

A Study on Global Piracy Attacks' Trends and Characteristics Based on Data Analysis

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Abstract

With the global shipping industry's prosperity, the piracy attacks are gradually rampant from the 1980s. To master the situation of global piracy attacks, and prevent and combat the piracy is the priority for the ship's safety. This essay detailedly studies the global piracy attack's trends, geographic locations, success and attempt, status of ships, types of vessels, types of arms, types of violence, flag states, managing countries, etc., based on statistical data of global piracy attacks from 1991 to 2014, and analyzes the new characteristics of the global piracy attacks in 2015 and the first three quarters in 2016, so that ship companies, mariners and researchers fully understand the the situation of global piracy attacks, then pointedly take necessary precautionary measures.

Keywords: Global piracy attacks, Trends, Characteristics

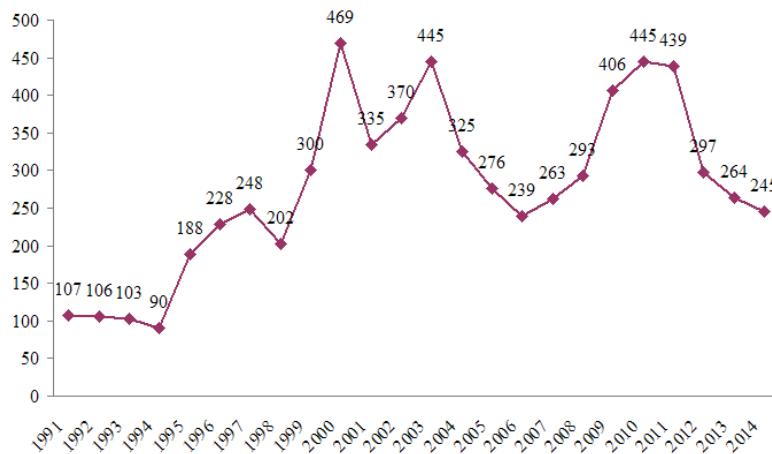
1. Introduction

The ICC International Maritime Bureau (IMB) is a specialized division of the International Chamber Of Commerce (ICC), whose main task is to fight against all types of maritime crime and malpractice. The International Maritime Organization (IMO) in it's resolution A 504 (XII) (5) and (9) adopted on 20 November 1981, has inter alia, urged governments, all interests and organizations to cooperate and exchange information with each other and the IMB with a view to maintaining and developing a coordinated action in combating maritime fraud. The IMB Piracy Reporting Centre (PRC) is established in October 1992 in Kuala Lumpur, Malaysia. IMB PRC offers a 24-hour service to report any piracy, armed robbery or stowaway incidents, provide the latest information about appropriate activities in shipping industry, publish comprehensive quarterly and annual reports detailing piracy statistics. This essay studies the statistical data of global piracy attacks in annual report and quarterly report offered by the PRC and analyzes the new characteristics of the global piracy attacks.

2. Trends of Global Piracy Attacks

The piracy attack includes piracy and armed robbery against ships in the PRC's piracy report. Piracy is defined in Article 101 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and armed robbery defined by the International Maritime Organization (IMO) in its 26th Assembly session as Resolution A.1025 (26). Figure 1, represents an overview of all the incidents of piracy and armed robbery against ships recorded by the PRC in the period 1991-2014^{[1]-[11]}. It shows an increase in the number of piracy attacks in this period. Though there are peaks and valleys throughout the twenty-four years presented in the chart, it can be said that the number of reports is low in the early 1990s, which does not mean that there were significantly less attacks in the past. One could speculate that it was a period when shipping had yet to get used to the idea of reporting attacks to a piracy reporting center^[12]. However, from 1999 to 2004 and 2008 to 2012 the number was very high which states that the piracy attacks are serious, from 2005

to 2007 it became improved, and from 2010 with 445 reported attacks the number started to wane, the safety of navigation at sea is improved gradually.



