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Port State Control (PSC) inspections on container ships

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ABSTRACT

The paper presents and processes data on inspections of the individual Memoranda (regions) and compares the overall number of ship detention cases. Also, the paper identifies the differences in various regions in the same period as well as their causes and consequences. Container traffic plays a key role in the international trade. Therefore, the research is based on a comparison of the inspection statistics (in general) and the ship detentions share with the total number of inspections and detentions of the container vessels for each region and the same period.
The data have been collected from the annual reports of the individual Memoranda (regions), covering a five-year period, from 2015 to 2019. The results of the research have pointed to partially successful attempts to harmonize and standardize the inspection procedures, as well as to the problem of the non-existent uniformed inspection system.

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1 Introduction

All ships operating in international waters must comply with the international codes and conventions ratified and implemented in the maritime law system of the flag state. Also, the flag state undertakes the supervising of the flagged ships under its jurisdiction to ensure they meet the minimum safety standards of the international agreements [1]. However, surveillance failures by flag states, especially flags of convenience (FoC)[1] [2] and the transfer of surveillance and certification tasks to the classification societies have resulted in the emergence of substandard ships and their involvement in a series of maritime accidents. The technical problems and poor maintenance have been the common denominator in all the accidents.

The port state control is based on the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of the international regulations and that the ship is manned and operated in compliance with these rules. This contributes to enhanced maritime safety, marine environment protection and the working and living conditions at sea [3].

The Port State Control (PSC) has become an indispensable component of the modern shipping, and should include uniformed, harmonized, standardized, and coordinated inspection system as the most effective solution to eliminate substandard ships.

Over 90% of the world's trade is carried out by sea. The container ships make up a large proportion of all seaborne trade (in terms of the value of goods[2]). This industry has helped shape the current world trade practices and has

[1] In the second half of the 20th century, the shipowners/operators mostly decided to register their ships in the countries that did not have developed system monitoring to avoid strict application of the provisions of certain conventions and to make a financial profit. Such states are called Flag of Convenience (FoC) states. The basic feature of such states is a very small number of safety inspectors in relation to the number of the registered ships.

[2] According to 2017 data, the global maritime container trade is estimated to account for around 60% of all seaborne trade (valued at around 12 trillion U.S. dollars) while in total maritime traffic it ranks third (13.5%), after liquid cargo (27.9%) and bulk cargo (43%) trade.

become the backbone of the world trade. During their life cycle, container ships are in constant operation (rare off-service periods) and are therefore subject to inspections.

2 Port State Control

When ships enter a foreign port and the internal waters of the coastal State, it gives the coastal State sovereign rights and jurisdiction over the foreign ships [4]. Their right to exercise port state jurisdiction over foreign-flagged vessels has its legal basis in the international law or more precise, in the United Nations Convention on the Law of the Sea, 1982, (UNCLOS)[3] [5]. Under the UNCLOS framework the national legislation of the port states is given priority over the law of the Flag State of the ship calling at the port.

By ratifying international conventions, the flag state is thus committed to incorporating their provisions into their domestic law. However, it remains questionable whether the provisions of the ratified international conventions are being implemented in practice, which is primarily the duty and obligation of the flag state. The legal basis is always the same, i.e., it is based on the minimum standards set by IMO[4] and ILO[5] [6]. However, the manner and frequency of implementation and the scope of inspections vary for each of the inspection systems.

Different inspection regimes (regions) do not have the same financial resources, nor the manpower (number of inspectors) given the number of ships to be inspected. The problem is also manifested in the fact that the manner of conducting the PSC inspection may vary depending on the level of education, theoretical knowledge, and skills that the inspector should have [7]. There are no guidelines making a distinction between the types of professional profile nor establish the number of inspectors that should form an inspection team. Hence, various trainings, seminars and workshops are organized. However, one of the biggest deficiencies is the lack of the uniformed inspection system (regarding frequency of inspections, annual inspection quotas, etc.). This issue should be worked out in the future because the fact is that a certain percentage of ships is not subjected to examination, or they are insufficiently well inspected. Therefore, ship in poor condition may receive a favourable result.

