and problems in negotiations on these issues, especially in terms of developed economies-developing countries relations, since the conclusion of GATT in 1947, great advances have been made regarding the reduction of barriers and encouragement of international trade (not only through GATT and the World Trade Organisation). This resulted in a rapid growth of the international trade of not only goods, but also services. The increase in world trade in the second half of the 20th century and the first decade of the 21st century was significantly higher than the rise of GDP. Besides the mentioned liberalisation of international trade activities, this was vastly contributed to by the reduction in transport costs.

In the 17th and 18th centuries (and earlier) two factors were missing for higher quality business activities in remote areas: developed transport and the possibility of fast communication. It was not until the development of the railway that the movement of goods, capital and people was enabled on a continental sphere, with the development of steam ships facilitating it on the global scene. Transport infrastructure development, along with the development of means of transport and communication in the second half of the 19th century facilitated what many consider to be the beginnings of the globalisation process.

Despite the two World Wars, the global economic crisis and oil shocks, transport growth in the 20th century was spectacular both in terms of quantity and quality. The growth, which was accompanied by a plunge in prices of both transport and communication services, led to the shrinkage of space, causing numerous changes in production organisation, international commodity exchange, provision of services and human life in general.

proizvoda. Liberalizacijom trgovine omogućavala se vrlo učinkovita globalna alokacija resursa, dok su telekomunikacije i prijevoz postali globalni sustav za prijenos informacija, robe i ljudi.

SMANJENJE TRANSPORTNIH TROŠKOVA

Razvoj transporta (i komunikacija) omogućio je razvoj međunarodne trgovine, a međunarodna trgovina je presudno utjecala na promjene što su se zbivale i zbivaju se u svim oblicima transporta. Nova transportna sredstva i smanjenje vremena potrebnog za prijevoz robe od mjesta proizvodnje do mjesta prodaje ili potrošnje bili su od presudnog značaja za razvoj međunarodne trgovine.

Daljnji pad transportnih troškova, poboljšanje kvalitete prijevoznoga servisa, sve veća brzina i sve pouzdaniji prijevoz, doveli su do toga da na međunarodnom tržištu pod jednakim uvjetima konkuriraju proizvođači iz gotovo svih država svijeta. U velikoj je mjeri nestala konkurentna prednost zasnovana na blizini tržišta.

Koliko je bilo smanjenje troškova transporta i komunikacija u prošlom stoljeću vidljivo je iz Grafikona 1.

Posebno brzi pad cijena dogodio se u sferi telefonskih i internet usluga te u cijenama zračnog prijevoza.

Razvoj prometne infrastrukture čini bazu za pojačani razvoj međunarodne trgovine. Posebice razvoj prometne suprastrukture, pod čime se podrazumijevaju prijevozna sredstva, ima za rezultat pojačan rast tržišta i ubrzano kolanje roba. To posljedično traži i pojačano ulaganje u prometnu infrastrukturu.

Kvalitetna infrastruktura je važna, kako na mjestima utovara tako i na mjestima istovara. Naime, od brzine utovara i istovara te troškova koje je za to potrebno učiniti u velikoj mjeri ovise i ukupni troškovi transporta, konačna cijena proizvoda pa time i njegova konkurentnost na

Global competition rose on the basis of international product standardisation and homogenisation. Liberalisation of trade expedited a highly effective global allocation of resources, whereas the telecommunication and transport became a global system of information, commodity and people transfer.

REDUCTION IN TRANSPORT COSTS

Development of transport (and communications) facilitated the development of international trade, which in turn crucially affected the changes that took place and are taking place in all forms of transport. The new means of transport and reduction in time needed to transport goods from the production site to the place of sales or consumption have had a critical significance in the development of international trade.

Further decline in transport costs, quality enhancement in transport services, the increasing speed and reliability of transport have contributed to an equal-opportunity competition among producers from almost every part of the world on the international market. The competitive edge realised on the basis of the vicinity of the market has vanished to a great extent.

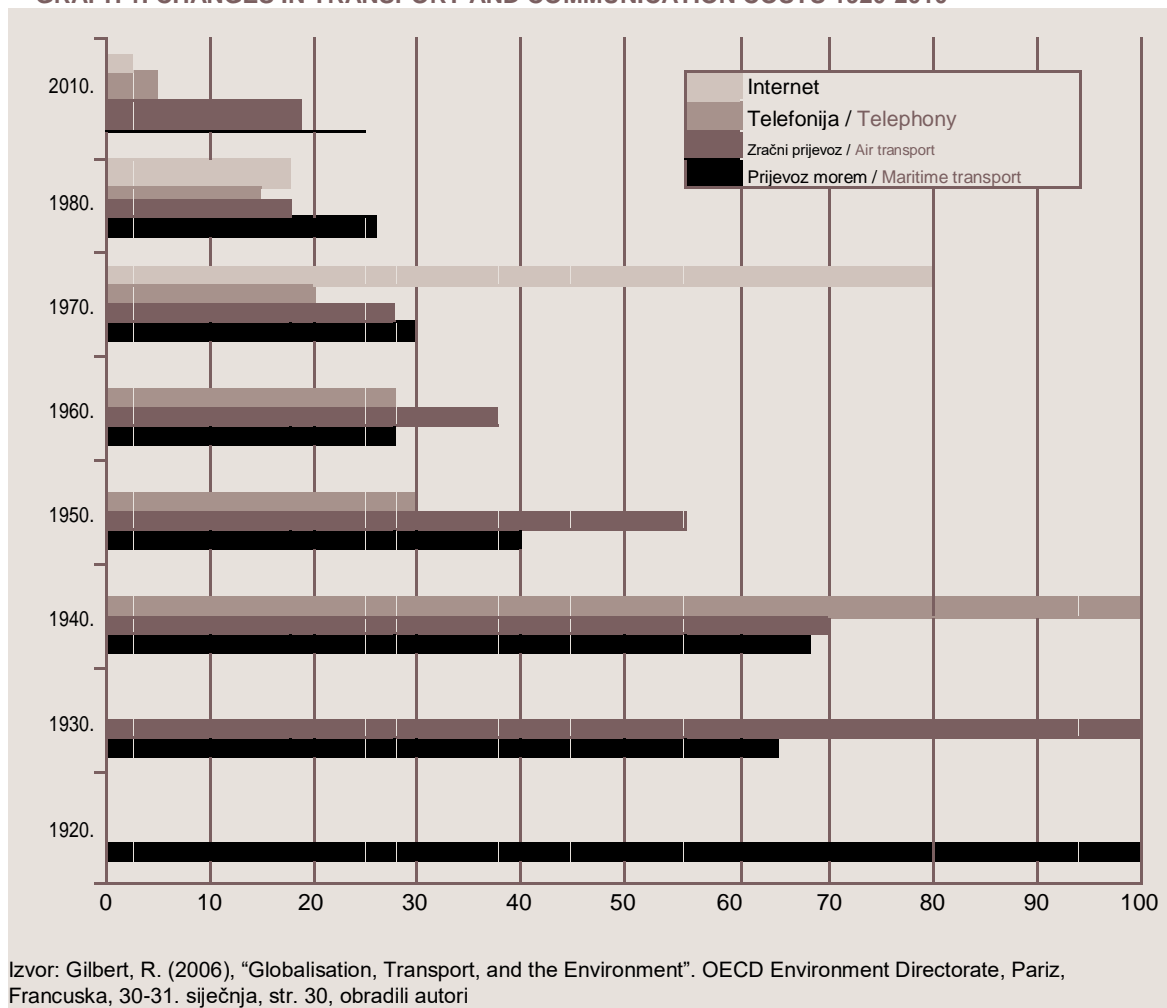
Graph 1 shows the extent of the reduction in costs of transport and communications in the last century.

