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## Transport market: Intermodality & Liberalisation

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6. Međunarodno znanstveno savjetovanje  
*6<sup>th</sup> International Scientific Conference*

LUKE I PLOVNI PUTOVI - *PORTS AND WATERWAYS*  
**POWA 2011**

**Prometno tržište: Intermodalnost & Liberalizacija**  
***Transport market: Intermodality & Liberalisation***

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***Under the Auspices of Ministry of the Sea, Transport and Infrastructure***

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## PREFACE

*The Faculty of Transport and Traffic Sciences – University of Zagreb, Faculty of Maritime Studies – University of Montenegro, Intermodal Transport Cluster and Croatian Chamber of Economy, under the auspices of the Ministry of the Sea, Transport and Infrastructure, organized the sixth International Scientific Conference on Ports and Waterways – POWA 2011 entitled “Transport market: Intermodality & Liberalisation”, which took place on October 12, 2011 at Croatian chamber of economy, Rooseveltov trg 2, Zagreb.*

*Ports and waterways development is undergoing significant changes in response to the world’s changing conditions. The objectives of this conference is to analyze the intermodal transport systems as well as existing and future transport strategies from the aspect of transport market liberalisation of water and land transport. This international conference serve as a good medium for exchange of ideas and know-how-transfer, discussion about intermodality, environment as well as transport liberalisation, legal issues and transport strategies related to management and planning of ports and water transport in the world with an emphasis on the Republic of Croatia and the Adriatic sea.*

*The conference provides a forum for discussion and exchange of ideas, methods, and knowledge between managers, operators, designers and the scientific and academic communities.*

*POWA 2011 is largely supported by the Croatian academic community, economic sector and port communities. The authors of contributions are experts and practitioners from faculties, institutes, colleges and transport studies, from transport economy, from the port authorities, municipal authorities for traffic, logistics operators and business people.*

*The papers, posters and presentations are focused on the environmental protection, ICT & E-Learning, intermodal transport systems, transport safety and security, legal issues, education & training and transport strategies of water and land transport.*

*We are grateful to all authors for their contributions and to the members of the International scientific committee for their help and great effort invested in activities contributed to the success of the Conference and the publishing of scientific papers.*

*Editor –in – chief  
Prof. Natalija Jolić, Ph.D.  
Zagreb, October 2011*

# **AN OVERVIEW OF THE SHIPPING TRADE IN THE REPUBLIC OF CROATIA AND POSSIBILITIES OF ITS DEVELOPMENT**

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## **SUMMARY**

When drafting this paper, the starting point was the general division and main characteristics of the basic types of the shipping trade with a review of the development of the Croatian shipping trade from the time preceding Croatia's independence until today. The basic characteristics of freight and passenger shipping will be presented. Freight shipping will further be described through liner, free and tanker shipping.

The emphasis in Croatian shipping will be on the number of ships through the years, the average age of the shipowners and the fleet, gross tonnage and total deadweight of the shipowners.

For the period closer to present only shipowners in international navigation that are members of the Mare Nostrum association will be presented.

## **KEY WORDS**

Shipping trade structure, average age, GT, flags of convenience.

## **1. INTRODUCTION**

A maritime country can best use its position on the sea, which is the cheapest way of transport, if it directs its foreign trade toward the sea and conducts the transportation with its own merchant marine.

Adverse events that have accompanied the development of the Croatian shipping trade in the past thirty years also had an impact on the condition of the merchant fleet which, with only a few exceptions, is characterised by obsolescence of the ships i.e. their age, purpose and construction. The average age of the fleet of 22.33 years does not allow for promising forecasts of the total activity of Croatian shipowners.

According to the data of the shipowner association Mare Nostrum, on 31<sup>st</sup> December 2010 the Croatian merchant marine owned 167 ships with 2,000,000 GT and over 3,000,000 tons of deadweight while in 1990 the Croatian merchant marine had 331 ships with 2,6000,000 GT.

Most of the ships of the merchant fleet sail under the Croatian flag, while a smaller number is under the flags of Malta, Marshall Islands, St. Vincent and the Grenadines as well as other flags of convenience.