**Figure 1. Attempted and Successful Attacks
1 January 1991 - 1 December 2014**

3. Global Piracy Attacks' Characteristics

3.1 Geographic Locations

To better understand the risk areas, this essay make a statistical analysis of geographic Location of piracy attacks in recent ten years [2]-[11]. From Figure 2, a total of 1550, 1041 piracy attacks had been reported respectively in Africa and SE Asia water areas (including Far East), which showed that these waters were the high risk areas. From 2009 to 2011 the number of attacks in Africa waters arrived at a peak, and dropped from then, because international naval vessels patrolled and escorted ships in Somali waters and protected ships from piracy attack. In SE Asia waters there has been an increasing trend in total. The waters off Indian Subcontinent, America and other waters where suffered 294, 231 and 51 reported attacks respectively had less piracy activities and remained relatively stable.

(1) In Africa, the geographic locations of piracy attacks with high risk were waters off Somalia, Gulf of Aden, Nigeria and Red Sea, where the number of reported attacks was 533, 344, 243 and 108 in sequence, which accounted for 34.4 %, 22.2%, 15.7% and 7% of total Africa (see Figure 3(a)). From 2010 to 2011 the number of attacks in Somalia waters arrived at a peak, so did it in Gulf of Aden waters from 2008 to 2009. There were two small booms in Nigeria waters and a high point in Red Sea in 2011. In recent three years, a significant drop was noticed in waters off Somalia, Gulf of Aden, Red Sea, however the piracy attacks in Nigeria waters had no obvious change and were more than the incidents in these waters.

(2) In SE Asia, the geographic locations of piracy attacks with high risk were waters off Indonesia, Malaysia and South China Sea, where the number of reported attacks was 588, 127 and 74 in sequence, which accounted for 56.5%, 12.2% and 7.1% of total SE Asia (see Figure 3(b)). The overwhelming majority of attacks were always reported around the Indonesian archipelago. Although it was a welcome obvious drop in 2009 and increased from then, the number of reports was more than the total of other waters in SE Asia. It shows an increase in the number of piracy attacks of Malaysia waters, and from

2009 to 2011 the number of attacks in South China Sea arrived at a peak and was reported 31 in 2010, more than half of the total ten years.

(3) In Indian Subcontinent, the geographic locations of piracy attacks with high risk were waters off Bangladesh and India, where the number of reported attacks was 189, 99 in order, which accounted for 64.3%, 33.7% of total Indian Subcontinent (see Figure 3(c)). Attacks related to both of these two areas had increased in recent three years, and the number in Bangladesh was almost two twice as that of India.

(4) In America, the geographic locations of piracy attacks with high risk were waters off Peru and Brazil, where the number of reported attacks was 58, 34 in order, which accounted for 25.1%, 14.7% of total America (see Figure 3(d)). Attacks related to American waters had reduced in recent three years, and the number in Peru was more serious than that of Brazil.

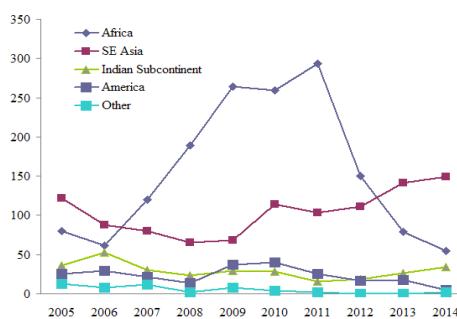
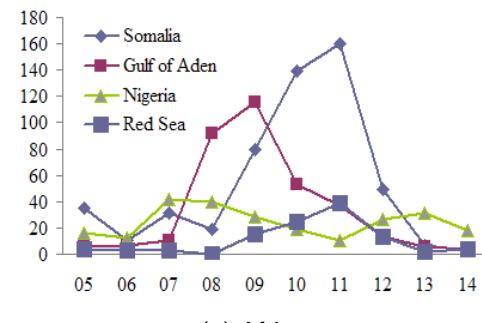
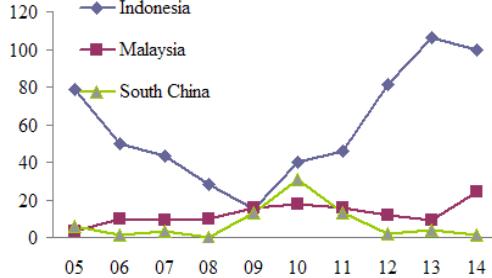