A substantially fast decline in prices was in the sphere of telephone and internet services and the prices of air transport.

The development of transport infrastructure is the basis of increased international trade development. Namely, the development of transport suprastructure, which purports means of transport, has caused a fast-paced market growth and speed of commodity flows. As a consequence, this demands an increased investment in transport infrastructure.

Quality infrastructure is important for both loading and unloading sites. Namely, the total cost of

GRAFIKON 1. PROMJENE TROŠKOVA U TRANSPORTU I KOMUNIKACIJI 1920-2010.
GRAPH 1. CHANGES IN TRANSPORT AND COMMUNICATION COSTS 1920-2010



Izvor: Gilbert, R. (2006), "Globalisation, Transport, and the Environment". OECD Environment Directorate, Pariz, Francuska, 30-31. siječnja, str. 30, obradili autori
 Source: Gilbert, R. (2006). "Globalisation, Transport, and the Environment". OECD Environment Directorate, Paris, France, January 30-31, p. 30, adapted by authors

međunarodnom tržištu. Kratki rokovi utovara i istovara robe te suvremena infrastruktura koja snižava troškove manipulacije robom može ukupne transportne troškove na veće udaljenosti učiniti nižima od troškova na manje udaljenosti ako je kod njih korištena zastarjela i skupa

transport and the final product price followed by its competitiveness on the international market greatly depend on the speed and costs of the loading and unloading procedures. Short deadlines for freight loading and unloading and modern infrastructure that reduces costs of freight handling can make

utovarno-istovarna infrastruktura. Zbog toga je za konkurentsku poziciju proizvoda svake države na međunarodnom tržištu, uz ostalo, važno ulagati u osuvremenjivanje transportne infrastrukture, ne samo kada su u pitanju prometnice (ceste, pruge, zračne luke i prateći objekti) nego i kada su u pitanju točke utovara i istovara te prekrcaja robe. Za države poput Hrvatske, s dobrim lučkim potencijalima i geografskim položajem koji im omogućavaju da budu tranzitna područja za izvoz i uvoz roba drugih država, ta ulaganja dodatno dobivaju na značenju.

Profitabilnost uvelike ovisi o logističkim troškovima, jer čine znatan dio ukupnih troškova poslovanja. Udio logističkih troškova pri planiranju i realizaciji prijevoznih ruta i distributivnog lanca u ukupnim troškovima razlikuje se u proizvodnim i maloprodajnim tvrtkama i kreće se u rasponu od 15% do 25%. Troškovi logistike u prosjeku čine 8% ukupnog ostvarenog prihoda poduzeća, a recentna istraživanja pokazuju da strukturu ukupnih logističkih troškova čine: transport 45%, skladištenje 25%, zalihe 20% i administrativni troškovi 10%, što ne mora biti pravilo za svaku tvrtku (Progressive, 2014).

Razvoj novih brodova i kontejnerizacija doveli su do pada jedinične cijene pomorskog prijevoza u realnim pokazateljima za 70%. Kvalitativne promjene uzrokovane razvojem mobilne telefonije, satelitske tehnologije i interneta omogućile su slanje dokumenata širom svijeta uz niske i konstantno padajuće troškove. Cijena jedinice kompjuterske snage pala je od 1970. za 99% (Cullinane, Khanna, 2000).

Kontejnerska revolucija rezultirala je velikim promjenama u međunarodnoj trgovini i jedan je od najvažnijih doprinosa globalizaciji svjetske ekonomije. Prijevoz generalnog tereta kontejnerima omogućio je da se ostvari koncept multimodalizma, to jest međusobnog povezivanja različitih oblika prijevoza (Cullinane, Khanna, 2000), pa se prijevoz tereta na taj način odvija po sustavu "od

the total transport costs for longer distances lower than those for shorter distances, if an outdated and expensive loading-unloading infrastructure is used for the latter. Due to the above, in order to achieve a competitive position of each country's products on the international market it is important, among other matters, to invest in the modernisation of transport infrastructure, not only in terms of transport modes (roads, railway, airports and accompanying facilities), but also in terms of loading and unloading places as well as transshipment. Countries like Croatia, which have favourable port potentials and geographical position, providing them with a characteristic of a transit destination for export and import from other countries, make these investments even more significant.

