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The implementation of port state control under the Maritime Labour Convention, 2006

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THE IMPLEMENTATION OF PORT STATE CONTROL UNDER THE MARITIME LABOUR CONVENTION, 2006

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: The implementation of port state control under the Maritime Labour Convention, 2006

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This dissertation aims to examine the difference of legal grounds in relation to Port State Control (PSC) between the Conventions under the auspice of IMO and ILO and investigate the influence of the Maritime Labour Convention, 2006 (MLC) on the shipping industry. This dissertation focuses on finding out the weaknesses of seafarers' living and working environments under the MLC and ILO No. 147 Convention related to the PSC data conducted by the Paris MoU and the Tokyo MOU during a three-year interval before and after 2013, which was the year entered into force the MLC.

This study pinpoints that, although the "innovative measures" of the MLC with respect to the ILO Conventions provide the right of port states to inspect foreign vessels in their ports, the "flexibility" of the MLC granting national discretions could lead into reluctant PSC inspections since the national requirements are contradictory to the principle of the inspection based on internationally agreed rules.

The analysis compares the data of both MOUs through the relationship with ship type, age, gross tonnage, deficiency and detention for two periods and reveals that the deficiencies of the Tokyo MOU increased by 71.8 percent in three years after 2013 compared to those of before 2013, while the ones of the Paris MoU slightly decreased during that period. However, the number of detentions increased in both MOUs. The analysis also shows that the MLC, supported by the "police power" of PSC, would bring a positive effect to the improvement of seafarers' living and working conditions, which will consequently contribute to the safety of ships and shipping.

KEYWORDS: Port State Control (PSC), Maritime Labour Convention (MLC), ILO No. 147 Convention, Paris MoU, Tokyo MOU

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LIST OF ABBREVIATIONS

AFS	International Convention on the Control of Harmful Anti-fouling Systems on Ships
BSMoU	Black Sea Memorandum of Understanding
Bunker Convention	International Convention on Civil Liability for Bunker Oil Pollution Damage
BWM	International Convention for Control and Management of Ship's Ballast Water and Sediments
CIC	Concentrated Inspection Campaign
CLC 1969	International Convention on Civil Liability for Oil Pollution Damage
DMLC	Declaration of maritime labour compliance
EMSA	European Maritime Safety Agency
Hague MOU	Memorandum of Understanding among eight North Sea States signed in Hague
ICLL	International Convention on Load Lines
IOMoU	Indian Ocean Memorandum of Understanding
KPI	Key Performance Indicator
ILO	International Labour Organization
ILO No. 147 Convention	Merchant Shipping (Minimum Standards) Convention
IMO	International Maritime Organization
ISM Code	International Safety Management Code
MARPOL	International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating to thereto
MedMoU	Mediterranean Memorandum of Understanding
MLC	Maritime Labor Convention
NMFT	No More Favorable Treatment
OILPOL	International Convention for the Prevention of Pollution of the Sea by Oil, 1954
Paris MoU	Paris Memorandum of Understanding on Port State Control
PSC	Port State Control
PSC Guideline	Guidelines for port state control officers under the MLC, 2006

RO	Recognized Organization
SOLAS	International Convention for the Safety of Life at Sea
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
Tokyo MOU	Memorandum of Understanding on Port State Control in the Asia-Pacific region
Tonnage Convention	International Convention on Tonnage Measurement of Ships
UNCLOS	United Nations Convention on the Laws of the Sea
USCG	United States Coast Guard

1. INTRODUCTION

1.1 Background

It is a traditional and well recognized principle of international maritime law that the State whose flag the ship flies has the jurisdiction of enforcement regime over that ship. It is clearly stated in Article 94 of the United Nations Convention on the Laws of the Sea, 1982 (UNCLOS) that a flag state shall effectively exercise its jurisdiction and control in administrative, technical and social matters over its ships.

In an effort to deal with the continuing problem of ships loss, the British parliament adopted the Loadline requirements in 1906, which was officially applied to all ships including foreign vessels visiting British ports and triggered the interventionism at the national level to other major maritime nations (Boisson, 1999). However, like the history of making new maritime conventions and regulations, things were significantly changed after the tragic accident of *Titanic* in 1912. The International Convention for the Safety of Life at Sea (SOLAS), 1914, which was the first regulatory international convention in the maritime safety domain, initially enacted the legal ground for the control of foreign vessels by a port state. Since that legal instrument did not enter into force because of the World War I, the first effective instrument on port state's right to control foreign vessels calling in its ports is associated with the SOLAS 1929 (IMO, 2011; Ozcayir, 2004).

The *Torrey Canyon* accident off the western coast of Cornwall, the United Kingdom, in 1969, paved the way for coastal states towards acquiring the right to intervene with foreign ships in their ports or outside their territorial water actively to prevent damage caused by the ships' failures. This trend led to strengthen port states' power under Article 6 of the International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating to thereto (MARPOL) and Articles 218 and 219 of the UNCLOS. However, the right of the port state under these Articles relates only about the protection of the marine environment aspects and is interpreted not to have direct grounds of inspecting on safety issues (Boisson, 1999; Ehlers, 2017). This drawback of the UNCLOS on Port State Control (PSC) of safety matters might be complimented by the SOLAS 1974.

Meanwhile, to tackle the issue of substandard vessels effectively, the idea of cooperating among neighboring countries or at the regional level on PSC inspection was put forward. Thus, PSC has emerged as a safety net for counteracting the misconduct and negligence of flag states and classification societies, which have the primary responsibility on ship's safety.

The origin of regional PSC regime was the Memorandum of Understanding among eight North Sea States[1] signed in the Hague (Hague MOU) in 1978, which had the aim to cooperate with PSC inspections on the Merchant Shipping (Minimum Standards) Convention, 1976 (ILO No. 147 Convention) (Ozcayir, 2004). A high public press in Western Europe society caused by the massive oil spill of *Amoco Cadiz* in March 1978 pushed stricter surveillance of port states over foreign vessels and, consequently, expanded its members and inspection areas leading to establish the Paris Memorandum of Understanding on Port State Control (Paris MoU) in 1982 by 14 European countries[2] (Ozcayir, 2004; Paris MoU, 2016a).

Noting that there are limitations of flag state's enforcement related to the shipping industry's nature and that a regional PSC MOU is an adequate safety net to control substandard ships, the International Maritime Organization (IMO) encouraged establishing a regional PSC MOU and cooperating among member authorities and between MOUs.

It is also necessary to consider the Maritime Labor Convention (MLC), which was adopted in 2006 and took effect on the twentieth August 2013 under the auspices of the International Labour Organization (ILO) in cooperation with the IMO. The MLC, as a "bill of rights" for seafarers, became the "fourth pillar" in the maritime sector with the traditional parts of safety, environment protection and seafarers training and certification represented by the SOLAS, MARPOL and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW) respectively (Baldauf, Dalaklis, & Kataria, 2016; Durler, 2010; Lavelle, 2014).

While the MLC is expected to lead towards "the universality of application and the level playing field" for the shipping industry mainly through PSC inspection of no more favourable treatment, this Convention describes a level of "flexibility", to allow its member states to exercise their discretion by legislating international regulations into their national laws and regulations (McConnell, Devlin, & Doumbia-Henry, 2011). For instance, the definition of "night" work and the "types of jeopardizing work" for seafarers under the age of 18 according to Standard A1.1 shall be defined or determined by national laws or regulations. While this discretion would lead its member states to lessen the burden of implementation and to adopt it speedily, it would act as an adverse effect to conduct PSC inspections because PSC officers do not deeply know the national rules concerned and have difficulties to correctly interpret them within the limited inspection time.

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1 Belgium, Denmark, France, Germany (Federal Republic of), the Netherlands, Norway, Sweden and the United Kingdom of Great Britain and Northern Ireland

2 Belgium, Denmark, Finland, France Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland

Additionally, there are not many studies about how to evaluate the effect of the Convention and what areas the Convention has regarding the weaknesses in respect of its implementation. Considering that the PSC inspection data is a reliable source, as one of the most accurate and objective indicators among several related data available, to appraise the performance of international maritime conventions, it is worthy at the time of three years after the effectuation of the MLC to evaluate its effect through the analysis on the PSC data.

1.2 Objectives of the study

The analysis in hand will investigate the difference of legal aspects between the IMO and ILO Conventions on seafarers and broadly discuss the impacts of the MLC on the shipping industry and seafarers' working environment. Additionally, it will study the outcome of the PSC inspections between the MLC and the ILO No. 147 Convention, which is another labour convention effective before the effectuation of the MLC.

The analysis in hand will also examine the flexibility of flag states' discretion in the regulations of the MLC, which may cause disagreements among PSC officers or even between a Flag state and a Port state, or reluctance in conducting PSC inspection. This research will examine the effect of the MLC on the seafarers' working environment based on analyzing the PSC inspection data, mainly in relation to the Paris MoU and the Memorandum of Understanding on Port State Control in the Asia-Pacific region (Tokyo MOU), on the ground of these questions.

Based on the results, it will try to identify the drawbacks of the MLC in implementing PSC as well as the associated weak areas. The study will seek further improvements to address the limitations on the MLC regulations. It is hoped thereby that this study will help the shipping industry and competent authorities to implement the Convention with the wider understanding on the weak parts of implementing the MLC in terms of the PSC and take corrective actions thereto.

1.3 Scope of the study

The research will examine the right of port states empowered by the ILO Conventions on seafarers, which contain different requirements; it will also carry out analysis for the PSC inspection data on seafarers' living and working conditions collected by the Tokyo MOU and the Paris MoU. The data will analyze and compare each area by the ship's age, type, gross tonnage, nature of deficiency and detention for two groups of 3 years before and after 2013, which is the MLC effectuated, between the records of the two regional PSC regimes.

The research will identify the difference of deficiencies pointed out by port authorities of both MOUs between the ILO No. 147 Convention and the MLC, as well as the weak part of the MLC in terms of PSC inspection.

1.4 Literature review

Titz (1989) supported that PSC is an effective tool in protecting environmental pollution via an analysis of 4.5 years' PSC inspection data at the very beginning of the Paris MoU. The analysis showed that as a ship gets older the deficiencies related to environmental matters are increasing and that PSC works as a tool to detect a potential polluter.

Stewart (1990) elaborated on the background of PSC and, especially, the structure and inspection procedure of the Paris MoU and the United States Coast Guard (USCG). The author examined the legal aspect of PSC that relates to Flag States, mostly open registry, which do not have enough administrative power to monitor and control their fleet whether they comply with international and national regulations or not. Another legal issue raised by the author was the civil liability of a shipowner or carrier and the liability of the Port State for loss of a carrier as a result of unduly detention.

Bo (2006) examined various articles of the MLC and the obligation of contraction governments, including a port state. He researched to identify which area should be improved to obtain the objective of the Convention in terms of the national level of China.

Mejia (2005) reviewed the performances criteria for the International Safety Management Code (ISM Code) by the analysis of PSC data, inspected by the Swedish Maritime Administration, comparing the deficiencies rate and detentions rate of different ship types between two periods; the first phase for pre-implementing the ISM Code and the second phase for post-implementing ISM Code. Although there were no significant trends, the author provided the observation that the analysis of PSC data suggested that the ISM Code gave positive impact on a ship's safety.

Veganaden (2007) examined the influences to the working conditions of seafarers by the implementation of MLC at the point of flag states, shipowners and ship crews. The author demonstrated that the compliance of the Convention greatly depended on the PSC and emphasized the harmonization and cooperation approach at the regional MOU level to tackle substandard vessels that were not complying with the Convention.

Jeon (2016) studied the missing or inadequate clauses of Korean national law compared to those of MLC in respect to the implementation of PSC. The author pointed out the limitation of PSC officers when dealing with some issues of Article III of MLC regarding the freedom of association, right of collective bargaining and elimination of all forms of forced or compulsory labour, which had not expressly stipulated their definition, application and

enforcement into the regulations or Code. He suggested that the national law would be supplemented for the detailed PSC inspection procedure and onshore complaint handling procedures.

Lee (2016) examined the effectiveness of the ISM Code by analyzing PSC deficiencies of the Tokyo MOU and non-conformities of the ISM audit for Korean vessels. It observed that the PSC influenced more effectively to improve some limited parts like emergency preparedness, maintenance and documentation in a short period while ISM worked in the long term to improve a ship's safety management system. The author stressed that the "police power" of PSC with the cooperation of regional authorities provided a string motive for shipping companies and seafarers to maintain their vessels in good condition at all times to prevent a detention by a port state.

2. PORT STATE CONTROL

2.1 The legal grounds of PSC

2.1.1. Legal foundation in SOLAS

The primary responsibility of a ship's safety belongs to the shipowners and the flag state who should take proper measures to ensure that ships flying its flag comply with generally agreed international standards on ship's equipment, structure, manning and crew competence according to Article 94 of UNCLOS. In practice, many flag states entrust their authority to a Recognized Organization (RO) for inspections and issuing certificates to their fleet according to the relevant rules including Regulation 6 and 12 of Chapter I of SOLAS and Regulation 6 and 7.2 of Annex I of MARPOL. However, the overall responsibility of the certificates issued by ROs still remains within the Administration of the flag state.

It is not a simple event for a port state or coastal state to inspect or investigate foreign vessels in their territory, since a vessel has been considered by international customary laws as a "moving territory" of the flag state that the ship is registered. Because of increasing international trading and calls of foreign ships in their ports and coastal waters, the need for coastal and port states to control the foreign vessels was created. The first outcome of these trends was Article 61 of the SOLAS 1914 that states:

> Every ship holding a Safety Certificate issued by the officers of the Contracting State to which it belongs, or by persons duly authorised by that State, is subject in the ports of the other Contracting States to control by officers duly authorized by their Governments in so far as this control is directed towards verifying that there is on board a valid Safety Certificate, and, if necessary, that the conditions of the vessel's seaworthiness correspond substantially with the particulars of that certificates ; that is to say, so that the ship can proceed to sea without danger to the passengers and the crew. (Boisson, 1999)

It is evaluated as a "pioneering approach" to the legal aspect of allowing port states' intervention to the territorial power of a flag state that dominated at that time, considering the clauses having a similar effect came to appear in MARPOL and STCW in 1970s. Even though the Convention was not introduced because of the outbreak of World War I, its intention was succeeded by the Article 54 of the SOLAS 1929, which became effective in 1933. The Article had similar expressions to its predecessor, only adding by the following

sentence: ”In the event of this control giving rise to intervention if any kind, the officer carrying out the control shall forthwith inform the Consul of the country in which the ship is deemed to be necessary.” This article was incorporated into regulation 19 of Chapter I of SOLAS 1974 through SOLAS 1948 and SOLAS 1960.

Additionally, Regulation 4 of Chapter 11-1 of SOLAS describes the PSC operational requirements. The PSC officers may ask for demonstrations and evaluate ship crew’s familiarizations on essential procedures on board such as firefighting and lifeboat launching under the regulations. Furthermore, Regulation 6.2 of Chapter IX and Regulation 9 of Chapter 11-2 of SOLAS on PSC significantly contribute to better quality levels of a ship’s safety and security.

2.1.2. Legal grounds in MARPOL

Owing to the global industrialization after the Second World War, the growth of seaborne trade from the 1950s drastically increased during the next 50 years with an average annual growth rate of about five percent compared to only nearly two percent annual growth rate for the previous 50 years since 1900 (Ma, 2016). This trend attracted many new ships into the shipping industry, but unfortunately a substantial number of accidents was also recorded. The world merchant fleet multiplied 2.63 times during 15 years: from 82.7 million gross tonnages in 1955 to 217.9 million gross tonnages in 1970. Remarkably, oil tankers expanded their gross tonnage by about 3.25 times during the period (UNCTAD, 1971).

To prevent ship-based pollution, the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (OILPOL) was adopted and entered into force in 1958. Although the Convention regulated the discharge of oil or oily mixtures from machinery spaces or cargo tank, the Convention had no clauses of inspection and certification by a flag state. The power of a port state in their territory under this convention is only inspecting the respective oil record book according to its Article IX.

Serious marine accidents were associated with the expansion of the world merchant fleet and open registries of providing more economic and administrative benefits to shipowners (Mukherjee, Brownrigg, Xu, & Mejia, 2013). Especially, a series of pollution incidents occurred in European and the United States waters by Liberian oil tankers, such as the *Torrey Canyon* in 1967, *Ocean Eagle* in 1968, *Argo Merchant* in 1976 and *Amoco Cadiz* in 1978, which promoted the notion of enforcing stricter PSCs and strengthening the port state’s power. Further, OILPOL, despite of the amendments in 1962, 1969 and 1971, largely allowed discharging ballast water contaminated in cargo tanks and proved inadequate to protect the marine environment (Boisson, 1999; Kasoulides, 1993; IMO, n.d.a).

Another drawback of OILPOL compared to its successor or SOLAS 1948, which was a contemporary convention on ship safety area, is that the Convention provided the legal grounds only for a flag state intervention, not for port states. To remedy the legal shortcomings of OILPOL and to strengthen the flag states' responsibility and port states' jurisdiction, IMO adopted the MARPOL Convention in 1973. This Convention introduced the "survey and certification system" by a flag state for ship's equipment and structure including oil filtering system and segregated ballast tank that is independent from cargo tank. Articles 5(2) and 6(2) of the Convention also empowered port states of its contracting parties to exercise the right of inspection to a ship calling at their ports or terminals. The Convention was modified by the Protocol in 1978, so called MARPOL 73/78, which became effective in 1983.

The MARPOL Convention consists of independent Annexes that regulate different polluters of oil, noxious liquid substances, harmful substances, sewages, garbage and air pollutants. Therefore, each Annex has the grounds of PSC on operational requirement under Regulation 11 of Annex I, Regulation 16.9 of Annex II, Regulation 9 of Annex III, Regulation 14 of Annex IV, Regulation 9 of Annex V and Regulation 10 of Annex VI.

2.1.3. Legal grounds in the Load line Convention

Despite some measures such as the recommendation of limiting loading cargoes by the Lloyds Register in 1835, many accidents still happened until the middle of the 19th century in the world. For instance, there were 1,313 shipwrecks in 1867. The first rule setting minimum freeboard for merchant vessels was recorded via the British Merchant Shipping Act of 1876 (Boisson, 1999; Ventura, n.d).

The first International Convention on Load Lines (ICLL) was adopted in 1930 in order to, as stated in its Preamble, "promote of life and property at sea by establishing in common agreement uniform principles and rules". The Convention aims to secure minimum reserve buoyance for safeguard by limiting maximum quantity of cargoes on board (Boisson, 1999). The limitations, the so called Plimsoll mark, are indicated amidships on both side hulls with seasonal and maritime regional freeboards.

Ships engaged in international voyages are required to hold a relevant certificate after the survey of their flag states and subject to control by the port state according to Article 16 of the Convention. This convention was succeeded by ICLL 1966, which entered into force in 1968; the right of PSC is affirmed by Article 21 of the new Convention.

2.1.4. Legal grounds in the Tonnage Measurement Convention

The International Convention on Tonnage Measurement of Ships (Tonnage Convention) was adopted in 1969 to unify a diverse tonnage measurement system of each state for

merchant ships and entered into force in 1982. Although the Tonnage Convention itself does not deal with safety or environmental issues, Article 12 of the Convention provides the reference of PSC as the Convention is important for PSC activities. The Convention defines a ship's gross tonnage that is the criteria whether or not the ship applies to the specific regulations of SOLAS, MARPOL and STCW.

