

# The Development Status and Future Development Trend of China's Crew Market

Minjie Wang

School of Shanghai Maritime University, Shanghai 201306, China.

---

## Abstract

In recent years, with the rapid development of China's economy, onshore job opportunities and salaries have continued to increase, and the number of maritime graduates on board has been declining. This has caused a prominent contradiction between supply and demand for crew members, especially third mates and third tube ships. Since the outbreak of the new crown epidemic, the rapid increase in the international market's demand for Chinese crew services has exacerbated the contradiction between crew supply and demand. Based on the analysis of the overall development of the Chinese crew market and the status of dry bulk ship employees, this article draws the current supply and demand of Chinese crews, and predicts the future development trend of the Chinese crew market based on the analysis of the current status of the Chinese crew market.

## Keywords

Chinese crew; Current Situation Analysis; Crew Market; Supply and Demand.

---

## 1. Introduction

The rapid growth of the world economy, the rapid increase in international trade and the development of economic globalization have brought rare opportunities for the maritime industry. Foreign trade has played an important role in China's economic development, and more than 90% of foreign trade goods are transported by sea [1]. As a result, the Chinese crew team continues to grow. However, in recent years, due to the increase in job opportunities and salaries on the shore, the number of maritime graduates on board has been declining, and the contradiction between supply and demand for Chinese crews has become increasingly prominent. The outbreak of the new crown epidemic in 2020 has caused a crisis of crew shifts on international routes. Compared with other countries, China has controlled the epidemic earlier, so foreign shipowners are more willing to use Chinese crews, and the demand for Chinese crews has surged, which has intensified the Chinese crew market [2]. The contradiction between supply and demand. Therefore, this article analyzes the current supply and demand of China's crew through the overall development of the national crew market and the status of dry bulk ship employees, and then predicts the future development trend of the Chinese crew market.

## 2. The overall development of China's crew market

### 2.1 The growth rate of the number of registered crew members is slowing down

In recent years, the number of registered seafarers in China has continued to increase, but the growth rate of the number of registered seafarers has continued to decline. As of the end of 2020, there were 1,716,866 registered crew members in China, an increase of 3.5% year-on-year, of which 258,896 were women. There were 808,183 seafaring crews, a year-on-year increase of 3.0%; inland watercraft crews were 908,683, a year-on-year increase of 3.9%. In 2020, there are 377,638 seafarers with maritime service qualifications, accounting for 46.7% of the total number of seafarers. In 2020, due

to the impact of the new crown pneumonia epidemic, the growth rate of the number of registered crew members has slowed down significantly.

