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# Comparing “Light Dues” in the Northern Adriatic Ports

## Usporedba “naknadâ za korištenje plovnih puteva” u sjevernojadranskim lukama

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### Summary

This article describes the different taxation systems regarding the entry of commercial ships into the ports of the North-Adriatic countries (namely Italy, Slovenia, Croatia). The taxes taken into consideration are largely known as light dues (or occasionally anchorage dues) and are based on the vessel, irrespective of the cargo discharged at the port and of any actual provision of “specific services”. In the above-mentioned countries, such taxes are based on different definitions and calculation models, in some instances taking the form of light dues, and are a clearly identifiable component (and, therefore, at least partly comparable) of the overall port-use costs charged to business operators. The geographical setting of the North Adriatic includes an international port range (mainly the ports of Trieste, Koper and Rijeka) competing in a partially overlapping hinterland, although differently. The drafting of an updated review of the tax component has become an interesting way to contribute, although through the analysis of a very specific and partial element, to the overarching research on competition in the North Adriatic ports and the role played by the diversity of political, legal as well as economic systems in an area which, in recent years, has on the whole recorded good traffic dynamics, as is to be expected from the hinterlands of Central and Eastern Europe.

### KEY WORDS

light dues  
Northern Adriatic ports  
comparison  
factor of competition

### Sažetak

Ovaj članak opisuje različite sustave naknadâ koji se tiču ulaska trgovačkih brodova u luke sjevernojadranskih zemalja (poimence Italije, Slovenije i Hrvatske). Naknade koje se uzimaju u obzir općenito su poznate kao naknada za upotrebu objekata sigurnosti plovidbe (ili pristojbe sidrenja) i temelje se na brodu bez obzira na teret koji se iskrcava u luci i bilo kakvo pružanje specifičnih usluga. U gore spomenutim zemljama, takve pristojbe temeljene su na različitim definicijskim i kalkulacijskim načinima, u nekim slučajevima uzimaju oblik lučkih pristojbi i jasne su identifikacijske komponente (i stoga barem djelomično usporedive) o kompletnim troškovima u luci koje ubiru poslovni subjekti. Geografsko okruženje sjevernoga Jadrana uključuje međunarodne luke Trst, Koper i Rijeka, koje se natječu za djelomično preklapajuće zaleđe, iako na različite načine. Sastavljanje ažuriranoga pregleda komponenti naknada postalo je zanimljiv način prinosa, iako analizom vrlo posebnoga i djelomičnoga elementa tog sveobuhvatnog istraživanja natjecanja među sjevernojadranskim lukama i uloge koja se odigrava zbog različitosti političkoga, zakonskoga, kao i ekonomskoga sustava u području koje u današnje vrijeme bilježi dobru dinamiku prometa, kao što zaleđe Središnje i Istočne Europe očekuje da će biti.

### KLJUČNE RIJEČI

pristojbe za korištenje plovnih puteva  
sjevernojadranske luke  
usporedba  
čimbenik natjecanja

## 1. INTRODUCTORY REMARKS: DUES AND THE CONTEXT OF THE NORTH ADRIATIC SEA / Uvodne napomene: pristojbe i kontekst sjevernoga Jadrana

### 1.1. The dues included in the survey / Pristojbe obuhvaćene istraživanjem

Irrespective of the reference geographical context, among the commercial port costs for users there are a number of items, typically defined as dues to be paid to the public administration

(the State and/or the Port Authority). Typically, such dues usually fall within the definitions of Harbour Dues or Light/ Anchorage Dues. Despite these dues are different from other fees and taxes concerning, for instance, the actual occupancy level and the use of port facilities (e.g. port charges levied on clients by port operators as well as other dockage fees), or the quantity of discharged cargo (Port Dues, etc.), in the different legal systems of the various countries it is not always easy

to distinguish between them and the numerous payments requested from port users. Nevertheless, the discriminating principle for the identification of dues is for them to be related to the type and size of the vessel and not to the actual degree of quay use (e.g. calculated on the number of occupancy days) or to the specific services supplied to an individual vessel, or the handled cargo, or, at least allegedly, to specific "impact" factors, e.g. environmental taxes. In some countries, however, dues have been quantitatively modulated on the basis of their environmental impact, thereby incentivising the reduction of the latter (European Commission, 2017).

Historically, in some legal systems (e.g. the United Kingdom), light dues or fairway dues were (and in some places still are) correlated with the contributions that all vessels are requested to pay towards to creation and maintenance of navigational marks, such as lighthouses, lightships, buoys and daymarks. In general, they not only warn of dangers, but provide the mariner with points of reference for his further voyaging (McNeil, 2002).