## **2. DIVISION AND MAIN CHARACTERISTICS OF THE BASIC TYPES OF MARITIME SHIPPING TRADE**

### **2.1. Division of the maritime shipping trade according to the transportation purpose**

Maritime shipping may be viewed as a complete activity but also individual types of this activity may be viewed as separate units if their particularities are sufficiently prominent.

The prominent particularities which allow that certain types of maritime shipping be differentiated can be noticed based on different criteria of which the most important are the technological and the economic criteria.



In the technological sense, the basic criteria for the division of maritime shipping into special categories are: the object of transportation, types of ships, way of using the ships as well as geographic area where they are active.

In the economic sense such criteria are: the type of the market, transportation price formation (freight rate), organization of the trade and other economic conditions.

Regarding the object of the transportation, two basic types of maritime shipping should be considered

- Freight shipping
- Passenger shipping

Passenger shipping may by the organisational and economic criteria further be divided into liner and tourist shipping, and by geographic scope into cabotage and overseas shipping.

Freight shipping, as the biggest and the most important part of the maritime shipping, can be divided according to the mentioned basic technological and economic criteria as follows:

- Free (trumper) shipping
- Liner shipping
- Tanker shipping

A similar division can be made for the shipowners so that there are passenger and cargo shipowners and among the cargo shipowners one can differentiate between the free, liner and tanker shipowners.

It can be said that there are almost no completely “pure” free, liner and tanker shipowners which would not, even if only in a small part of their activities, act also in the business area belonging to another type of activity in the freight shipping. An excellent example for this is Tankerska plovidba Zadar whose name also points out that this is a shipowner engaging in the transportation of liquid cargo; however, if we pay attention to the type of ships that it currently has in its fleet, it can be noticed that out of the total 20 ships 11 ships are for the transportation of liquid cargo while the rest of 9 ships are for the transportation of dry and bulk cargo. Almost a half of the ships is busy in free navigation and a similar example can be found in Uljanik plovidba from Pula and Mediteranska plovidba from Korčula whereby the latter shipowner owns ships that can be divided as ships for the transportation of refrigerated cargo and passenger ships.

For a more complete and clearer presentation of the basic types of maritime shipping one should introduce the basic characteristics of using the ships in individual sectors. These are conditions dictated by the global maritime market, to which our shipowners must also stick in order to be an equal rival on the market.

## **2.2. Freight shipping**

### **2.2.1. Liner shipping**

The way of using ships in the liner shipping largely differs from the free and tanker shipping.

The ships in liner shipping are not used in the full capacity and mostly they do not offer in one place the complete ship space for a certain voyage or a certain time as is the case in free and tanker shipping. The liner shipowner regularly offers only a part of the ship space for various kinds of cargoes in various ports of loading with the goal of transporting such cargo to several ports for unloading.

Such transportation is offered by the liner shipowner in certain time intervals for a longer period of time and on certain navigation routes. The use of maritime ships in liner shipping, therefore, has several important particularities: a liner ship in a certain port of loading does not offer the complete space of the ship but rather, in most cases, only a part of the space; the offered part of the ship space in a certain port of loading usually does not relate to one type of cargo and one shipper, but rather to several different types of cargo and several

shippers; a liner ship has a fixed navigation route i.e. a route that has been defined for a longer period of time, a navigation route which regularly connects several ports of loading; longterm connecting of certain ports of loading and unloading on a certain liner route is conducted in certain time intervals according to the defined navigation timetable; a liner shipowner rarely keeps up a maritime transportation on a certain liner route only with one ship, rather, this is usually done in an organized manner by a group of ships, the so-called liner.

It is characteristic of liner shipping as well that there is continuity and stability in carrying out the transportation on certain navigation routes so that the time in the ballast for this type of shipping is different from the free tramper shipping where this is "idle state". The liner voyage of a ship is regularly calculated with the outward journey and the return journey as a round trip, so that the basic ports of loading in the outward journey usually appear as basic ports of loading in the return journey. Therefore, "idle state" in liner navigation mostly depends on the capacity usability in both directions of the round trip.