The profitability largely depends on the logistics costs, because they comprise a significant part of total operating expenses. The share of logistics costs in planning and realisation of transport routes and distribution chain in total expenses differs in production and retail companies, moving in the range from 15% to 25%. Logistics costs represent 8% of the total company's turnover on average, with recent research showing the structure of total costs of logistics comprised by: transport 45%, storage 25%, stock 20% and administrative costs 10%, which need not be taken as a rule for every company (Progressive, 2014).

Development of new ships and containerisation have led to a decline in maritime transport price per unit by 70% in real indicators. Qualitative changes caused by the development of the mobile telephony, satellite technology and the internet have enabled forwarding of documents worldwide for low and continuously declining prices. Computer power unit price has fallen since 1970 by 99% (Cullinane, Khanna, 2000).

The container revolution resulted in big changes in international trade and is one of the largest contributors to the globalisation of world economy. Container transport of general freight facilitated the realisation of the multimodal transport concept,

vrata do vrata”. U kontejnerskom brodarstvu prevladava linijska plovidba između specijaliziranih kontejnerskih terminala, različitoga reda veličine, čime se povećava brzina prijevoza morskim putem i smanjuje njegova cijena po jedinici proizvoda.

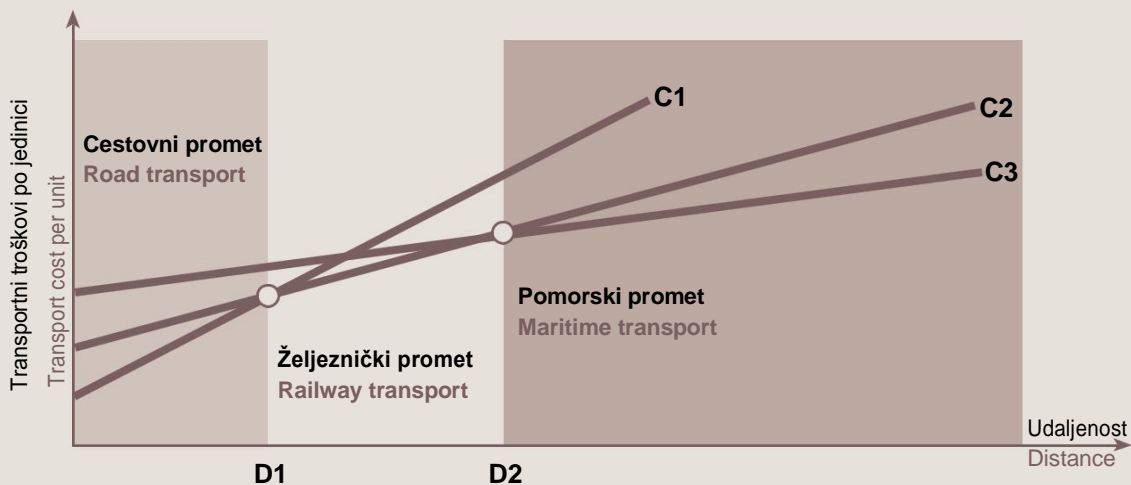
To je posebno važno pri transportu na veće udaljenosti. Naime, na malim razdaljinama nema velike razlike u troškovima transporta cestama, željeznicom ili morem (Grafikon 2), ali ta razlika na velikim razdaljinama postaje značajna. Zbog toga su za rast međunarodne trgovine od golemog značaja i uključivanje što većeg broja država u međunarodne ekonomske odnose te razvoj pomorskog transporta i lučke infrastrukture.

i.e. the interrelation of various modes of transport (Cullinane, Khanna, 2000), so that the freight transport is carried out on the “door-to-door” mode. Liner shipping between specialised container terminals of different sizes prevails in maritime container shipping, which increases the speed of maritime transport and decreases its price per unit.

This is especially noteworthy in terms of long distance transport. Namely, there are no greater differences in transport costs for short distance road, rail or maritime transport (Graph 2), but at long distances the difference is significant.

Consequently, the growth of international trade and inclusion of greater number of countries in international economic relations vastly depends on the development of maritime transport and port infrastructure.

GRAFIKON 2. ODNOS TRANSPORTNIH TROŠKOVA I UDALJENOSTI
GRAPH 2. TRANSPORT COST AND DISTANCE RELATIONSHIP



Izvor: <https://repositorij.fpz.unizg.hr/islandora/object/fpz%3A150/datastream/PDF/view>, obradili autori Source: <https://repositorij.fpz.unizg.hr/islandora/object/fpz%3A150/datastream/PDF/view>, adapted by authors

UTJECAJ TRANSPORTNIH TROŠKOVA NA MEĐUNARODNU RAZMJENU

Da bi se između dvije države odvijala razmjena nekog proizvoda, razlika u cijeni tog proizvoda u dvjema državama mora biti veća od transportnih troškova. Utjecaj transportnih troškova na cijene i količine u međunarodnoj razmjeni vidljiv je iz Grafikona 3.