2.1.5. Legal grounds in STCW Convention

To achieve the minimum competency of seafarers and unify different standards on certification, training and education for seafarers by each state, IMO adopted the STCW Convention in 1978, which entered into force in 1984. According to Article X of the Convention, PSC officers are given the right to verify that seafarers on board hold the relevant Certificates of Competency or Endorsement and other certificates for basic training, familiarization training and special training for certain types of ship and equipment on board.

On the other hand, the 1995 amendment to the STCW Convention contained distinctive requirements to impose more obligations on flag states compared to other Conventions under the auspices of IMO. A flag state is required to conduct an evaluation by an outside organization for its quality standards on their certification system, training courses, programs, examination and qualification of instructors and assessors at intervals of not more than five years according to Regulation I/8.

Another requirement for flag states is to provide to IMO detailed information on its administrative measures, including the evaluation of quality standards, on how to assure its national system to fulfill the conventional requirements full and complete effect according to Regulation I/7. After reviewing the information of flag states by panels of competent persons, IMO produces a list of "confirmed parties", the so called "white list", which complies the Convention (Boisson, 1999; IMO, n.d.b).

2.1.6. Legal grounds in UNCLOS

The UNCLOS, as "a constitution for the oceans", was adopted at the third United Nations Conference on the Law of the Sea (third Conference) in 1982 after nearly a 20-year long discussion. UNCLOS takes into account all the legal aspects of the ocean space over serious conflicts between two opposing fundamental principles, i.e. territorial sovereignty and freedom of the seas (Bernaerts, 1988). The Convention incorporated customary international law and four 1958 Conventions[3].

[3] They are the Convention of Territorial Sea and Contiguous Zone, the Convention of High Seas, the Convention of Continental Shelf and the Convention of Fishing and Conservation of the Living Resources of the High Seas.

While every state has the exclusive right to sail its ships on the high seas, it has several obligations to exercise its jurisdiction and control over the ships according to Article 94 of UNCLOS. More specifically, flag states should take relevant measures on ship registration, securing a ship's safety at sea including the survey and crew qualifications and marine casualty investigation in respect of administrative, technical and social matters concerning the ships. Furthermore, Article 211(2) and Article 217 of the Convention requires that flag states should ensure their vessels to comply with applicable international rules and standards on enactment, survey, certification and control over violation in respect to the prevention of pollution of the marine environment.

On the other hand, a port state is given the power to establish particular requirements to prevent and control marine pollution from foreign vessels calling their ports under Article 211(3) of UNCLOS. Additionally, Article 218 and 219 of UNCLOS describe the right of port states to investigate or inspect foreign vessels called their ports to protect marine environment. While Article 219 states administrative measures to prevent environmental threats that may be caused by violation of international standards on a ship's seaworthiness, Article 218 defines the jurisdiction of port states in respect of an illegal discharge from a vessel.

2.1.7. The legal grounds in Anti Fouling Convention

Most ships have been applying anti-fouling coating of paints to the hull to prevent or reduce attached organisms by slowly leeching the compounds of paint or killing barnacles and other marine lives. However, the paints may contain harmful substances for the marine eco system (IMO, n.d.c). For the purpose of regulating ecologically harmful substances in anti-fouling system, the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS) was adopted in 2001.

Even though the AFS convention became effective on 17 September 2008, the application, re-application or use of harmful anti-fouling systems to all ships has been prohibited since 1 January 2003 and ships do not bear such compounds on their hull or external surface since 1 January 2008 according to Article 4 and Annex 1 of the Convention. The Convention requires ships of 400 gross tonnages and above, engaged in international voyages, to hold an International Anti-fouling System Certificate issued by ship's flag state[4].

[4] If a ship of 24 meters or more in length, but less than 400 gross tonnages, is engaged in international voyages, the ship should carry a Declaration signed by the owner or owner authorized agent according to Regulation 5 of Annex 4 of the Convention.

Port states can inspect a ship calling in their ports whether the ship complies to the Convention or not by Article 11 of the Convention. If non-compliance is suspected, port states can take a brief sample from the ship's anti-fouling system.

2.1.8. The legal grounds in ILO No. 147 Convention

The ILO, a specialized agency of the United Nations founded in 1919 to seek promotion of social justice in respect of human and labour rights, adopted its first maritime Conventions in 1920[5]. Since the first official discussion in ILO in 1933, the ILO No. 147 Convention was the result of a long discussion in ILO (Kasoulides, 1993).

The ILO No. 147 Convention, which was incorporated in the MLC, was adopted in 1976 and came into force in 1981. The Convention consists of 12 Articles and one Appendix, without detailed technical requirements, which is a list of other ILO Conventions that have the same effect to be ratified simultaneously when that Convention is ratified by member states. Therefore, the ILO No. 147 Convention, so called "umbrella convention", covers in respect of seafarers' working conditions including hours of work, manning, officers' competency and safety standards to prevent accident, social security measures and shipboard conditions of employment and living arrangements.

Though Article 4 of the Convention provides the grounds on the right of a port state's intervention, the approach of its inspection is interpreted more narrowly compared to the regulations of other IMO Conventions. This Article states that the port state may conduct an inspection when receiving a complaint or obtaining evidence that the ship does not conform to the requirements of this Convention. This means that the inspection under the Convention is deemed "passive" while IMO Conventions such as SOLAS and MARPOL are more active to conduct PSC inspections with respect to port states.

2.2 No more favorable treatment clause

A treaty or international convention is adopted by a signature or expressed agreement of consent of each government to have that effect after negotiations. According to paragraph 3 of Article 24 under the Vienna Convention on the Law of Treaties 1969, by establishing the consent of a State to be bound on specific date after the treaty has come into force, the treaty enters into force for that State on that date unless the treaty otherwise provides. Additionally, every treaty in force is binding upon the parties to it according to Article 26 of the Convention. These clauses explain the general principles of international laws that the

[5] Minimum Age (Sea) Convention (No. 7), Unemployment Indemnity Shipwreck Convention (No. 8) and Placing of Seaman Convention (No. 9).

states under their free will consent to the treaty to observe the obligations required by it become the parties to that treaty and that, unless provided otherwise, non-parties are not bound to it generally. For instance, PSC under the SOLAS 1914[6] applied not to all ships called in the ports of contracting party, but ships flagged in the contracting governments (Ozcayir, 2004). Other examples can be found in certain ILO maritime conventions, i.e. Article 6.1 of the ILO No. 147 Convention and Article 18.1 of the ILO No. 180 Convention clearly describe that "this Convention shall be binding only upon those Members of the Organization whose ratifications have been registered".

On the contrary to the above principle, the ICLL Convention introduced "no more favorable treatment" (NMFT) clause in 1930. The clause might apply to similar levels of convention rules to ships, regardless of being non-party to the Convention of a ship's flag state, and provide the same playing level of competition by preventing them from enjoying any premium of ships registered in the non-parties to a Convention. Article 17 of the Convention describes that "the privileges of this Convention may not be claimed in favour of any ship unless it holds a valid International Load Line Certificate". Furthermore, the Article 22 of ICLL 1966 and Regulation 20 of Chapter I of SOLAS 1974 have nearly the same wording as that Article.

It is also indicative that paragraph 4 of Article 5 of MARPOL Convention, 1973, clearly states that "with respect to the ships of non-Parties to the Convention, Parties shall apply the requirements of the present Convention as may be necessary to ensure that NMFT is given to such ships". Additionally, the NMFT clause gradually incorporates to paragraph 5 of Article X of STCW 1978, Article II(3) of Protocol 1978 and Article I(3) of Protocol 1988 of SOLAS 1974 and paragraph 1.5 of IMO Resolution A.787(19), which describes procedures for PSC adopted in 1995 (IMO, 2001). Hence, port States have clear legal grounds for inspecting all ships including vessels flagged in non-party to the Conventions.

These clauses of NMFT offer a justification for PSC by providing a remedy to solve a drawback for applying the regulations of Conventions to the ships of non-Contracting parties, which are generally not applied to these Conventions. Furthermore, the clauses have accelerated flag states to ratify a Convention by removing the advantages of non-Parties to that Convention. For instance, it accounts over 99 percent of world gross tonnage for the ships of members have ratified the main Conventions of PSC under the auspices of IMO such as ICLL 1966, Annex I and II of MARPOL 1973/1978, SOLAS 1974 and STCW 1978 (IMO, 2017).

[6] Article 61 of the Convention described that every ship of contracting State is subject in the ports of other contracting States to control by authorized officers. This intent of the Article was succeeded by next versions of SOLAS and even SOLAS 1974, which stipulates that every ship when in a port of another Contracting Government is subject to the control of officers duly authorized.

2.3 Development of regional PSC cooperation arrangements

2.3.1. Paris MoU

The Paris MoU succeeding the Hague MOU mentioned previously in section 1.1, was initially signed by 14 States in January 1982 and was effective from July 1982 (Ozcayir, 2004; Paris MoU, 2016a). Its members have extended to 27 States as of 2016, including European Union countries, Norway, Iceland, Russia and Canada.

The MOU itself is a kind of "gentleman's agreement", not creating any legal obligations to its members. However, the European Commission adopted the EC Directive 95/21/EC, which imposes obligations on its member states of the European Union to inspect at least annually 25 percent of individual ships calling at their ports from July 1996 (Ozcayir, 2004). Furthermore, innovative measures were introduced when the 24 year-old oil tanker *Erica* and the 25 year-old oil tanker *Prestige* accidents in December 1999 and November 2002 respectively, caused serious environmental pollution along the Atlantic coast of west Europe.

In January 2002, the European Commission adopted Directive 2001/105/EC and Directive 2001/106/EC, which are amendments to Directive 95/21/EC. The Directives, in respect of short term legislative measures, the so called Erica Package I, proposed several measures and became effective on 22 July 2003 (European Union, 2007a). The measures included banning the access of multi-detained vessels[7] to its ports and dictating the conduct of more stringent inspection for old-age ships and supervising classification societies with more stringent quality criteria.

A long-term package of legislative measures, the Erica Package II, was also adopted by the Commission (European Union, 2007b). A vessel monitoring and information system[8] was established by the Directive 2002/59/EC to reduce the risk of accidents in geographic chokepoints such as the English Channel and the Strait of Gibraltar. Vessels bound for EU ports are required to report to port authorities 24 hours before arrival. Additionally a compensation fund, named COPE, and the European Maritime Safety Agency[9] is established (European Union, 2015a).

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[7] It is denied to enter the ports of the Union for ships older than fifteen years that have been detained by PSC more than twice within the two preceding years

[8] It is named to "SafeSeaNet" operated by the European Maritime Safety Agency (EMSA)

[9] EMSA was established by EC Regulation No 1406/2002, which took into force 27 June 2002, to "ensure a high, uniform and effective level of maritime safety, maritime security and prevention and response to pollution caused by ships or by oil and gas installations"

To improve the existing legislative measures on maritime safety, the European Commission adopted in March 2009, the so-called Erica Package III, which became effective on 17 June 2009 (European Commission, 2017; GARD, 2010). The Directive 2009/21/EC requires EU member states to ensure the quality of safety standards of their ships and not register them in the black or grey lists of the Paris MoU. The Directive 2009/16/EC aims to increase the effectiveness of the existing PSC scheme; it describes that all vessels calling on EU ports should be inspected based on a risk profile and that a blacklist of companies operating substandard ships as well as flag states is published.

These "Erica Packages" of the European Commission were incorporated into the Paris MoU accordingly, which gives the effect of strengthening the port states' power to control foreign vessels (Ozcayir, 2004). Thus, the MoU is supplemented and transformed into a "half legal entity" by its EU member States that have vigorous enforcement powers to deny the entry of foreign vessels with multiple detentions according to Section 4 of the MoU[10].

The instruments of the Paris MoU according to its paragraph 2.1 are 12 Conventions with their Protocols including SOLAS 1974, MARPOL 1973/1978, STCW 1978, ILO No. 147, MLC and the International Convention for Control and Management of Ship's Ballast Water and Sediments (BWM), 2004, which entered into force on the 8 September 2017. The interesting instruments of the MoU are the International Convention on Civil Liability for Oil Pollution Damage (CLC 1969) including the 1992 Protocol and International Convention on Civil Liability for Bunker Oil Pollution Damage (Bunker Convention) (Paris MoU, 2016b). These two Conventions that were incorporated by the Directive 2001/106/EC and Directive 2013/38/EC respectively are not listed in the applicable conventions according to the "Procedures for PSC", IMO A.27/Res.1052, adopted in 2011. It is deemed that no clear clause provides the right of sanctions of port states against foreign vessels in the Conventions while contracting port states are given obligations, through paragraph 11 of Article 7 of the CLC and paragraph 12 of Article 7 of the Bunker Convention, to check the validity of insurances or other relevant security items of these ships as required by those Conventions (European Union, 2015b).

The Paris MoU publishes the PSC performance of flag states, whose vessels have been more than 30 inspections over a 3-year rolling period, based on the detention rate calculated by its specific formula (Paris MoU, 2016c). A State having a low risk to be detained is categorized in the "White list" while a State with high risk is registered in "Black

[10] For instance, if a ship of a flag state in the Grey List of the MoU's annual report was detained twice in the course of the preceding 24 months, the ship should be prohibited to enter the EU ports for 3 months. If a ship flying a flag in the Black List is detained twice within 36 months, the ship is under the same sanction. The sanction for multiple detentions gradually increases for 12 months, 24 months and permanence against the second, third and fourth refusal orders respectively

list". If the State is between two groups it comes into the "Grey list". The ships flagged into the Black list are at a disadvantage of being more frequently inspected than other ships in the Grey and White list. Additionally the MoU releases the performance of each RO having a minimum of 60 inspections over a 3-year rolling period with the same formula to calculate that of the flag states (Paris MoU, 2016d).

2.3.2. Tokyo MOU

The Tokyo MOU was signed in December 1993 and has been effective since April 1994 for the purpose of "an improved and harmonized system of PSC and of strengthening cooperation and the exchange of information" (Tokyo MOU, 2016a). The MOU was established under impetus from the IMO Res. A.682(17) adopted in 1991, which the organization invites States to consider concluding and participating in the regional PSC MOU.

The Tokyo MOU, as a non-binding entity, has not any enforcement power and provides a guideline for the general commitment inspection of its 20 full member authorities[11]. Hence, each authority voluntarily determines its national inspection target for individual foreign vessels while the Committee of the MOU monitors the overall inspection activity of the member authorities to achieve the regional inspection rate of 80% of the total number of ships operating in the region according to paragraph 1.4 of the MOU.

The instruments of the MOU include SOLAS, MARPOL, STCW, ICLL, ILO No. 147 Convention, MLC, BWM and CLC 1969; it is very similar to the Paris MoU, except the Bunker Convention. This MOU stipulates that an authority do not impose excessive standards on foreign vessels rather than those applicable to its national flagged ships when applying the regulations of the relevant instruments for PSC.

The Tokyo MOU annually publishes its Black, Grey and White lists based on the flag state's performance. Its evaluation formula is similar to that of the Paris MoU. Additionally, Under-performing ship list is published to increase pressures on substandard shipowners. The member authorities are requested to inspect the ships in the list, which have been detained for three or more times in the region during the last 12 months. As of May 2017, there are 11 vessels in the list (Tokyo MOU, 2017a).

The MOU carries out its Concentrated Inspection Campaign (CIC), normally for three months, on specific areas to prevent accidents related to emerging issues or to check shipping industry's preparedness on new regulations. The MOU has been conducted its

[11] Australia, Canada, Chile, China, Fiji, Hong Kong(China), Indonesia, Japan, Republic of Korea, Malaysia, the Republic of the Marshall Islands, New Zealand, Papua New Guinea, Peru, the Philippines, the Russian Federation, Singapore, Thailand, Vanuatu and Viet Nam

CIC on fire safety system, propulsion and auxiliary machinery, STCW hours of rest, crew familiarization for enclosed space entry and cargo securing arrangement from 2012 to 2016 (Tokyo MOU, 2016b). The most of its CICs have been conducted with Paris MoU for a decade. Especially the CIC in 2015 was carried out by five other PSC regional cooperation schemes including the Latin American Agreement, the Indian Ocean Memorandum of Understanding (IOMoU), the Mediterranean Memorandum of Understanding (MedMoU), and the Black Sea Memorandum of Understanding (BSMoU). The next CIC will jointly be carried out with the Paris MoU on the Safety of Navigation including ECDIS and the MARPOL Annex VI in 2017 and 2018 respectively.

2.3.3. Other PSC MOUs

Spurred by the Paris MoU and IMO Res. A.682(17), the Latin American Agreement was signed on 5 November 1992. Its membership is termed as Members, Co-operating Members and Observers, as similar to the Tokyo MOU (Latin American Agreement, 2017). As of May 2017, its full membership is 15 authorities[12].

The instruments of the Agreement include numerous IMO Conventions as stated in IMO Resolution A.1052(27). However, the ILO No. 147 and MLC Conventions are not included, whereas, the CLC 1969 is. The minimum inspection target of each member authority of the Agreement is 20 percent of the calling foreign vessels during the last 6 months according to paragraph 1.3 of the Agreement.

Following the establishment of the Tokyo MOU in 1994, Caribbean MOU, MedMoU, IOMoU, Abuja MOU and BSMoU were signed in 1996, 1997, 1998, 1999 and 2000 respectively. The latest regional cooperation scheme on PSC among the nine MOUs is the Riyadh MOU signed in 2004. Although their instruments are nearly similar with the ones of the Tokyo MOU, the Riyadh MOU excludes the ILO No. 147, MLC and CLC 1969 Conventions.

The annual inspection target is set to 15 percent of the ships calling at each member authority of the Caribbean, Mediterranean, Abuja and Riyadh MOU while the Indian Ocean MOU agrees each authority inspects 10 percent of all visiting foreign ships. The BSMoU has a similar target to the Tokyo MOU to inspect 75 percent of those visiting in the region annually. The regional MOUs, except the Abuja MOU, have been conducted their CIC inspection for specific areas (IMO Secretariat, 2016).

The inspection data, including detailed detentions, are released through each MOU's public website for transparency. The detention rate varied from 0.48 percent of the Abuja

[12] Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Guatemala, Honduras, Mexico, Panama, Peru, Dominican Republic, Uruguay and Venezuela.

MOU to 6.26 percent of the IOMOU in 2014. The detention rate of the Paris MoU was 3.32 percent in 2014; the Tokyo MOU one was 3.96 percent. For imposing more pressure on substandard vessels, the IOMoU, Abuja MOU and BSMoU have published underperforming ship list similar to the Tokyo MOU.

2.3.4. PSC activity of the USCG

The introduction of ship inspection in the United States ports took place in 1838; the inspection program has been reinforced via several stages since then with the ratification of the ILO No. 147 Convention in June 1988 (Boisson, 1999). On May 1 1994, by the request of the U.S. Congress, the USCG has changed its PSC policy to concentrate its control on substandard ships based on the performance of their owners, charterers, ROs and flag states (Ozcayir, 2004). The instruments of its inspections are mainly IMO Conventions and the ILO No. 147 Convention.

Its inspection priority is basically provided by the boarding matrix that is calculated based on the weighing points of an individual vessel for five parameters of ship management (owner, operator or charterer), flag state , RO, vessel history (inspection, marine casualty and marine violation) and ship particulars (type and age). The Priority I ships are those having a higher total targeting score, which is the sum of weighing points for each parameter, or involved marine casualty or whose RO has more than two percent or greater than the average detention ratio. These ships are targeted for inspection before entering U.S. ports and may be restricted from port entry (USCG 2017). Vessels having a medium targeting score, or with outstanding requirements from a previous inspection, or has not been inspected within the last 12 months, are categorized as Priority II, which is targeted to examine before cargo operations or passenger embarkation/disembarkation while Non-Priority vessels with low safety and environment risks may randomly be selected for inspection.