The construction of first lights to ensure safer navigation started in ancient times; their distribution was fortuitous and the collection of dues was occasional. The organised provision of lights as well collection of light dues in UK commenced in the sixteenth century, although until the late eighteenth century specialized navigational safety marks were rare (McNeil, 2002)- It is actually summarized from this source. On reflecting upon the aspects relating to the international competition between ports, some authors have discussed the basic taxation criteria as well as the possible competitive effects between British and continental ports generated by light dues (Asteris, 2008).

As a general principle, the tax on the use of navigation aids in national waters is applicable when the ship starts receiving such services in the waters of a given country.

Governments, and not ports, usually set and collect light dues. For example, in Sweden light dues are based on how far ships travel up the estuaries (Parliament.UK, 2003) and – since they are meant to be a tool introducing environmental incentives – upon sulphur contents in fuel as well as NO<sub>x</sub> emissions (Wilmsmeier, 2007).

In Holland, light dues are collected through pilotage fees. Nevertheless, in most European countries light dues are levied through port dues, also known as harbour dues, tonnage dues, etc. (Wilmsmeier, 2007), which are still mainly based upon a ship's gross tonnage (GT). Some authors, however, argue against GT-based port dues, as they are unfair towards some types of ships and discourage the introduction of new safer and efficient designs (Vasudevan, 2010). Some ports, such as Rotterdam, include frequency and sustainability discounts on the Port dues charged (Port of Rotterdam, 2017).

## **1.2. Port competition and the international port context in the North Adriatic / *Natjecanje luka i međunarodni kontekst sjevernojadranskih luka***

Several researches focus the role played by the different factors influencing port competitiveness and many of them stress the role played by "port costs", although some scholars tend to put in light the often neglected aspect of non-price competition determinants (Esper & al.).

Experts have different opinions on how the elasticity of demand for port services acts with respect to port costs and port final prices. Slack (1985), for instance, argues that it is

relatively inelastic, mainly because many other factors influence port demand and port competitiveness, e.g. port facilities and equipment, efficiency of the port, sailing frequency, location of the port, port hinterland accessibility, the costs of auxiliary services, the reputation of the port, etc. (see (Slack, 1985), (Tongzon, 2002), Aronietis et al., 2010). On the other hand, Haralambides (2002) states that the right prices can lead a port to prosperity and growth, while wrong prices can guide it to extinction or the proliferation of subsidies and inefficiency.

It is generally accepted that port prices should be cost-related, although there is no clear guideline as to what cost base should be used; that prices should allow for cost recovery and should at the same time meet certain objectives that are specific to a port under discussion (Mchizwa, 2014). The main objectives of port pricing are the following (ESCAP & KMI, 2002): ensuring that port facilities are used in the most efficient manner, retaining the benefits resulting from investments within the country, and recovering sufficient revenue to meet financial objectives.

No single port charge can be accurately compared across the world purely by its tariff, name or category; port pricing structures differ in the various jurisdictions and sometimes even within the same port or port system (PRSA, 2015).

Nevertheless, we decided to compare Light dues (and Port dues) in three "regional gate ports" of the North Adriatic belonging to three different countries, namely the Italian port of Trieste, the Slovene port of Koper and the Croatian port of Rijeka, with the aim of widening the knowledge on the variables of the competitive context of the North Adriatic ports.

Competition among "gate ports" striving for regional gateway status is a topic that recently has been identified as a specific research issue (Kim & al. 2016).

In general, the competition between Italian, Slovenian and Croatian "gate ports" in the North-Adriatic, especially in the container sector, has been dealt with in the literature even in recent times (Twrđy & Batista, 2014; Acciaro & al., 2017), but published research studies on the comparison of port pricing structures, breaking down the different components of port charges, are few and far between.

In 2005, Dundović and Hess investigated light dues as well as other port dues levied on ships as a part of a transport route, on the example of four different cargo vessels calling at these three ports, and determined that the light dues at the port of Rijeka are higher than at the Ports of Koper and Trieste. Jurjević, Dundović and Hess obtained the same results in 2016, too. According to their research, depending on the type of vessel (general cargo ships, bulk carriers) light dues reportedly range between 23% and 37% of total port charges in Rjeka, between 7% and 15% in Koper and between 20% and 55.4% in Trieste, thereby highlighting the wide diversity of port charges structures in the various settings. Since the comparison was carried out by selecting only some sectors of traffic and vessel types, although interesting, this comparison of light dues is not exhaustive and, therefore, does not provide an overall picture of the situation.

In order to offer a more extensive tool for the comparison of cost simulations, irrespective of the actual light-due amounts, this article aims at describing how the various taxation systems of the "light dues" type are levied on commercial vessels at the ports of the North Adriatic countries (Italy, Slovenia, Croatia),

also for the purpose of carrying out simulations on large numbers of cases.