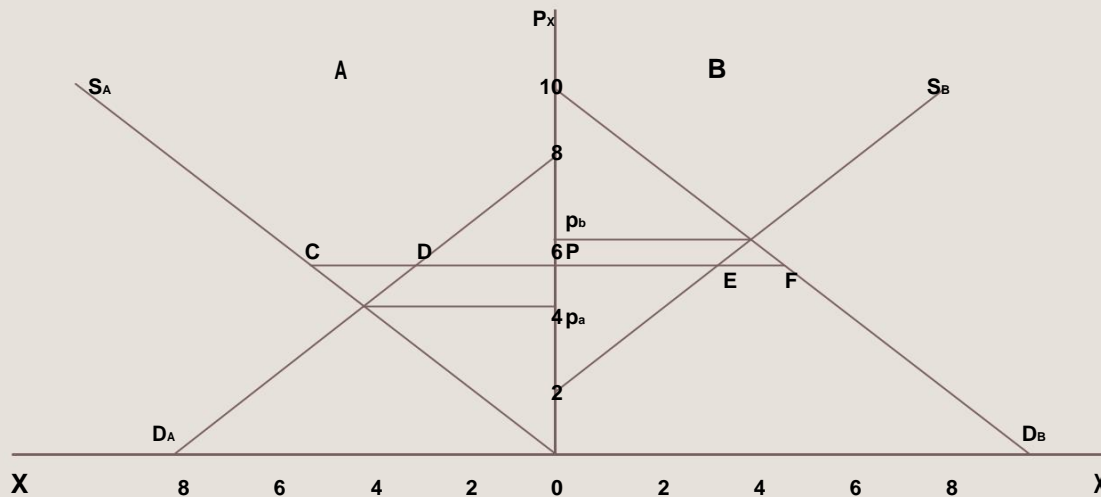
U novije vrijeme transportni troškovi, a ne carinske i necarinske barijere, određuju obujam, intenzitet i tijekove međunarodne trgovinske razmjene. Visoki rast transportnih troškova može znatno usporiti međunarodnu razmjenu pojedinih proizvoda. Najprije se na udaru nalaze industrije čiju su proizvodi osjetljivi na prijevozne troškove (industrija namještaja, industrija obuće, metalna industrija, industrija strojeva i sl.). Mnoge tvrtke se zbog visokih transportnih troškova odlučuju

IMPACT OF TRANSPORT COSTS ON INTERNATIONAL TRADE

In order for two countries to trade a product, the difference in the price of the product in the two countries needs to be larger than transport costs. The impact of transport costs on pricing and quantity in international trade can be seen in Graph 3.

In recent times it have been the transport costs, and not tariff and non-tariff barriers, that have been setting the volume, intensity and flows of international trade. The rapid growth of transport costs can significantly slow down international trade of individual products. The greatest impact is felt by industries the products of which are sensitive to transport costs (furniture industry, footwear industry, metal industry, machinery industry and the like). Due to high transport costs, a lot of companies are deciding to move

GRAFIKON 3. UTJECAJ TRANSPORTNIH TROŠKOVA NA MEĐUNARODNU RAZMJENU
GRAPH 3. IMPACT OF TRANSPORT COSTS ON INTERNATIONAL TRADE



Izvor: Babić, A., Babić, M. (2000), *Međunarodna ekonomija*, peto izdanje, Mate, str. 106, obradili autori

Source: Babić, A., Babić, M. (2000), *Međunarodna ekonomija*, 5th ed., Mate, p. 106, adapted by authors

premjestiti proizvodne pogone ili distribucijske centre bliže potrošačima, pokušavajući transportne troškove držati na niskoj razini. Poznato je da povećanje transportnih troškova od 10% rezultira smanjenjem trgovinske razmjene za više od 20%. Kada bi prometni troškovi bili jednaki razlici u cijeni dobra X, između dviju država prestala bi razmjena. "Transportni troškovi postaju trojanski konj procesa globalizacije" (Pupavac, 2009).

Razlike u cijenama roba među kontinentima mijenjale su se kroz vrijeme. Najprije, od 1820. do 1914, razlike u cijenama roba među kontinentima smanjile su se za 81%, od čega 72% zbog pojeftinjenja transporta, a 28% zbog promjena (smanjenja) visine carina. Između 1914. i 1950. cijene su se među kontinentima udvostručile zbog uvođenja različitih barijera. Konačno, između 1950. i 2000. godine, ponovno su pale za 76%, da bi na kraju bile niže nego 1914. Od toga pada, 74% dogodilo se zbog liberalizacije tržišta, a 26% zbog jeftinijeg transporta. U cijelom razdoblju od 1820. do 2000. razlike u cijenama među kontinentima smanjivale su se za 92% – 18% zahvaljujući raznim mjerama politike, a 82% zahvaljujući jeftinijem transportu (Wolf, 2005, str. 117-118).

Globalni ekonomski razvoj obilježen je velikim porastom međunarodne trgovine i promjenama u međunarodnoj podjeli rada, a kao rezultat toga teretno brodarstvo postaje jedan od najbrže rastućih ekonomskih sektora (Grossmann i drugi, 2007). Ekonomski napredak zemalja u razvoju temelji se na izvozu sirovina i industrijskih proizvoda, čime je povećana međunarodna robna razmjena, osobito kontejnerski promet. U razdoblju od 1980. do 1996. godine, međunarodna robna razmjena se udvostručila, dok kontejnerski promet bilježi još veći rast, jer se on udvostručio u kraćem razdoblju (1990 -1997). Danas se kontejnerima prevozi više od 80% sveukupnoga pomorskog generalnog tereta, a očekuje se i daljnji porast udjela (Rindolfi, 1999). Razvoj ekonomija u istočnoj i južnoj Aziji uzrokuje jačanje trgovine između tih novih industrijskih središta i glavnih svjetskih tržišta. U tom kontekstu

production plants or distribution channels closer to customers in an effort to maintain lower transport costs. It is known that an increase in transport costs by 10% results in a reduction of trade by over 20%. If the transport costs were equal to the price of commodity X between two countries, the trade would be discontinued. Transport costs are becoming the Trojan horse of the globalisation process (Pupavac, 2009).

Differences in prices of goods among continents have changed over time. Firstly, from 1820 to 1914 the differences in commodity prices among continents decreased by 81%, 72% of which were due to a fall in transport, and 28% of which were due to a change (reduction) in customs duty. Between 1914 and 1950 the prices among continents doubled owing to the introduction of different barriers. Finally, between 1950 and 2000 they plummeted again by 76%, hitting a bottom, that was lower than in 1914. In that year 74%

of the plunge was due to the liberalisation of the market and 26% because of cheaper transport. In the overall period between 1820 and 2000 the price differences among continents decreased by 92%, 18% of which due to the various policy measures, and 82% of which owing to cheaper transport (Wolf, 2005, pp.117-118).