The USCG publishes the annual “Targeted Flag list”, which has a higher detention ratio than the three-year overall average of the USCG. There are 15 states in the list based on the performance of 2013-2015 (USCG, 2016a). The authority also releases the lists of targeted ship managements and charterers that have been associated with two or more safety detentions within the past twelve months. Additionally, a ship that has been detained three times within a twelve month period must be conducted as an expanded inspection of ISM for determining the banning of entry into U.S. ports (USCG, 2010). There are three vessels in the banning list since the application of the measure took place in 2010 (USCG, 2016b).

3. MARITIME LABOUR CONVENTION (MLC)

3.1 The background and characteristics of the MLC

Since adopting the first convention on seafarers' labour rights in 1920, the ILO has adopted around 41 Conventions for the shipping industry. However, dozens of the Conventions have not been effective due to a limited number of ratifications by member states of the Organization, while some of the Conventions have been ratified by a large number enough to enter into force. Another inconvenience of the Conventions compared to the IMO Conventions is that the scope of each Convention deals with a too specific narrow area and that hence many conventions exist to cover the seafarers' labour rights. For instance, the ILO No. 16 Convention deals with the medical examination of young persons and the ILO No. 58 Convention covers the minimum age of seafarers with only 12 Articles.

Another problem in respect to secure seafarers' right is the lack of enforcement power to implement the requirements of the ILO's Conventions. As shipping is the most internationalized industry, flag states having the jurisdiction of control on their ships are not effective to ensure their ships to maintain seafarers' onboard working condition because of ship's mobility and less calling their home port.

Since initiating discussion to improve seafarers' labour lights in the late of 1990s, the Joint Maritime Commission launched a project in 2000 that is called "Geneva Accord" to collect all relevant ILO instruments and merge them into one single convention. The next year, considering unique tripartite system of the Organization consisting of representatives of workers, employers and governments, a High Level Tripartite Working Group was created to deal the issues of the Geneva Accord. The working group prepared the draft of the MLC for the Diplomatic Conference in 2006 following several important meetings to reach the goal (Durler, 2010).

The MLC was adopted by the majority of the members of the attendants to the Conference in 2006. The Convention not having a Convention number, unlikely to other ILO Conventions, consolidated 68 international conventions and recommendations on maritime labour issues under the auspices of ILO instruments (Abel, 2014; Durler, 2010; ILO, 2017a). The Convention covers seafarers' living and working conditions, including employment, welfare, food and prevention of occupational accidents on board (Mejia, 2016)

The Convention consists of Articles, Regulations and a two-part Code, where Part A provides binding standards while Part B is dealing with non-compulsory Guidelines. The 16 Articles of the Convention prescribe general obligations, including the implementation and

enforcement of member states, scope of application, fundamental rights of seafarers, entry into force and procedures of amendments. Its Regulations and Code are organized into five Titles[13]. Each Title contains the groups of provisions with connected numbering, which consist of hierarchical composition of relevant Regulation, Part A and Part B of the Code. Following the Articles of the Convention, there is an Explanatory Note to the Regulation and Code which is intended as a general guide to understand the legal relationship among the Regulation, Part A and Part B of the Code but do not form of the Convention (ILO, 2009). The Note is a "new figure" in respect to the physical format of convention structure, which is extremely rare in the existing IMO and ILO maritime Conventions (McConnell, Devlin, & Doumbia-Henry, 2011).

The MLC became effective on August 20, 2013 after 12 months from the date of ratifications by at least 30 states, whose total share accounts for more than 33 percent of world total gross tonnage of merchant fleet (Article VIII). Among existing 41 ILO maritime Conventions, 37 legal instruments including one Protocol are revised by the Article X of the Convention[14] (International Labour Office, 2015). This Article has another effect: the countries that do not ratify the MLC will remain bound by the existing Conventions that they have ratified, although those instruments will be closed to further ratification. For instance, the state ratified both ILO No. 147 Convention and MLC leads the effect to automatically denounce from former convention. Out of 56 states that ratified the ILO No. 147 Convention, 15 states of non-party to the MLC including the United States and Brazil, as of May 2017, still maintain the status of contracting government to the Convention (ILO, 2017b)

Another characteristic of MLC in terms of contents is allowing the flexibility of the national level in its implementation. There are two main areas of flexibility as stated in the Explanatory note of the Convention: one is the possibility for a member to recognize substantial equivalence having the same effect to the Standards of the Convention as defined in paragraph 3 and 4 of Article VI and the other is empowering a wider scope of national discretion through the compulsory Standards of the Convention. The former, like the Regulation 5 of Chapter I of SOLAS 1974 and Regulation 5 of MARPOL Annex I for accepting an alternative fitting, materials and design to adapt new technology or specific surroundings, should have at least the effect as those required by the relevant Regulation

[13] Title 1: "Minimum requirements for seafarers to work on a ship", Title 2: "Conditions of employment", Title 3: "Accommodation, recreational facilities, food and catering", Title 4: "Health protection, medical care, welfare and social security protection" and Title 5: "Compliance and enforcement".

[14] Four conventions were excluded; the ILO No. 15 Convention on minimum age (trimmers and stokers), ILO No. 71 Convention on seafarers' pensions, and ILO No. 108 and 185 Conventions on seafarers' identity documents.

and clearly be recorded in Part I of the Declaration of the maritime labour compliance (DMLC) according to paragraph 10 of Standard A5.1.3. While the latter grants flexibility for each flag state, it seems to cause an adverse effect of hampering the universality of unified regulations.

The other powerful development is enhancing implementation by certification and PSC including NMFT on the ships of non-party to the Convention. Certification to ships imposes responsibility on the flag state to implement the requirements of the Convention while PSC acts as supplementing flag states as well as monitoring their performance.

On the other hand, each contracting government is asked to submit its annual reports on how to implement ratified Conventions to International Labour Office according to Article 22 of the Constitution of the ILO. Thus, member authorities of the MLC make the report that is given their new legislative measures affecting the application of the Convention, replies to the questions in the form on the practical application and replies to comments regarding the application of the Convention by the supervisory bodies (ILO, 2010). The information provided by each contracting government would be reviewed by supervisory bodies and, where necessary, is made comments that give the effect for ILO to evaluate the performance quality of flag state as like acting function of “white list” by the STCW mentioned in 2.1.5.

3.2 Application of the MLC

The MLC basically applies to all seafarers who are employed or engaged in any capacity on board a ship to which this Convention applies (Article II.2). If there is a question as to whether certain categories of persons are to be regarded as seafarers, the flag state would determine it after consultation with the shipowners’ and seafarers’ organizations (Article II.3).

Considering the traditional concept that a master is an allegiant agent for the owners in commercial matters, as well as a representative of the ship and an administrator for ship’s crew in public aspect, masters had not been regarded as a seafarer by other Conventions and especially shipowners’ party (Cartner, 2014). According to the definition of the Convention, a ship’s master is also defined as a seafarer (Cartner, 2014; Durler, 2010). Hence, a master has the rights of enjoying decent working and living conditions as a seafarer in personal entity while he or she, in respect of public view, has the duties to familiar with following regulations of the Convention and to secure their implementation (Standard A5.1.3.7(c))[15].

[15] record-keeping of seafarers’ employment document on board, recording hours of rest, ensuring repatriation, maintaining safe manning level, preserving decent accommodation and recreation

The Convention applies to all ships, ordinarily engaged in commercial activities, other than fishing boats, warships, naval auxiliaries and traditional ships such as dhows and junks (Article II.4). However, the Convention does not apply to ships that navigate exclusively in inland waters or waters within, or closely adjacent to, sheltered waters or areas where port regulations apply by the definition of ship (Article II.1(i)). Flag states determine whether a specific category of ships applies to this Convention or not (Article II.5).

Any determination by flag stats as to whether a specific person on board or ships apply to this Convention and application of grace period for certain rules to domestic ships of less than 200 gross tonnage shall be communicated to the Director-General of International Labour Office, who notify them to the member states (Article II.7). For instance, by the determination of the Republic of Korea according to the Article, the followings are not regarded as a seafarer: technicians and workers temporarily joining a ship for the purpose of repairing the ship; harbour pilots, workers working for ships only operating in harbor area; trainees and cadets (ILO, 2016).

While most IMO Conventions apply new rules to a ship if the ship is under the category of a major conversion or alteration for a specific regulation, the MLC does not apply such a definition. This means Regulation 3.1.2 of the MLC that relates to ship construction and equipment applies to ships constructed on or after the twentieth August 2013, regardless of a ship's conversion date. This is also clearly stated in paragraph 2.2 of the Tokyo MOU.

3.3 PSC under the MLC

Unlike other ILO maritime Conventions, the MLC gives clear legal grounds of the port states' right to exercise active PSC inspections on foreign vessels calling at their ports (Article V.4 and Regulation 5.2). The regulations are deemed not to impose obligation to port states while the flag states have an obvious obligation to control their ships under paragraph 7 of Article V. This means PSC, as a general obligation of the contracting government, is a discretionary power to protect its national interests and to secure the goals of the relevant Conventions (Kasoulidies, 1993).

The MLC clearly describes the NMFT clause in paragraph 7 of Article V that the Convention applies to the ships flagged in non-ratifying states. Thus, the port state that has ratified the MLC, as the same as most of IMO Conventions, may inspect foreign ships in its ports regardless of their nationality in order to set a level playing ground.

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facilities and catering, taking measures accident prevention, posting inspection reports by flag stats and establishing on-board complaint procedures.

On the other hand, MLC has a unique procedure for seafarers to report a breach of the Convention to the competent authority when they visit a harbor for the prompt and practical measure of remediation according to Regulation 5.2.2. The port authority receiving seafarer complaints should undertake relevant investigations, which is the obligation of the port state. The scope of the investigation by receiving a complaint is not limited to one of the 14 areas listed in Appendix A5-III of the Convention according to paragraph 79 of the Guidelines for port state control officers under the MLC, 2006 (PSC Guideline) adopted by the tripartite expert's meeting in 2008. If the complaint is not resolved at the ship-board level, it should be notified to the flag state or where necessary to the Director-General of the International Labour Office. Before reporting to the port administration, seafarers may directly raise the issue to the ship's committee or master of the ship or lodge to the external authorities (Standard A5.1.5). The on-board complaint procedures should be provided to include the right of seafarers to be accompanied or represented during the procedure and safeguard against the possibility of seafarer's victimization for filing complaints. The paragraph 7 of the Standard describes that safeguard measures on the confidentiality of the complaints should be taken.

3.4 Challenges of conducting PSC in relation to MLC

The instruments of PSC are normally based on "applicable international standards", which mean international conventions, rather than national requirements. When conducting a PSC, the port authority is requested to exercise its power without discrimination against foreign vessels voluntarily calling at its ports according to Article 227 of UNCLOS. As a more specific example, paragraph 2.6 of the Tokyo MOU describes that the port authority will not impose standards on foreign vessels that are in excess of the standard applicable to ships flying the flag of that port state. In addition, the port authority exercises its power within reasonable expectation because excessive measures by the authority may cause retaliatory measures by its counterparts (Kasoulides, 1993).

Although the Convention does not describe specific requirements, there are simple ideas on the policy of inspection and enforcement activities and on the professional profile and requirements of the authorized officers by port states in paragraph 7 of Standard A.5.2.1 and paragraph 33~38 of the PSC Guideline. The officers should carry out the PSC inspection in a consistent manner based mostly on international standards and be reluctant to apply their national requirements that go beyond the standards.

On the other hand, many Standards to grant national discretion in the MLC are explained in 3.1 as shown in Table 1. One of the reasons allowing wide national discretions can be

explained by the facts that there are 8 Conventions[16] out of 37 Conventions consolidated by the MLC, as shown in Table 2, have not been effective. Even the other effective Conventions had been ratified only by less than half of the shipping states or dominant flag states at the time of MLC adoption. The largest number of ratifications among them is 82 States for the ILO No. 16 Convention while most of the other ILO Conventions have recorded less than 50 contracting governments. It is arguable whether the Conventions ratified only by these small numbers of states could be recognized as "generally accepted international regulations" or "applicable international rules and standards" by Article 94 and Article 219 of UNCLOS.

Another reason is that it is necessary to get a result in the agreement of the majority of states for the adoption and early entry into force of the MLC, considering that the 30 states and 33 percent requirements of the MLC to entry into force are more strict than other ILO conventions, i.e. that of ILO No. 147 Convention is 10 members and 25 percent (McConnell, Devlin, & Doumbia-Henry, 2011). Furthermore, Title 5 on implementation of flag and port states with NMFT clause, as a new context in ILO Conventions, makes States cautious when considering their ratification.

Among two flexibilities in MLC, substantial equivalence should clearly be recorded in Part I of the DMLC defined in paragraph 10 of Standard A5.1.3, thus PSC officers could easily identify it and assume its scope of variation from the Standards. While national discretion seems to be more complicated for the officers since, although concise national regulations are provided in the DMLC, there is no clear reference for deciding whether it is relevant or not. To define its relevance, the officers should be accustomed to each flag states' regulations or communicate with the relevant maritime administrations when suspecting. Hence, it is deemed difficult to fill these conditions considering that no officers are clued up to each member's national rules. Additionally, getting feedback from the flag state in a timely manner is very restricted by the time officers to review the national and conventional rules and judge what actions are appropriate to reach the goal of the Convention without causing the unduly delay of a ship's operation. Especially, certain types of vessels including containerships, car carriers and cruiser ships stay only for a few hours in a harbor, which is not providing adequate time for the officers to communicate other administrations to confirm their rules. These constraints may result in a reluctance to inspect foreign ships actively for the regulations granting national flexibility.

[16] Holidays with Pay (No.54), Social Security (No. 70), Paid Vacations (No. 72), Wages, Hours of Work and Manning (No. 57, 93 and 109), Accommodation of Crews Convention, 1946 (No. 75) and Wages, Hours of Work and Manning (Sea) Convention, 1946 (No. 76)

4. Hypothesis and methodology

4.1 Hypothesis

In the aspect of PSC that should be conducted on the basis of international standards, the flexibility of a Flag state should not be desirable and may act as a negative influence due to the lack of the knowledge and source of PSC officers for a Flag state's specific rules. It can be expected that such flexibility results in excluding or inactively exercising PSC inspection for specific areas.

On the other hand, the various areas of the MLC are not fully covered by the ILO No. 147 Convention, which was the only instrument to conduct PSC inspection among the ILO Conventions before the adoption of the MLC (Ozcayir, 2004; Paris MoU, 2016b; Tokyo MOU, 2016a). Therefore, the PSC inspection results between before and after three years of the effectuation of the Convention would be different because the Parties to the MLC and the ILO No. 147 Convention and their coverages are not the same as each other. However, if we compare the same nature of the deficiency, we can access the change between two periods. From the analysis, the paper can evaluate how the MLC acts for the decent working and living conditions of seafarers and identify non-compliance areas, which show the categories of ships that are vulnerable to the Convention.

Therefore, this paper, based on these assumptions, will explore the hypothesis that;

① the flexibility of Flag states' discretion under the MLC takes an adverse effect to Port state enforcements;

② PSC inspection data can be used as an indicator to show the weak areas of implementing the MLC, which can compare the PSC outcomes of the IMO conventions to the MLC;

③ there is a significant change in the statistics between the ILO No. 147 Convention, which had been conducted before the entry into force of the MLC, and the MLC; and

④ the PSC results on the MLC between Paris MoU and Tokyo MOU are not the same, which reflects their regional circumstance.

4.2 Dataset

To demonstrate the hypothesis mentioned in 4.1, the data of the Paris MoU and Tokyo MOU are used as shown in Table 3. The reason is that both MOUs are recognized as the most active and well-organized ones among nine regional PSC cooperation schemes, as explained in 2.3. However, 88,812 deficiency records in this Table are not the same as the number in their Annual Reports (Paris MoU, 2013, 2017a; Tokyo MOU, 2017b). This might be a result of the re-arrangement of their deficiency coding system for the implementation of the MLC.

Both MOUs developed similar coding systems in order to process data concisely and precisely for ship type, flag state, RO, port authority, port of inspection, certificates, deficiency group and nature of deficiency. The Deficiency codes of both MOUs have the same structure and nearly same codes for deficiencies as shown in Table 4. However, a few deficiencies are not exactly the same to each other (Paris MoU, 2017b; Tokyo MOU, 2017c). For example, the Tokyo MOU has 13 sub-codes under the ISM deficiency group while the Paris MoU has only one sub-code.

The codes of deficiency group for the ILO No. 147 Convention by both MOUs are 091 and 092 and that of MLC are 181, 182, 183 and 184, which is the same arrangement to each Title of the Conventions. The codes of deficiency groups for both Conventions have several sub-codes as shown in Tables 5 and 6.

The system also includes the certificates related to the MLC, such as Medical certificate (deficiency Code 1218), Training and qualification by MLC for personal safety training (1219) and Seafarers' employment agreement (1220) that are categorized into the deficiency group of "Certificate and Documentation – Crew Certificate".

4.3 Methodology

This research has examined the regulations of the MLC by authorizing national discretion through the interpretative approach and will carry out an analysis for the PSC data of both MOUs. The data will be analyzed by the correlation among ship's age, type, size, nature of deficiencies and detentions for two periods of three years before and after 2013 in two regional MOUs.

The paper will identify the difficulties in carrying out PSC inspection with the flexibility of national discretion, the trend of deficiencies and detentions pointed out by both MoUs for two ILO Conventions and the weak parts of the MLC in terms of PSC inspection. The discussion will then be followed by the outcome of the analysis.

Therefore, this paper will

- review and study some pre-literature and methodologies related to the background of the PSC and the MLC;
- examine the reluctance and difficulties to exercise PSC inspection in the MLC regulations including Flag states' discretion clauses;
- analyze the PSC inspection data of the Paris MoU and Tokyo MOU of before and after three years of MLC implementation ;
- attempt to interpret the dataset and discuss the implication of analysis and identify the statistical trend therefrom; and
- suggest to lessen the burden of PSC officers dealing the Flag states' discretion clauses in the MLC and to correspond the weak areas be dealt for further improvements.

5. DATA ANALYSIS AND DISCUSSION

5.1 Overview of the PSC results

The total PSC inspections conducted by the Paris MoU have decreased from 24,058 inspections in 2010 to 17,828 inspections in 2016. Those of the Tokyo MOU have increased from 25,762 inspections to 31,678 inspections during the period as shown in Table 7. While total number of deficiencies and detentions had been reduced in both MOUs, the detention rate of the Paris MoU has maintained an uprising trend from 3.28 percent in 2010 to 3.79 percent.

While the deficiencies of the Paris MoU for the MLC including the ILO No. 147 Convention have decreased from 9,989 in 2010 to 6,730 in 2016, those of the Tokyo MOU have increased from 2,990 in 2010 to 6,622 in 2016. The number of detentions related to the MLC in the Paris MoU during the six years was 8,607 and its average detention rate to the deficiencies was 19.30 percent. On the other hand, the number of detentions in the Tokyo MOU during the period was 6,046 with a 19.04 percent of its average detention rate. The detention rate in the Paris MoU for both Conventions has been going up from 16.87 percent in 2010 to 22.21 percent in 2016 while that of the Tokyo MOU has gone down from 27.79 percent to 14.56 percent during the period.