So far nine regional agreements on Port State Control – Memoranda of Understanding or MoUs – have been signed: Paris MoU (Europe and the north Atlantic), Acuerdo de Viña del Mar MoU (Latin America), Tokyo MoU (Asia and the Pacific), Caribbean MoU (the Caribbean), Mediterranean MoU (the Mediterranean), Indian ocean MOU (the Indian Ocean), Abuja MoU (West and Central Africa), Black Sea MoU (the Black Sea region), Riyadh MoU (the Gulf Region). The United States Coast Guard maintains the tenth PSC regime (North America). [8]

2 Overview and the Results of the Research

The data of the annual reports of the Memorandum, referred to in tables, are published in the Equasis system. [9]

The study has determined that the regions with the highest number of annual inspections are the United States Coast Guard (USCG) and Tokyo MOU region. It should be emphasized that these are economically developed regions with large number of ships that call into the ports of those regions and enough resources and manpower to conduct inspections.

The ports of the east, west, and south coasts of the United States are a crucial element in the country's economic chain.

With over 80,000 inspections per year, the USCG, as a separate regime, has climbed to the very top of PSC inspection statistics and manages to maintain a low rate of ship detention (around 3%). The share of container ships in the total number of inspections is around 12% with a percentage of ship detention of around 2%. From the above we can conclude that a very small number of ships docking in US ports are below standard ships. The reason for this are also very strict national laws (sometimes more rigorous than the requirements of international conventions and regulations) and it is not companies' interest to allow any deviation.

USCG follows Tokyo MoU, the region where most maritime trade takes place. With a figure of over 30,000 inspections per year, it ranks second with a percentage of ship detention that ranges around 3%. Of the total number of inspections, container ships account for about 16%, which is the highest percentage compared to other regions. The reason lies in the fact that the largest fluctuation in container traffic occurs exactly in this area. The rate of container vessels detention is between 1 and 2.5%.

Inspections in the Paris MoU region are almost twice as low, but the detention rate is similar (3%). The container ships make 10% of overall inspections in this region with the detention rate of 2%. Paris MoU region has slightly smaller vessel movements than USCG and Tokyo MoU region making it possible to process more vessels (providing that they fulfil the inspection conditions).

The inspections within the framework of Viña deL Mar Agreement (Latin America) have slightly increased over a five-year period while the detention rate has remained the same (around 0.6%). The overall increase of inspections has resulted in increase of container vessels inspections with a very small percentage of detentions carried out (up to 0.5%). Very small percentage in relation to the total number of inspections of container vessels (about 13%).

[3] UNCLOS – *United Nations Convention on the Law of the Sea*

[4] IMO – *International Maritime Organisation*

[5] ILO – *International Labour Organisation*

Table 1 Summary of inspections according to the annual reports for USCG region

	USCG					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	82515	2744	3.33%	9973	216	2.17%
2016	80599	2716	3.37%	11057	183	1.66%
2017	80672	2488	3.08%	10282	167	1.62%
2018	81717	2290	2.80%	10994	191	1.74%
2019	82590	2191	2.65%	10952	184	1.68%

Source: The author's findings [10]

Table 2 Summary of inspections according to the annual reports of Tokyo MoU

	TOKYO MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	31407	1153	3.67%	5058	131	2.59%
2016	31687	1090	3.44%	5085	99	1.95%
2017	31315	941	3.00%	5154	78	1.51%
2018	31589	934	2.96%	5705	114	2.00%
2019	31372	983	3.13%	5481	98	1.79%

Source: The author's findings [11]

Table 3 Summary of inspections according to annual reports of Paris MoU

	PARIS MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	17878	611	3.42%	1768	29	1.64%
2016	17845	687	3.85%	1814	35	1.93%
2017	17925	695	3.88%	1833	40	2.18%
2018	17955	569	3.17%	1814	34	1.87%
2019	17908	526	2.94%	1812	33	1.82%

Source: The author's findings [12]