In order to decrease the "idle state" of a vessel in the liner shipping, it is necessary to have the same quantities of cargo in both directions of the round trip and also in both directions the most favourable ratio between the full usage of the ship's capacity and the partial usability of the ship's capacity above such peak.

The basic written contract for transportation services in liner shipping is the bill of lading while one of very important characteristics of liner condition of the maritime transportation, compared to the free and tanker shipping, is the obligation of the shipowner in the liner maritime transportation to pay for the costs of loading and unloading of the cargo in the ports. The loading and unloading expenses or cargo handling expenses are high and have a high position in the structure of a liner journey of a ship so that they are also reflected in the height of the freight rate. Croatia's largest liner shipping company, Croatia Line from Rijeka, was closed down in 1999 due to poor business results during the transition period.

### **2.2.2. Free Shipping**

Free shipping is the basic and the oldest type of maritime shipping as a part of the transportation activity. Today, free shipping is only one of three types of activities in maritime shipping. The peculiarities of this kind of shipping relate to technology, economy and to legal relations as well as to types of organisation of maritime transportation.

The most important particularity of free shipping is the way in which the vessels are used, market's influence on the freight rates, types of cargo, types of vessels and organisation and business of the shipowner. In free shipping full transportation capacities are regularly used for one or several journeys i.e. for a certain period of time.

The voyage of the ships in free shipping is not set in advance for certain navigation routes. Rather, the route is freely and particularly contracted, so that ships carry cargo for which the best freight rate could be achieved at the moment.

Movement freedom and not being bound to set navigation routes in advance enables free shipping to quickly adjust to current changes in the demand on the maritime market, which is often emphasized as an important characteristic of free shipping.

In looking for the best solutions in how to use the ships, a free shipowner must pay attention to unprofitable navigation i.e. to navigation in the "ballast". The loss in using the time capacity of the ship is characteristic for free shipping and the consequence of it is flexibility i.e. not being tied to set navigation routes.

Normally, in free shipping the complete capacity of the ship is used in the transportation of a cargo between two ports, so that for the technological and economic success of a ship's journey it is important that the port of unloading be close to the port of the next loading. Otherwise, a long maritime journey in the ballast and without cargo would mean too big an idle status for successful technological and economic usage of the ships in free shipping.



As far as the contracts in free shipping are concerned, the f.i.o.<sup>1</sup> clause should be mentioned. In contracts on maritime transportation, this clause means that the costs of loading and unloading cargo are carried by the shipper i.e. the recipient of the cargo.

The basic cargo in maritime transportation of free shipping, in a certain way characteristic for this type of activity, is a massive dry bulk cargo.

In general, the bulk cargoes can be divided in five basic types of cargo as follows: iron ore, coal, grains, phosphates and bauxite. In addition, there are cargoes such as manganese ore, sand minerals, gypsum, coke, salt, sulphur, cement, pyrite etc.

The types of vessels characteristic for free shipping have been developed in accordance with the way in which they are used as well as with the quantity and characteristic type of cargo that they carry.

Of all the characteristic cargoes in free shipping very common today is iron ore so that bulk ships for other bulk cargoes are built with special reinforcements in order to, if necessary, be able to carry ores.

The main advantage of bulk ships, ships for the transportation of ores and other specialised ships for the transportation of dry bulk cargo is their size i.e. their deadweight capacity of up to 150,000 tons.

In Croatian merchant marine in free shipping the biggest vessel is owned by Atlantska plovidba from Dubrovnik. It is m/v Miho Pracat of total carrying capacity of 79,964 t while the average carrying capacity of ships is around 50,000 t.

### 2.2.3. Tanker Shipping

In the past thirty years a stronger and faster development of tanker shipping can be noticed. Lloyd's statistic tables mention a special part of the merchant marine specialised for the transportation of liquid cargoes only in 1896.

That year the tanker marine had only 328,000 GT, which made up 1.8% of the total tonnage of the world merchant marine. After the World War II the tanker shipping became independent as a separate branch of maritime shipping and two periods can be differentiated here.

