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TONNAGE TAX REVISITED: THE CASE OF GREECE DURING A SHIPPING CRISIS AND AN ECONOMIC CRISIS PERIOD

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ABSTRACT

The research investigates the relative position of the Greek tonnage tax system internationally. The authors point that despite the regulatory framework remaining unchanged - since Greece was the first traditional maritime country to introduce this regime in the 1970s - total taxes paid by Greek shipping companies increased by almost tenfold since the start of the Greek economic crisis. Next, they investigate the sources and mechanisms for this rise pointing a. at the impact of voluntary commitments undertaken by the Greek ship-owning community in the period of the economic adjustment programs and b. at the extension of the tax base. Next, they analyze the comparative tax burden on specified vessel types under the Greek, EU and non-EU tonnage tax regimes. The analysis reaffirms that, while shipping tax regimes have converged internationally, there are still differences in the tonnage tax bill according to alternative principles. The paper concludes that while the Greek system is considered traditionally as favorable for companies, it has become less so in terms of international comparisons in recent years, favoring, however, state revenues through the shipping crisis since 2008. The authors suggest that tax incentives to ship-owning companies can vary according to whether maritime clusters, fleet competitiveness, short-term tax receipts or long-term tax receipts are selected as optimization target and point to areas of further research.

Keywords: Tonnage tax, ship taxation, Greek shipping, shipping fiscal impact.

JEL Classification: H25, E63, R40, O57

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1. Introduction

A unique characteristic of the shipping industry is the mobility of the industry's main asset, the vessel, and the fact that a ship can be registered almost anywhere in the world, due to the existence of the so-called open registries as classified by OECD. The abundance of flag alternatives - which have proliferated since the first modern version of this type of registry during the American prohibition - has progressively weakened the strength of the link between the ship-owner and the sovereign country of ownership. Against this background, the traditional maritime nations have experienced a decrease in their nationally registered fleet to the benefit of the open registries. Today, the world fleet is currently flagged-out by more than three quarters, which corresponds to the situation of the fleet under Greek ownership as well (UNCTAD, 2018).

The decision of ship-owning entities to choose or change registry depends on various parameters such as crewing requirements, taxation, mortgage regimes etc. The traditional maritime nations' reaction to the flagging-out development was *inter alia* the adoption of taxation systems similar to these of the open registries, aiming at attracting or retaining the national fleet. Nowadays, the tonnage-based corporate tax system (thereafter tonnage tax system) is used as the main regime for taxing the shipping activities especially ocean-going ones. It started to gain ground in traditional shipping nations since the late 20th century not only as a way to restore the level playing field and averting the continuation of flagging-out of vessels but, more importantly in order to preserve shipping cluster activities which may or may not be directly correlated with vessel registration as well.

Greece was the first traditional maritime nation to introduce this tax regime in the 1970s. Despite the official legal framework remaining unchanged in the decades that followed, the total amount of taxes paid by Greek shipping companies increased by almost tenfold since the start of the Greek economic crisis. This development was mainly the result of voluntary commitments undertaken by the Greek ship-owning community in the context of economic adjustment programs that successive Greek governments had to implement following agreements with lender governments and intergovernmental institutions (e.g. ESM) under the close monitoring of the

European Commission and the IMF. Amidst both crises, shipping and economic, the European Commission requested from Greece to amend specific provisions of the shipping tax Law 27/1975 following an enquiry it had initiated in 2011; this resulted in the tax imposition base being increased although the basic principle of the Greek shipping taxation regime remained the same.

This development apparently impaired the comparative advantage of the Greek flagged vessel in terms of taxation, especially as it occurred amidst depressed freight markets which had significantly reduced shipping companies' earnings. However, the ability to budget more or less fixed paid-out costs - regardless of the state of the freight market - seems to still make the system preferable to alternatives which may provide cash relief during low markets but deduct liquidity during market peaks; hence, there has been a stated preference by the ship-owning community for the preservation of the status-quo.

This paper investigates the comparative position of the leading ship registries and their respective tonnage tax system with a special focus on the Greek-controlled fleet, analyzing also the recent course of Greek tax revenues during the years of the economic adjustment programs. In this context, the research is both an update and an extension of Marlow and Mitroussi (2008). Firstly, the authors update the tonnage tax calculations based on the current framework and, secondly, they extend the research by including a greater number of tonnage-tax regimes reflecting the current structure of the global and EU fleet. The authors assess next the development in the corporate tax burden of shipping companies operating in Greece comparing them with other tonnage tax regimes, showing the evolution of the comparative position of the former and discussing the development of its contribution to state revenues and the main causes for its increase.

The main paper is organized as follows. The next section presents the literature review of tonnage tax including the classification of the various related regimes. In section 3, we present recent developments in the registration of the Greek and the world fleet. Section 4 summarizes the basic developments of the Greek tonnage tax regime and the course of Greek shipping tax revenues over recent years. In Section 5, we present the data and the methodology used for specific tonnage tax

international comparisons while the results of the comparative analysis are presented in Section 6. The paper concludes with a summary of key policy implications and suggestions for further research.