Global economic development was marked by a surge in international trade and changes in international work distribution, resulting in freight shipping by sea to become one of the fastest growing economic sectors (Grossmann et al., 2007). Economic growth of developing countries is based on the export of raw materials and industrial products, which increases international commodity exchange, especially container transport. From 1980 to 1996, international commodity exchange doubled, while the container transport marked an even higher growth, because it doubled in a shorter period of time (1990-1997). Today containers convey over 80% of total general freight by sea, with further growth of the share being expected (Rindolfi, 1999). Economic development in East and South Asia is causing trade enhancement

i Sredozemno more počinje dobivati sve veći značaj u kontejnerskom prometu, što rezultira revitalizacijom lučkih aktivnosti u mnogim njegovim dijelovima. To je od velike važnosti za Hrvatsku i kao, potencijalno, još značajniju državu za tranzit roba, ali i kao vanjskotrgovinski čimbenik, jer se time smanjuju troškovi robne razmjene. Veliki kontejnerski brodovi nisu više samo u tranzitu kroz Sredozemlje već tiču njegove luke, čineći ih tako čvorištima u mreži međunarodne trgovine. To je od velikog značaja za te luke, osobito one na europskome rubu. Sve do danas, luke na Sjevernom moru, favorizirane zbog lokacije na Atlantiku i izvrsnih veza s industrijski razvijenim zaleđem, prevladavale su u europskoj kontejnerskoj trgovini (čak i s azijskom regijom kroz Sueski kanal). Do kraja 1980-ih sredozemne im luke nisu mogle konkurirati, no niz pozitivnih čimbenika doveo je do promjena (Rindolfi, 1999). Vanjski čimbenik koji je to uzrokovao jest globalizacija. Zbog toga Europska unija u svojoj prometnoj politici favorizira razvoj Transeuropske mreže (TEN), zbog integracije perifernih regija sa središnjima. To je moguće ostvariti širenjem i modernizacijom željezničkih mreža na tri južna europska poluotoka (Pirenejskom, Apeninskom i Balkanskom).

Novi prometni tijekovi traže nove logističke strategije: globalizaciju pomorskih servisa, strateška udruživanja operatora kontejnerskog prometa, standardizaciju plovidbenih ruta, razvijanje novih tehnologija u rukovanju teretom, rast veličine brodova, koncentraciju luka ticanja i uspostavu *hub* luka, veću uporabu *feeder*-servisa. Veliki linijski brodari nastoje osigurati svoj udio na terminalima koji posjeduju dokove ili ih kontroliraju, a uključeni su i u kopnenu manipulaciju kontejnerima. Sve to, u međunarodnoj trgovini, ali i ukupnom ekonomskom razvoju, stvara nove, povoljne okolnosti za Hrvatsku.

Razvoj transportnih sredstava i infrastrukture, pad cijena prijevoza, razvoj i pojeftinjenje usluga komunikacija te globalna ekonomija koju je to

between the new industrial hubs and major global markets. Within the context, the Mediterranean Sea is gaining prominence in container transport, resulting in the revitalisation of port activities in several of its parts. This is highly significant for Croatia as both a potentially even more significant commodity transit destination and as a foreign trade factor, because this reduces the costs of commodity exchange. Large container ships do not only pass through the Mediterranean but dock in its ports, making them the hubs of international trade network. Up to date, North Sea ports, which have been preferred for their location on the Atlantic and excellent connections with the industrially developed hinterland, have prevailed in the European container trade (even with the Asian region through the Suez Canal). Until the end of the 1980-s, Mediterranean ports could not compete with them, but a range of favourable factors led to changes (Rindolfi, 1999). The external factor causing this is globalisation. Consequently, the European Union favours the development of the Trans-European Networks (TEN) in its transport policy, in order to integrate peripheral regions with the central ones. This is possible to attain through expansion and modernisation of railway networks on the three European peninsulas (Iberian, Apennine and Balkan).

The new traffic flows demand new logistic strategies: globalisation of maritime transport services, strategic mergers of container transport operators, standardisation of maritime transport routes, development of new technologies in freight handling, growth of ship sizes, concentration of ports of discharge and establishment of hub ports and the increased utilisation of feeder services. Large liner shipping companies tend to secure their share on terminals that have docks or they control them. They are also involved in container handling on land. All of the above creates new and favourable circumstances for Croatia in international trade, but also in the total economic development.

The development of suprastructure and infrastructure, the decrease in prices, the

omogućilo, osobito su se pozitivno odrazili na male države. Otvorenost tržišta omogućava i malim državama da ostvare ekonomiju obujma kao jedan od glavnih čimbenika konkurentске prednosti na međunarodnom tržištu.

Porast konkurencije učinio je neophodnim da poduzeća smanje ili potpuno eliminiraju troškove skladištenja i distribucije te da slijede imperativ brzine (*speed imperative*). Najpoznatija ilustracija toga jest pravodobna proizvodnja (*just in time*) koja smanjuje zalihe (te ljude i prostor koji su za to potrebni), povećava kontrolu kvalitete čineći greške mnogo prije vidljivima i ubrzava vrijeme do izlaska na tržište. Danas, povećane mogućnosti komunikacije, učinkovitost transportnih aktivnosti te povećana standardizacija procesa proizvodnje učinile su mogućim integraciju kanala snabdijevanja na svjetskom planu (Salvatore, 2001, str. 4).

Dok je u 19. i većem dijelu 20. stoljeća smanjenje transportnih troškova bilo rezultat tehnoloških promjena koje su se događale u pojedinim oblicima transporta, posljednjih desetljeća najveći pad troškova dogodio se zbog razvoja multimodalnog transporta, koji je omogućen smanjenjem barijera između različitih oblika transporta. Najbolji primjer za to jest kontejnerizacija, gdje kontejneri lako mogu biti transferirani između pomorskog, željezničkog i cestovnog transporta, a razvijaju se i novi tipovi zrakoplova prilagođeni za primanje kontejnera.