The border between these two periods is clearly the so-called oil crisis at the end of 1973 when the OPEC<sup>2</sup> countries significantly increased the price of crude oil.

The tanker fleet reached a peak in its development in 1978 when it had 174,876,000 GT, i.e. 48% of the total carrying capacity in the world; today this amounts to 32%.

The tanker shipping was mostly viewed in relation with the free shipping, especially because of the similarities in the maritime transportation contracts and somewhat less in relations with liner shipping due to similarities in maintaining navigation on established routes.

Tankers are usually used in their full capacity for one or several journeys in a series i.e. they are leased for a certain period of time similar to the ships in free shipping. In the transportation of oil derivatives the navigation routes are not as firmly established as in the transportation of crude oil but the transportation of oil derivatives does not request sudden and rapid dislocation of a larger part of the tanker capacity away from the established routes between the countries which process oil and the biggest consumer countries. A special type of tanker shipping, one that other types of cargo shipping do not have, are regular navigation routes in one direction i.e. on the return journey the tankers are regularly without cargo, in "ballast".

As far as the freight rates are concerned, in tanker shipping they are calculated more as transportation costs rather than as sales prices of a transportation service. The freight rate indexes in tanker shipping have been presented through history in Interscale for sterling and ATRS for dollar area; nowadays the freight rate indexes can be viewed through New World Scale which is revised every year according to changes in the port expenses, fuel expenses and other voyage expenses.

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<sup>1</sup> Free in & out

<sup>2</sup> OPEC – Organization of Petrol Exporting Countries

As far as cargo itself is concerned, four main types of cargo can be mentioned as follows: crude oil, oil derivatives, LPG and chemicals. Based on the types of cargo, special types of ships have been developed such as ships for the transportation of crude oil, ships for the transportation of oil derivatives, ships for the transportation of liquefied petroleum gas and ships for the transportation of chemicals. Combined ships which are used for the transportation of dry and liquid cargoes, O/O and OBO<sup>3</sup> ships, are usually mentioned among the tankers because in normal market conditions they primarily serve for the transportation of oil.

Tankerska plovodba Zadar with over 600,000 GT share in ships for the transportation of liquid cargo is our biggest tanker ship operator. Uljanik plovodba from Pula with 147,011 GT should be mentioned as well. JPS from Rijeka with 3,921 GT has a very small share.

### 2.3. Passenger Shipping

As far as the technology and organisation of maritime transportation is concerned, passenger shipping has a distinctive place in the type of the market of the ship space in which the services are offered, in business in general and in economic evaluation of the activity. According to the data from Lloyd's tables, which were on the inventories of the world marine, the passenger marine of the world in 1992 amounted to only 3.05% of the total merchant marine expressed in GT. The Croatian passenger marine in that time amounted to 2.14% of the total capacity of the Croatian merchant marine while today this amounts to 4.5%. The passenger shipping had a peculiar development in the period after World War II. In this period there were significant changes in the size and the quality of the maritime transportation service to passengers in international passenger traffic along the coast i.e. in the cabotage. In international passenger traffic, in overseas navigation, the 1960s were a turning point in the further development. Air traffic took over almost all regular passenger transportation across the ocean. Small liner ships in cabotage were also abandoned because they could not compete with road traffic in coastal passenger traffic.

The passenger seafaring traffic at present, as far as overseas cabotage space is concerned, develops in relations with the tourist traffic and the offer of tourist services. In overseas passenger traffic these are cruises and in cabotage these are traffic services made possible by ferryboats and rapid catamarans.

## 3. THE DEVELOPMENT OF MERCHANT MARINE OF THE REPUBLIC OF CROATIA

The ratio of total capacities of the merchant fleet of Croatia compared to the capacities in the former state clearly shows the importance of Croatia as the strongest and largest shipping republic in the former federation. The biggest and the strongest shipowners had their headquarters on the territory of the Republic of Croatia. 80% of ships were registered with 68.6% GT i.e. 67% of deadweight capacity of the total capacities of the former state. The development capacities of the Croatian merchant fleet (Table 1) before the former state broke apart showed a satisfactory slow growth despite unfavourable factors at home and abroad.