2. Literature review on tonnage tax

In the 1960s and - especially - in the 1970s, the flagging-out of vessels from traditional maritime nations to the so-called open registries (often termed then Flags of Convenience) attracted scholarly attention. This research interest was both in the context of developments in the International Division of Labour Shipping (Thanopoulou, 1995) and in terms of the use of these registries in the context of shipping competitiveness (Thanopoulou, 1998). A main aspect related to vessel registration was the tax burden and eventual investment incentives provided by traditional maritime nations as discussed for instance in Gardner and Marlow (1983) and Marlow (2002).

The introduction of tonnage tax systems by the EU maritime nations since the late 1990s attracted further scholarly attention especially regarding the potential of EU tonnage tax regimes for limiting flagging-out or even for reversing past trends (Leggate and McConville, 2005).

Greece was the first traditional shipping country to introduce the tonnage tax system in the 1970s and its shipping tax regime remained unchanged in the subsequent decades. The advantages of the tonnage tax system can be summarized as follows (Matsos, 2009):

a. *Simplicity*: There is limited need for documentation and vouching as the taxation is based on the size and – in some cases – the age of vessel. This also facilitates the tax authorities as they do not need to dedicate resources for the computation of the tonnage tax.

b. *Certainty*: Due to the simplicity of the system, there can usually be little ground for disputes on the amount of tax; similarly there is no eventual ground for penalties related to not reporting revenues.

c. *Stability of tax payments/ revenues*: For the ship-owners, the amount of taxes is pre-determined and thus can be treated as an operating cost. For the tax authorities, it provides revenue with minimal variations over time.

d. *Level playing field and transparency*: Tonnage tax allows comparison of the tax burden among different regimes and it restores a state of equality between the traditional and the open registry tax regimes.

The tonnage tax is not levied on corporate profits of the ship-owning company. It is based on the size and – in some cases – on the age of the vessel owned/operated by the shipping company. Tonnage tax systems can be broadly divided into two types (Marlow and Mitroussi, 2012; PwC, 2015):

1. *Greek model*: The tax is calculated per unit of tonnage (in Greece, for example, in US dollars on the basis of the gross tonnage of the vessel, GT). The annual tax is determined as the product of the tax per ton and the total tonnage of the vessel, taking into account some discounts due to the age of the ship etc. This model - in variants - is followed also by Malta, Cyprus and the open registries.

2. *Dutch model*: The first step for the calculation of the tax is the determination of a notional amount of profit per day and per unit of capacity, usually on the basis of the net tonnage. The annual profit is the product of the above-mentioned profit per day multiplied by the working days of the ship and its tonnage. The tax is then calculated on the basis of the applicable corporate tax rate on notional annual profits. This model is followed also by Germany, the United Kingdom, Ireland and others.

The ship-owning company's decision to register its vessel under a specific flag depends *inter alia* on the fiscal regime and the respective tax burden, as the latter is related to the cost- competitiveness quest of the shipping company. On the basis of the qualitative analysis of UK based companies, fiscal reasons were ranked 5th among important factors for the companies using foreign flags (Bergantino and Marlow, 1998) after crew costs, bureaucratic control, availability of skilled labour and cost for compliance.

Marlow and Mitroussi (2008) evaluated the present value of tonnage taxes across 5 regimes, i.e. the UK, the Netherlands, Greece, Panama and Liberia. Their estimations were based on a newly built vessel in 2007, which would remain registered for 15 years. They also employed five vessel types (a bulk carrier, a tanker, two container ships and a VLCC) and three different discount rates (5%, 10% and 15%). Based on their calculations, the aforementioned tonnage tax regimes were ranked according to the present value of tonnage taxes in each one. On the basis of their results, it was shown that Panama was the cheapest choice in all five cases. The UK was the most expensive in all but one case (bulker of 75,499dwt) with Greece being the most expensive tonnage tax regime in this case. However, Greece was ranked between the open registries and the traditional flags in two out of the five cases (i.e. a tanker of 103,622 dwt and a containership of 5,400TEUs). In the remaining two cases (i.e. containership of 8,000 TEUs and VLCC of 297,700 dwt), the Greek tonnage was the second cheapest followed by the Liberian one. As the Greek tonnage system is age-dependent as well, the calculations were repeated for a 15-year old vessel entering the register. In two cases, the ranking of the Greek tax system deteriorated: a. in the case of a 5,400 TEUs containership, where it was shown to be the most expensive and b. in the case of the VLCC, where it was demoted by one position. The overall conclusion was that the Greek tonnage tax was – in general – ranked in the middle, apart from exceptions.

Kavussanos and Tsekrekos (2011) analyze the flag decision in the economic framework of a company under uncertainty; they consider it effectively as a switching option under uncertainty. They also provide an analytical framework for the level of operating profitability (including tonnage tax) difference that will lead a shipping company to flag-out from the national flag, i.e. the switching thresholds. As far as the tonnage tax regime is concerned, they show that the higher the tax benefit for switching to a flag of convenience, the lower the switching threshold level for flagging out.

Merika, Triantafyllou and Zombanakis (2019) modeled net receipts from shipping in the Greek balance of payments and labor cost competitiveness by the use of a system of simultaneous equations, employing the Generalized Method of

Moments. Their results show negative relationship between competitiveness and a. the net receipts from shipping services and b. the size of the Greek-registered fleet. Moreover, they have investigated the impact of the tonnage tax on the latter two variables. They show that the tonnage tax revenues are negatively correlated with net shipping receipts. They get similar results when the use the tonnage tax per vessel capacity (tonnage tax rate) and a dummy variable for the regime swift in the post-2013 period. Finally, they show that the impact of a change in the tonnage tax and the tonnage tax rate is negative on the Greek-flagged fleet.