Table 4 Summary of inspections according to annual reports of Viñ del Mar MoU

	VIÑA DEL MAR MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	8860	60	0.68%	1005	2	0.20%
2016	8517	47	0.55%	2024	3	0.15%
2017	9499	51	0.54%	1183	6	0.51%
2018	9661	62	0.64%	1204	4	0.33%
2019	9267	65	0.70%	1163	4	0.34%

Source: The author's findings [13]

Table 5 Inspection summary according to annual reports for Black Sea MoU

	BLACK SEA MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	4997	218	4.36%	152	2	1.32%
2016	5066	229	4.52%	157	2	1.27%
2017	5112	283	5.54%	145	4	2.76%
2018	5214	278	5.33%	175	6	3.43%
2019	6036	212	3.51%	212	4	1.89%

Source: The author's findings [14]

Table 6 Inspection summary according to annual reports for Mediterranean MoU

	MEDITERRANEAN MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	5740	300	5.23%	556	9	1.62%
2016	5312	228	4.29%	620	12	1.94%
2017	5200	173	3.33%	641	11	1.72%
2018	5343	142	2.66%	668	7	1.05%
2019	5380	95	1.77%	722	10	1.39%

Source: The author's findings [15]

Table 7 Inspection summary according to annual reports for Indian Ocean MoU

	INDIAN OCEAN MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	6253	350	5.60%	664	43	6.48%
2016	6010	370	6.16%	657	25	3.81%
2017	5674	281	4.95%	652	25	3.83%
2018	5697	252	4.42%	728	25	3.43%
2019	5943	232	3.90%	762	28	3.67%

Source: The author's findings [16]

Table 8 Inspection summary according to annual reports for Riyadh MoU

	RIYADH MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	4165	32	0.77%	274	0	0.00%
2016	3381	26	0.77%	253	2	0.79%
2017	3104	38	1.22%	235	1	0.43%
2018	3214	28	0.87%	288	0	0.00%
2019	3207	46	1.43%	272	3	1.10%

Source: The author's findings [17]

Table 9 Inspection summary according to annual reports for Abuja MoU

	ABUJA MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	2348	2	0.09%	328	0	0.00%
2016	1922	24	1.25%	307	4	1.30%
2017	2074	16	0.77%	312	1	0.32%
2018	2409	14	0.58%	296	0	0.00%
2019	2695	21	0.78%	389	4	1.03%

Source: The author's findings [18]

Table 10 Inspection summary according to annual reports for Caribbean MoU

	CARRIBBEAN MOU					
Year	Inspection	Detention	%	Cont. Ship	Detention	%
2015	867	18	2.08%	168	0	0.00%
2016	859	15	1.75%	140	1	0.71%
2017	769	10	1.30%	127	1	0.79%
2018	635	11	1.73%	116	1	0.86%
2019	782	11	1.41%	139	0	0.00%

Source: The author's findings [19]

Over a period of five years, Black Sea MoU region managed to increase the number of annual inspections. Number of detained ships remained similar. The number of container vessels inspections has also increased while the number of detentions varied. Of the total number of annual inspections, only 3% account for container ships.

The Mediterranean region (Mediterranean MoU), the Gulf region (Riyadh MoU) and the Indian Ocean region (Indian Ocean MoU) have a similar number of annual inspections (between 5,000 and 6,000) with a slight decline over the five-year period. The percentage of ship detentions is higher in the Mediterranean and the Indian Ocean (up to 6%) and lower in the Gulf region (around 1%).

The container ships make around 10% of overall inspections while in the Gulf region that number is slightly lover (8%). In the region of Riyadh MoU there is a greater focus on the liquid cargo carriers since they make majority of the seaborne trade in that area.

The memoranda with the least number of inspections are the Caribbean MoU (the Caribbean) and the Abuja MoU (Central and South Africa). The Abuja MoU conducts around 2,000 inspections a year while the Caribbean MoU conducts around 800 with the detention rates of 0.5 to 1.5%. The percentage of container vessels inspected is around 15% out of the overall number of inspections, with a detention rate of 1% for Africa and even lower detention rate (or no detention at all) for the Caribbean.