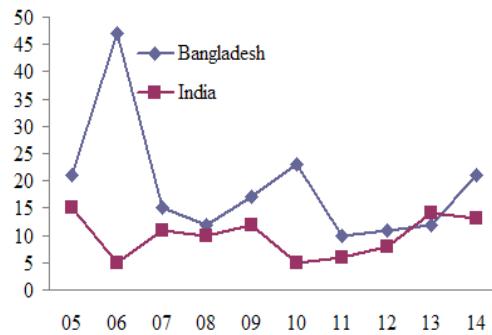
Figure 2. Geographic Locations of Piracy Attacks, 2005 - 2014



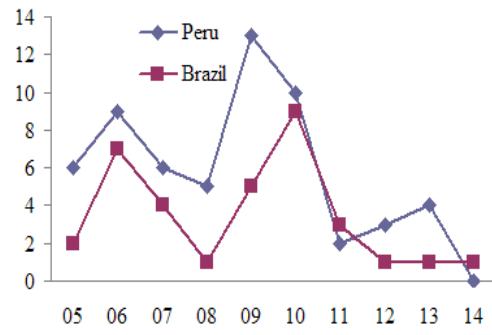
(a) Africa



(b) SE Asia



(c) Indian Subcontinent



(d) America

Figure 3. Geographic Locations of Piracy Attacks with High Risk, 2005 - 2014

3.2 Success and Attempt

Piracy attacks do not always succeed, which contain actual attacks and attempted attacks in the PRC's piracy report. In recent ten years, 2060 actual attacks succeed which involved 1748 Boarded attacks and 312 Hijacked attacks, and 1107 reported attacks attempted which involved 489 fired upon and 618 Attempted (see Figure 4). There attacks had a high success rate from 2009 to 2011, but dropped gradually in recent three years, which attributed to the combined efforts of the Navies in the region, along with the increased hardening of vessels and BMP4 compliance, employment of Privately Contracted Armed Security Personnel (PCASP), and so on.

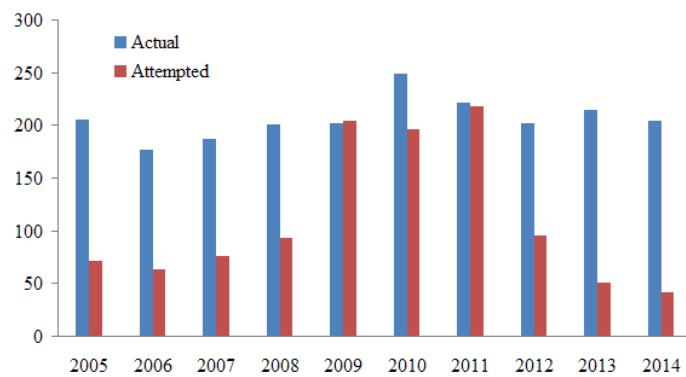


Figure 4. Actual Attacks and Attempted Attacks, 2005 - 2014

3.3. Status of Ships

In recent ten years, actual attacks were mostly made while ships were at anchor, and the number of these attacks was 1183 which accounted for 57.4% of total successful situation, followed by steaming, berthed and not stated status in order (see Figure 5). However, attempted attacks were frequently happened while ships were steaming, and the number of reports was 929 which accounted for 83.9% of total unsuccessful situation, followed by anchored and berthed status in order (see Figure 6). In conclusion, most ships were targeted successfully while in anchorages, but less were succeed while underway.