For the deficiencies related to the MLC, both MOUs had the same trends of increasing more than 20.7 percent annually during the three years. The deficiency areas for Title 1 accounted for only 1.6 percent to the whole MLC deficiencies in two MOUs while the deficiencies for Title 4 overwhelmed other areas with more than 51.5 percent.

5.2 Statistics of the PSC inspection of the Paris MoU

5.2.1. Analysis of the deficiencies of the Paris MoU

The most frequently identified deficiency related to both Conventions in the Paris MoU during the six years was the cleanliness of engine room (deficiency code 9232) as shown in Figure 1. The second was sanitary facilities (9106 and 18302) followed by electrical (9209) and ropes/wires (9227), which are the deficiency group of working conditions. The next deficiency was personal equipment (18412) and wages (18203). The highest detention rate among major deficiencies in the MoU was code 18203 with 52.0 percent followed by provisions quantity (18314 and 9128), code 18302 and ventilation for accommodation (9103).

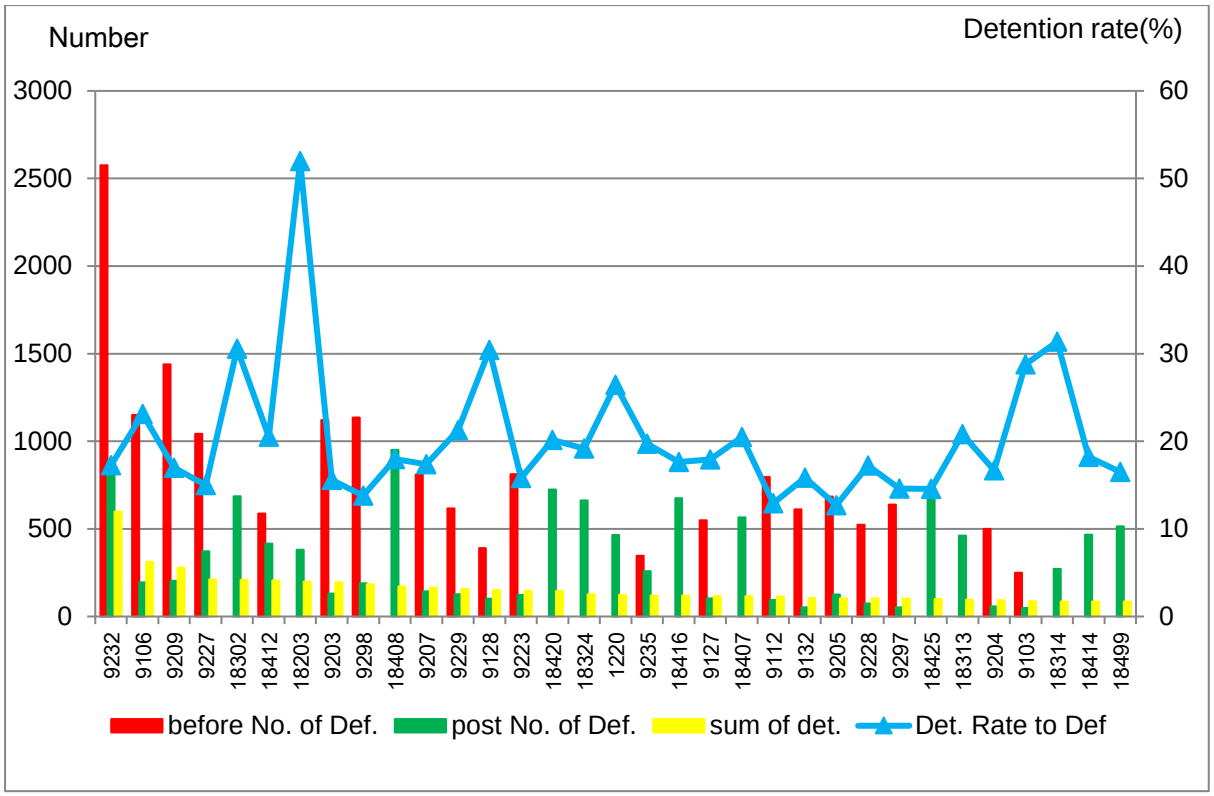

Figure 1 Major detentions in the Paris MoU

For the relationship of ship type-age compared between 2010-2012 and 2014-2016, the number of deficiencies for General cargo ships was decreasing in all ages except for 5-10 and 15-20 years intervals as shown in Figure 2. The number of deficiencies for the type, which was the largest one with 20,423 deficiencies (44.8 percent) among a total of 45,579 deficiencies during the period, peaked at the age interval of 25-35 years. The second largest type was Bulk carriers with 9,212 deficiencies (20.2 percent) that were increasing up to 20 years after implementing the MLC compared to those of before 2013. The Most deficiencies were for Containerships with 3,154 deficiencies in the range of 5-20 years. Chemical tankers had the trend of increasing deficiencies for the range of 5-15 years after 2013. RO-RO cargo ships having a 3.50 percent share fluctuated in ages and peaked their deficiencies at the interval of 30-35 years. The Refrigerated cargo carrier of the ranges of 15-30 years had a higher portion of deficiencies while 5-15 years-old Oil tankers had many deficiencies for the type. Additionally, the distribution of deficiencies by nine age groups fluctuated from 5.7 percent for 40 years and above to 14.8 percent for 25-30 years.

The analysis for the other ship types are excluded in this study since those are not seemed as major ones. Also the limitation of this study's wording is considered.

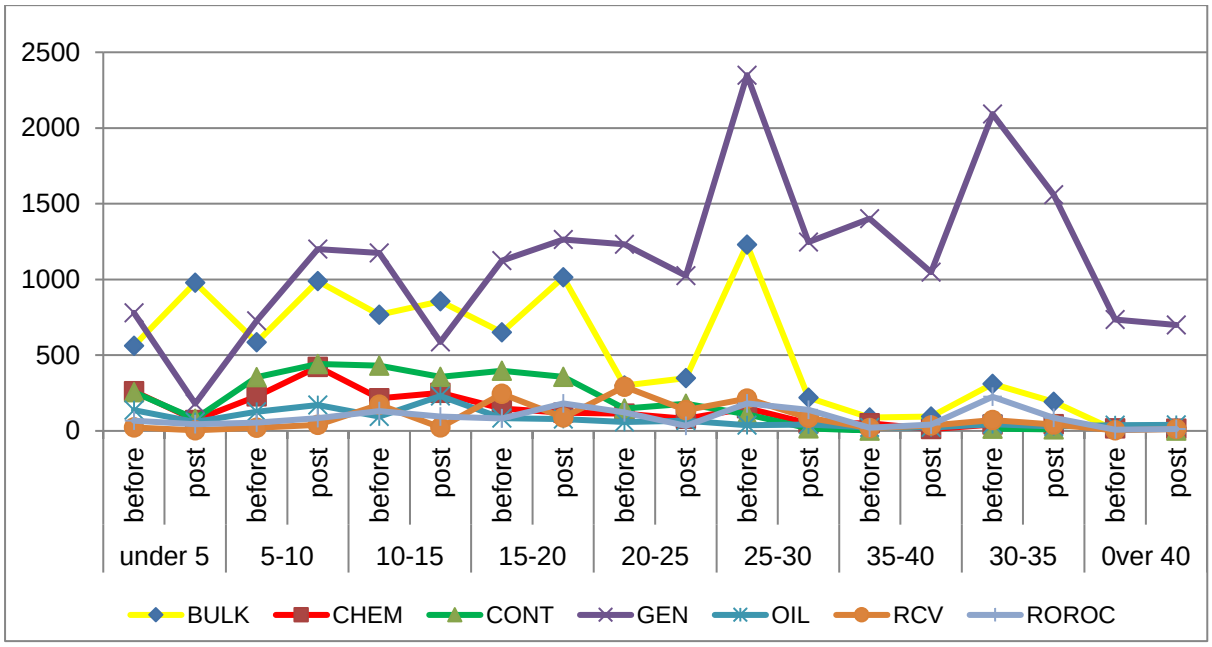

Figure 2 The deficiencies of the Paris MoU by ship type-age

The deficiencies of General cargo ships for the six intervals of relationship between ship type and gross tonnage were decreasing after 2013 compared to before 2013 as shown in Figure 3. The interval of 2,000-5,000 tons of the type peaked with 5,826 deficiencies during 2010-2012 and 4,834 deficiencies after 2013. Bulk carrier's deficiencies were concentrated in the range of 5,000-50,000 tons and the interval of 20,000-50,000 tons increased and peaked with 2,709 deficiencies after 2013. Containerships had the most deficiencies for 5,000 tons and above and peaked at the interval of 5,000-20,000 tons with 699 deficiencies before 2013.

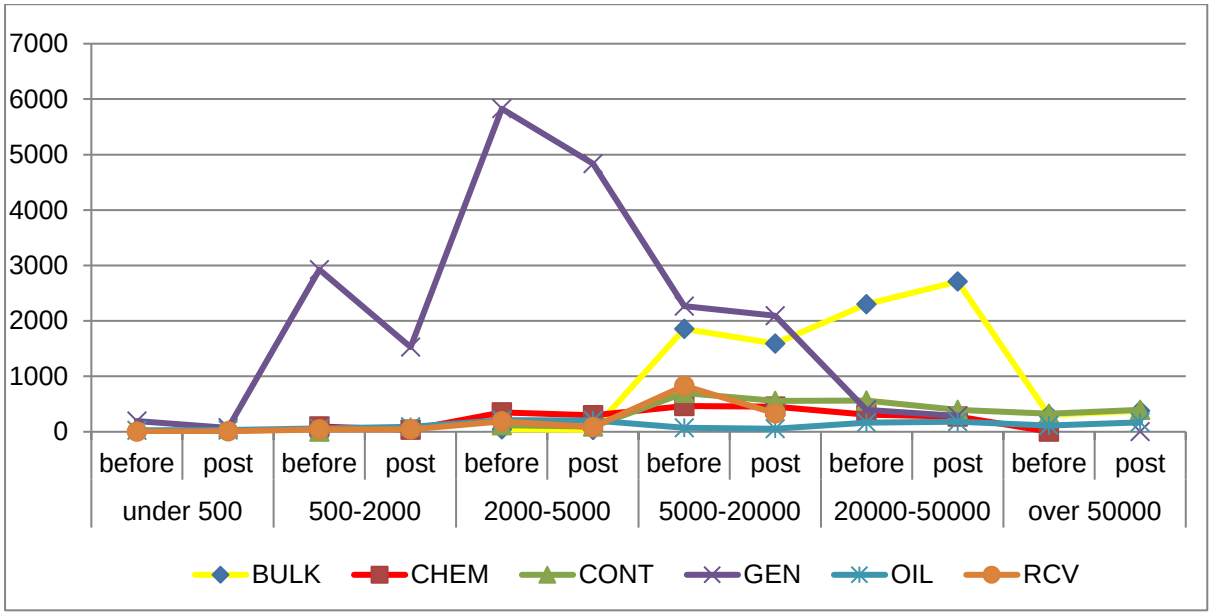

Figure 3 The deficiencies of the Paris MoU by ship type-gross tonnage

Chemical tanker's deficiencies positioned in the range of 2,000-50,000 tons and had no significant changes before and after 2013. Oil tankers were increasing deficiencies in the range of 20,000 and above after 2013. Refrigerated cargo carriers' deficiencies peaked at 829 in the interval of 5,000-20,000 tons before 2013 and fell to 332 after 2013.

The deficiencies of less than 500 gross tons and less than 5 years were 8.6 percent of the total deficiencies among nine intervals of ship ages and increased at the interval of 40 years and above from 77 to 233 after 2013 as shown in Figure 4. The deficiencies of 500-2,000 tons after 2013 had a smaller number than those of before 2013 and hit a high point of 873 at the interval of 25-30 years. Similarly, 2,000-5,000 tons' deficiencies took a higher portion in the range of 25-35 years. 5,000-20,000 tons' deficiencies peaked with 1,466 after 2013 at the interval of 5-10 years and jumped from 804 before 2013. The deficiencies of 20000-50,000 tons increased after 2013 compared to those of before 2013 up to 20 years and had small portions after 30 years. The deficiencies of 50,000 tons and over marked less than 317 with reducing to less than 77 in the range of 20 years and above.

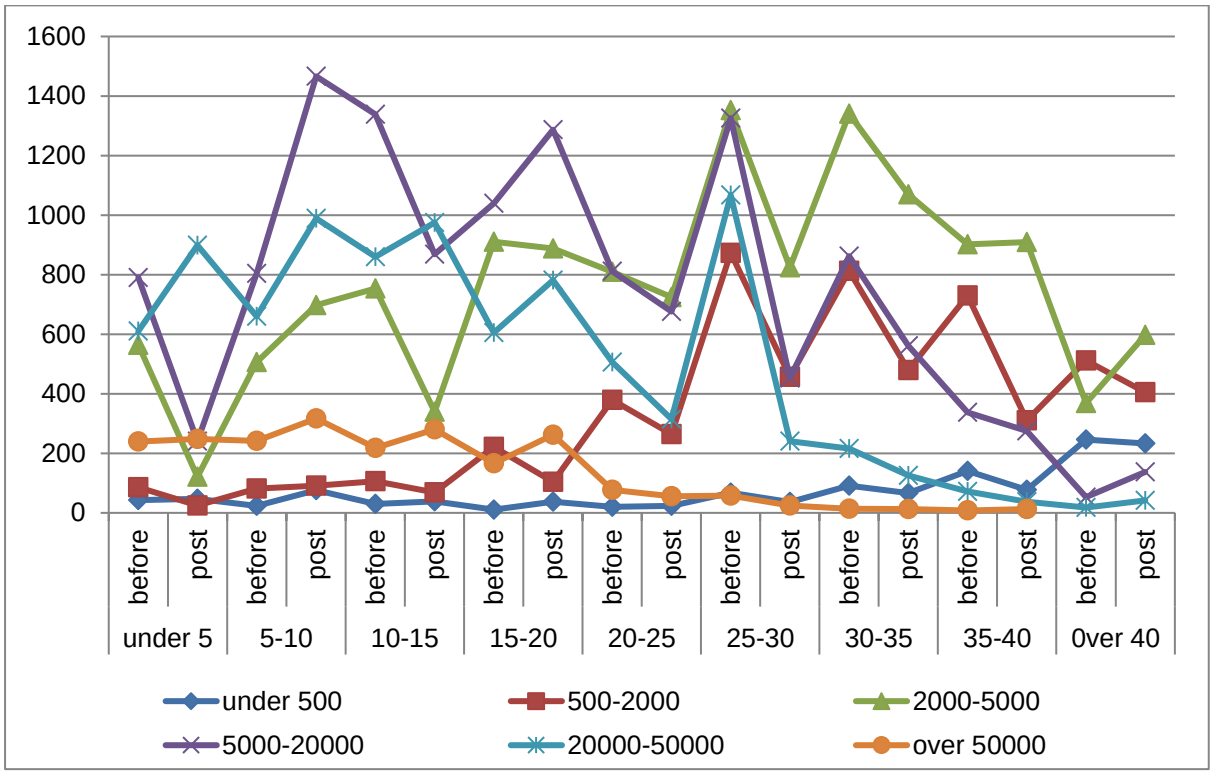

Figure 4 The deficiencies of the Paris MoU by gross tonnage-age

The greatest deficiencies for General cargo ships was the deficiency code 9106 in Table 6 followed by medical equipment (code 9112), cold room temperature (9132), code 9128 and cleanliness for living conditions (9127) as shown in Figure 5. Bulk carriers had a similar trend except for positioning code 1220 in fifth place. The major deficiencies of

Containerships, Chemical tankers, Oil tankers and Refrigerated cargo carriers were similar to those of Bulk carriers.

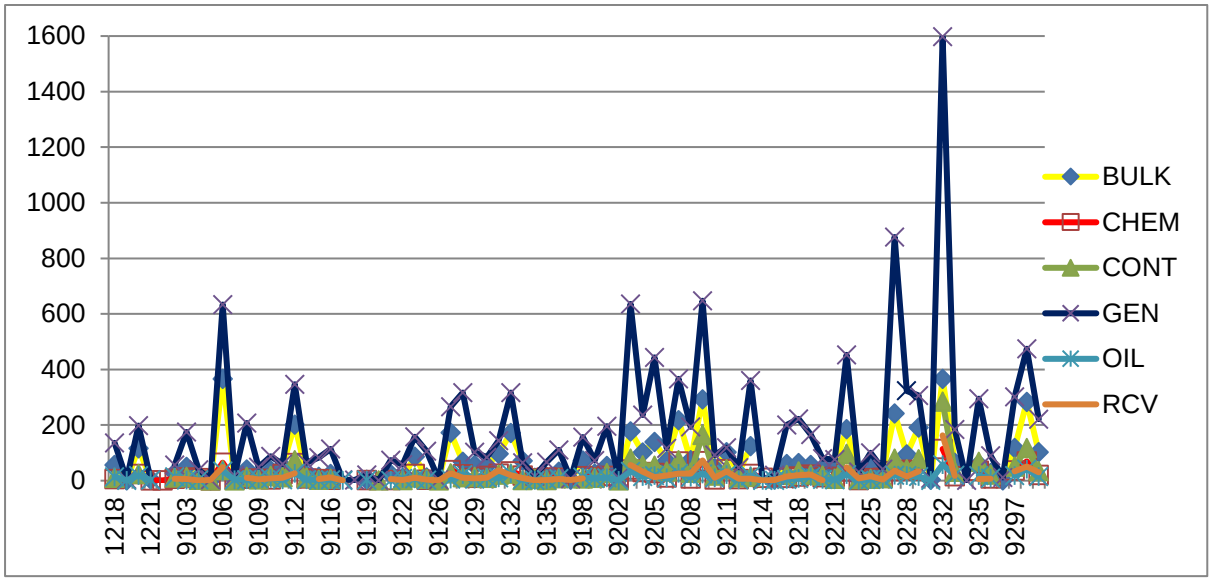

Figure 5 The deficiencies of the Paris MoU by ship type-deficiency code

Ships of less than five years old had high frequent deficiency codes of 9209, 9112, and 9298 while the highest deficiency for the group of 5-10 years was code 18408 followed by the codes of 9232, 9209, 18324 (cold room, cold room cleanliness, cold room temperature) and 9298 as shown in Figure 6. The highest deficiency codes for the group of 10-15 years were the codes of 9232, 9209, 9298, 18408 and 18425 (access / structural features), which was nearly the same trend with the other groups.