One thing most of the regions have in common is a higher detention rate in 2017. This can be explained by the fact that 2017 was the final year for mandatory ECDIS implementation as the primary means of navigation instead of paper charts. Therefore, a concentrated inspection campaign on ECDIS and its proper installation and use (both in theory and practice) was conducted. The detention rates have been reduced from then on.

From the data presented, we can see unequal annual inspection quotas. In the regions of the Memorandum that are more economically developed, we notice a higher percentage of inspections and a similar percentage of retention (2-3%), while in less developed regions there is a lower percentage of inspections and almost insignificant percentage of retention. Thus, it is more likely for substandard ship to stay undetected.

It is necessary to ensure that PSC inspections are conducted in a uniform and harmonized manner. Thus, it will no longer be possible for the same ship (having deficiencies) to be detained in one port and not in another. The same goes for penalties and fines which range from high to negligible.

The container ships, as already pointed out, carry out a significant share of total maritime trade and employ many seafarers. Also, they make between 10 and 15% of annual inspections. Considering the fact that not every ship can be examined (in economically poorer regions, usually only

those who belong to Priority I); this percentage should be even higher. The retention rate ranges from 0.5 to 2%, which means that when it comes to container ships, most of them comply with the Conventions and regulations.

3 Possible Area of Improvement

Container ships, as already pointed out, make up a significant share of total maritime traffic and employ a large number of seafarers, but not only them. Today, more than 90% of world trade takes place by sea.

The role of the shipowner (among other things) is to establish a system of safe management of the ship and ship operations based on international conventions and regulations. This establishes a unified system in which there should be no exceptions.

The PSC regime was established to verify that ships adhere to this system. However, it is not uniformed either.

Most of the differences in regimes arise as a result of unequal financial construction, economic development of the area, undefined rules.

The solution could be the adoption of a rulebook that would be legally binding on all regimes (Memoranda). The ordinance would determine the level of education that PSC inspectors must meet. An example is the STCW Convention, which unifies the seafarers' education system.

The ordinance would also define the number of inspectors (depending on qualifications) who would define the inspection team.

Establishing a common fund to finance the regimes, which would provide a level playing field, would minimize disparities.

The introduction of a (central) database would simplify the monitoring of ships and the introduction of annual quotas which are to be met.

In addition, a body should be established to perform an internal control system to ensure the implementation of all mandatory items (quality control).

4 Conclusion

The primary responsibility for the safety of the vessel rests with the ship's crew, the ship's owners / operators, and the flag state of the vessel. But what if they fail at that task? [8]

The Port State Control (PSC) jurisdiction under foreign vessels has its legal background in the UN Convention on the Law of the Sea. The port state has the right to inspect the ship entering national waters in order to verify that the general condition of the ship and its equipment, as well as the condition of the cargo, engine room, crew accommodation and working and living conditions comply with the requirements of the international regulations. The inspection also verifies that the crew's competences and the level of maritime education and training in performing basic working procedures comply with the STCW standards. The overall aim is to enhance the safety of navigation, marine environment protection, and working and living condition on board ships. The final goal is the elimination of substandard shipping and improvement of minimum standards for the safe ship management. However, the comparison of the implementation of these regimes has displayed some differences. They refer to the way of interpreting of certain factors or to the evaluation of the performance of flag states and recognized organizations. There are differences in frequency of the periodic inspections and planned annual inspection quotas. Not all regions have the same conditions for conducting inspections in terms of resources, manpower or trainers' competencies.

These deficiencies have been presented in the 5-year summary of statistical data on inspections conducted from 2015 to 2019.

To conclude, one of the significant PSC inspection issues is non-uniformity of the PSC standards. The establishment of the uniformed and harmonized inspection system would result in easier selection of potentially risk ships to be inspected. Furthermore, all inspection information would be available within a single, global database. Such a system would result in the elimination of the substandard ships and would prevent banned ships to run detention and to continue to operate in the ports of other Memoranda regions.

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