3. The Greek and EU fleet

The Greek controlled fleet is the largest among the other world maritime nations representing approximately 16% of the world fleet in dwt terms. However, only a portion - amounting to around 20% in 2018 (no. of vessels) - is registered under the Greek flag. While two EU registries (i.e. Malta and Cyprus) represent together 25% of the Greek controlled fleet, [1] Liberia and Marshall Islands represent each another 17%. Since 2005, when the Greek-registered fleet represented almost 30% of the Greek-controlled fleet, the share of the Greek flagged fleet has been steadily decreasing while the registries of the Marshall Islands, Liberia and Malta have increased their share in the total (see Figure 1).

[Insert Figure 1 here]

The analysis of the flag registration of the EU-owned fleet provides us with a similar picture: Liberia, Marshall Islands and Malta are the leading registries with a share of around or more than 10% each, while Panama, Cyprus and Greece hover around 5% each (Figure 2).[2]

[Insert Figure 2 here]

[1] The Greek-controlled fleet in the total of EU-owned tonnage amounts to more than 40% in terms of number of vessels and around 46% in dwt/gt terms.

[2] The ranking of countries does not change significantly if the analysis is performed on the basis of dwt rather than on number of vessels.

4. The Greek tonnage tax and Greek shipping tax revenues

In broad terms, the following categories of tonnage tax Greek tax revenues have evolved over the period reviewed.

1. Greek Tonnage tax of Greek flagged vessels: Since the 1970s, tonnage tax is the only option for Greek-flagged vessels as there is no alternative taxation method. Law 27/1975[3,4] distinguishes two categories of vessels: the first category predominately refers to vessels of more than 3,000 GT and the second category to all other vessels. The tax in the first category vessels is calculated in USD as per the tax brackets, rates and the age coefficients presented in the Appendix. According to set practice, every five years there is an increase of 4% p.a. in the tax rates per GRT.[5] On average, the annual revenues in recent years are estimated at around 15 million euros. Any changes in the size of the Greek-flagged vessel and/or on the EUR/USD exchange rate could affect total EUR denominated tonnage tax revenues.

2. Tonnage Tax on foreign flagged vessels operated by companies based in Greece: In 2013, foreign-flagged vessels operated by companies based in Greece became also subject to tonnage tax. The calculation of the tax was made with the same tax brackets, rates and age coefficients as for the Greek-flagged vessels. However, any tonnage tax (or any similar charge) paid in the flag country of the foreign-flagged ship under Greece-based management was to be deducted.[6] As a result, since 2013, in terms of tax receipts there is a net difference between tax receipts from Greek-flagged vessels and those of foreign-flagged vessels managed from Greece with the overall tax burden remaining, however, the same for both vessel categories. The additional annual revenues from this measure are estimated at around 40 million euros.

[3] It is noted that Chapters A to D of Section A of this Law, which set out the taxation procedure (criteria, rates and scales) and respective deductions, enjoy a supra-legislative status pursuant to Article 107 of the Greek Constitution on the protection of foreign capital.

[4] The tonnage tax scheme and the other tax reliefs of Law 27/1975 have been subject of an investigation by the European Commission from the end of 2011 regarding their compatibility with the Community guidelines on State aid to maritime transport.

[5] For the five-year period 2016-2020, see Law 4336/2015, Subparagraph D4.

[6] Law 4110/2013 Article 24, which amended Article 26 of Law 27/1975.

3. The Voluntary contribution of the shipping community[7] to the Greek state was concluded in the summer of 2013, in the form of a Memorandum of Understanding. The initial memorandum duration was agreed to be three-years (2014-2016) and was then extended for one year twice, effectively becoming an agreement over five-years (2014-2018). [8] The voluntary contribution was calculated by applying the same tax brackets, rates and the age coefficients for Greek–flagged vessels and covered both Greek and foreign flagged ships[9] of companies - 478 in number according to the initial memorandum - that became parties to the agreement. Essentially, shipping companies paid a double tonnage tax: once on the basis of the two above-mentioned tonnage taxes and a second time on the basis of the voluntary contribution. The additional annual revenues from this measure are estimated at around EUR 50 million, with more than 90% of the capacity of the Greek-owned fleet opting into the voluntary service program.

4. Voluntary "perpetual" contribution of 10% shipping company dividends remitted: Recent developments resulted in the voluntary contribution, which ended in 2018, being replaced by a voluntary "perpetual" contribution of 10% shipping company dividends remitted in Greece through a new agreement – on a voluntary basis again – concluded between the Greek government and the shipping community. The form of this agreement relates to the taxation of the profits remitted to Greece at 10% with a target annual amount of 40 million euros. The new agreement was ratified by Law 4607/2019 and is of indefinite duration starting in 2019. It was endorsed by 530 companies which cover an overwhelming share of the total of shipping companies operating in Greece of which there were fewer than 600 in 2017 (Petrofin Research, 2018). This measure will impact mainly on individuals receiving dividends while the voluntary contribution was "levied" on the basis of the tonnage owned by a ship-owning company; thus it is more akin to taxation systems based on revenues/profits.