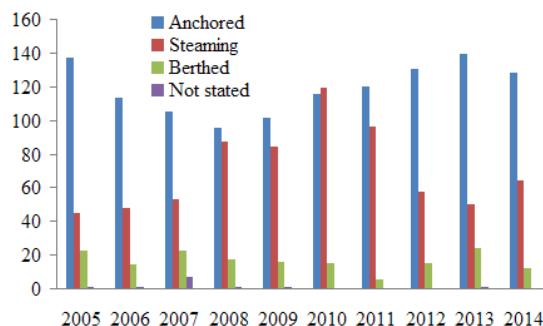


Figure 5. Status of Ships of Actual Attacks, 2005 - 2014

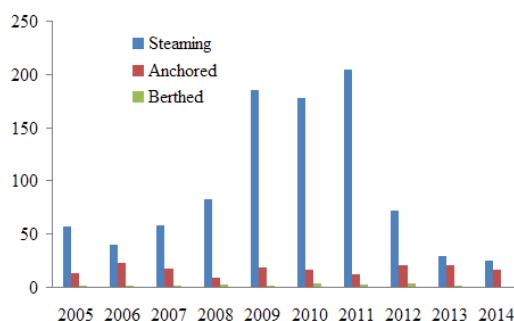


Figure 6. Status of Ships of Attempted Attacks, 2005 - 2014

3.4. Types of Ships

Figure 7, illustrates that the types of ships were under piratical attacks in the order from more to less: bulk carriers, container ships, chemical tankers, general cargo vessels, crude oil tankers, production tankers, tugs, fishing vessels, LPG tankers, supply ships. The type of target chosen by pirates depends on the opportunities and capabilities of the pirates, as well as to what extent target ships are actually suited to attack^[13]. In recent ten years, bulk carriers were encountered 681 attacks by pirates. Because this kind of ship had a low freeboard and a relatively low speed, it is easier to go on board for the pirates. Container ships were encountered 469 attacks. Because this kind of ship has a high speed, which makes that the attacks always happen at night while at anchor or berth. Furthermore, container ships have deck containers, causing big blind areas which make it easier for pirates to board the vessel. So do chemical tankers and general cargo vessels with low freeboard, which are more easily boarded by the hooks and long ladders.

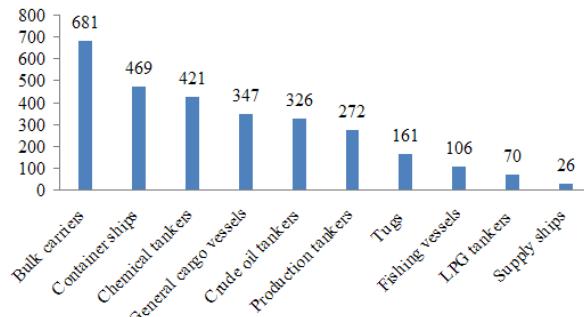


Figure 7. The Top 10 Types of Ships Attacked, 2005 - 2014

3.5. Types of Arms

The weapons used in piracy attacks are modernizing, and the pirates are often armed with a variety of new conventional weapons and sophisticated equipment, such as: applying radar to detect targets, interfering ships' communication systems and contacting other criminals or groups for sharing the business information via the Internet, and so on^[14]. Figure 8 depicts the number of incidents using weapons from 2005 to 2014. 1318 attacks arming with guns accounting for 41.6%, 1014 not stated, 755 robbers with long knives and 80 other weapons. The number of attacks arming with guns peaked from 2009 to 2011 and was 243 per year. From then on, the number with guns dramatically declined. While other types of arms were relatively stable and no obvious change.