This compared description intends to contribute, though partially, to a better comparative analysis of the competitive context in which the North Adriatic ports operate, starting by those that are more oriented towards the international hinterland (Trieste, Koper and Rijeka).

The following paragraphs describe the approach and functioning criteria of the taxation mechanism underlying light dues.

## 2. LIGHT DUES IN CROATIA / *Naknada za upotrebu objekata sigurnosti plovidbe u Hrvatskoj*

Light dues are imposed upon any vessel navigating through the lanes along the coast of the Republic of Croatia.

They are collected by the shipping agency Plovput. Plovput is a limited liability company, with the majority of shares owned by the State. Light dues are equally applied to all vessels calling at Croatian ports (Rijeka, Ploce, Split, and Dubrovnik), the rate being much lower in the case of yachts and passenger ships.

The tariff regulations for charging light dues in the internal and territorial sea of the Republic of Croatia can be described as follows.

GT or gross tonnage is the unit measure for all vessels in accordance with the International Convention on Tonnage Measurements of Ships of 1969, which is part of the ship's certificate. If it is not available, light dues are charged on the basis of the tonnage quoted in the Lloyd's Register of Ships.

As an exception to the previous item, if a vessel does not have GT the following is applied:

- for ships and technical vessels without their own drive system, the unit measure is their deadweight, namely DWT
- for tugs, the unit measure is indicated in kW.

For the purpose of light dues, vessels are defined (Article 5, item 4 of the Maritime Law – Official Journal 181/04, 76/07, 146/08, 61/11 and 56/13, in further text ML) as hulls measuring more than 12 m, with GT greater than 15, or carrying more than twelve passengers. It can be:

1. passenger ship (passenger ship in coastal navigation; - cruise ship);
2. cargo ship (tanker, - bulk carrier, container and RO-RO ship, tug, - all other cargo ships not included above);
3. technical vessels;
4. scientific research ships;
5. fishing vessels;
6. ship used by Authorities

Boats and yachts, which are not the subject of this article, are to be added to ships.

Croatian vessels are vessels flying the Croatian flag regardless of the owner's nationality, and which pay light dues in kunas (HRK). Foreign vessels are vessels flying a foreign flag regardless of the owner's nationality and which pay light dues in foreign currency.

Monthly light dues are fees charged for 30 days starting from the day of the vessel's arrival at a port or an anchorage of the internal waters or territorial sea of the Republic of Croatia.

Annual light dues are fees charged for 12 months starting from the day of the vessel's arrival at a port or an anchorage of the internal waters or territorial sea of the Republic of Croatia. It can be settled as a one-off payment or in two annual instalments.

The following tables, that is Table 1 and Table 2, report the light dues for cruisers and the other ship categories.

## 3. LIGHT DUES IN SLOVENIA / *Naknada za upotrebu objekata sigurnosti plovidbe u Sloveniji*

The internal waters of the Republic of Slovenia encompass all ports, bays and the anchorage of the Port of Koper, circumscribed by meridian 13° 39' east and latitude 45° 35,4' north (Off. Gazette of the RS, 26/2001). The port of Koper is the only Slovenian international cargo port. It is a multipurpose port with 24 berths. The port handled 22 million tons of cargo and was called by 2,061 ships in 2016 (Luka Koper, 2017), but sea traffic in Slovenian waters is also generated by passenger ports in Izola and Piran as well as the marinas along the Slovenian coast.

The Slovenian Maritime Administration (SMA), a body set up within the Ministry of Infrastructure of the Republic of Slovenia (formally the Ministry of Transport), is responsible for all port issues in Slovenia. The SMA is located in Koper and is (together with other bodies) responsible for the economic development of port infrastructures and safety at sea. This includes the drafting of maritime documents, the adoption and introduction of international maritime standards and technical regulations, international cooperation, the preparation of bilateral and multilateral agreements, etc. It also supervises the regular maintenance of port infrastructure intended for public transport and regular maintenance of facilities which ensure safe navigation as well as safety of sea ways.

The basic regulations on maritime transport in the Republic of Slovenia and its waters are provided by the Maritime Code from 2001. Among other issues, it regulates the safety of navigation in the territorial sea and internal waters of Slovenia by setting the conditions which have to be met on the seaways, in the ports, at anchorage areas as well as on the vessels. In the following table are listed all legislative documents that regulate light and port dues in Slovenia.

According to the Slovenian Maritime Code, the navigation safety facilities in the sea lanes of the territorial sea and internal waters of the Republic of Slovenia include lighthouses, coastal lights, buoys and other signalling devices, signal stations, radio stations, as well as visual, acoustic, electric, electronic, radar and other equipment for safe navigation at sea, in sea lanes and in

Table 1 Croatia: Light dues tariff for cruising vessels (as on 31/12/16)

Tablica 1. Hrvatska: tarife naknada za upotrebu objekata sigurnosti plovidbe za kruzere (na datum 31. 12. 2016.)