[7] The agreement took the form of a voluntary contribution so as to avoid legal issues stemming from the supra-legislative status of specific articles of Law 27/1975.
[8] It was ratified by Laws 4301/2014 and 4484/2017.
[9] It is noted that for the purpose of calculating the voluntary contribution for ships with a foreign flag, the tonnage tax (or any similar charge) paid in the flag country of the ship under management is not deducted.

[Insert Figure 3 here]

The impact on the last two measures on the Greek tax revenues from shipping[10] is evident in Figure 3. Before the Greek-sovereign crisis in 2010, shipping tax revenues amounted to about 14 million euros, increasing to around 48 million euros in 2013 after the adoption of the tax on vessels managed from Greece as well and reaching the level of around 120 million euros in the 2015-2018 period, after the adoption of the voluntary contribution. Therefore, the total tax revenues stemming mainly from the ship-owning companies increased by more than 800%. It must be noted that this development took place in a crisis period which, especially after 2015, was marked by very depressed levels of freight rates.

Taking into account the new voluntary contribution, tax revenues from shipping are expected to remain at this level, with changes stemming from the size of the Greek-flagged fleet, the size of the foreign-flagged vessels managed from Greece, the EUR/USD exchange rate and the customarily increase of 4% p.a. in the rates of the tonnage tax.

5. Methodology

5.1 Data

The tax rates and brackets in the year 2018 for the Greek and other regimes are collected by the respective Ministry of Finance or Ship Registration Authority (see Appendix). In our research, we compare the tonnage tax regimes across traditional EU maritime nations (Greece, Germany, the Netherlands, the UK), new 2004 EU member states (Cyprus and Malta) and main open registries in the world fleet (Panama, Marshall Islands and Liberia). As it was previously indicated, the Greek-controlled fleet and the EU beneficial owned fleet are widely registered in the aforementioned registries. The UK case attracts further interest as in the event of a

[10] The total Greek tax revenues from shipping include also the *Contribution (tax) on incoming remittances of ship cluster companies*, *other than ship-management (e.g. shipbroking)*. This contribution was initially ranging from 3%-5% (later 5%-7%) and was introduced in 2013 also as temporary measure, initially for 2012-2015 but extended throughout 2016-2019, adding tax revenues of around 4-5 million euros. By Law 4607/2019, this measure became permanent.

post-Brexit era emerging in the near future, this country will not be binding by the Community guidelines on State aid to maritime transport anymore.

5.2 Methodology

A case study approach is used in this research; at least one vessel per main market (dry bulk, tanker, container and LNG) is selected. The size and age of each vessel have been set to be representative of the respective characteristics of the Greek-owned fleet. The technical characteristics correspond to those of actual vessels (see Table 1). A sensitivity analysis is performed in relation to the age of the vessels, using a younger vessel (of up to 4 years) and an older one (of 15-years) in order to assess the effect of age within those registries that provide discounts for younger vessels (e.g. Greek flag).

[Insert Table 1 here]

6. Analysis and findings

Our analysis shows that for all types of vessels compared - with the exception of the VLCC case - the tax burden in the main international open registries and the new EU countries clusters around similar levels. It is though surprising that the UK tonnage tax ranks in the sixth position, becoming the more tax competitive tonnage tax regime among the traditional EU sea nations. With the exception of the containership case, where the Greek tonnage tax provides for a 50% tax discount, and the VLCC case, mainly due to the size of the vessel, the Greek tonnage tax burden is the highest among the countries under review. When we compare our results to those of Marlow and Mitroussi (2008), we identify a number of striking findings (see Figure 4 and Table 2):

1. Broadly speaking, the ranking of Panama and Liberia remained unchanged. Marlow and Mitroussi (2008) have not included in the study the registry of Marshall Islands; however, the ranking of the latter closely follows that of the other two open registries. This is also true if in the VLCC case, we apply Plan B of the Marshall Islands tonnage scheme, with the initial registration fees for a VLCC being lower under the Plan B compared to Plan A offered by that registry.

2. Having included in our study the registries of two newer EU member states, it becomes evident that their ranking as well as the absolute value is also close to that of the open registries. This is an indication of the role that the registries of Malta and Cyprus may have played in retaining EU vessels under EU flags.

3. The ranking of the UK has improved significantly. From being – generally – the most expensive registry, it is now close to average. This development is closely linked to the corporate tax rate. In 2008, the UK corporate tax rate was at 30% while today is at 19%. A similar development is also evident for the Dutch registry where the corporate tax rate decreased from close to 30% in 2008 to 20% in 2018.[11]

4. The situation of the Greek tonnage tax has deteriorated significantly, as it became one of the most expensive EU flags comparable only to the German one. In general, the tonnage cost of the Greek flag is twice more expensive compared to that of the UK or the Netherlands. The only exception is the liner-container sector due to the 50% discount in the tonnage tax for container ships.

[Insert Figure 4 here]

[Insert Table 2 here]

When analyzing the results for the 15-year old vessels the findings are similar (see Figure 5 and Table 3).