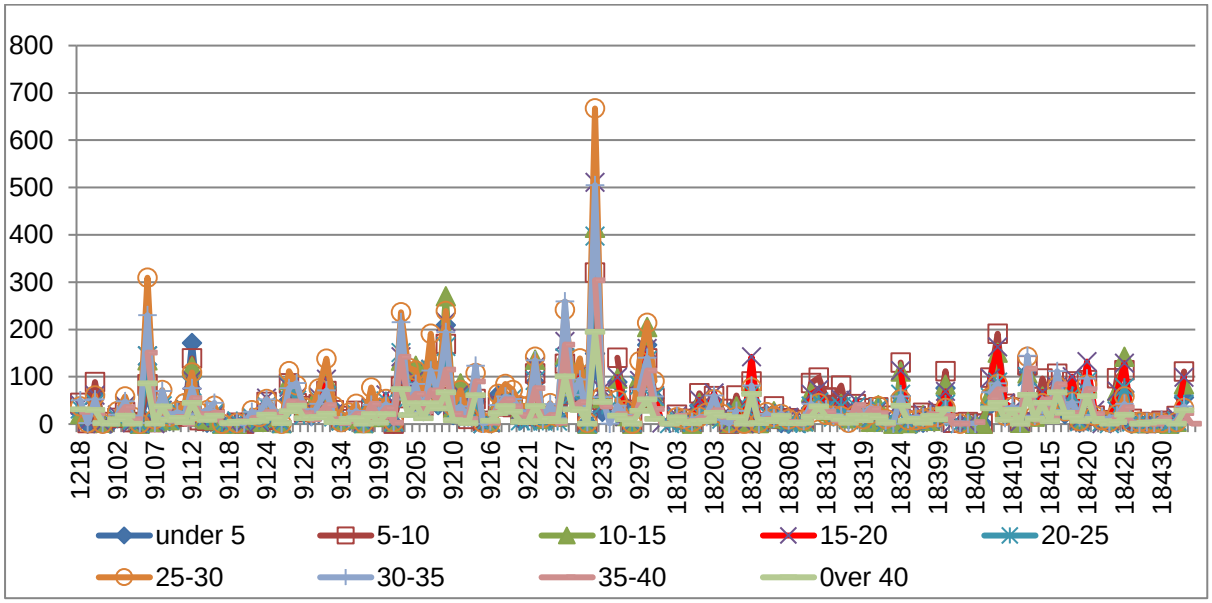

Figure 6 The deficiencies of the Paris MoU by ship age- deficiency code

5.2.2. Analysis of the detentions of Paris MoU

The number of detentions for General cargo ships was generally increasing as a ship's age gets higher and the interval of 5-10 years and 15-20 years increased in the number of detentions after 2013, compared to those of before 2013 as shown in Figure 7. The number of detentions for this type was the largest with 4,840 detentions (56.2 percent) among a total of 8,607 detentions during the period, peaking at 548 at the age interval of 30-35 years before 2013. The second largest type was Bulk carriers with 1,572 detentions (18.3 percent), which was increasing after 2013, compared to those of before 2013 except for the interval of 25-30 years. 10-20 year old Containerships were more vulnerable to be detained and the intervals of 5-10 years and 20-25 years had more detentions after 2013 than before 2013. Interestingly, RO-RO cargo ships were the fourth largest group with 325 detentions peaking at the interval of 25-30 years. Chemical tankers had the trend of increasing detentions for the range of 5-15 years after 2013, while the age groups of 25-30 years and 30-35 years accounted for more than 17.0 percent of the total detentions respectively, the group of less than five years taking 4.2 percent. Oil tankers recorded only 155 detentions during 6 years.

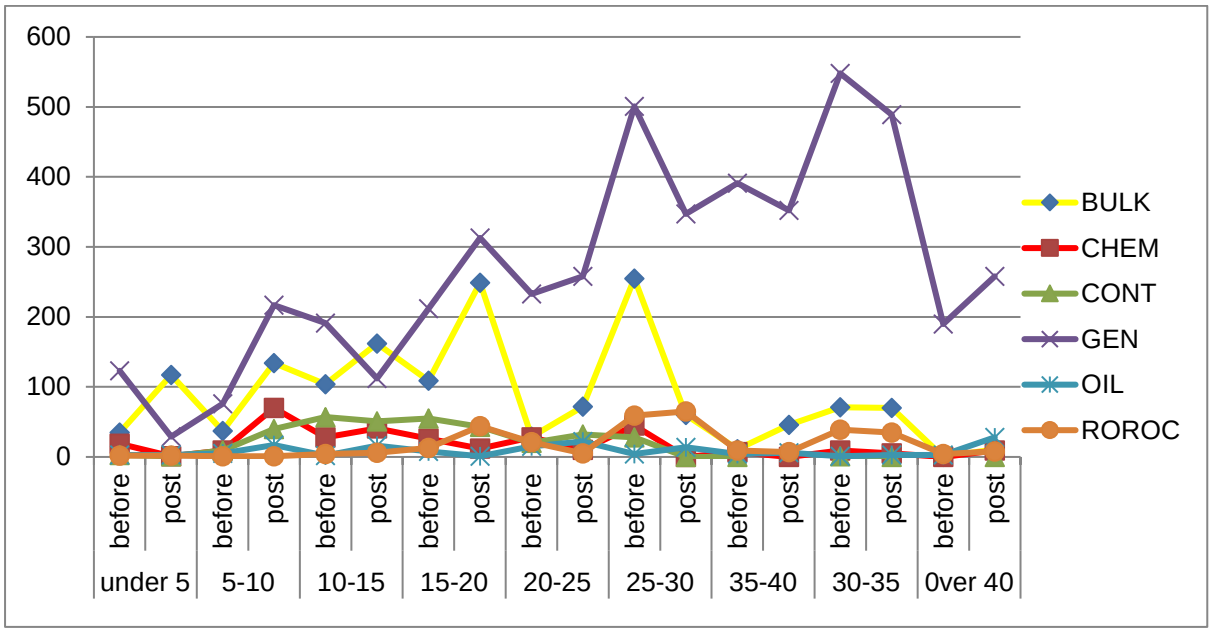

Figure 7 The detentions of the Paris MoU by ship type-age

About 51.7 percent of the detentions for General cargo ships were marked at the interval of 2,000-5,000 gross tonnage. Detentions of the groups of 2,000-5,000 and 5,000-20,000 tons rose after 2013 compared to before 2013 as shown in Figure 8. About 95.8 percent of the detentions for Bulk carriers were concentrated in the range of 5,000-50,000 tons, which were increasing after 2013, compared to those of before 2013. The range of 5,000-50,000 tons of Containers accounted for 86.5 percent of their detentions. The intervals of 5,000-

20,000 and 50,000 tons and above for the type were increasing after 2013 compared to those of before 2013. The range of 5,000-50,000 tons of RO-RO cargo ships accounted for 74.5 percent of their detentions and the detentions of the range increased after 2013, compared to before 2013. The group of 2,000-5,000 tons of Chemical tankers shared 41.4 percent of detentions for the type and the 5,000-20,000 tons' interval increased after 2013, compared to those of before 2013.

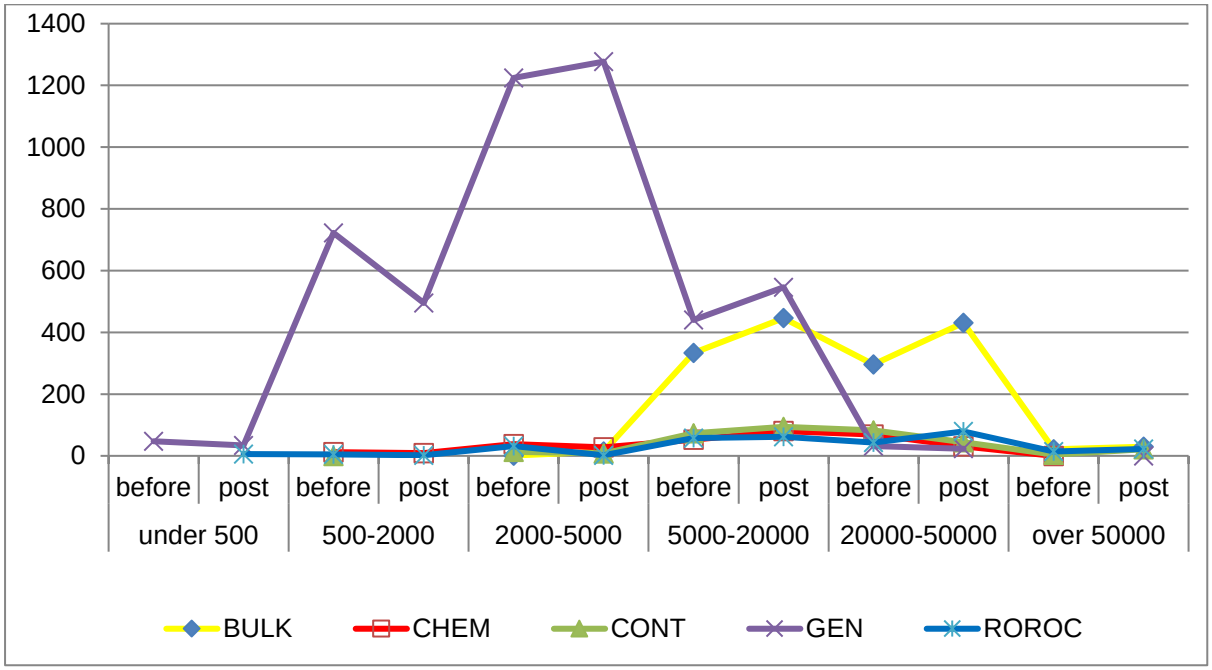

Figure 8 The detentions of the Paris MoU by ship type-gross tonnage

The detentions of less than 500 gross tons accounted for only 3.3 percent of the total detentions of six groups and the interval of 40 years and above took 46.5 percent of the group's detention as shown in Figure 9. The detentions of the 500-2,000 ton group concentrated with 85.7 percent in the range of 25 years and above. The 2,000-5,000 ton group had the highest detention with 34.1 percent, accounting for 65.3 percent in the group for the age of 25 and above. The 5,000-20,000 ton detentions peaked at the age of 15-20 and were increasing in seven intervals, except the intervals of less than five years and 25-30 years after 2013, compared to those of before 2013. The detentions of the 20,000-50,000 ton group were increasing after 2013 compared to those of before 2013 up to 20 years and accounted for 32.7 percent in the group for the age of 25 and above. The detentions of 50,000 tons and over, which were the lowest among the groups, accounted for only 1.6 percent. The range of 10-20 years shared 62.6 percent for the group's detention and were increasing after 2013 compared to those of before 2013.

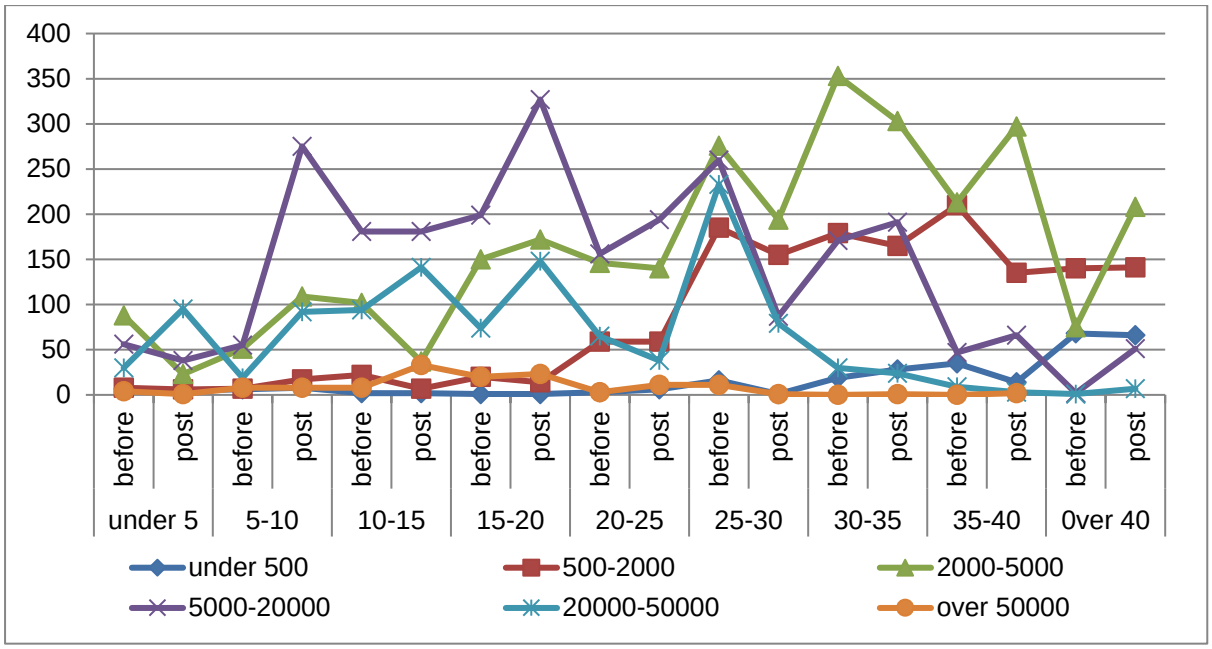

Figure 9 The detentions of the Paris MoU by gross tonnage-age

The greatest detention item for General cargo ships was deficiency code 9232 with 332 detentions followed by the codes of 9106, 9209, 9227 and 18412 as shown in Figure 10. The major deficiency codes of Bulk carrier detentions were 9232, 9106, 18302, 9209 and 9298. Those of Containerships were 9232, 9209, 9298, 9203 (Lighting for working spaces) and 18420 (Cleanliness of engine room) while the codes of 9232, 18424, 9106, 9207 and 9112 were for Chemical tankers. RO-RO cargo ships were mainly detained by the deficiency codes of 9232, 18408, 9298, 9209 and 18420.

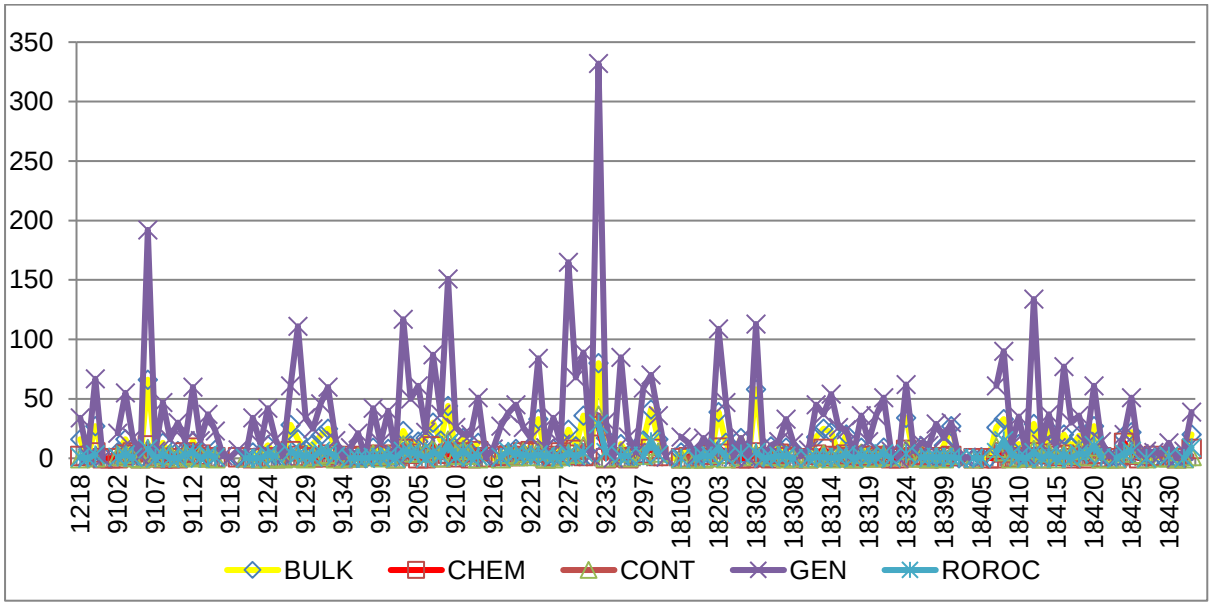

Figure 10 The detentions of the Paris MoU by ship type-deficiency code

5.3 Statistics of the PSC inspection of the Tokyo MOU

5.3.1. Analysis of the deficiencies of the Tokyo MOU

The most notable deficiency in the Tokyo MOU was records of rest (deficiency code 1308) followed by code 9232, gangway/accommodation ladder (9223) and others for accident prevention (9298) as shown in Figure 11. The top 15 deficiencies in the MOU were under the deficiency group of working conditions, except code 1308, schedules for watchkeeping personnel (1306) and seafarers' employment agreement (1220). The next coming deficiencies were electrical (code 18408), manning specified by the minimum safe manning (1209) and ropes/ wires (18416). The highest detention rate among major deficiencies in the MOU was code 1209 with 37.0 percent followed by code 18203, other for working space (9297) and code 18314.

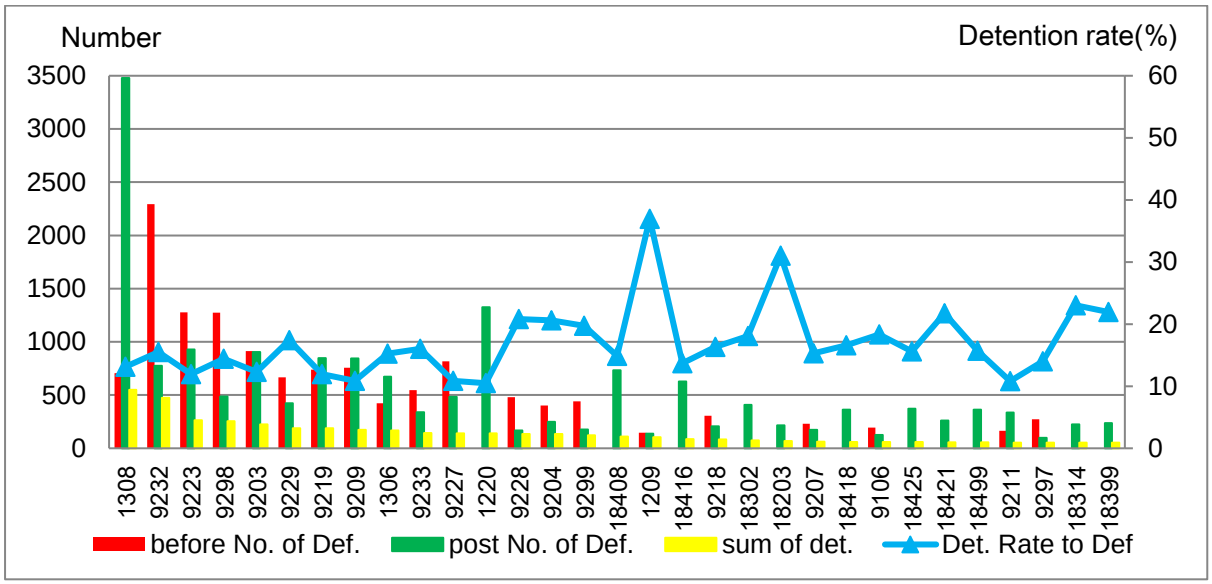

Figure 11 Major detentions in Tokyo MOU

The largest ship type having deficiencies related to the MLC and ILO No. 147 Conventions in the Tokyo MOU during six years was General cargo ships that accounted for 36.5 percent (15,786) of the total of 43,233 deficiencies as shown in Figure 12. The type's deficiencies peaked at the interval of 5-10 years after 2013 and the range of 5-30 years was rising after 2013, compared to those of pre-implementing the MLC. Bulk carriers with 29.9 percent of total deficiencies peaked their deficiencies at the same interval of General cargo ships and declined as a ship's age was getting older. The type had bigger deficiencies in the range of less than 25 years after 2013 than before 2013. Containerships, Chemical tankers and Oil tankers with 12.0, 5.4 and 5.0 percent of total deficiencies respectively had a similar

trend to Bulk carriers. For the distribution of deficiencies by nine age groups, the highest group was 5-10 years with 22.7 percent and a range of less than 30 years accounting for 90 percent of total deficiencies.