GT	Price per GT (valid for 30 days)	Price per GT (valid for 12 months)
≤ 20,000	0.19 EUR	0.64 EUR
20,001 – 30,000	0.14 EUR	0.64 EUR
30,001 – 50,000	0.14 EUR	0.48 EUR
50,001 – 80,000	0.12 EUR	0.40 EUR
>80,000	0.12 EUR	0.35 EUR

Source: Adopted from Jadroagent, International Shipping and Freight Agency, Rijeka, 2017.

Table 2 Croatia: Light dues tariff  
 Tablica 2. Hrvatska: tarife naknada za upotrebu objekata sigurnosti plovidbe

Vessel type/Size	Base	Price per base unit (valid for 30 days)	Price per base unit (valid for 12 months)
<b>BULK CARRIERS</b>			
≤ 30,000	GT	0.48 EUR	0.16 EUR
30,001 – 50,000	GT	0.43 EUR	1.43 EUR
>50,000	GT	0.37 EUR	1.23 EUR
<b>TANKERS</b>			
RO-RO VESSELS	GT	0.49 EUR	1.64 EUR
		0.35 EUR	1.17 EUR
<b>CONTAINER CARRIERS</b>			
≤ 40,000	GT	0.22 EUR	1.00 EUR
>40,000	GT	0.10 EUR	0.55 EUR
<b>PASSENGER VESSELS AND RO-RO PASSENGER VESSELS</b>			
	GT	0.19 EUR	0.64 EUR
<b>Cruisers (valid from 01/01/2017)</b>			
20,000	GT	0.20 EUR	0.70 EUR
20,001 – 50,000	GT	0.161 EUR	0.55 EUR
50,001 – 80,000	GT	0.138 EUR	0.46 EUR
>80,000	GT	0.137 EUR	0.40 EUR
<b>SPECIALIZED VESSELS</b>			
Science vessels	GT	0.19 EUR	0.64 EUR
Supply vessels	GT/KW	0.48/0.16 EUR	1.60/1.38 EUR
Tugs	GT/KW	0.25/0.23 EUR	0.83/1.38 EUR
Vessels without their own power	GT/DWT	0.48/0.16 EUR	1.60/1.02 EUR
Tugged vessels / vessel under repair	GT/KW/DWT	0.25/0.12/0.10 EUR	
Vessels arriving to receive bunker supply	GT	0.25 EUR	
Vessels arriving to perform crew change	GT	0.25 EUR	
Fishing vessels	GT	0.19 EUR	0.64 EUR
Technical vessels	GT	0.19 EUR	0.64 EUR
Other vessels	GT	0.48 EUR	1.6 EUR

Source: Adopted from Jadroagent, International Shipping and Freight Agency, Rijeka, 2017.

Table 3 Slovenian legislation on Light and Port dues  
 Tablica 3. Slovenske legislative o naknadama za upotrebu objekata sigurnosti plovidbe i plovidbenim pristojbama

Slovenian Maritime Code	Official Gazette of the Republic of Slovenia No. 26/2001, 33/2016
Order on the usage fees for the use of facilities providing navigational safety on sea lanes	Official Gazette of the Republic of Slovenia No. 39/1992, 73/1998 (77/1998 corr.), 26/2000, 1/2001
Order on the usage fees for the use of facilities providing navigational safety on sea lanes for boats and yachts	Official Gazette of the Republic of Slovenia No. 98/1999, 33/2016
Decree on the method and requirements for the provision of commercial public services for the regular maintenance of navigational safety facilities	Official Gazette of the Republic of Slovenia No. 52/2002

ports (Off. Gazette of the RS, 26/2001). Both, domestic and foreign floating objects, that is ships, non-propelled units, boats and yachts, are obliged to pay the fee for the use of navigational safety facilities in the Slovenian waters. The fee is known as Light due and is based upon net tonnage (when indicated), deadweight, power or length, according to the type of the floating object as can be seen from the following table.

A 50 percent discount is applied to special purpose ships, that is RORO ships and ferry ships. For cruise ships, the fee is reduced by 50 percent in case they sail into Slovenian waters only on a

single occasion.