Cijena prijevoza obično varira ovisno o udaljenosti prijevoza. Što je veća udaljenost na koju se roba transportira, veća je i cijena prijevoza (Grafikon 4). Prijevozna cijena se povećava s udaljenošću prijevoza, ali to povećanje nije direktno proporcionalno udaljenosti. Najčešće ukupna prijevozna cijena raste degresivno u odnosu na udaljenost prijevoza. Od veličine pošiljke ovisi stupanj iskorištenja prijevoznog sredstva, te će i troškovi prijevoza iste količine robe biti različiti ovisno o tome predaje li se na prijevoz kao jedna ili više pošiljaka.

Na današnjem tržištu prisutne su različite vrste roba, koje moraju prijeći velike udaljenosti od

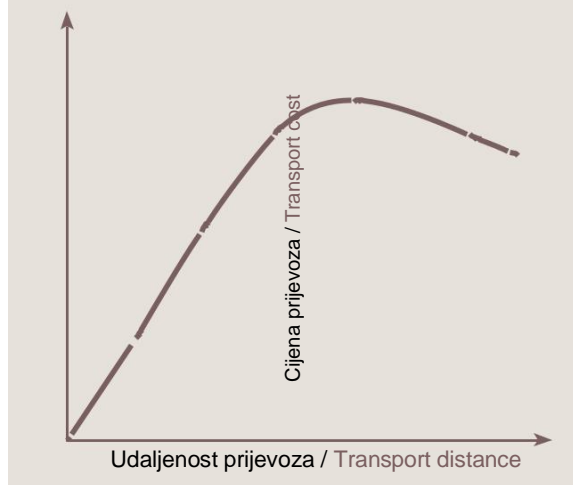
development and reduction of communication service costs and the global economy arising on that basis have had significantly positive effects on small economies. The openness of the markets enables smaller countries to achieve economies of scale as one of the main factors in achieving competitive edge on the international market.

The rise of competition has made it necessary for companies to reduce or completely eliminate storage and distribution costs and to follow the speed imperative. The most famous illustration of this is the just-in-time (JIT) manufacturing that reduces stock (as well as human and space resources needed for it), increases quality control, making errors visible much sooner, and speeds up the time of market launch. Today, the enhanced communication possibilities, efficiency of transport activities and the increased standardisation of manufacturing processes have made possible the integration of sourcing channels on the global scene (Salvatore, 2001, p. 4).

Whereas in the 19th and 20th century the reduction of transport costs resulted from technological changes occurring in specific modes of transport, in the last decades the greatest fall in costs has occurred owing to the development of multimodal transport, which was enabled by the reduction in barriers among different modes of transport. The best example of this is containerisation, whereby containers can be easily transferred among ocean carriers, rail and road carriers, with new types of airplanes being developed in order to carry containers.

The price of transport usually varies according to the distance. The greater the distance for commodity transportation, the higher the price of transport (Graph 4). Transport price increases with the transport distance, but the increase is not directly proportional to the distance. Most frequently the total transport cost increases digressively in relation to transport distance. The utilisation level of the carrier depends on the size of shipment, so the transport costs for the same

GRAFIKON 4. GRAFIČKI PRIKAZ ODNOSA CIJENE PRIJEVOZA I UDALJENOSTI PRIJEVOZA
GRAPH 4. DIAGRAM SHOWING THE RELATIONSHIP OF TRANSPORT COST AND TRANSPORT DISTANCE



Izvor: autori / Source: authors

proizvođača do potrošača. Za svladavanje većih udaljenosti danas možemo odabrati jedan od dva načina prijevoza: morem ili zrakom. Ovisno o vrsti robe i zahtjevima za prijevoz formirat će se cijena prijevoza, ne uzimajući u razmatranje mogućnost da se na zahtjev klijenta bilo koju robu može otpremiti bilo kojim sredstvom, ako klijent ne pita za cijenu.

Primjena kontejnerskog koncepta, to jest transformacija tradicionalnih heterogenih linijskih u homogene kontejnerske terete, dovela je do revolucionarnih promjena u lučkom prometu.

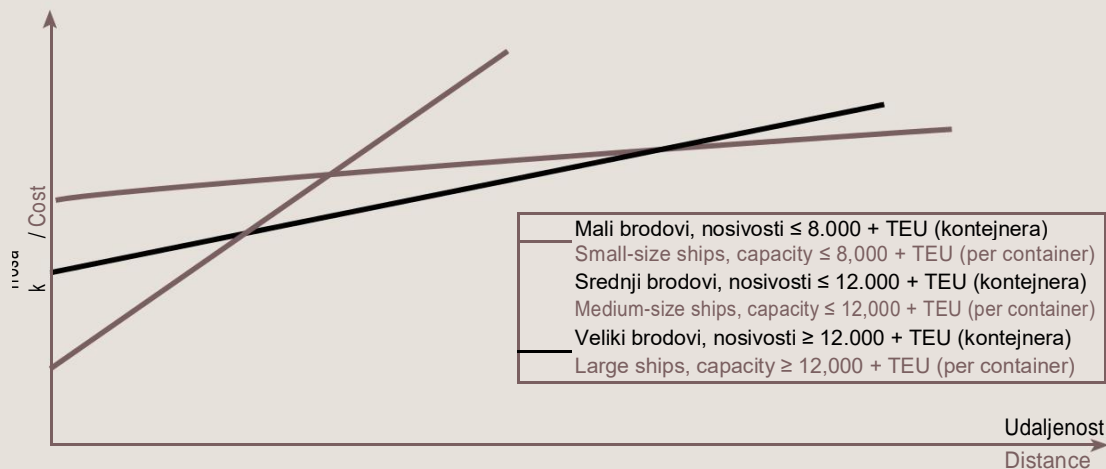
Kontejnerizacija se pojavljuje 1960-ih godina, a već je 1984. godine udio kontejnerskog tereta u teretu koji se može kontejnerizirati iznosio 75% na sve tri glavne trgovačke rute u smjeru istok – zapad (transpacifičkoj, transatlantskoj i ruti Europa – Daleki Istok) (Cullinane, Khanna, 2000). U proteklih dvadesetak godina zabilježen je izniman porast uporabe kontejnera u prijevozu generalnog tereta. Ukupni promet kontejnerskih

amount of goods will vary if they are shipped as one or several shipments.