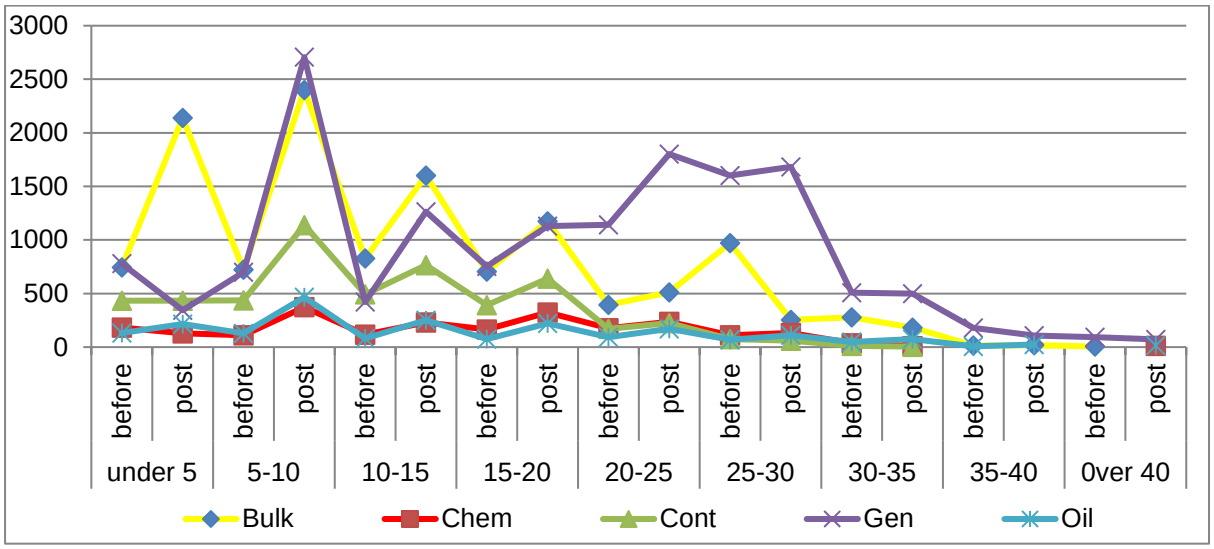

Figure 12 The deficiencies of the Tokyo MOU by ship type-age

96.0 percent of the deficiencies of General cargo ships positioned in three intervals of 500-20,000 tons among six intervals of gross tonnage and the type's deficiencies were increasing until 50,000 tons after 2013 compared to those of before 2013 as shown in Figure 13. Bulk carrier's deficiencies were concentrated at the interval of 20,000-50,000 tons and increased for more than 500 tons after 2013, compared to those of before 2013.

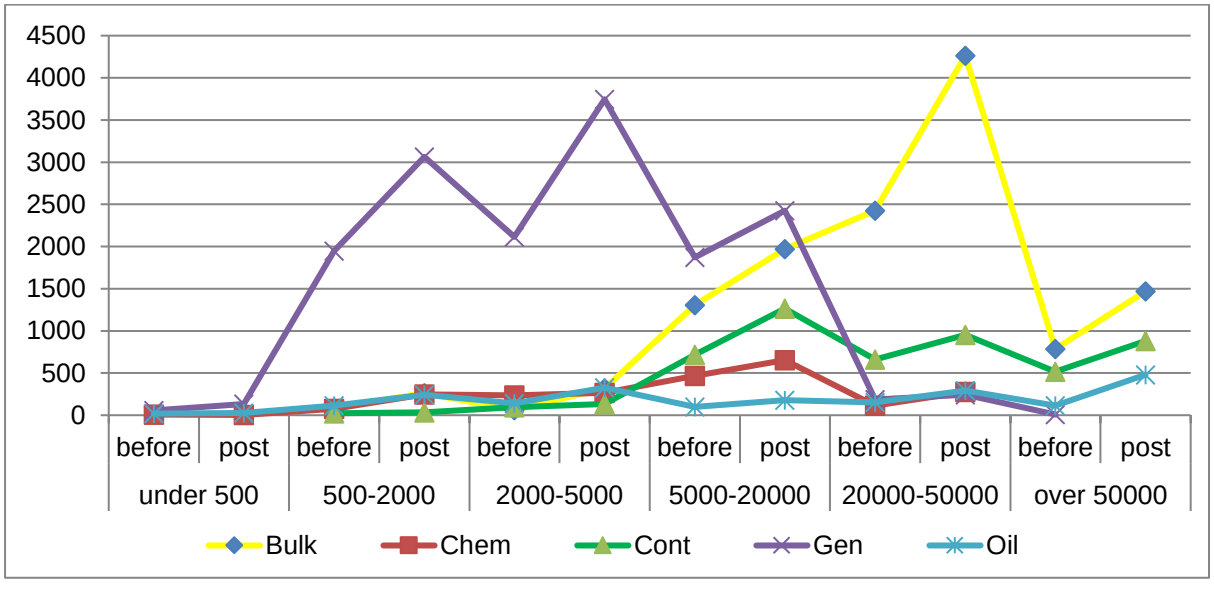

Figure 13 The deficiencies of the Tokyo MOU by ship type-gross tonnage

Containerships had the most deficiencies for 5,000 tons and above and their deficiencies were rising at the range of 500 tons and above after 2013, which was a similar trend to Chemical tankers and Oil tankers.

93.0 percent of deficiencies were concentrated in the range of less than 30 years. The deficiencies of less than 5 years peaked at the interval of 20,000-50,000 tons and were increasing at the intervals of less than 500 tons and 20,000 tons and above as shown in Figure 14. The deficiencies of the 5-10 year group were the largest with 22.7 percent among nine groups of ages, which peaked at the interval of 5,000-20,000 tons and were increasing at all the intervals after 2013. The deficiencies of 10-15 years peaked at the interval of 20,000-50,000 tons and were increasing at all intervals after 2013. The deficiencies of 15-20 years peaked at the interval of 5,000- 20,000 tons and were decreasing only at the intervals of 500-2,000 tons after 2013. The 20-25 year deficiencies peaked at the interval of 500-2,000 tons and increased until 2,000 tons, which was the same trend as the 25-30 year deficiencies. The 30-35 year group accounted for 5.0 percent of the total deficiencies and peaked at the interval of 5,000-20,000 tons. The deficiencies of 35 years and above accounted for only 2.0 percent of the total deficiencies.

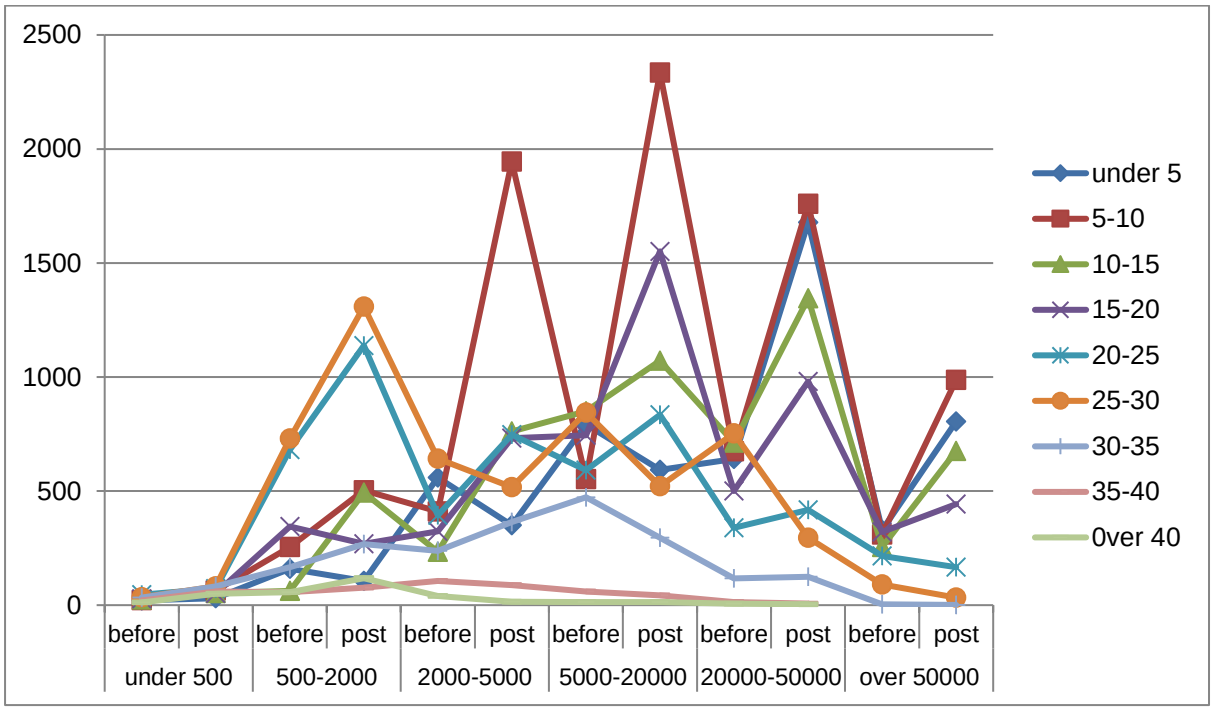

Figure 14 The deficiencies of the Tokyo MOU by gross tonnage-age

The major deficiencies of General cargo ships were deficiency codes of 1308, 9232, 9223, 9227 and 1220 as shown in Figure 15. Among them, the code 1308 surged 5.95 times from 239 deficiencies during 2010-2012 to 1,422 deficiencies during 2014-2016 while code

9232 dropped 3.05 times from 1,021 before 2013 to 335 deficiencies after 2013. The top three deficiencies of Bulk carriers were the same as those of General cargo ships, which were followed by codes 18408 and 9298. The major deficiencies of Containerships were codes 9232, 1308, 9209, 1220 and 9223. Chemical tankers had major deficiencies for codes 1308, 9219, 9298, 9211 and 9203 while Oil tankers were mainly highlighted for codes 1220, 1308, 9203, 9219 (Pipes, wires of insulation) and 9223.

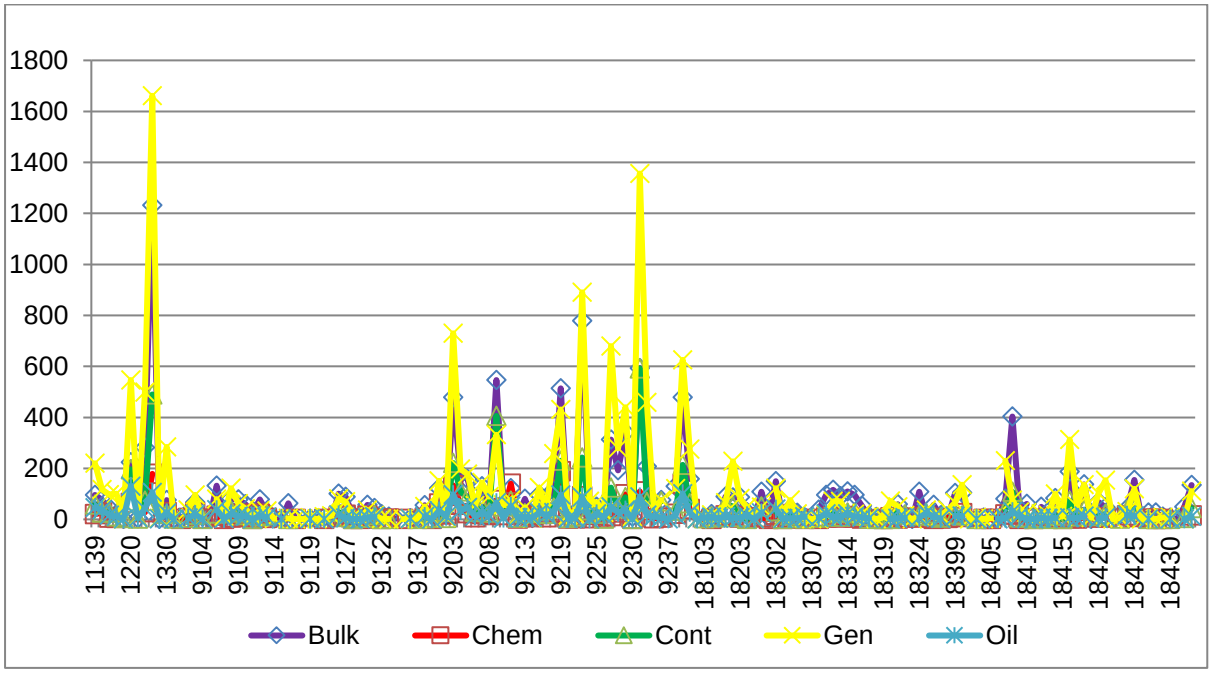

Figure 15 The deficiencies of the Tokyo MOU by ship type-deficiency code

5.3.2. Analysis of the detentions of the Tokyo MOU

The number of detentions for General cargo ships accounted for 42.0 percent of total detentions in the MOU and was fluctuating but generally increasing until 30 years as a ship's age got older as shown in Figure 16. The range of 5-20 years had larger detentions during 2014-2016 than during 2010-2012. The second largest type was Bulk carriers with 1,768 detentions (29.2 percent), which was increasing until 20 years old. The detentions of the type were distributed evenly over the range of 0-30 years. 74.3 percent of Containership detentions were concentrated in the range of 5-20 years. Chemical tankers having 3.8 percent of the total detentions had fewer detentions, except for the interval of 5-10 years, after 2013 than before 2013 while Oil tankers had a greater figure up to 25 years after 2013. Refrigerated cargo ships and RO-RO cargo ships shared their deficiencies with 2.99 and 2.15 percent of total deficiencies and 3.18 and 1.90 percent of total detentions respectively.

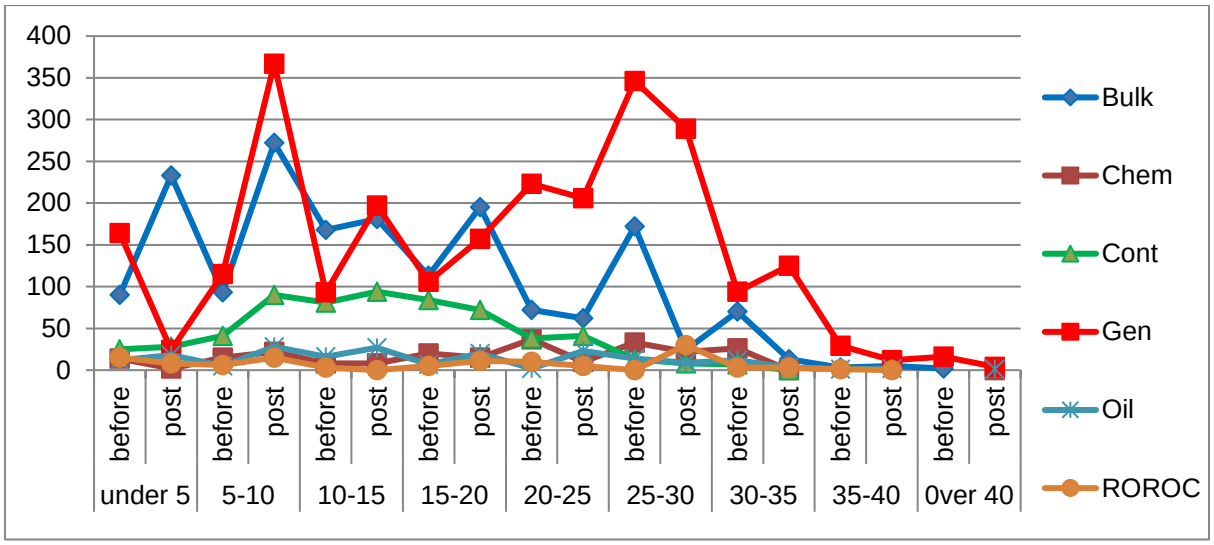

Figure 16 The detentions of the Tokyo MOU by ship type-age

About 40.2 percent of the detentions for General cargo ships were recorded at the interval of 2,000-5,000 gross tonnage as shown in Figure 17. The type's detentions were rising up to 5,000 tons after 2013 compared to before 2013. The detentions for Bulk carriers were increasing after 2013 compared to those of before 2013 and were concentrated in the range of 5,000-50,000 tons with 78.5 percent. The detentions of Containers were not significantly changed before and after 2013 and their range of 5,000-50,000 tons accounted for 69.0 percent of their detentions. The interval of 2,000-5,000 tons of Chemical tankers shared 44.8 percent of their detentions that were generally decreasing after 2013 while Oil tankers generally showed an even spread over the tonnages and increased after 2013.

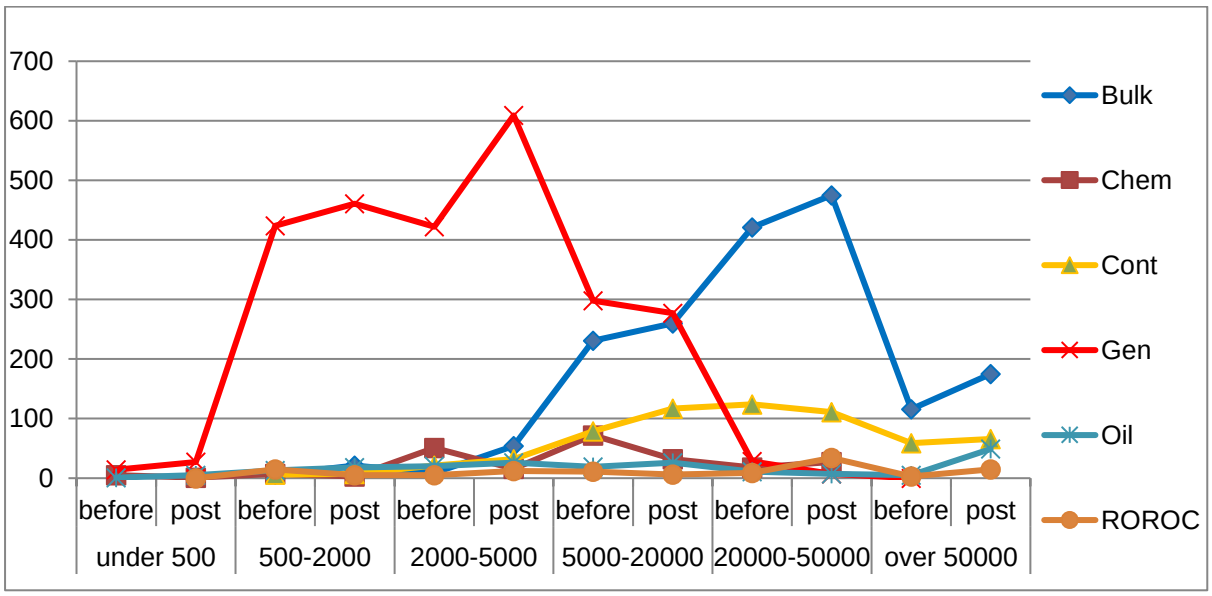

Figure 17 The detentions of the Tokyo MOU by ship type-gross tonnage

Each group of less than 30 year old ships shared from 11.6 to 18.8 percent of detentions as shown in Figure 18. The detentions of less than five years was increasing at the intervals of less than 500 gross tons and 20000 tons and above after 2013. The 5-10 year detentions were increasing over the tonnage intervals after 2013 and peaked at the interval of 200-5,000 tons. The 10-15 year detentions peaked at the interval of 20,000-50,000 tons and the change before and after 2013 fluctuated over the tonnages. The 15-20 year detentions peaked at the interval of 5,000-20,000 tons and increased in the range of 2,000-50,000 tons after 2013. The detentions of 20-25 and 25-30 years peaked at the interval of 500-2,000 tons and generally decreased after 2013. The 30-35 year detentions peaked 5,000-20,000 tons and were increasing until 5,000 tons after 2013. The detentions of 35 years and above accounted for 2.2 percent of the total detentions and occurred less than 50,000 tons.