The level of light dues is decided by the Ministry and made public by the Order on usage fees for the use of facilities providing navigational safety on sea lanes. The first version of the document was drafted in 1992, just after Slovenia achieved its independence; however, the legislation on maritime seaways, their usage and maintenance was created in former Yugoslavia back in 1974, and was subsequently revised on several occasions, namely in 1977, 1981, 1985 and 1988. The Slovenian Order on usage fees for the use of facilities providing navigational safety

Table 4 Applicable Light dues in Slovenia  
*Tablica 4. Primjenjive naknada za upotrebu objekata sigurnosti plovidbe u Sloveniji*

	Type of floating object	Period	Points*	Currently applicable amount
1	Ship (self-propelled unit) – per NT	30 days	7	0.35 EUR
		12 months	17	0.85 EUR
2	Non propelled unit – per ton of deadweight	30 days	2	0.10 EUR
		12 months	17	0.85 EUR
3	Ship without NT or deadweight indication – per kW**	30 days	4	0.20 EUR
		12 months	23	1.15 EUR

Note: \* - the value of each point was SIT 12 (Slovenian tolar) or EUR 0.05 if the official exchange rate of 1 EUR = 239.64 SIT is applied; \*\* - applicable only/mainly for tug boats

Source: (Off. Gazette of the RS, 1/2001)

on sea-lanes was revised several times in a relatively short period. Firstly, it was defined in US \$ for six different floating object categories, then the amounts were converted into Slovenian currency, but only for three types of floating objects. A separate order was created for boats and yachts, and finally the point value increased with the last version. The document currently in force and consequently the level of fees dates back to December 2000.

The ship-operator is liable for the payment of light dues. The payment is considered to be a national budget revenue. The money is collected by the SMA and is then forwarded to a special account called "Fees for the use of navigational safety facilities".

Light dues are not paid by domestic or foreign military ships nor by the vessels used for public services such as for police or search and rescue activities. In addition, light dues are not charged to ships entering ports or at anchorage in Slovenian waters (Off. Gazette of the RS, 73/1998) for specific reasons not related to commercial operations.

The navigability of sea-lanes in the territorial sea and internal waters of the Republic of Slovenia must be maintained by installing navigation safety facilities and ensuring their proper functioning (Off. Gazette of the RS, 26/2001). The maintenance of navigational safety facilities is carried out on the basis of the awarded concession contract with a ten-year validity. The regular maintenance is done in accordance to annual plans and the costs are covered from the state budget.

#### 4. LIGHT DUES IN ITALY AND IN THE PORT OF TRIESTE / *Naknade za upotrebu objekata sigurnosti plovidbe u Italiji i u luci Trst*

##### 4.1. The Italian Regulations / *Talijanska regulativa*

In Italy, light dues were introduced in legislation in 1963<sup>1</sup>. They are taxes levied on both national and foreign vessels anchoring

at or off an Italian port in order to carry out commercial operations.

Until 2007 light dues, just like any other fee relating to port operations (e.g. the fees on cargo, known as "port fees") were entirely collected by central government, without the Port Authorities getting any benefit from them.

After 2007, however, changes to the legislation inspired by the principles of "devolution" and "the financial autonomy of ports" have assigned to port authorities the entire revenue from light dues.

According to the regulations in force, besides receiving the entire amount of the light dues, the Port Authority can also add surcharges on fees (the law does not set a limit to these) "for the purposes of carrying out surveillance tasks and the provision of security services in compliance with the port safety plans".

With regard to their structure, light dues are calculated on the net tonnage of the vessel. Vessels with a greater net tonnage proportionally pay more, per registered ton, than vessels with a smaller tonnage.

Table 5 illustrates in greater detail the relation between dues and vessel size, as well as the variations relating to both the type of navigation (with a EU or extra-EU origin/destination) and the time covered by the dues.

With respect to the validity period, light dues can be settled in three ways, with very different conditions. In general, light dues for vessels exceeding 200 NT cover 30 days from the date of mooring and payment of dues and have, therefore, a one-month validity period. Alternatively, dues can also be paid on an annual basis. For larger vessels bound for or leaving ports outside the EU, light dues amount to 2.2844 EUR per net ton, while vessels sailing between EU ports pay 0.7230 EUR. The third type of settlement is on a "one call" basis, as will be explained below.

Table 5 Variation coefficients of dues according to NT, type of navigation and validity period  
*Tablica 5. Varijacije koeficijenta pristojbi prema NT-u, tipu navigacije i važeće razdoblje*

Net Tonnage		0 - 50	50 - 200	200 -350		350 +	
Validity period		-	only annual	monthly	annual	monthly	annual
Type of navigation	EU	exempted	0.13 EUR	0.20 EUR	0.72 EUR	0.20 EUR	0.72 EUR
	Non EU	exempted	0.13 EUR	0.20 EUR	0.72 EUR	1.04 EUR	2.28 EUR

Source: Based on data taken from DPR 107/2009 and subsequent additions

<sup>1</sup> Light dues, in Italy, were established by Law n° 82 of 9 February 1963. Presidential Decree n° 107/2009 has somewhat revised and simplified the regulation of maritime fees and dues, which dates back to 1963 and is still the reference legislation in Italy. The rates were subsequently updated several times, the latest of which was in February 2016. In the case of the free port of Trieste, article 3, par. 2, of DPR 107/2009 retains the special provisions laid down by Decree n° 339 of 1989.