The market today features various types of goods that need to pass large distances from the place of production to the consumer. In order to overcome the larger distances, we can choose one of two methods of transport: by sea or by air. The price of transport is set depending on the type of commodity and transport demands, not taking into consideration the possibility to ship a commodity on the request of a client by any means and regardless of the price.

The implementation of the container concept, i.e. the transformation of traditional heterogeneous liner into homogenous container cargo has led to revolutionary changes in port traffic.

Containerisation appeared in the 1960-s, and already in 1984 the share of container cargo in containerisable cargo was 75% with all three main East-West trading routes (Trans-Pacific, Trans-Atlantic and the Europe-Far East route) (Cullinane, Khanna, 2000). In the last 20 years there has been a considerable growth in utilisation of containers in general cargo transport. The total traffic of container ports in 2010 grew by 15.4%, reaching 460 million TEU (twenty-foot equivalent unit). The majority of the traffic (65%) was achieved in developing countries. Interestingly, the percentage of these countries in global container transport is growing three times faster than in developed economies (*Review of maritime transport*, 2012). This primarily relates to the East Asian countries that have been achieving an increase in growth of foreign trade in the last years. The implementation of the containerisation concept has also changed the method of utilising land traffic, connecting ports with the hinterland they serve. Multimodal development, together with the increase in size of container ships is resulting in rationalisation in the number of ports of discharge and time spent at the port accompanied by the reduction of costs for individual shipping companies.

GRAFIKON 5. ANALIZA TROŠKOVA PRIJEVOZA PO KONTEJNERU
GRAPH 5. ANALYSIS OF TRANSPORT COSTS PER CONTAINER


Izvor: autori / Source: authors

luka u 2010. godini rastao je po stopi od 15,4%, čime je dosegao 460 milijuna TEU. Većina tog prometa (65%) ostvarena je u zemljama u razvoju. Zanimljivo je da udio tih zemalja u svjetskom kontejnerskom prometu raste tri puta brže nego u razvijenim zemljama (*Review of maritime transport*, 2012). To se prije svega odnosi na istočnoazijske zemlje, koje posljednjih godina bilježe sve veći porast vanjske trgovine. Primjena koncepta kontejnerizacije promijenila je i način korištenja kopnenim prometnicama koje povezuju luke sa zaleđem kojemu služe. Multimodalni razvoj, zajedno s rastom veličine kontejnerskih brodova, dovodi do racionalizacije u broju ticanja luka i u vremenu zadržavanja broda u luci, a samim time smanjuju se troškovi pojedinačnih brodara.

Izgradnjom većih i suvremenijih brodova troškovi transporta na veće udaljenosti bitno se smanjuju (Grafikon 5). U početku su se kontejneri prevozili u konvencionalnim brodovima, često prilagođavanima za prijevoz

By constructing larger and more modern ships the costs of transport to longer distances are significantly reduced (Graph 5). In the beginning containers were transported in traditional ships often adapted for container transport. These were immediately followed by first the construction of transoceanic, and then specialised container and cellular container ships. Container ships, the development of which has been highly intensive, are seeing their 5th generation today. The advantages of container ships for general cargo as opposed to liner shipping service are reflected primarily in the fact that container ships demand significantly less time of cargo loading and unloading at port, making them more efficient and economically and technologically more perfected, so that costs per ship remain the same, regardless of the quantity of containers they are transporting.

Transport infrastructure is an important segment in transport costs. Data show that poor infrastructure

kontejnera, da bi se odmah zatim počeli graditi najprije polukontejnerski, a zatim i specijalizirani kontejnerski i celularni kontejnerski brodovi. Razvoj kontejnerskih brodova bio je vrlo intenzivan i danas doživljava već 5. generaciju. Prednosti kontejnerskih brodova u odnosu na klasične linijske brodove za generalne terete ogledaju se prije svega u činjenici što kontejnerski brodovi zahtijevaju znatno kraće vrijeme ukrcaja i iskrcaja tereta u luci, što ih čini učinkovitijima te ekonomski i tehnološki savršenijima, tako da troškovi po brodu ostaju isti bez obzira na količine kontejnera koje prevoze.

Prometna infrastruktura je važan segment u transportnim troškovima. Podaci pokazuju da loša infrastruktura sudjeluje u transportnim troškovima u obalnim državama sa 40%, a u državama bez mora sa čak 60% (Francois, 2007, str. 4), bitno otežavajući, a često i potpuno onemogućavajući međunarodnu razmjenu.

Koliko je za međunarodnu trgovinu važan razvoj transportne infrastrukture, dobro je vidljivo na primjeru Kine. Oko 83% kineske vanjske trgovine odvija se u dijelovima uz more, iako u njima živi samo 37% stanovništva (UN, ESCAP, 2014).

Na uzorku od 75 država utvrđeno je da bi četiri grupe mjera za olakšavanje trgovine (*trade facilitation*) među njima donijele porast trgovine za 377 milijardi dolara, predstavljajući povećanje od 9,7%. Oko 107 milijardi dolara ostvarilo bi se povećanjem učinkovitosti u lukama, 33 milijarde dolara pojednostavnjivanjem carinskih procedura, 83 milijarde dolara poboljšanjem regulative, a 154 milijarde dolara poboljšanjem infrastrukture (Wolf, 2005).

Zahtjevi koji se postavljaju pred transport uzrokovani su procesom globalizacije i promjenama u brzini i načinu snabdijevanja, proizvodnje i distribucije. Vertikalna dezintegracija poduzeća, međunarodno kretanje kapitala, uvećavanje tržišta, pojava interneta i satelitske tehnologije s brzim kontaktima i transakcijama pretpostavljaju brži i pouzdaniji transport, osobito u inovativnim sektorima poput informatike, biotehnologije i elektronike.

accounts for 40% of transport costs in coastal countries, and as much as 60 % in landlocked countries (Francois, 2007, p. 4), significantly debilitating, and frequently completely preventing international trade.