**Table 1. Capacities of the Croatian merchant marine in the former state (000)**

Number of vessels	GT	DWT	Year
272	1,662	2,512	1980
245	1,766	2,676	1985
274	2,280	3,512	1988
312	2,465	3,795	1989

<sup>3</sup> O/O and OBO – oil –ore and oil-bulk-ore ships

*Source: Analysis of Merchant Fleet Activities in 1980 and 1989,  
Status of the Fleet of the Maritime Shipping of Yugoslavia, Belgrade 1988  
Croatian Chamber of Economy, Zagreb 1985*

The capacities were increasing in this period especially because Atlas Dubrovnik registered in 1987 as a new member of the "Business Union of the Shippers of Yugoslavia", and shippers such as Croatia Line, Atlantska plovdba, Slobodna plovdba, Jadroplov, Lošinjska plovdba, Mediteranska plovdba and Dalmatinska plovdba bought 18 ships only in 1987.

In the total fleet, most represented were ships which were sailing in free navigation with 60.6% total GT while in the very structure most represented were, by tonnage and by number, ships for the transportation of bulk cargo. Already back then this fact pointed to the permanently present orientation towards ships transporting bulk cargo.

Also, during that time, before the former state fell apart, the number of container ships increased in the liner navigation which was indicating that the shipowners tried to modernise their fleet in order to become a part of the modern transportation of general cargo in spite of difficulties. It should be mentioned that the development of containerisation started in 1974 when Croatia Line from Rijeka bought the first container ship "Pionir", 6,096 deadweight tonnage and 304 TEU<sup>4</sup>.

In 1987 the tanker fleet had 317,931 GT which amounted to 14.3% of the total GT of the merchant fleet. All ships for the transportation of liquid cargo belonged to Tankerska plovdba from Zadar, which means that for the transportation of liquid cargo the Croatian fleet was also the total tanker fleet of the former state. Since the share of the tanker capacity in the world shipping amounted to about 34%, the share which this type of shipping had in our country was way below average.

The passenger fleet consisted of a larger number of classic passenger ships and ferryboats of smaller deadweight and a smaller number of classic passenger ships and ferryboats of larger deadweight. Smaller passenger ships were mainly used for the transportation of passengers in cabotage, which corresponds with the needs of our very indented coast, while larger ships were used for internal and international transportation.

In the period until 1989 the cabotage in Croatia was conducted by several ship operators as follows: Jadrolinija Rijeka, Lošinjska plovdba Mali Lošinj, Rapska plovdba Rab and Mediteranska plovdba Korčula. The largest capacity of the passenger fleet was concentrated in Jadrolinija from Rijeka, almost 90% of the total capacity. In figures this was 45 ships with a total of 29,673 GT, 15,327 passenger seats and 1,540 vehicle places. As far as the age structure is concerned, the passenger fleet was in the worst situation so that the average age was 24.5 years. Even the passenger ships in international navigation had the average age of 18.8 years. According to the "Status of the Fleet of Maritime Shipping Companies", in 1975 Jadrolinija's ships were on average 48 days out of use, in 1986 88 days and in 1990 this was the case on 56 days. In the recent times the average age of Jadrolinija as the leading passenger ship operator remained the same. The emphasis in the fleet continues to be on ferryboats and catamarans in order to provide a fast connection of the land and the islands.

The beginning of independence of the Republic of Croatia brought along new winds which influenced the development of our shipping. For reasons of comparison the beginning years of independence should be shown together with the recent several years. According to Table 2, the largest number of ships was possessed by the Croatian merchant fleet in 1990 when it had 331 ships and since that time the number of ships went down.

The reduction in the number of ships does not have to mean an automatic reduction in the capacity of the fleet. Nowadays the ships are larger and more modern, which reflects on their total number and capacity. For example, if we pay attention to our largest ship owner Tankerska plovdba from Zadar, we will notice that in 1990 this ship owner possessed a fleet

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<sup>4</sup> TEU – Twenty foot equivalent unit, a unit of measure for the capacity of a container ship related to the dimensions of a standard container 6.1x2.2x2.6 m.

of 25 ships with 458,058 GT whereas twenty years later it possessed 19 ships with a total of 831,729 GT.