Finally, for vessels exceeding 350 net tons and exclusively with non-EU origins or destinations, if cargo has been loaded on deck or in superstructures not included in the gross tonnage, a “berthing surcharge” shall be paid. The surcharge is calculated according to the following principle: the volume of cargo loaded on either deck or superstructures is regarded as stowed in the hold and, therefore, chargeable with the same rate of duty. Thus, the volume of cargo stowed on deck and in the vessel superstructures has to be “converted” into equivalent NT.

Yet, the basic rules for the calculation of light dues described above do not actually cover the full range of applicable rates.

In addition to the net tonnage, light dues vary according to the type of vessel, based on a correction coefficient which, in practice, works as a reduction of the taxable net tonnage. Eight vessel classes have been defined<sup>2</sup>, from A to H.

Table 6 shows the various reduction coefficients for each vessel category.

In the case of container vessels, there is a further possibility. As an alternative to annual light dues, vessels “assigned to regular international transshipment services” are given the choice to pay a “one call” light duty amounting to one twelfth of the annual fee.

To complete the description of the rather complex and intricate mechanisms to calculate the amount of light dues, the relevant regulations provide for the possibility to put foreign and national vessels on the same level. A list of the countries entitled to such equal treatment is attached to the regulation.

In the absence of such recognition, payable dues shall be twice the amount of those applied to national vessels and there is no possibility of opting for an annual fee; however, in practice most maritime countries are entitled to this recognition, which reduces the relevance of this clause.

Table 7 summarises all the above for the main types of vessel with NT exceeding 350.

#### 4.2. Specific aspects relating to light dues in Italy, with a focus on the port of Trieste / *Specifični aspekti koji se odnose na naknade za upotrebu objekata sigurnostiplovidbeu Italiji s fokusom na luku Trst*

First of all, as already noted, the regulatory references and the method of calculation are extremely complex. The legal framework is considerably vast and stratified (at least 11 different regulations are involved); the laws setting out light dues and the

Table 6 Reduction coefficients of the taxable net tonnage according to type of vessel  
*Tablica 6. Redukcijski koeficijenti oporezive neto tonaže prema tipu broda*

A	Liquid bulk cargo vessels	0.98
B	Dry bulk cargo vessels, general cargo vessels with one or more decks with whole between-deck spaces, one-deck cellular container ships, reefer vessels	0.99
C	General cargo ships with two or more decks with open between-deck space	
	for GT below 4 000	0.37
	for GT above 4 000	0.90
D	Cellular container ships with two or more decks, livestock vessels	0.54
E	Ro-Ro ships, ferries, unitized cargo vessels, car vessels	0.34
F	Passenger ships	0.99
G	Fishing vessels	1.00
H	Support vessels	0.71

Source: Decree n°18/03/1988

Table 7 Light dues, value in EUR/NT by validity period and type of vessel (national or equivalent)

*Tablica 7. Naknada za upotrebu objekata sigurnosti plovidbe, vrijednosti u EUR/NT-u po važećim razdobljima i tipu broda (nacionalni ili ekvivalent)*

		Container vessels	Tankers	RoRo	Bulk carriers and General cargo vessels*
One call (transshipment)	between EU ports	$(0.7235 \text{ EUR} \times 0.99)/12 = 0.06 \text{ EUR}$	not provided for in the legislation		
	non-EU O/D	$(2.2861 \text{ EUR} \times 0.99)/12 = 0.19 \text{ EUR}$			
Monthly	between EU ports	$0.2026 \text{ EUR} \times 0.99 = 0.20 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.98 = 0.20 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.34 = 0.07 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.99 = 0.20 \text{ EUR}$
	non-EU O/D	$1.0418 \text{ EUR} \times 0.99 = 1.03 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.98 = 1.02 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.34 = 0.35 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.99 = 1.03 \text{ EUR}$
Annual	between EU ports	$0.7235 \text{ EUR} \times 0.99 = 0.72 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.98 = 0.71 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.34 = 0.25 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.99 = 0.72 \text{ EUR}$
	non-EU O/D	$2.2861 \text{ EUR} \times 0.99 = 2.26 \text{ EUR}$	$2.2861 \text{ EUR} \times 0.98 = 2.24 \text{ EUR}$	$2.2861 \text{ EUR} \times 0.34 = 0.78 \text{ EUR}$	$2.2861 \text{ EUR} \times 0.99 = 2.26 \text{ EUR}$

Note: \*Class B

Source: Data based on relevant Italian regulations

<sup>2</sup> DPR 107/2009, regarded as the latest legislation on light dues, makes reference to the “regulations in force on vessel tonnage”, i.e. decree n° 18/3/1988 by the Minister of the Merchant Navy, published in O.J. n° 82 of 8/4/1988.

relevant changes and updates never provide a simple and clear representation in the form of a table (like in the case of Table 7 herein), but instead long and convoluted descriptions with frequent and not readily comprehensible references to one law or another.