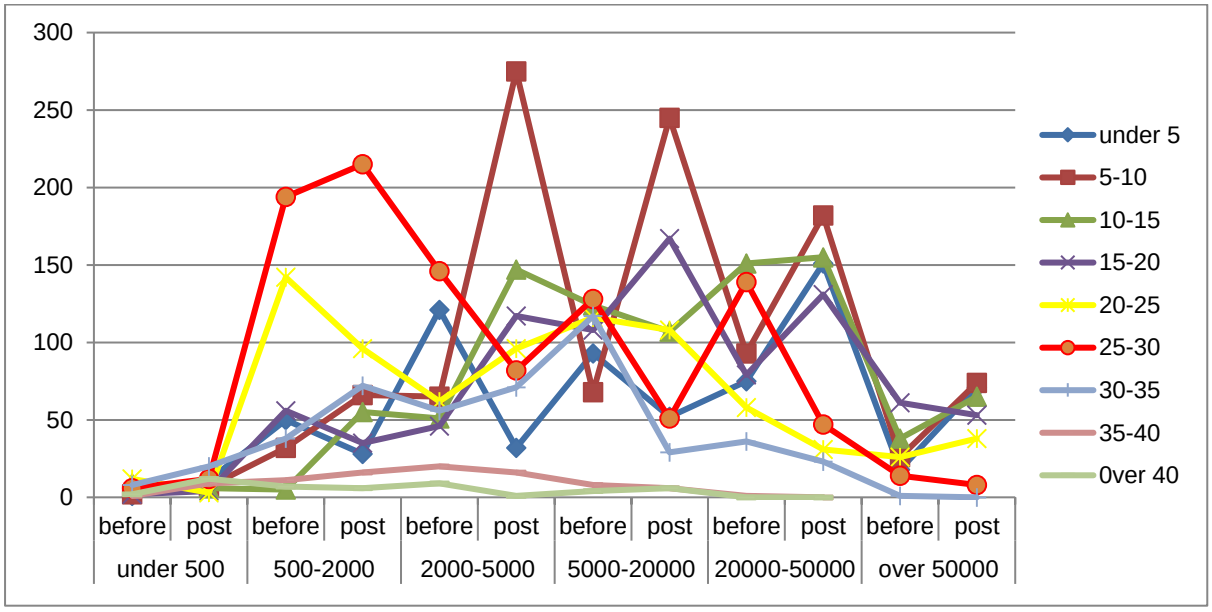

Figure 18 The detentions of the Tokyo MOU by gross tonnage-age

The greatest detention item for General cargo ships was deficiency code 9232 with 268 detentions followed by the codes of 1308, 9223, 9203, 9229 as shown in Figure 19. These codes, except for 1308, were decreasing detentions after 2013. The major deficiency codes of Bulk carrier detentions were 1308, 9298, 9232, 18408 and 9223, which had the same trend of post-period as General cargo ships. The codes of 9232, 1308, 9223, 9298 and 18408 were the main detainable items for Containers. For Chemical tanker, the major detentions were the codes of 9219, 9298, 9211, 9204 and 9232, of which the last two codes marked zero after 2013. Oil tankers were mainly detained by codes 1220, 9232, 1308, 18299 (other for conditions of employment) and 9219.

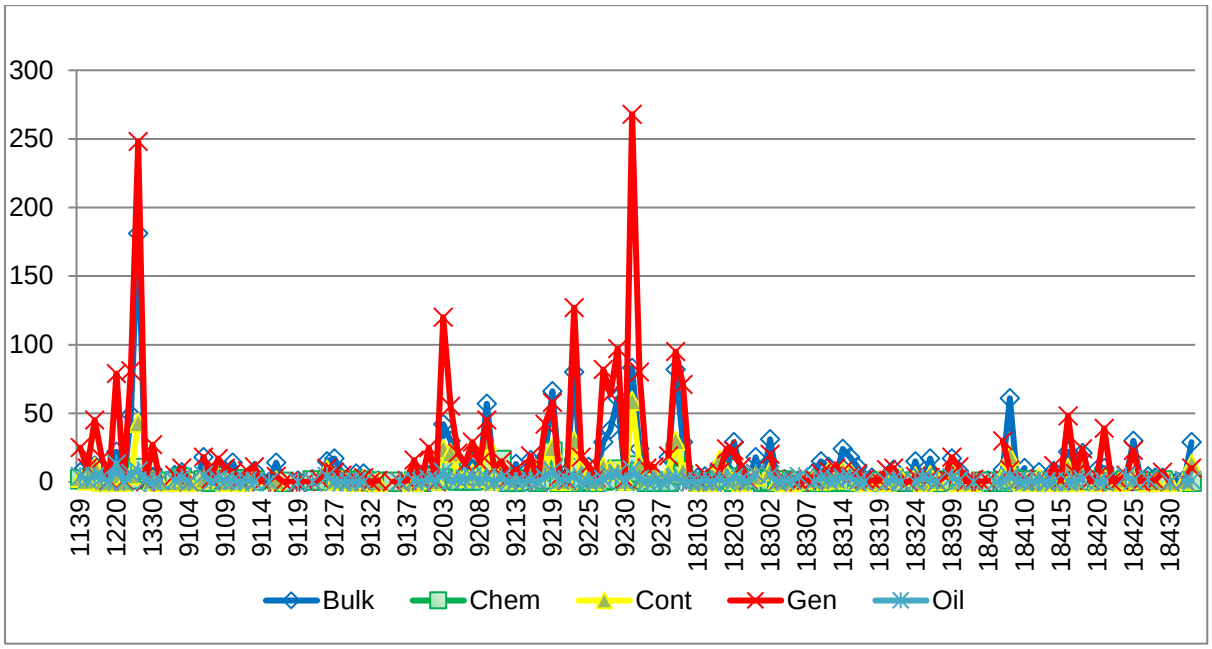

Figure 19 The detentions of the Tokyo MOU by ship type-deficiency code

5.4 Discussion

For the three-years after implementation of the MLC, 15,593 deficiencies with an average number of 205.17 for all deficiency codes in the Paris MoU and 16,546 deficiencies with an average of 201.78 in the Tokyo MOU were identified in both ILO Conventions. For the relation to national discretion granted by the MLC, the Paris MoU recorded in total 2,492 deficiencies with an average of 178.00 per individual deficiency codes and the Tokyo MOU marked 4,737 deficiencies with an average of 263.17 as shown in Table 8. If the figures are calculated by each number of deficiency codes, considering that several clauses on the national discretions were duplicated to one deficiency code, the revised average was down to 113.27 in the Paris MoU and 175.44 in the Tokyo MOU, which is 55.2 percent to the average for all deficiency codes and 86.9 percent in the Tokyo MOU as mentioned in the first hypothesis.

Although it is not easy to say that the above figures give a perfect correlation between the lower deficiencies and PSC officers' behavior by the drawback of the regulations in terms of PSC, as mentioned in 3.4, it is more reasonable to believe that PSC Officers will have difficulty in confirming flag states' regulations within a limited time and that it will cause passive inspection in the areas.

There were 17 deficiency codes in both of the MOUs' top 30 detainable deficiencies[17] as shown in Figure 1 and 11. These codes could be assumed as an indicator for weaker areas

[17] Code 9232, 9203, 1220, 9106, 9298, 9229, 9204, 9227, 9228, 9223, 18408, 18416, 18302, 18203, 9207, 18425 and 9297

for ships to implement the MLC and ILO No. 147 Convention. For instance, the Paris MoU presents its key performance indicators (KPIs) by the number of inspections, inspections with deficiencies, deficiencies, detainable deficiencies, detentions and ISM deficiencies (Paris MoU, 2017c).

For the accommodation and recreational facilities through Regulation 3.1 of the MLC, each deficiency code from 18301 to 18311 was marked less than 1.03 percent of the total deficiencies during 2014-2016, except for code 18302 having 4.41 percent in Paris MoU and 2.47 percent in Tokyo MOU both recorded above the average. The outcome seems to be reflected by the fact that the Regulation applies to new ships constructed after August 2013, regardless of a major conversion. This means existing ships do not apply to the regulation even if the ship undertakes a major conversion after 2013, which is not the same approach as IMO Conventions.

As the MLC includes ILO No. 147 Convention, most deficiencies of both the Conventions are the same nature with a different deficiency code. For example, the deficiency code for personal equipment is 9216 for the latter Convention while 18412 is for the former one. Although this paper analyzes the basis of the deficiency code without incorporating the same nature of deficiency, several codes showed significant change between the pre- and post-implementing the MLC. Generally the codes of Table 5 for ILO No. 147 Convention were decreasing after 2013 while the ones in Table 6 for the MLC were increasing. Also the deficiencies and detentions in the Tokyo MOU were increasing over ship ages and sizes after 2013. Especially, the number of deficiency code 1308 for the records of rest in the Tokyo MOU after 2013 jumped up 4.94 times and that of detention also increased 2.04 times during the period.

After implementing the MLC, the deficiencies for the Convention were rising more than 20.7 percent annually during the three years in both MOUs. However, the number of deficiencies and detentions for each item were not the same. The deficiencies in the Paris MoU during 2010-2012 accounted for 54.8 percent, which was greater than 45.2 percent for 2014-2016, while the Tokyo MOU had a larger figure of 63.2 percent after 2013 than before 2013. This means the number of deficiencies in the Tokyo MOU after 2013 increased by 71.84 percent compared to before 2013. While the detention of both MOUs for the post-implementation of the MLC recorded larger numbers with 51.5 and 54.7 percent respectively than before 2013. Even though the number of Paris MoU's deficiencies in the areas decreased, increasing detentions of both MOUs shows that they had placed stricter enforcement on seafarers' living and working environments after implementing the MLC. Especially, code 18203 (wages) recorded 52.0 percent of the highest detention rates to deficiencies in Paris MoU and the second with 31.0 percent in the Tokyo MOU.

It is also noted that the deficiencies and detentions related to the MLC rather than ILO No. 147 Convention were increasing after 2013 compared to those of before 2013. For instance, the detentions in the Tokyo MOU decreased for the deficiency codes of 9232, 9298, 9299 (Other for mooring), 9223, 9227, 9228 (Anchoring devices), 9229 (Winches/capstans) and 9203 after 2013 while the codes of 1308, 1220 and new deficiency groups for the MLC were increasing after 2013. From other analyses on ship type, tonnage and age in 5.2 and 5.3, different outcomes of deficiencies and detentions were presented. For example, the deficiency and detention rates of General cargo ships were 44.8 and 56.2 percent in the Paris MoU while they marked 36.5 and 40.2 percent in the Tokyo MOU respectively. Another example is that the largest ship types in the Tokyo MOU were General cargo ships, Bulk carriers, Containerships, Chemical tankers and Oil tankers in order while RO-RO cargo ships were positioned in the fourth for the highest detention types and the fifth for the highest deficiencies in the Paris MoU. Meanwhile, RO-RO cargo ships in the Tokyo MOU ranked the seventh largest ship types having their share of 2.15 percent of deficiencies and 1.90 percent of the total detentions.

One of the reasons of having the above differences between two regions can be explained by the number of the contracting governments to the MLC and ILO No. 147 Convention. As shown in Table 9, all 27 member authorities of the Paris MoU are contracting governments to the latter Convention and its 26 authorities are ones to the MLC while, among 20 full member authorities of the Tokyo MOU, only five and 14 members are contracting governments to the ILO No. 147 and the MLC respectively. Another reason is assumed that the characteristics of calling vessels in the region were diverse as its main trading commodities are different from each MOU

6. CONCLUSION

The aims of this paper were to examine the difference of legal grounds for PSC among the Conventions under the auspices of the IMO and ILO and investigate what influenced the MLC towards the shipping industry. This dissertation has focused on finding out the weak areas of seafarers' living and working environments of the MLC and ILO No. 147 Convention related to the PSC data conducted by the Paris MoU and the Tokyo MOU during 2010-2012 and 2014-2016, which were the periods before and after three-years of the year of entering into force of the MLC.

This study describes the background of the IMO and ILO Conventions, the legal grounds of PSC and the development of PSC regional cooperation schemes. The brief background of adopting the MLC, its main figures, implementing PSC and shortcomings in terms of conducting PSC were also provided. Additionally, the analysis on the correlation among ship's type, age, gross tonnage, nature of deficiency and detention was conducted for 88,812 deficiency records of both MOUs on seafarers' living and working conditions during six years.

The study explains that most ILO Conventions, even though they are evaluated to contributing to increase the level of seafarers' labor conditions, had not greatly impacted on the shipping industry as much as IMO Conventions. Since the Conventions, unlikely IMO Conventions, do not provide any legal grounds of PSC with NMFT in order to control foreign vessels for their implementation. Even the ILO No. 147 Convention, when compared to IMO Conventions, is considered to conduct "passive" PSC inspection that could inspect when receiving seafarers' complaints or obtaining evidence. However, to overcome the limitation of the ILO Conventions and achieve decent seafarer labor conditions, the MLC was adopted with borrowing complementary articles from the IMO Conventions that were evaluated as an "innovational measure" in respect to the ILO Conventions.

Meanwhile, the flexibility granting national discretion by the MLC could lead PSC officers to inspect reluctantly, because PSC officers have some limitations to obtain the information of each national regulation within their inspection time. From the analysis, the deficiency codes related to national discretions also show lower figures than the average deficiencies of post-implementing the MLC, as shown in Table 8.

The analysis compared the data of both MOUs by the relationship with ship type, age, gross tonnage, deficiency and detention for the three years, which could be a good indicator for implementing the MLC by the shipping industry like the KPIs of the Paris MoU. The study reveals that the deficiencies of the Tokyo MOU increased by 71.8 percent in the three years

of 2014-2016, compared to those of before 2013, while the ones of the Paris MoU were slightly decreasing during the same periods. However, the number of detentions on the issues was increasing in both MOUs. This implies that the shipping industry operating in the Tokyo MOU region was much more affected by the MLC rather than that of Paris MoU.

Unlikely most IMO Conventions, ship construction in the case of having been major conversion has not been affected by the MLC. As mentioned in 3.2, even if an existing ship undertakes major conversions after 2013, the requirements of the MLC do not apply to the ship according to Regulation 3.1 on the construction of accommodation facilities by the MLC.

While most member authorities of the Paris MoU were contracting governments to both Conventions, the Tokyo MOU members were changed from 5 for the ILO No. 147 Convention to 14 for the MLC. This difference with trading commodities in both regions could affect the PSC outcome of both MOUs. Its typical example is that the number of deficiencies in the Tokyo MOU during 2014-2016 increased by 71.84 percent compared to 2010-2012. The number of detentions during 2014-2016 was also rising from 4,177 to 4,430 in the Paris MoU and from 2,736 to 3,310 in the Tokyo MOU. Another example of the difference in both regions is different trend and share for ship's type. General cargo ships, the largest ship type in both regions, marked 44.8 percent of deficiencies and 56.2 percent of detentions in the Paris MoU, which were higher by 8.3 and 16.0 percent than those of the Tokyo MOU. Additionally, RO-RO cargo ships ranked fourth for the highest detentions type and fifth for the highest deficiencies in the Paris MoU while it positioned only seventh in the Tokyo MOU. Similar examples can be found in other areas of correlation among ship's age, size, nature of deficiency and detention.

The MLC incorporating the ILO No. 147 Convention has four deficiency coding groups, two of which are similar deficiency codes. During 2014-2016, the number of the deficiencies for the ILO No. 147 Convention was decreasing while that of the MLC was increasing. Especially, the deficiency code 1308 on the records of seafarers' rest ranked top with 8.05 percent of total deficiencies and with 11.15 percent of detentions during 2014-2016.

From the results of the analysis, it could reach a conclusion that the MLC supported by the "police power" of PSC would bring positive effects to the improvement of seafarers' living and working conditions, which will consequently contribute to the safety of the ship. However, the author believes that certain improvements/clarifications to get a better outcome from the MLC are needed. The first suggestion is that more clear guidelines or interpretations for the regulations allowing national discretions should be given to PSC officers, as the IMO presents unified interpretations for vague expressions in its Conventions. Excessive national discretion seems a kind of shortcoming of the Convention in terms of conducting PSC, because PSC is conducted on the basis of international standards, not national rules. Furthermore, there could be a negative impact on the fair competition among shipping

companies and flag states by allowing setting lower standards than generally internationally accepted ones.

Another suggestion is that the deficiency codes on several Regulations should be developed. The Regulations 2.4, 2.5, 2.6 and 4.5 of the MLC on seafarer's leave, repatriation, compensation for ship's loss or foundering and social security are not listed in the Coding system of both MOUs. Even though these Regulations seem to apply to seafarers getting off a ship, port states might tank a chance to investigate these issues by the onshore seafarer complaint procedure according to Regulation 5.2.2 of the Convention.

This study was limited to examine the impact of the MLC by using the analysis of PSC data of both MOUs considering the time pressure and data availability. The analysis was only carried out through a broad approach on several factors such as ship type, age and size. Hence, it is worthy to undertake further studies on how the MLC affects seafarers' real life through the survey considering the Convention could play a vital role in preventing maritime accident by upgrading seafarers' living and working conditions.