In specialised ships for towing and supplying platforms, the condition is far from an ideal one. Out of the total of 33 ships, Brodospas Inc. Split and JPS Rijeka, only 10 are less than 20 years old. The average age of the fleet of the above two shipowners is 22.45 years. In this type of industry the majority of the lessees demand that the ships not be older than 20 years. With two new ships to supply platforms, Brodospas Inc. began with a renovation of the fleet. However, in today's market conditions a more aggressive approach is necessary toward this kind of a market.

Comparing the average age with the number of ships in a certain fleet, some experts are of the opinion that a ship older than 15 years is outdated so that some countries do not permit that such ships enter and operate in their ports.

The average age of the Croatian merchant fleet immediately before separation from the former state was about 16 years whereas today for the members of the shipowner association Mare Nostrum the average age is 22.33 years.

At present the youngest fleet is owned by Uljanik plovdba Pula with an average of 4.65 years. However, if we take a look at our bigger shipowners, according to the average, Tankerska plovdba Zadar is in the best position with 7.28 years.

**Table 2. Croatian merchant fleet**

Shipowner	1990		1993		2007		2010	
	Number of ships	GT	Number of ships	GT	Number of ships	GT	Number of ships	GT
Croatia Line	53	679,502	39	591,744	-	-	-	-
Tankerska plovdba	25	458,056	27	545,046	14	642,208	19	831,729
Atlantska plovdba	25	402,250	23	385,424	20	461,696	19	465,915
Slobodna plovdba	26	367,218	19	257,965	-	-	-	-
Jadroplov	18	206,505	16	205,718	7	173,107	6	159,383
Losinjska plovdba	29	144,102	18	72,722	11	142,984	7	142,033
Dalmatinska plovdba	15	142,544	-	-	-	-	-	-
Uljanik plovdba	4	43,009	6	75,809	6	175,447	7	208,224
Meditranska plovdba	15	65,656	13	62,919	5	11,352	3	10,562
Splitska plovdba	9	26,430	9	26,976	7	11,060	7	11,060

Brodospas	38	18,682	38	23,214	24	16,150	24	18,690
JPS	9	2,060	13	5,566	17	9,002	18	9,036
Atlas	15	2,358	6	657	-	-	-	-
Jadrolinija	50	54,513	47	52,205	55	99,378	51	96,101
Rapska plovidba	-	-	-	-	5	1,498	5	1,791
Brodogradiliste Cres	-	-	-	-	1	400	1	400
TOTAL	331	2,612,935	274	2,311,099	172	1,744,282	167	1,954,924

*Source: Status of the Fleet of the Maritime Shipping of Yugoslavia, Belgrade, 1991  
Status of the Croatian Marine, Zagreb, 1992,  
Mare Nostrum 1993, 2007, 2010*

Due to political changes at the beginning of 1990s, as well as for economic reasons, the majority of the ships in the ownership of Croatian ship operators were put under the flags of various states of convenience. Flags such as the Bahamas, Liberia, St. Vincent and the Grenadines, Marshall Islands etc. were a common picture on the ships in those years. According to the latest data of the association Mare Nostrum, in 2010 26 ships are still flying the flags of various states of convenience while 141 ships are sailing under the Croatian flag. The reasons are mainly of economic nature but it should certainly be mentioned that in 2010 the Croatian fleet in the international navigation finds itself on the white list of the Paris memorandum, because in the past three years none of our ships was stopped due to technical flaws or some other kind of irregularities in the ports of the Paris memorandum.

Ten years ago the Croatian flag was on the black list of shame exclusively because of technical flaws which were found on old ships of some of our shipowners.

#### 4. SUMMARY

The current status of the fleet of any state is always evaluated based on the existing condition of the freight and passenger shipping by the structure, capacity and age.