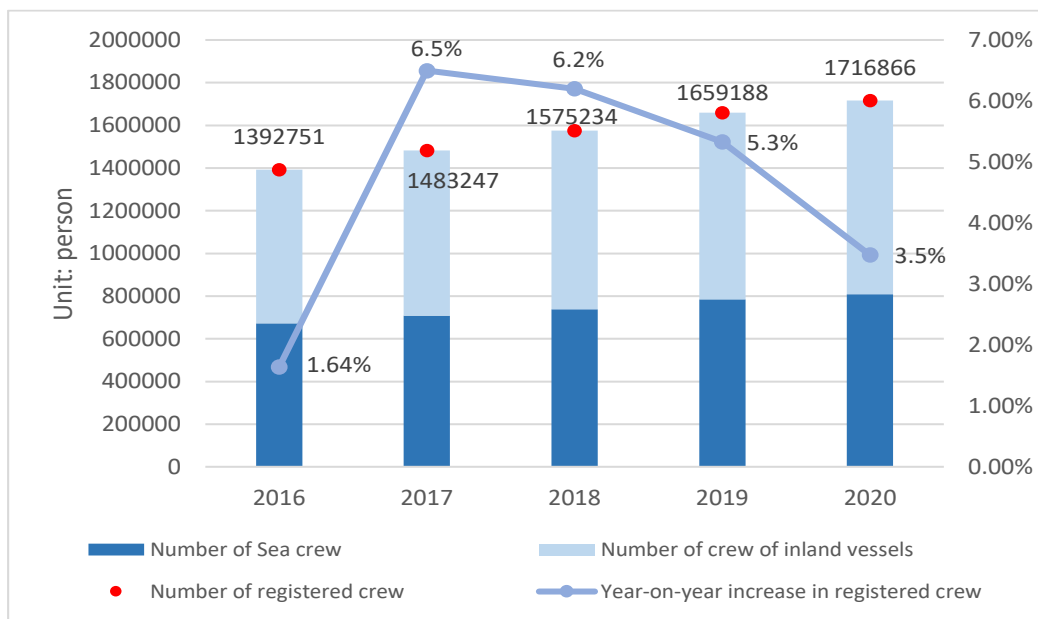


Fig. 1 The number of registered seafarers in China in 2016-2020 (Data source: China Maritime Safety Administration)

From 2015 to 2020, the number of registered seafarers on international voyages in China has continued to increase. In 2020, there will be 17,175 newly registered seafarers on international voyages. As of the end of 2020, China had a total of 592,998 registered seafarers on international voyages, a year-on-year increase of 2.98%. The growth rate of seafarers on international voyages has dropped significantly.

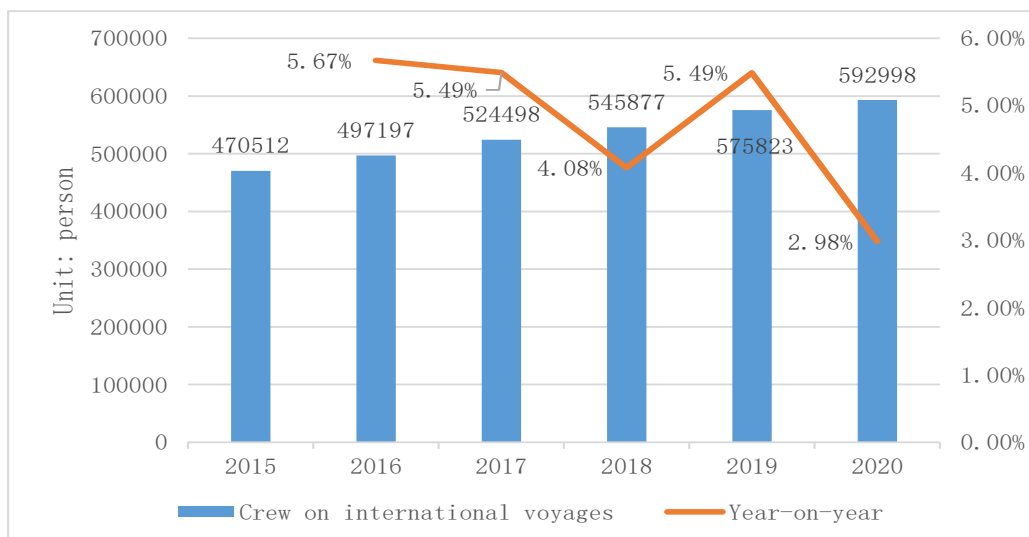


Fig. 2 Number of registered seafarers on international voyages from 2015 to 2020 (Data source: China Maritime Safety Administration)

From 2015 to 2020, the number of registered seafarers on China coastal voyages has continued to increase. In 2020, China will newly register 6,653 seafarers on coastal voyages. As of the end of 2020, there were 215,185 registered coastal seafarers in China, a year-on-year increase of 3.19%. In 2020,

affected by the national new crown pneumonia epidemic, the growth rate of the number of seafarers sailing along the coast has dropped sharply.