[Insert Figure 5 here]

[Insert Table 3 here]

In addition:

a. The tax bill for those systems that employ age dependent criteria (Malta and Greece) increases.

b. The Greek tonnage tax system, with the containership exception, is the most expensive among the ones examined. Another striking issue relates to tonnage tax for LNG vessels; this is also five times more than that of other regimes and double of that in the German system. The reason for this deviation, relates to the high GT/NT

[11] For taxable profits above 200,000euros, the corporate tax rate is 25%.

ratio (see Table 1) of the LNG vessels and the fact that the Greek tonnage tax is based on gross tonnage. For younger vessels, this issue is disguised by the age-reduction coefficient.

Summing-up, the Greek tonnage tax burden (excluding voluntary contributions[12]) is among the highest among both EU and main non-EU (i.e. Liberia, Panama and Marshall Islands) regimes. The tax burden is further increased for older vessels, as the structure of the Greek tonnage tax penalizes them.

7. Conclusions: policy implications and further research

Our analysis showed that the ranking of the Greek tonnage tax system has deteriorated since 2008, as the corporate tax rates in the UK and the Netherlands, two traditional EU sea nations, decreased significantly. Against this background the key implications for policy makers is the fact that Greek shipping companies face a tax comparative disadvantage vis-à-vis those companies established in other tonnage tax fiscal regimes (EU or non-EU). This could have negative effects on the local maritime cluster. Moreover, the fact that the Greek tonnage tax is based on gross tonnage rather than on the net tonnage penalizes vessels with high GT/NT ratio such as the LNG which is a high growing shipping sector. For addressing this, the Greek state could provide a tonnage tax discount for LNGs similar to that provided to containership vessels.

In addition, the tonnage tax system penalizes older vessels; this is an incentive for fleet replacement promoting environmental protection, if not competitiveness itself as older tonnage may be marginalized outside market peaks. Overall, tonnage tax may be allowing less reliance on debt-financing by increasing equity through retained profits. As such, it may be allowing to sustain the shipping base of a maritime cluster and thus maximize the tax base in the long-term.

Overall, the research verdict on the preferred regime remains open according to policy priorities. Policy stability may, however, be playing a key role - appreciated

[12] For the period 2014-2018, if the voluntary contribution was considered, the comparative tax disadvantage becomes even higher.

and encouraged by industry and policy makers respectively - to maintain the vigor of the local maritime cluster.

Lastly, there seems to be reasonable ground to suggest that, on the one hand, tonnage tax may be practical for cash-flow projections; on the other hand, however, it may be encouraging over-investment - this “endemic tendency” of the shipping markets as termed by Metaxas (1971) - by increasing liquidity during peak markets. In a further research perspective, this last point may be acquiring a greater significance as the future may be less shipping intensive in terms of volume and distance but more capital intensive in view of the technological transformation of the industry in both hardware and software terms (Thanopoulou, 2019).

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Appendix

Tonnage-based corporate tax regime:

In the tonnage–based corporate tax systems (of the Greek type or largely inspired by it), tax is calculated directly on the basis of the size of the vessel in terms of net or gross tonnage. The fee (in EUR or USD) per ton is multiplied by the size of the vessels. There may be regressive fee brackets (to avoid penalizing large vessels) and discounts for younger vessels.

4.1 Greece

The tonnage tax is levied on ships flying the Greek flag in accordance with Law 27/1975. According to the usual practice, every five years an increase of 4% p.a. in the tax rates per ton is set. For the calculation, the GT size of the vessel is multiplied in each bracket by the respective coefficients, which have a regressive structure (i.e. the larger the vessel, the smaller the coefficient in the bracket). Then, the outcome of step A is multiplied by the respective age dependent rate in USD (Step B). In the Greek case, younger vessels (up to 5 years) enjoy a significant discount. This description excludes the 2013 extension of the regime to Greek-owned and foreign flagged vessels and the subsequent voluntary arrangements.

Table A.1 – Summary table of Greek Tonnage tax rates and age adjustment rates (2018)

Step A		Step B	
Gross (registered) Tonnage (a)	**Co-efficient**	**Vessel Age**	**USD/grt (Age dependent)**
100-10,000	1.2	0-4	0.458
10,001-20,000	1.1	5-9	0.821
20,001-40,000	1.0	10-19	0.804
40,001-80,000	0.45	20-29	0.760
80,001+	0.20	30+	0.588

Source: Law 27/1975 and Independent Authority for Public Revenues.

(a) GRT was the norm then.

4.2 Cyprus

The Cypriot tonnage system was approved by the European Commission in 2010. The tonnage tax is defined on the basis of the vessel's net tonnage. Owners of Cyprus flagged vessels are automatically subject to the Cypriot Tonnage tax. In our calculations, we have also included the Cyprus Registry Maintenance Annual Fee that amounts to 300 euros.

Table A.2 – Summary table of Cyprus tonnage tax rates

Net Tonnage	EUR/100 nt
0-1,000	36.50
1,001-10,000	31.03
10,001-25,000	20.08
25,001-40,000	12.78
40,000+	7.30

Source: Cyprus Department of Merchant Shipping, Ministry of Transport, Communications and Works.

4.3 Malta

The Maltese tonnage tax system is based on the vessel's net tonnage. The rates per ton are subject to reduction or increase depending on the age of the vessel (i.e. vessels younger than 10 years receive a reduction of up to 30%, while vessels older than 15 years attract an increase of up to 50%). In addition, there is an annual fee of 1,095 EUR from the second year of registration onwards. The latter is included in our calculations.