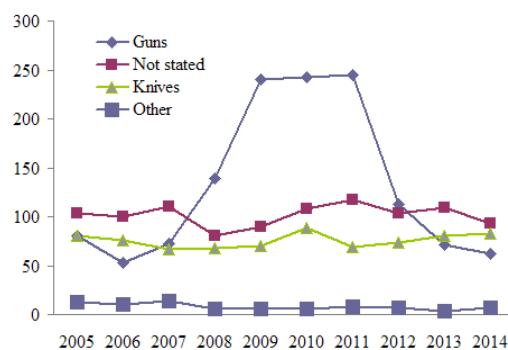


Figure 8. Types of Arms Used in Incidents 2005 – 2014

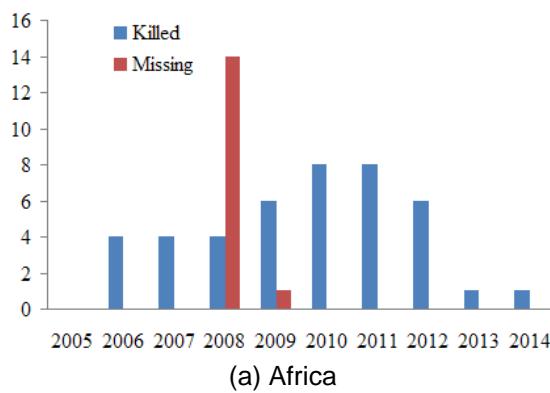
3.6. Types of Violence

Today the types of violence and the purpose of attacks changes from threat of violence to injure or kill the crews and from steal or rob the property of the ship to hijack the ship and kidnap crew members for ransom. Even the attacks are manipulated and controlled for engaging in terrorist activities by separatist groups and terrorism organizations. Tab. 1 shows the Types of violence used in incidents from 2005 to 2014. It is estimated that from 2008 to 2011 around 3924 seafarers were held hostage reaching a peak, and dropping gradually in recent three years. Seafarers tortured physically and mentally abused in the way of kidnapping, threatening, assaulting, injuring were reduced. The small number of serious violence killing and missing is always present. In conclusion, the main purpose of piracy is for the money. In other words, the majority of pirates are ultimately driven by profit motives, not aim to hurt or kill seamen. However, the pirates were cruel in Africa, SE China (see Figure 9). In Africa, many crews were killed or missing from 2006 to 2012. These violent attacks were often happened especially in waters off Somalia, Gulf of Aden

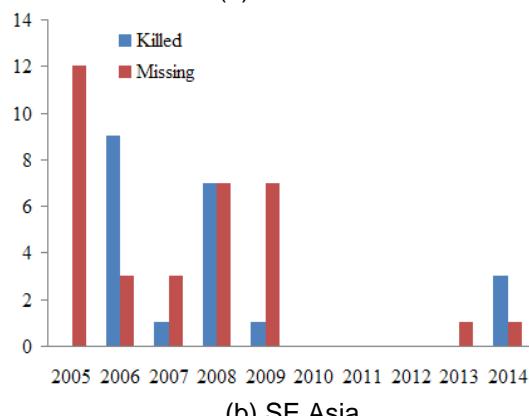
and Nigeria, but they did not occur in recent two years. In SE Asia, there were lots of persons killed or presumed dead from 2005 to 2009, but not exist from 2010 to 2012. During the latest two years there has been an obvious increase of these serious attacks in waters off Malaysia, Philippines and South China Sea. Especially in 2014, 2 persons were killed and 1 missing in Philippines, 1 killed in Malaysia, which should be taken seriously by shipping companies and seafarers.

Table 1. Types of Violence used in Incidents 2005 - 2014

Persons Years Types \	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hostage	440	188	292	889	1052	1181	802	585	304	442
Kidnap	13	77	63	42	12	20	10	26	36	9
Threatened	14	17	6	9	14	18	27	13	10	9
Assaulted	6	2	29	7	4	6	6	4	0	1
Injured	24	15	35	32	68	37	42	28	21	13
Killed	0	15	5	11	8	8	8	6	1	4
Missing	12	3	3	21	8	0	0	0	1	1



(a) Africa



(b) SE Asia

Figure 9. Persons Killed and Missing, 2005 - 2014

3.7. Flag States

Except selecting the types of ships attacked, the pirates often considered the nationalities of ships attacked. Figure 10 illustrates the flag states whose ships attacked 12 times or more average annual in recent ten years. Flag states whose ships attacked were in the order from more to less: Panama, Liberia, Singapore, Marshall Islands, Hong Kong. The number of attacks to these nationalities peaked from 2010 to 2011 and was gradually declined from then on. From the nationalities of ships, Panama, Liberia, Singapore and Marshall Islands are the nations with business of flags of convenience, while Hong Kong doesn't register a flag of convenience, but with lots of convenient advantages, and was popular with ship owners. The ships belong to the owner in the developed shipping countries and regions mainly registered under flags of convenience. One of the major reasons for these ships are vulnerable to pirate attack is that the ship owners can pay high ransom.

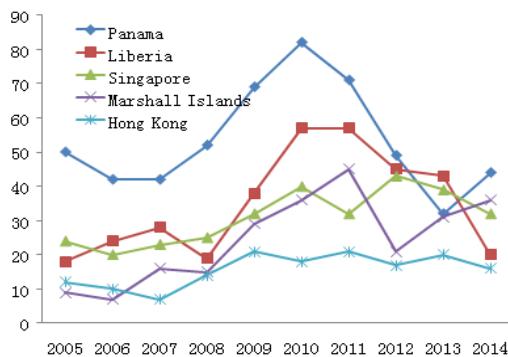


Figure 10. Flag States Whose Ships Attacked, 2005 - 2014

3.8. Managing Countries

Figure 11, illustrates the managing countries whose ships attacked 12 times or more average annual in recent ten years. Managing countries whose ships attacked were in the order from more to less: Singapore, Germany, Greece, Japan, Hong Kong. The number of attacks to these countries except Singapore peaked from 2009 to 2011 and was gradually declined from then on. The number of attacks to Singapore gradually increased was from 2005 to 2014 and climbed to the top in 2013. From the managing countries of ships, they are developed shipping countries and regions and liable to cause the favour of pirates.