Even before World War I and then within the Kingdom of Yugoslavia, Croatia constantly developed its fleet which in 1939 had the tonnage of 450,000 GT. After the two world wars, this tonnage was reached only in 1958. After 1958 this tonnage was constantly increasing so that in 1990, immediately before the Homeland War, it reached its peak in the capacity with 2,612,935 GT. Since that time, the capacities of the fleet were in constant decrease. The decrease in the capacity cannot be tied exclusively to the young Croatian state because the negative impacts from the past, such as not supporting the purchase of ships from domestic shipyards, made the ship operators turn to imports and second-hand ships.

After Croatia's independence, due to the war and transition, the shipping industry found itself in ever bigger problems and since 1995 it entered into a crisis and significant losses. The started transformation and privatisation of shipowning companies reduced the purchase of ships and a big share of the ships switched to the flags of convenience. The foreign trade, port and transit traffic decreased, the indebtedness of the shipowning companies increased as well as their losses. In the period between 1996 and 1999 the freight rates on the global maritime market went down significantly. The state subsidies to shipowners were abolished, while only the subsidies for Jadrolinija were kept because it maintains the transportation of passengers along the coast and between the land and the islands.

In such a situation the shipowning companies started the rationalisation and reorganisation of its businesses in order to keep the reduced capacities. To those in a more severe situation, in 1998 the state provided financial support from various funds and provided guarantees for taking loans in foreign banks. Some shipowners requested also the reprogramming of their credit obligations inherited from the period before the privatisation; however, this did not help them to master the crisis either. Unfortunately for the Croatian

merchant fleet, three shipowners went bankrupt: Dalmatinska plovidba Vela Luka in 1995, Slobodna plovidba Šibenik in 1998 and Croatia Line Rijeka in 1999. With the demise of Croatia Line, the liner shipping practically disappeared from the structure of the Croatian merchant fleet. Slobodna plovidba from Šibenik had, in its best times, the best quality marine of the Croatian free shipping because the oldest ships in its fleet were the least represented.

Today our biggest shipowners are Tankerska plovidba from Zadar and Atlantska plovidba from Dubrovnik and the ships of those shipowners are mainly in international navigation so that their direct influence on our foreign trade is negligible; however, with good business practices in the global framework they continue to be our most successful and most powerful shipowners.

The representation of our shipowners in the freight traffic on the domestic market is very small, which reflects on the condition and the structure of the fleet in that segment of the shipping trade. The average age of the ships of Splitska plovidba from Split, which is mainly transporting cargo in the domestic traffic, is 39.3 years which is the best indicator of the obsolescence of this part of the fleet.

The passenger shipping continues to struggle with the age of its fleet. There is no doubt that ferryboats have the role of a traffic promoter, and they are also a promoter of tourism and general development of the Adriatic region. A better connected Adriatic as a rule means a stronger development of tourism as well as a more favourable demographic development. This brings us to the conclusion that the connection land - islands – land is a very important factor of development of land units which are divided by the sea. Its importance is obvious in all phases of development plans of the local communities, both on the local as well as on the regional, national and even on the interregional level within the framework of the European Union.

Strategic construction planning or purchase of new passenger ships produced recently with target characteristics both according to the needs of the passenger and vehicle transportation and according to the existing and the future planned port infrastructure, can help a lot in the development of communication on the Adriatic Sea.

Completely new conditions have set in in the development of maritime shipping for the free and sovereign Republic of Croatia. The transition period is a thing of the past and now one should be self-reliant in the development of all types of shipping, especially of ships for general cargo because the containerisation has become a global trend in the cargo transportation.

With its know-how, proper strategic planning as well as adjustment to the global economic business requirements the shipping trade of the Republic of Croatia has an excellent opportunity to come forward as a leader in the sector related to the sea and maritime affairs in a country with a centuries old maritime tradition.

## LITERATURE

- [1] Ban, Ivan: Economic Significance of Maritime Shipping and Yugoslav Economic Policy, 1992
- [2] Cumbelić, Petar: Technology and Economics of Ship Usage, Dubrovnik 1992
- [3] Glavan, Boris: Economics of Maritime Shipping, SK Zagreb, 1992
- [4] Mare Nostrum (various years)