The extent to which international trade relies on the development of transport infrastructure is visible in the case of China. About 83% of Chinese foreign trade is conducted along coastal areas, even though there is only 37% of the population in these areas (UN, ESCAP, 2014).

It was determined on the sample of 75 countries that four groups of measures for trade facilitation would bring a trade growth among them of 377 billion dollars, representing an increase of 9.7%. About 107 billion dollars would be realised by increasing efficiency in ports, 33 billion dollars by simplifying customs procedures, 83 billion dollars by regulation improvement, and 154 billion dollars by infrastructure advancement (Wolf, 2005).

Demands set before transport are a consequence of the globalisation process and changes in the speed and method of sourcing, production and distribution. Vertical disintegration of companies, international capital flows, market increase, emergence of the internet and satellite technology with fast contacts and transactions imply a faster and more reliable transport, especially in the innovative sectors like informatics, biotechnology and electronics.

The development of transport services and an adequate transport and communication infrastructure are increasingly becoming a significant factor of achieving the competitive edge in specific parts of the world and decidedly influence the position of a country in international trade.

The globalisation process has resulted in the reproduction of capital on the global scene in almost all business activities. "The whole world is becoming our market but also our competitor. But competition takes place more at the level

Razvoj transportnih usluga te odgovarajuća prometna i komunikacijska infrastruktura postaju sve značajnijim čimbenikom konkurentne prednosti pojedinih dijelova svijeta i odlučujuće utječu na poziciju neke države u međunarodnoj razmjeni.

Proces globalizacije doveo je do reprodukcije kapitala na svjetskom planu u gotovo svim djelatnostima.

“Cijeli svijet je postao naše tržište, ali i naš konkurent. No konkurencija se više odvija na planu izvora snabdjevenija (*sourcing*) i procesa distribucije, nego na planu proizvodnje.” (Capineri, Leinbach, 2006, str. 24).

Globalizacija je za daljnji razvoj transporta od izuzetne važnosti iz još jednog razloga. Za razvoj novije prometne suprastrukture, osobito luka, potrebno je utrošiti stotine milijuna (i milijarde) dolara. Bez globalnog tržišta za plasman transportnih sredstava, njihov daljnji razvoj bio bi nemoguć.

I pored svih tehnoloških promjena te velikog pada cijena svih oblika transporta i komunikacija, još uvijek se više od 50% svjetske robne razmjene odvija među partnerima koji su međusobno udaljeni manje od 3000 kilometara (OECD, 2004). To pokazuje da postoji golemi prostor za daljnje unaprjeđenje i transportnih sredstava i prometne te komunikacijske infrastrukture.

ZAKLJUČAK

Međuovisnost transporta i međunarodne trgovine nastavit će se i u budućnosti, a globalizacijski procesi vjerojatno će se ubrzati. Razmjena dobara među udaljenim će se državama zbog pada troškova transporta povećati i to će imati znatnog utjecaja na izgradnju novih te povećanje postojećih kapaciteta i kvalitete transportne mreže, transportnih sredstava te utovarnih i istovarnih lokacija.

Globalno zatopljenje u kome se nalazi Zemlja najvećim je dijelom uzrokovano spaljivanjem fosilnih goriva. Transport je jedan od većih potrošača fosilnih goriva pa će u okviru globalnih aktivnosti na smanjenju ispušnih plinova, osobito

of sourcing and distribution processes than of production.” (Capineri, Leinbach, 2006, p. 24).

Globalisation is essential for further transport development for another reason. In order to develop newer transport suprastructure, especially ports, it is necessary to spend hundreds of millions (and billions) of dollars. Without the global market for placement of means of transport, their further development would be impossible.

Despite all technological changes and a plunge in prices of all forms of transport and communication, 50% of global commodity exchange is still carried out among partners who are at a distance of less than 3,000 kilometres (OECD, 2004). This shows that there is a vast area for further advancement of carriers and transport and communication infrastructure.

CONCLUSION

The interdependence of transport and international trade will continue in future, and the globalisation processes will probably gain more momentum. The commodity exchange among distant countries will increase due to the cost reduction, which will significantly affect the construction of new and enhancement of existing capacities and quality of the transport network, carriers and loading and unloading locations.

Global warming affecting the Earth is mainly caused by burning of fossil fuels. Transport is one of the largest consumers of fossil fuels; therefore, within the frame of global activities aimed at reduction of gas emissions, especially carbon dioxide, transport will also undergo significant changes in the coming years.

Since trade, especially international trade, cannot take place without transport, the changes in transport will again affect the changes in international trade, as they did in the past. Transport, especially commodity transport, has been growing faster than the gross domestic

ugljičnog dioksida, transport i u narednim godinama doživljavati značajne promjene.

Kako trgovine, osobito međunarodne, nema bez transporta, promjene u transportu ponovno će kao i u prošlosti utjecati na promjene u međunarodnoj trgovini. Transport, osobito transport roba, raste u posljednje vrijeme brže nego bruto društveni proizvod. Intenzitet transporta u svjetskoj ekonomiji povećava se i nastaviti će se povećavati u 21. stoljeću. Isto tako nastaviti će se povećavati i učešće međunarodne trgovine u društvenom proizvodu većine država, jer će rasti potreba za ekonomijom obujma kao ključnim čimbenikom konkurentnosti proizvoda, a ekonomiju obujma za većinu roba nije moguće postići samo na nacionalnom tržištu, čak ni u najvećim ekonomijama na svijetu.

product lately. The intensity of transport in the world economy is increasing and this trend will continue in the 21st century. In the same way the percentage of international trade in the domestic product of most countries will increase, due to the rise in the need for economies of scale as a key factor of a product's competitiveness. However, the economies of scale for most of commodities are impossible to achieve on a domestic market only, even in the strongest economies in the world.

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