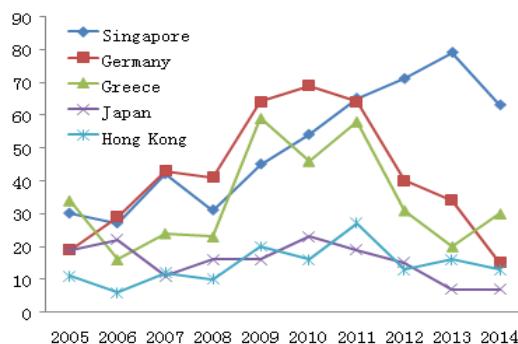


Figure 11. Managing Countries Whose Ships Attacked, 2005 – 2014

4. Current Global Piracy Attacks' Characteristics

According to the annual report offered by the PRC^[15], there were no new incidents reported in waters off Somalia and Gulf of Aden, only suspected Somali pirates continued to hold 29 crew members for ransom, which attributed to the combined efforts of the Navies in the region, along with the continued hardening of vessels, BMP4 compliance, employment of Privately Contracted Armed Security Personnel (PCASP), and the stabilizing factor of the central government within Somalia has contributed in this positive reduction. IMB PRC continues to monitor the situation in the region, in order to prevent from the Somali pirates attack again. A total of 246 incidents have been reported in 2015 (see Figure 12), which is similar in total to 2014, where 245 incidents were reported. (1) The number of reported attacks accounted for 72% in SE Asian waters, and focus primarily on Indonesia, Vietnam, Malaysia, Philippines and Singapore Straits (see Figure 13(a)). In addition, some incidents have been confirmed in Africa accounting for 14% of total attacks (see Figure 13(b)), which are mainly concentrated in Nigeria. The number of reported attacks accounted for 10% in Indian Subcontinent (see Figure 13(c)). Piracy attacks have been confirmed in America accounting for 3% (see Figure 13(d)). (2) This figure is broken down as 203 vessels boarded, 15 attempted attacks, one vessel fired upon and 27 vessels hijacked. (3) The figure is stated about the status of ships as 218 actual attacks, 22 berthed, 104 anchored, 91 steaming. On the other hand, the figure about the status of ships is as 28 attempted attacks, 4 berthed, 10 anchored, 14 steaming. (4) The types of ships attacked are in the order from more to less: bulk carriers, production tankers, container ships, crude oil tankers, general cargo vessels, chemical tankers, tugs, LPG tankers, Refrigerated cargo ships, fishing vessels. (5) The types of arms used in piracy attacks are counted as 33 armed with guns, 97 knives, 108 not stated, 8 other weapons. (6) There are over 271 crew were taken hostage, 19 kidnapped, 14 threatened, 14 assaulted, 14 injured and 1 killed. (7) Flag states whose ships attacked were in the order from more to less: Marshall Islands, Panama, Singapore, Liberia, Hong Kong, Malaysia. (8) Managing countries whose ships attacked were in the order from more to less: Singapore, Greece, Germany, Japan, Hong Kong, United kingdom, Malaysia.

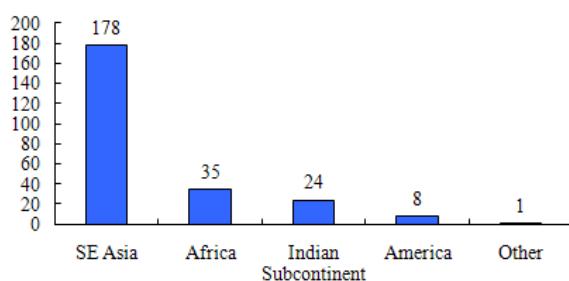
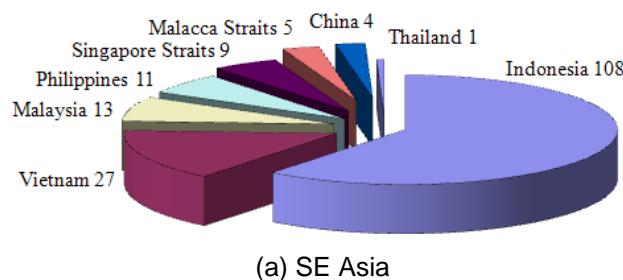