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8. APPENDICES (Tables)

Table 1 National discretion clauses in MLC

MLC Standards	Requirement / Content	Deficiency Code
A1.1.2	Definition of Night	1139
A1.1.4	Type of prohibited work	1140
A1.4.3(c)	National Reg. to authorize collective bargaining agreement	1140
A1.4.6	Licences for private service operation in recruitment	for authority
A2.1.3	The form (content) of Seafarer employment document	1220
A2.1.4	The contents of Seafarer employment agreement	1329
A2.1.6	Shortening notice period for termination of employment	1330
A2.2.5	Charge for transmitting wages	18102
A2.3.4	Hours of work and rest	18104
A2.3.7	Musters and drills exempted from hours of rest	18199
A2.3.10(b)	Poster on hours of work and rest	18199
A2.4.1	Annual leave standards	18201
A2.4.2	Annual leave length	18201
A2.5.3	Recovering the cost of repatriation	18202
A2.5.4	Shipowner's right to recover the cost of repatriation	18205
A2.6.2	Seafarer compensation for ship 's loss	18299
A3.1.1	Minimum standards for accommodation	18299
A4.1.1(d)	Medical care and health protection service	18299
A4.1.4(a)	Medical chest, medical equipment and guide	18299
A4.1.4(b)	Medical doctor for international passengerships	18299
A4.1.4(c)	Personnel for medical first aid	18299
A4.2.1(b)	Financial security for occupation injury	18399
A4.2.2	Limiting shipowner's liability for medical care	18401
A4.2.3	Paying wages during sickness or injury in work	18404
A4.2.4	Limiting shipowner's liability for incapable seafarer	18404
A4.2.5	Excluding shipowner's liability for willful misconduct of sick, injured or deceased seafarer	18406
A4.2.6	exempting shipowner's liability covered by other public authority	18427
R4.3.3 and A4.3	Standards for occupational safety and health protection and accident prevention	18499
A4.5.1	Comprehensive social security protection	for authority
A4.5.3	Complementary social security protection	for authority
A5.1.2.3(a)	Oversight system for RO	for authority
A5.1.3.1	Inspection items for maritime labour certificate	for authority
A5.1.3.2	Validity of maritime labour certificate	for authority
A5.1.3.10	Declaration of maritime labour compliance	for authority
A5.1.3.11	Record of deficiencies during inspection	for authority
A5.1.3.12	Copy of MLC and DMLC	for authority
A5.1.4.16	Compensation for unreasonable detain	for authority
A5.1.5.1	On-board complaint procedures	for authority

(Source: compiled by author)

Table 2 The ratification status of the consolidated conventions to MLC

Conventions	Date of entry into force	No. of ratification	Effective ratification.
Minimum Age (Sea) Convention, 1920 (No. 7)	Sep.27 1921	53	2
Unemployment Indemnity (Shipwreck) Convention, 1920 (No. 8)	Mar.16 1923	60	2
Placing of Seamen Convention, 1920 (No. 9)	Nov.23 1921	41	2
Medical Examination of Young Persons (Sea) Convention, 1921 (No. 16)	Nov.20 1922	82	2
Seamen's Articles of Agreement Convention, 1926 (No. 22)	Apr.4 1928	60	2
Repatriation of Seamen Convention, 1926 (No. 23)	Apr.18 1928	47	2
Officers' Competency Certificates Convention, 1936 (No. 53)	Mar.29 1939	37	2
Holidays with Pay (Sea) Convention, 1936 (No. 54)	-	6	5
Shipowners' Liability (Sick and Injured Seamen) Convention, 1936 (No. 55)	Oct.29 1939	18	2
Sickness Insurance (Sea) Convention, 1936 (No. 56)	Dec.9 1949	20	2
Hours of Work and Manning (Sea) Convention, 1936 (No. 57)	-	3	5
Minimum Age (Sea) Convention (Revised), 1936 (No. 58)	Apr.11 1949	51	2
Food and Catering (Ships' Crews) Convention, 1946 (No. 68)	Mar.24 1957	25	9
Certification of Ships' Cooks Convention, 1946 (No. 69)	Apr.22 1953	38	9
Social Security (Seafarers) Convention, 1946 (No. 70)	-	7	7
Paid Vacations (Seafarers) Convention, 1946 (No. 72)	-	5	9
Medical Examination (Seafarers) Convention, 1946 (No. 73)	Aug.17 1955	46	7
Certification of Able Seamen Convention, 1946 (No. 74)	Jul.14 1951	29	2
Accommodation of Crews Convention, 1946 (No. 75)	-	5	7
Wages, Hours of Work and Manning (Sea) Convention, 1946 (No. 76)	-	0	9
Paid Vacations (Seafarers) Convention (Revised), 1949 (No. 91)	Sep.14 1967	25	9
Accommodation of Crews Convention (Revised), 1949 (No. 92)	Jan.29 1953	47	7
Wages, Hours of Work and Manning (Sea) Convention (Revised), 1949 (No. 93)	-	5	9
Wages, Hours of Work and Manning (Sea) Convention (Revised), 1958 (No. 109)	-	15	9
Accommodation of Crews (Supplementary Provisions) Convention, 1970 (No. 133)	Aug.27 1991	32	12
Prevention of Accidents (Seafarers) Convention, 1970 (No. 134)	Feb.17 1973	29	2
Continuity of Employment (Seafarers) Convention, 1976 (No. 145)	Mar.3 1979	17	2
Seafarers' Annual Leave with Pay Convention, 1976 (No. 146)	Jun.13 1979	17	2
Merchant Shipping (Minimum Standards) Convention, 1976 (No. 147)	Nov.28 1981	56	10
Protocol of 1996 to the Merchant Shipping (Minimum Standards) Convention, 1976 (No. 147)	Jul.10 2003	24	5
Seafarers' Welfare Convention, 1987 (No. 163)	Jan.11 1991	15	2
Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164)	Jan.11 1991	15	2
Social Security (Seafarers) Convention (Revised), 1987 (No. 165)	Jul.2 1992	3	2
Repatriation of Seafarers Convention (Revised), 1987 (No. 166)	Jul.3. 1991	14	2
Labour Inspection (Seafarers) Convention, 1996 (No. 178)	Apr.22 2000	15	2
Recruitment and Placement of Seafarers Convention, 1996 (No. 179)	Apr.22 2000	10	2
Seafarers' Hours of Work and the Manning of Ships Convention, 1996 (No. 180)	Aug.2002	21	5

(Source: compiled by the author by using the NORMLEX of ILO web site)

Table 3 The trend of deficiencies on ILO No. 147 and MLC by both MOUs per year[18]

Year	2010	2011	2012	2014	2015	2016	Total
Paris MoU	10,271	7,470	7,240	7,234	6,634	6,730	45,579
Tokyo MOU	4,676	5,405	5,823	10,140	8,520	8,669	43,233
Total	14,947	12,875	13,063	17,374	15,154	15,399	88,812

Table 4 Deficiency code group of the Paris MoU and Tokyo MOU

Paris MoU	Detective item	Tokyo MOU
011	Certificate and Documentation - Ship Certificates	011
012	Certificate and Documentation - Crew Certificates	012
013	Certificate and Documentation – Documents	013
021	Structural Conditions	021
031	Water/Weathertight conditions	031
041	Emergency Systems	041
051	Radio Communications	051
061	Cargo operations including equipment	061
071	Fire safety	071
081	Alarms	081
091	**Living and Working Conditions - Living Conditions**	**091**
092	**Living and Working Conditions - Working Conditions**	**092**
101	Safety of Navigation	101
111	Lifesaving appliances	111
121	Dangerous goods	121
131	Propulsion and auxiliary machinery	131
141	Pollution prevention - MARPOL Annex I	141
142	Pollution prevention - MARPOL Annex II	142
143	Pollution prevention - MARPOL Annex III	143
144	Pollution prevention - MARPOL Annex IV	144
145	Pollution prevention - MARPOL Annex V	145
146	Pollution prevention - MARPOL Annex VI	146
147	Pollution prevention - Anti Fouling	147
15	ISM	15
16	ISPS	16
181	**Labour Conditions-Minimum requirements for seafarers**	**181**
182	**Labour Conditions-Conditions of employment**	**182**
183	**Labour Conditions-Accommodation, recreational facilities, food and catering**	**183**
184	**Labour Conditions-Health protection, medical care, social security**	**184**
991	Other	991

(Source: compiled by the author from the Coding system of both MOUs)

[18] The number of deficiencies differed from that of its Annual Report. It seems the differences between both figures are caused by amending the coding system, which led to the changing the codes of some deficiencies.

Table 5 Deficiency codes for ILO No. 147 Convention by both MOUs

091 - Living and Working Conditions - Living Conditions	092 - Living and Working Conditions - Working Conditions
09101 – Minimum age	09201 - Ventilation (Working spaces)
09102 - Dirty, parasites	09202 – Heating
09103 - Ventilation (Accommodation)	09203 - Lighting (Working spaces)
09104 – Heating	09204 - Safe means of access
09105 – Noise	09205 - Safe means of access Shore – Ship
09106 - Sanitary Facilities	09206 - Safe means of access Deck - hold/tank, etc.
09107 – Drainage	09207 - Obstruction/slipping, etc.
09108 - Lighting (Accommodation)	09208 - Protection machinery
09109 - Pipes, wires (insulation)	09209 – Electrical
09110 - Electrical devices	09210 – Machinery
09111 – Sickbay	09211 - Steam pipes and pressure pipes
09112 - Medical Equipment	09212 - Danger areas
09113 - Access/structure	09213 - Gas instruments
09114 - Sleeping room	09214 - Emergency cleaning devices
09115 – No direct openings into sleeping rooms cargo/mach.	09216 - Personal equipment
09116 – Furnishings	09217 - Warning notices
09117 - Berth dimensions, etc.	09218 - Protection machines/parts
09118 – Clear head	09219 - Pipes, wires (insulation)
09119 - Messroom (location)	09220 - Structural features (ship)
09120 - Clothes locker	09221 - Entry dangerous spaces
09121 – Laundry	09223 - Gangway, accommodation-ladder
09122 – Record of inspection (Accommodation)	09224 - Stowage of cargo
09124 - Galley, handlingroom (maintenance)	09225 - Loading and unloading equipment
09127 – Cleanliness	09226 - Holds and tanks safety
09128 – Provisions quantity	09227 - Ropes and wires
09129 - Provisions quality	09228 - Anchoring devices
09130 - Water, pipes, tanks	09229 - Winches & capstans
09131 - Cold room	09230 - Adequate lighting - mooring arrangements
09132 - Cold room temperature	09232 - Cleanliness of engine room
09133 - Cold room cleanliness	09233 - Guards - fencing around dangerous machinery parts
09134 - Food personal hygiene	09234 – Night working for seafarer under the age of 18
09135 - Food temperature	09235 - Fitness for duty - work and rest hours
09136 – Food segregation	09236 - Legal documentation on work and rest hours
09137 - Record of inspection	09237 – Fitness for duty – intoxication
09198 - Other (crew and accommodation)	09297 - Other (working space ILO)
09199 - Other (food)	09298 - Other (accident prevention)
	09299 - Other (mooring)

(Source: compiled by the author from the Coding system of the Paris MoU and Tokyo MOU)

Table 6 Deficiency codes for MLC by both MOUs

181 - Labour Conditions-Minimum requirements for seafarers	**184 - Labour Conditions-Health protection, medical care, social security**
18101 – Minimum age	18401 - Medical Equipment, medical chest, medical guide
18102 – Night working	18402 - Access to on shore medical doctor or dentist
18103 - Medical fitness	18403 - Standard medical report form
18104 - Recruitment and placement service	18404 - Medical doctor or person in charge of medical care
18199 - Other (Minimum requirements)	18405 - Medical advice by radio or satellite
182 - Labour Conditions-Conditions of employment	18406 - Medical care onboard or ashore free of charge
18201 - Fitness for duty - work and rest hours	18407 - Lighting (Working spaces)
18202 - Legal documentation on work and rest hours	18408 – Electrical
18203 – Wages	18409 - Dangerous areas
18204 - Calculation and payment of wages	18410 - Gas instruments
18205 - Measures to ensure transmission to seafarer's family	18411 - Emergency cleaning devices
18299 - Other (Conditions of employment)	18412 - Personal equipment
183 - Labour Conditions-Accommodation, recreational facilities, food and catering	18413 - Warning notices
18301 - Noise, vibration and other ambient factors	18414 - Protection machines/parts
18302 - Sanitary Facilities	18415 - Entry dangerous spaces
18303 – Drainage	18416 - Ropes and wires
18304 - Lighting (Accommodation)	18417 - Anchoring devices
18305 - Hospital accommodation (Sickbay)	18418 - Winches & capstans
18306 - Sleeping room, additional spaces	18419 - Adequate lighting - mooring arrangements
18307 - No direct openings into sleeping rooms cargo/mach.	18420 - Cleanliness of engine room
18308 – Furnishings	18421 - Guards - fencing around dangerous machinery parts
18309 – Berth dimensions, etc.	18422 – Asbestos fibers
18310 – Minimum headroom	18423 - Preventative information
18311 - Messroom and recreational facilities	18424 - Steam pipes, pressure pipes, wires (insulation)
18312 - Galley, handlingroom (maintenance)	18425 - Access / structural features (ship)
18313 – Cleanliness	18426 - Exposure to harmful levels of ambient factors
18314 - Provisions quantity	18427 - Ship's occupational safety and health policies and programmes
18315 - Provisions quality and nutritional value	18428 - On board programme for the prevention of occupational injuries and diseases
18316 - Water, pipes, tanks	18429 - Procedure for inspection, reporting and correcting unsafe conditions and for investigating and reporting on-board

	occupational accidents
18317 - Food personal hygiene	18430 - Ship's safety committee
18318 - Food temperature	18431 - Investigation after accident
18319 - Food segregation	18432 - Risk evaluation, training and instruction to seafarers
18320 - Record of inspection (food and catering)	18499 - Other (Health protection, medical care…)
18321 - Heating, air conditioning and ventilation	
18322 – Insulation	
18323 – Office	
18324 - Cold room, cold room cleanliness, cold room temperature	
18325 - Training and qualification of ship's cook	
18326 - Laundry, Adequate Locker	
18327 - Ventilation (Working spaces)	
18328 - Record of inspection	
18399 - Other (Accommodation, recreational facilities…)	

(Source: compiled by the author from the Coding system of the Paris MoU and Tokyo MOU)

Table 7 Overview of PSC inspections by both MOUs

Paris MOU	2010	2011	2012	2014	2015	2016	Average
Number of inspections	24,058	19,058	18,308	18,430	17,858	17,828	19,257
Number of detentions	790	688	669	612	595	675	672
Number of deficiencies	64,698	50,738	49,261	45,979	41,436	41,698	48,968
Detention % of inspections	3.28	3.61	3.65	3.32	3.33	3.79	3.50
No. of deficiencies for ILO No. 147	9,989	7,565	7,249	2,954	1,164	974	4,983
No. of deficiencies for MLC 2006				3,951	5,002	5,756	4,903
Title 1				57	62	120	80
Title 2				324	393	542	420
Title 3				1,352	1,752	2,038	1,714
Title 4				2,218	2,795	3,056	2,690
No. of detentions for MLC and ILO No. 147	1,685	1,280	1,212	1,539	1,396	1,495	1,435
Detention percentage to deficiencies for MLC and ILO No. 147	16.87	16.92	16.72	22.29	22.64	22.21	19.61
Tokyo MOU	2010	2011	2012	2014	2015	2016	Average
Number of inspections	25,762	28,627	30,929	30,405	31,407	31,678	29,801
Number of detentions	1,411	1,562	1,421	1,203	1,153	1,090	1,307
No. of deficiencies (incl. ISPS)	92,927	106,482	102,820	91,175	84,995	82,895	93,549
Detention % of inspections	5.48	5.46	4.59	3.96	3.67	3.44	4.43
No. of deficiencies for ILO No. 147	2,990	3,411	5,168	4,663	3,215	2,904	3,725
No. of deficiencies for MLC 2006				2,437	3,247	3,718	3,134
Title 1				74	35	38	49
Title 2				363	515	483	454
Title 3				1,017	998	1,025	1,013
Title 4				983	1,699	2,172	1,618
No. of detentions for MLC and ILO No. 147	831	1,015	890	1,301	1,045	964	1,008
Detention percentage to deficiencies for MLC and ILO No. 147	27.79	29.76	17.22	18.32	16.17	14.56	20.64

(Source: compiled by the author from the Annual Reports during 2010-2016 of the Paris MoU and Tokyo MOU)

Table 8 The deficiencies of both MOUs on National discretion of the MLC related to Table 1

MLC Standards	Deficiency Code	Paris MoU No. of Def.	Paris MoU share of Def.	Tokyo MOU No. of Def.	Tokyo MOU share of Def.
A1.1.2	1139			503	3.040
A1.1.4	1140			313	1.892
A1.4.3(c)	1140				
A1.4.6	for authority				
A2.1.3	1220	465	2.982	1326	8.014
A2.1.4	1329			10	0.060
A2.1.6	1330			463	2.798
A2.2.5	18102	2	0.013	3	0.018
A2.3.4	18104	74	0.475	76	0.459
A2.3.7	18199	30	0.192	40	0.242
A2.3.10(b)	18199				
A2.4.1	18201	269	1.725	302	1.825
A2.4.2	18201				
A2.5.3	18202	191	1.225	443	2.677
A2.5.4	18205	13	0.083	4	0.024
A2.6.2	18299	248	1.590	277	1.674
A3.1.1	18299				
A4.1.1(d)	18299				
A4.1.4(a)	18299				
A4.1.4(b)	18299				
A4.1.4(c)	18299				
A4.2.1(b)	18399	152	0.975	237	1.432
A4.2.2	18401	496	3.181	324	1.958
A4.2.3	18404	12	0.077	10	0.060
A4.2.4	18404				
A4.2.5	18406	3	0.019	4	0.024
A4.2.6	18427	22	0.141	39	0.236
A4.3	18499	515	3.303	363	2.194
A4.5.1	for authority				
A4.5.3	for authority				
A5.1.2.3(a)	for authority				
A5.1.3.1	for authority				
A5.1.3.2	for authority				
A5.1.3.10	for authority				
A5.1.3.11	for authority				

A5.1.3.12	for authority				
A5.1.4.16	for authority				
A5.1.5.1	for authority				
Total for Post-implementation		15,593	100.000	16,546	100.000
Post Average per all Def. codes		205.171	1.316	201.7805	1.220
Total for Codes of national discretion		2,492	15.982	4,737	28.629
Post Average per relevant Def. codes[19]		178.000	1.142	263.167	1.591
Revised Average per relevant Def. codes[20]		113.273	0.726	175.444	1.060

(Source: compiled by the author from the PSC data of both MOUs)

[19] Average calculated by the number of individual deficiency codes related to the national discretion of the MLC, i.e. Paris MoU is 14 individual deficiency codes and Tokyo MOU is 18.

[20] Revised Average calculated by the each number of deficiency codes, i.e. Paris MoU is 22 deficiency codes and Tokyo MOU is 27.

Table 9 Ratification status of member Authorities of both MOUs for ILO No. 147 and MLC Conventions

Tokyo MOU			Paris MoU		
Authority	**ILO 147**	**MLC 2006**	**Authority**	**ILO 147**	**MLC 2006**
Australia	-	2011-12-21	Belgium	1982-09-16	2013-08-20
			Bulgaria	2003-02-24	2010-04-12
Canada	1993-05-25	2010-06-15	Canada	1993-05-25	2010-06-15
Chile	-	-	Croatia	1996-07-19	2010-02-12
China	-	2015-11-12	Cyprus	1995-09-19	2012-07-20
Fiji	-	2013-01-21	Denmark	1980-07-28	2011-06-23
Hong Kong, China	1980-11-28	-	Estonia	2004-12-01	2016-05-05
Indonesia	-	-	Finland	1978-10-02	2013-01-09
Japan	1983-05-31	2013-08-05	France	1978-05-02	2013-02-28
Republic of Korea	-	2014-01-09	Germany	1980-07-14	2013-08-16
Malaysia	-	2013-08-20	Greece	1979-09-18	2013-01-04
Marshall Islands	-	2007-09-25	Iceland	1999-05-11	-
New Zealand	-	2016-03-09	Ireland	1992-12-16	2014-07-21
Papua New Guinea	-	-	Italy	1981-06-23	2013-11-19
Peru	2004-07-06	-	Latvia	1998-11-12	2011-08-12
Philippines	-	2012-08-20	Lithuania	2006-07-14	2013-08-20
			Malta	2002-01-10	2013-01-22
			Netherlands	1979-01-25	2011-12-13
			Norway	1979-01-24	2009-02-10
			Poland	1995-06-02	2012-05-03
			Portugal	1985-05-02	2016-05-12
			Romania	2001-05-15	2015-11-24
Russian Federation	1991-05-07	2012-08-20	Russian Federation	1991-05-07	2012-08-20
Singapore	-	2011-06-15	Slovenia	1999-06-21	2016-04-15
Thailand	-	2016-06-07	Spain	1978-04-28	2010-02-04
Vanuatu	-	-	Sweden	1978-12-20	2012-06-12
Viet Nam	-	2013-05-08	United Kingdom	1980-11-28	2013-08-07
Panama	-	2009-02-06			
DPR Korea	-	-			
Macao, China*	-	-			
Solomon Islands	-	-			
Tonga	-	-			
Entry into force date	1981-11-28	2013-08-20	Entry into force date	1981-11-28	2013-08-20

(Source: compiled by the author from the ILO's NORMLEX website and Tokyo MOU's 2016 Annual Report)