Furthermore, the variables on which to calculate the dues are very numerous, as has become apparent, and reference is made to totally different parameters, such as size (NT); validity period of the dues paid; type of navigation; type of vessel; type of service provided (transshipment or other); presence, if any, of cargo on deck; flag. Moreover, these variables tend to overlap unevenly. For instance: the regulation allowing the payment of light dues on a "one call" basis only considers transshipment operations and, therefore, only concerns one type of vessels, i.e. container ships. The presence, if any, of cargo on deck, involving the levying of a berthing surcharge, only concerns vessels sailing outside the EU, etc.

The structure of light dues is such that some types of traffic may benefit more than others (like in the case of the port of Trieste), without this being necessarily ascribable to any specific parameter or objective, as the result is mainly due to a combination of variables defined by the legal framework and the types of services provided by vessels.

Ro-Ro ships calling at the port of Trieste, for instance, enjoy a considerably high reduction coefficient (Ro-Ro ships, in fact, pay 34% of the basic charge). Since they mainly provide "regular" services in shuttle mode, the same vessels will call at the same port, thereby offering the opportunity to pay light dues on an annual basis. Oil traffic, besides enjoying limited reduction coefficients (98% of the basic charges is paid), despite being a regular service, uses different vessels. The result is that, even when light dues are paid on an annual basis, the advantage is much smaller than when vessels are shuttling.

Lastly, container ships have, per se, low reduction coefficients (99% of dues is paid), but if transshipment operations are carried out (vessel-to-vessel), thanks to the special advantage that the Italian law grants to this type of traffic, vessels can pay only one twelfth of the rate according to the "one call" formula. In this case, however, no bonuses relating to the period of validity can be applied. The opportunity for a ship to be classified as a transshipment vessel depends on the maritime agent's statement, always subject to the potential supervision of the maritime authority.

All the above means that, at a port like Trieste, the amount obtained from tankers is considerably higher than that collected from other vessel categories: the revenue from tankers accounts for about 80% of total revenues, in comparison to other types of traffic, including the intermodal ones (e.g. 15% from container ships and 1.3% from Ro-Ro vessels), although also these vessel categories make considerable use of the port.

The revenue from light dues is defined, as has been mentioned, by a national legislation originally drafted for all ports from the point of view of the State Inland Revenue: in this regard, originally the structure of light dues was not pursuing specific objectives for each individual port.

On transferring the revenue to the port authorities, however, the consequences of the duty structure are no longer as neutral as they used to be in terms of competitive effects on ports.

As an example, suffice it to think of the case of vessels coming from abroad, for which the regulations require that

dues be settled at the first Italian port called along their routes. This means that, for multiple-port routes (like the routing of some container services calling at the North Adriatic ports), the Port Authority that will benefit the most is that which will act as "the first port", often as a result of decisions totally independent from the ports' merits or demerits.

On the other hand, it can hardly be stated that light dues are not substantially relevant, from the point of view of both the impacts on the choices of economic players and the port authorities' balance sheets. About this last point, by now light dues have become a significant component of ports' self-funding. Just to mention the case of Trieste, in this city in the past six years light dues have accounted for 23% of the Port Authority's total current revenue.

## 5. COMPARATIVE OVERVIEW / *Komparativni pregled*

Table 8 and table 9 show for the three national settings a comparison of the taxation structure and of the values of the fee for the main and most common categories of ships.

The compared description of taxes of the "light dues" type in the ports of the North Eastern Adriatic belonging to three different states of North Adriatic has highlighted considerable differences, starting from the actual tax structure. Not only calculation units are different (GT or NT), but there are also differences in managing important elements such as the "on deck" containerised cargo, the flag or the type of function (transshipment). In general, the Italian taxation is the most complex and structured one.

This can be clearly inferred from Table 8.

The considerable difference of the actual taxation values resulting from the implementation of tax rates can also be inferred from Table 9, which summarises the information on the calculation parameters for the dues.

The table clearly highlights the complex structure of the Italian model, in comparison with the much clearer and simpler system of the other two countries.

## 6. CONCLUSIONS / *Zaključci*

In principle, the freedom of taxation (in the hands of the national administrations and, partly, at least in Italy, of the Port Authority of Trieste) is a well known factor which can legitimately lead to marked differences in the final outcome of taxation.