Figure 12. Geographic Locations of Piracy Attacks, 2015



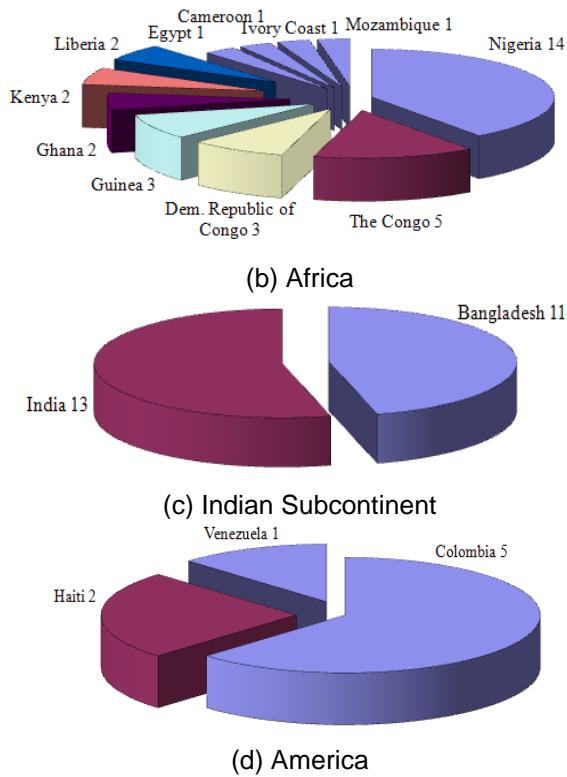
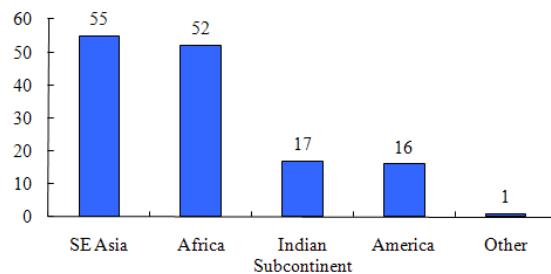
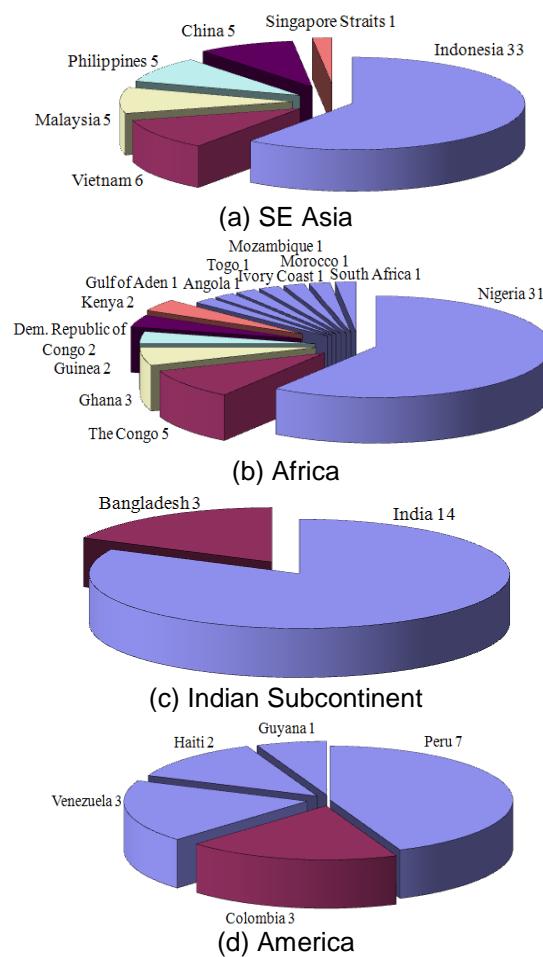