Table A.3 – Summary table of Maltese Tonnage tax rates and age adjustment rates

Net Tonnage	EUR/nt	Vessel Age	Age adjustment
0-2,500	1.000 euros	0-5	-30%
2,500-8,000	0.40	5-10	-15%
8,000-10,000	0.19	10-15	-/-
10,000-15,000	0.14	15-20	5%
15,000-20,000	0.12	20-25	10%
20,000-30,000	0.09	25-30	25%
30,000-50,000	0.07	30+	50%
50,001+	0.05		

Source: Transport Malta.

4.4 Liberia

The Liberian tonnage tax is based on net tonnage and it amounts to 0.10USD per net ton plus a fixed fee of 3,800 USD

Table A.4 – Summary table of Liberian tonnage tax rates

Net Tonnage	USD/nt
-/-	0.10
Plus	3,800USD

Source: Liberia Maritime Authority - Consolidated List of Fees and Charges.

4.5 Marshall islands

The Marshall Islands Registry provides two options for tonnage tax. Plan A which is the traditional system with annual tonnage tax per net tonne of 0.20USD, and a Plan B with a higher (though declining) initial registration fee and regressive (based on vessel size) annual tonnage tax per net ton (from 0.20USD to 0.125USD per net ton). In our analysis, we used Plan A with the exception of the VLCC, in which Plan B was used as the initial registration fees for a VLCC is lower under the Plan B

Table A.5 – Summary table of Marshall Islands tonnage tax rates

Plan A		**Plan B**	
Net Tonnage	**USD/nt**	**Net Tonnage**	**USD/nt**
-/-	0.20	0-2,500	500 USD
Min. Annual Tonnage tax	500USD	2,501-5,000	0.20
		5,001-25,000	0.17
		25,001-50,000	0.15
		50,001+	0.125

Source: International Registries.

In our calculations, we have also included in the tonnage tax the Annual Marine Services Fee of 2,250 USD.

4.5 Panama

The Panama tonnage tax amounts to 0.10USD per net ton. In our calculations, we have also included the annual consular fees amount to 3,000 USD for vessels above 15,000grt. (Source: Panama Marine Authority - Administration Fees)

Dutch type tonnage-based corporate tax regime:

In the Dutch-type tonnage–based corporate tax regimes, the notional profits of the vessel are calculated on the basis of the table below based on the vessel's net tonnage multiplied by the number of operating days. Then, the standard corporate tax rate is applied on the notional profits.

4.3 The Netherlands

The Dutch tonnage system was approved by the European Commission in 1996. Shipping companies can select either the regular corporate tax system or the tonnage-based tax system. If a company opts for the second, the tonnage-based tax system will be applicable for 10 years and renewed in every tenth year. The Dutch corporate tax rate for profits up to 200,000 euros is 20%.

Table A.6 – Summary table of the Dutch tonnage tax rates

Net Tonnage	Daily profit in EUR/1,000 nt
0-1,000	9.08
1,001-10,000	6.81
10,001-25,000	4.53
25,001-50,000	2.27
50,000+	0.50[13]

Source: Dutch Ministry of Infrastructure and the Environment.

4.4 Germany

The German tonnage tax system was approved by the European Commission in 1998. The German corporate tax rate for profits is estimated at 30-33%. In our analysis, we use 31.5%. [14]

Table A.7 – Summary table of German tonnage tax rates

Net Tonnage	Daily profit in EUR/100 nt
0-1,000	0.92
1,001-10,000	0.69
10,001-25,000	0.46
25,000+	0.23

Source: Federal Ministry of Transport and Digital Infrastructure – Deutsche Flagge.

4.6 The UK

The UK tonnage tax system was approved by the European Commission in 2000. The UK corporate tax rate for profits is 19%.

Table A.8 – Summary table of the UK tonnage tax rates

Net Tonnage	GBP/100nt
0-1,000	0.60
1,001-10,000	0,45
10,001-25,000	0,30
25,000+	0.15

Source: HM Revenue & Customs.

[13] The reduced rate is provided for vessels first registered after 31/12/2006 or flying a non EU/EAA flag in the five years prior to the application for the Dutch tonnage tax. In all other cases, it is set at 2.27EUR/1,000nt.

[14] In 2018, the national corporate tax rate in Germany was 15%, the solidarity surcharge at 5.5%, the trade tax at 14%-17% (determined by municipalities), which bring the effective corporate tax at 30%-33% (source: Deloitte – Corporate tax rates 2018, available at: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-corporate-tax-rates.pdf).

Tables and Figures

Table 1 – Summary table of vessel cases

		gt	nt	dwt	TEU	cu.m.	gt/nt ratio
Case 1:	Bulker – Panamax	44,114	27,557	82,052			1,6
Case 2:	Tanker – Aframax	63,485	35,025	114,696			1,8
Case 3:	Container-ship	55,400	28,400	62,340	5,000		2,0
Case 4:	LNG	113,037	36,562	95,194		174,000	3,1
Case 5:	VLCC	162,330	112,075	321,234			1,4

Source: Clarkson Research Services.