In the case of light dues, however, one may wonder whether such evident differences between countries of the same geographical region (not only in terms of the amount of the dues per se, but especially in the way they are calculated or levied), are just a secondary element, which does not interfere with trade decisions and with a transparent and streamlined context for port competition.

The question seems to be relevant especially when close ports compete (at least partially) for the same hinterland, as is the case of Northern Adriatic Sea.

A previously mentioned recent work on port charges in Europe (2017) provide a general picture of the issue at European level. However, more focused economic analysis of competition between the ports in cross border regions should be carried out, in order to understand better, on the "regional" level, how institutional factors actually influence port competition frameworks, especially when close ports belong to different legislative contexts.



Table 8 Comparison of the structure of the three taxes  
 Tablica 8. Usporedba strukture triju pristojbi

		Italy	Slovenia	Croatia
Base unit		Net Tonnage	Net Tonnage	Gross Tonnage
Other units		CV (KW)	DWT; KW	DWT; KW
Possibility of exemptions		YES	YES	YES
Is cargo on deck or on superstructures taxed?		YES (only for extra EU navigation)	NO	NO
Other differentiations (in terms of final amount)	Type of ship	YES	YES	YES
	O/D EU/EXTRA EU	YES	NO	NO
	Flag	YES	NO	NO
Types of payment possible	One call	YES (only container ship; in transshipment)	YES (only cruise ships)	NO
	30 days	YES	YES	YES
	12 months	YES	YES	YES
Body for checking		Port Captaincies - Coast Guard	Slovenian Maritime Administration	Ministry of Sea, Traffic and Infrastructure
Body for collection		Customs Agency	Slovenian Maritime Administration	Plovput Split, limited liability Co
Beneficiary		Port Authorities	Republic of Slovenia	Republic of Croatia

Table 9 Comparison of the main fee amounts collected through the three taxes  
 Tablica 9. Usporedba glavnih iznosa pristojbi prikupljenih putem triju pristojbi

Nation	Base Unit	Duration	O/D		Container vessels	Tankers	Bulk carriers and General cargo vessels	RoRo	
ITALY	Net Tonnage	One call (transshipment)	between EU ports		$(0.7235 \text{ EUR} \times 0.99)/12 = 0.06 \text{ EUR}$				
			non-EU		$(2.2861 \text{ EUR} \times 0.99)/12 = 0.19 \text{ EUR}$		not provided for in the legislation		
		Monthly	between EU ports	NT > 350	$0.2026 \text{ EUR} \times 0.99 = 0.20 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.98 = 0.20 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.99 = 0.20 \text{ EUR}$	$0.2026 \text{ EUR} \times 0.34 = 0.07 \text{ EUR}$	
			non-EU		$1.0418 \text{ EUR} \times 0.99 = 1.03 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.98 = 1.02 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.99 = 1.03 \text{ EUR}$	$1.0418 \text{ EUR} \times 0.34 = 0.35 \text{ EUR}$	
		Annual	between EU ports		$0.7235 \text{ EUR} \times 0.99 = 0.72 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.98 = 0.71 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.99 = 0.72 \text{ EUR}$	$0.7235 \text{ EUR} \times 0.34 = 0.25 \text{ EUR}$	
			non-EU		$2.2861 \text{ EUR} \times 0.99 = 2.26 \text{ EUR}$	$2.2861 \text{ EUR} \times 0.98 = 2.24 \text{ EUR}$	$2.2861 \text{ EUR} \times 0.99 = \text{€}2.26$	$2.2861 \text{ EUR} \times 0.34 = 0.78 \text{ EUR}$	
SLOVENIA	Net Tonnage	Monthly			0.35 EUR	0.35 EUR	0.35 EUR	$0.35 \text{ EUR} \times 0.50 = 0.175 \text{ EUR}$	
		Annual			0.85 EUR	0.85 EUR	0.85 EUR	$0.85 \text{ EUR} \times 0.50 = 0.425 \text{ EUR}$	
CROATIA	Gross Tonnage	Monthly		GT ≤ 40,000	0.22 EUR	0.49 EUR	GT ≤ 30,000	0.48 EUR	
				GT > 40,000	0.10 EUR		GT 30,001–50,000	0.43 EUR	0.35 EUR
		Annual		GT ≤ 40,000	1.00 EUR		GT > 50,000	0.37 EUR	
				GT > 40,000	0.55 EUR	1.64 EUR	GT ≤ 30,000	0.16 EUR	1.17 EUR
					GT 30,001–50,000	1.43 EUR			
						GT > 50,000	1.23 EUR		

Note: \* – Ship without NT or deadweight indication

In addition, analysis on the “weight” of every single cost element in total cost structure should be developed to completely understand the impacts of possible, although not necessarily compulsory, harmonization policies.

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