Figure 13. Piracy Attacks with High Risk, 2015

According to the Quarterly report offered by the PRC^[16], as for Somalia, zero incidents were recorded and just one attempted attack was recorded in the Gulf of Aden. A total of 141 incidents have been reported in the first three quarters of 2016 (see Figure 14), which is a 25% drop from the same period in 2015. (1) The number of reported attacks accounted for 39% in SE Asian waters, and focus primarily on Indonesia, Vietnam, Malaysia, Philippines, China and Singapore Straits (see Figure 15(a)). In addition, some incidents have been confirmed in Africa accounting for 37% of total attacks (see Figure 15(b)), which are mainly concentrated in Nigeria. The number of reported attacks accounted for 12% in Indian Subcontinent (see Figure 15(c)). Piracy attacks have been confirmed in America accounting for 11% (see Figure 15(d)). (2) This figure is broken down as 111 vessels boarded, 5 vessels hijacked, 15 attempted attacks and 10 vessels fired upon. (3) The figure is stated about the status of ships as 116 actual attacks, 20 berthed, 71 anchored, 25 steaming. On the other hand, the figure about the status of ships is as 25 attempted attacks, 1 berthed, 5 anchored, 19 steaming. (4) The types of ships attacked are in the order from more to less: bulk carriers, production tankers, crude oil tankers, container ships, chemical tankers, tugs, offshore tug, general cargo vessels, LPG tankers, pipe layers. (5) The types of arms used in piracy attacks are counted as 40 armed with guns, 30 knives, 69 not stated, 2 other weapons. (6) There are over 110 crew were taken hostage, 49 kidnapped, 5 threatened, 5 assaulted and 6 injured. (7) Flag states whose ships attacked were in the order from more to less: Panama, Marshall Islands, Singapore, Liberia. (8) Managing countries whose ships attacked were in the order from more to less: Singapore, Greece, Japan, Hong Kong.



**Figure 14. Geographic Locations of Piracy Attacks,
 The First Third Quarters of 2016**



**Figure 15. Piracy Attacks with High Risk,
 The First Three Quarters of 2016**

5. Conclusion

In recent years, the global piracy attacks have dropped but remain risky. Although the number of attacks has decreased significantly in Somalia and Gulf of Aden, they appear to be increasing in SE Asia and West Africa. In SE Asia, the attacks are mainly concentrated in waters off Indonesia and Malaysia, most pirates arm long knives and also guns looking to steal supplies, cargoes and oils from vessels, took crew members hostage or hijack the

vessel^[17], and more and more coastal tankers are hijacked here from 2014. In West Africa, the attacks are mainly focus on waters off Nigeria and Guinea, and the pirates tend to hijack production tankers, hostage and kill crew members, which are more brutal than in Somalia. Owing to low freeboard, bulk carriers, chemical tankers and general cargo vessels are often targeted. Container ships are also attacked while at anchor or berth. The ships' flag states registered under flags of convenience are developed shipping countries and are vulnerable to pirate attack. Managing countries whose ships attacked are liable to developed shipping countries and cause the favour of pirates. Thus, the global piracy attacks slightly decrease and are more violent, and the geographic locations with high risk change. Therefore taking necessary precautionary measures is a long-term job, mariners are warned to be extra cautious in those areas.

Acknowledgments

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References

- [1] CC IMB. Piracy and Armed Robbery against Ships Annual Report 2004[R], London, UK.
- [2] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2005[R], London, UK.
- [3] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2006[R], London, UK.
- [4] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2007[R], London, UK.
- [5] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2008[R], London, UK.
- [6] CC IMB. Piracy and Armed Robbery against Ships Annual Report 2009[R], London, UK.
- [7] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2010[R], London, UK.
- [8] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2011[R], London, UK.
- [9] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2012[R], London, UK.
- [10] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2013[R], London, UK.
- [11] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2014[R], London, UK.
- [12] Maximo Q. Mejia Jr. Maritime piracy - a multi-dimensional issue [M]. Luftfartsverkets tryckeri, 2012.5.
- [13] Deng Shuzhang, Ren Wei. Security and Anti-piracy technology [M]. Dalian: Dalian Maritime University, (2012): 194.
- [14] The Hague Centre For Strategic Studies. Future Issue - Maritime Piracy, (2008).11.
- [15] ICC IMB. Piracy and Armed Robbery against Ships Annual Report 2015[R], London, UK.
- [16] ICC IMB. Piracy and Armed Robbery against Ships Report Third Quarter 2016[R], London, UK.
- [17] Hu Wei. A study on the Latest Situation of Piracy and Response [J].China Maritime, (2015), 6, pp. 62-63.