Table 2 - Ranking of tonnage tax cost for a 4 year old vessel

Registry	Bulker	Tanker	Containership	LNG	VLCC
Panama	1	2	1	2	2
Liberia	3	3	3	3	3
Marshall Islands	4	5	4	5	5
Malta	2	1	2	1	1
Cyprus	5	4	5	4	4
UK	6	6	6	6	7
Netherlands	7	7	8	7	6
Germany	8	8	9	8	9
Greece	9	9	7	9	8

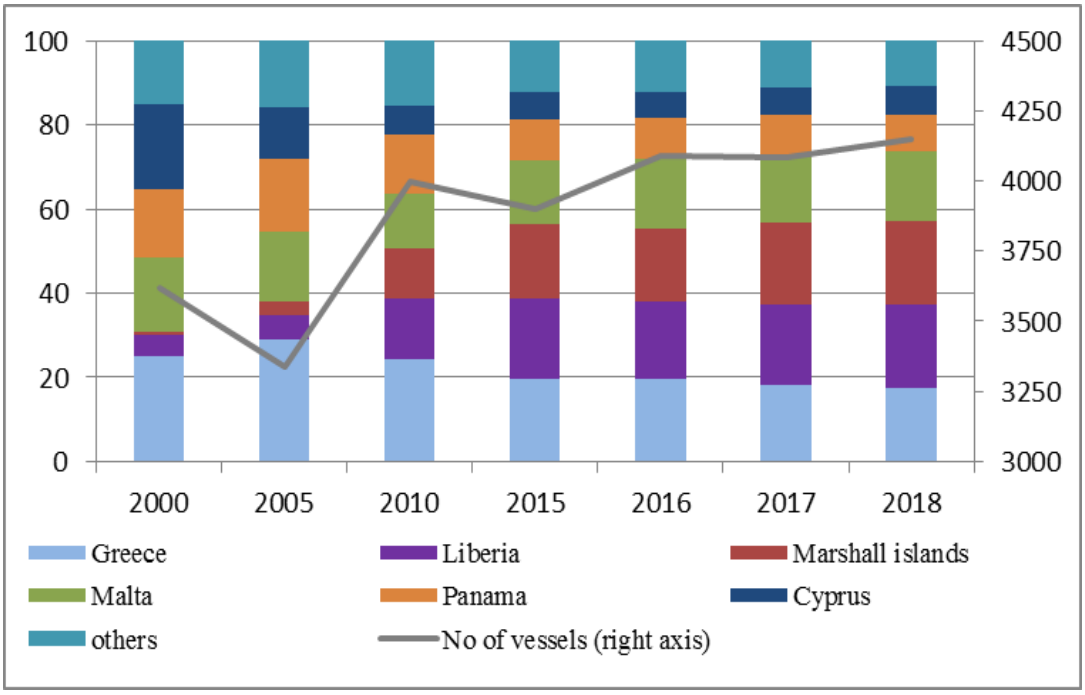
Note: 1= lowest tax burden, 9=highest.
Source: Authors' calculations.

Table 3 – Ranking of tonnage tax cost for a 15 year old vessel

Registry	Bulker	Tanker	Containership	LNG	VLCC
Panama	1	1	1	1	2
Liberia	2	2	2	2	3
Marshall Islands	3	5	3	5	5
Malta	5	3	5	3	1
Cyprus	4	4	4	4	4
UK	6	6	6	6	7
Netherlands	7	7	7	7	6
Germany	8	8	9	8	8
Greece	9	9	8	9	9

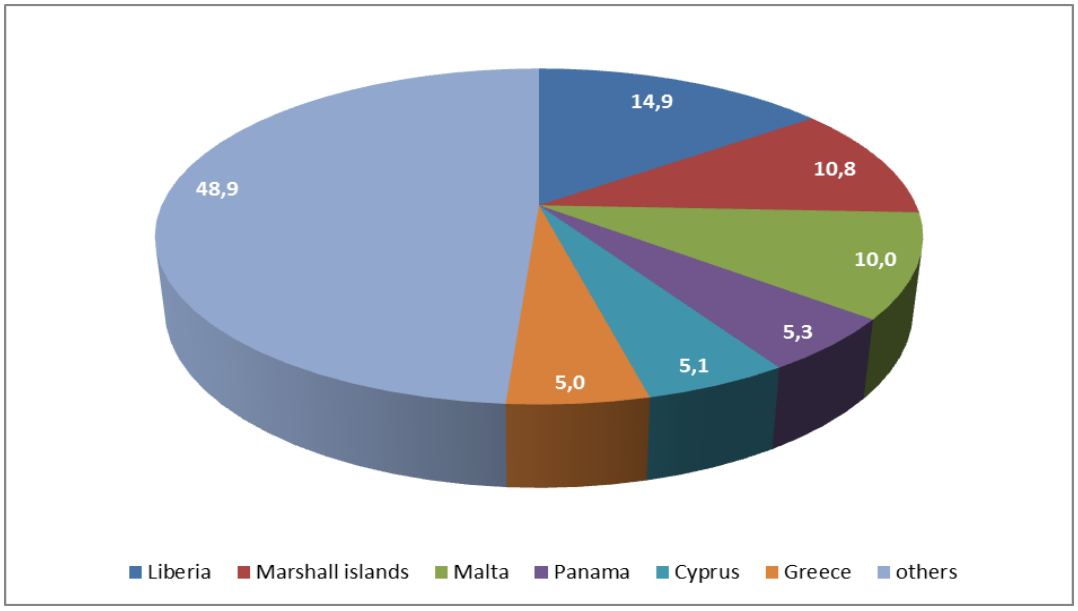
Note: 1= lowest tax burden, 9=highest.
Source: Authors' calculations.

Figure 1 – Flag breakdown of the number of Greek-controlled vessels
(>1,000 gross tons)



Source: Greek Shipping Co-operation Committee.

Figure 2 – Flag break down of the EU owned fleet – 2018
(>1,000 gross tons)

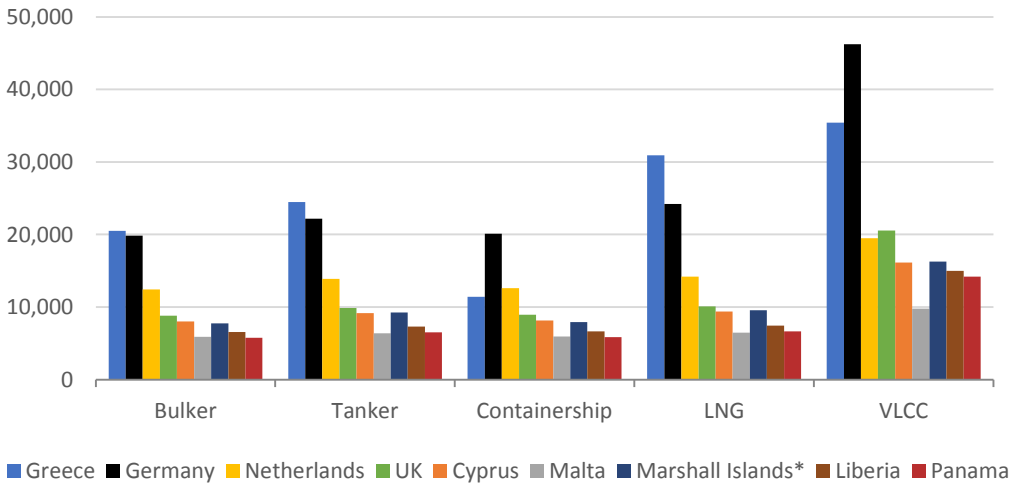


NB: Covers 25 EU members for which UNCTAD data were available. There were no data for the Czech Republic, Hungary and Slovakia.
Source: Authors based on UNCTAD (2018).

Figure 3 – Greek Tax Revenues from shipping

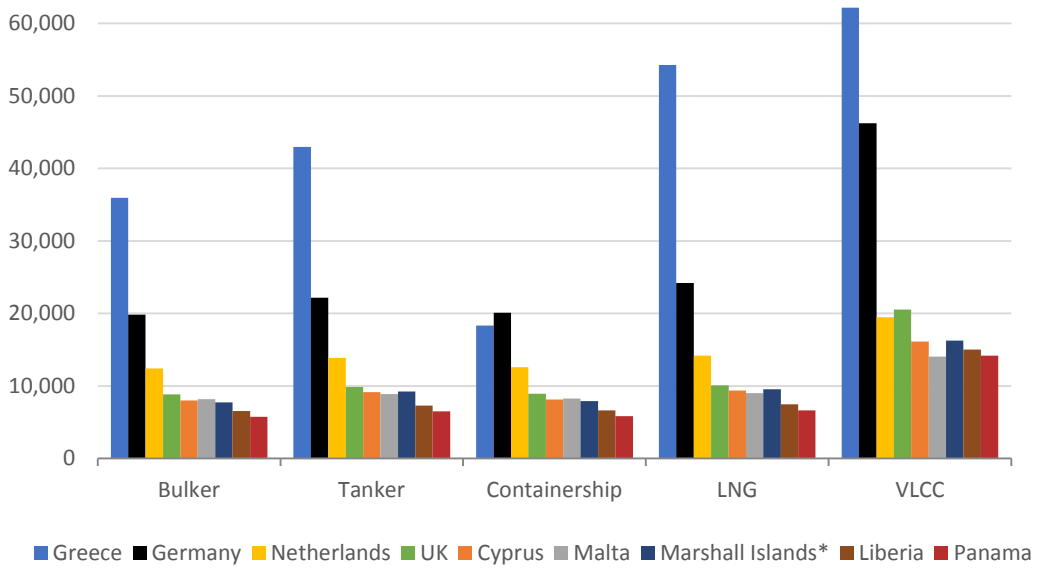
Source: State budget (for tax revenues) and Clarkson Research Services (for ClarkSeaIndex).

Figure 4 – Tonnage tax of a 4-year old vessel under various tax regimes (in USD)



Note: It excludes voluntary tax for the Greek-flagged vessels.
* In the VLCC case, Plan B of Marshall Islands was used as the initial registration fees for a VLCC is lower under the Plan B (compared to Plan A).
Source: Authors' calculations.

Figure 5 – Tonnage tax of a 15-year old vessel under various tax regimes
(in USD)



Note: It excludes voluntary tax for the Greek-flagged vessels.
* In the VLCC case, Plan B of Marshall Islands was used as the initial registration fees for a VLCC is lower under the Plan B (compared to Plan A).
Source: Authors' calculations.

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