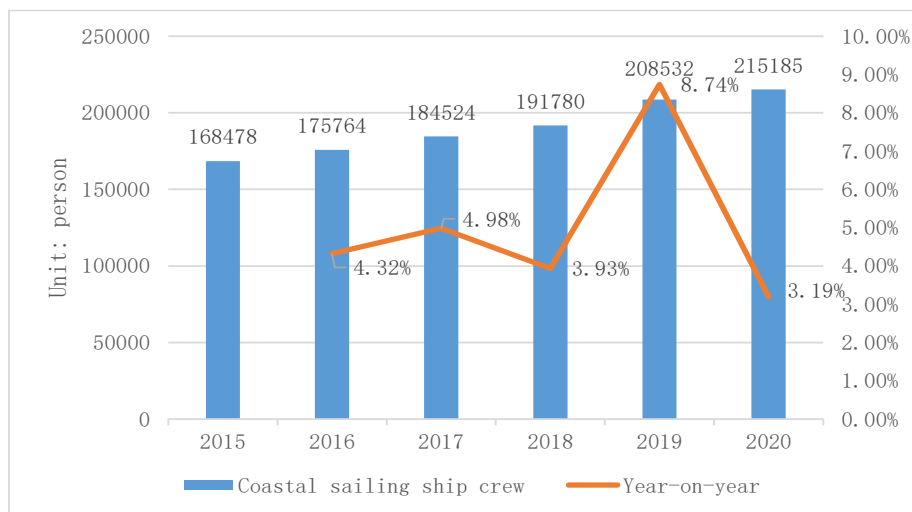


Fig. 3 Number of registered seafarers on coastal sailing ships from 2015 to 2020 (Data source: China Maritime Safety Administration)

## 2.2 The number of active participants in certain positions has declined

### 2.2.1 The number of certificate holders and active number of third officers and third officers on international voyages continues to decline

As of the end of 2020, China has a total of 269,995 seafarers holding certificates of competency for international voyages, a year-on-year increase of 4.1%. Among them, there are 17,256 captains and 91,835 other senior crew members. In the past two years, the number of certificate holders and active number of third officers and third officers on international voyages has continued to decrease. In 2020, affected by the new crown epidemic, the decline will be even more pronounced. The number of third officers has decreased by 26.80% year-on-year. The number of certificate holders decreased by 27.92% year-on-year, the number of active third officers decreased by 30.27% year-on-year, and the number of active third-managers decreased by 33.47% year-on-year.

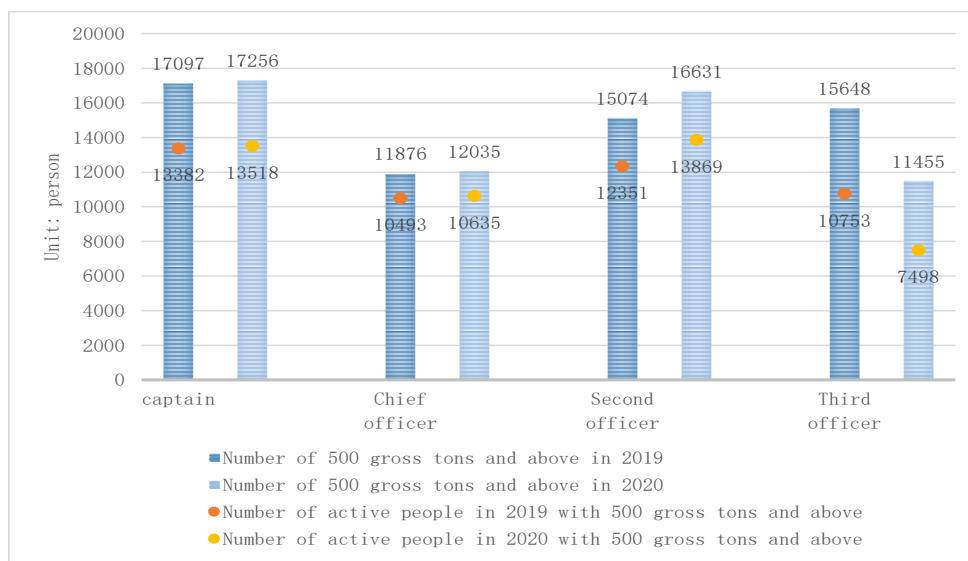


Fig. 4 The number of active captains and deck crew members holding certificates of competence for international voyages in 2019-2020 (Data source: China Maritime Safety Administration)

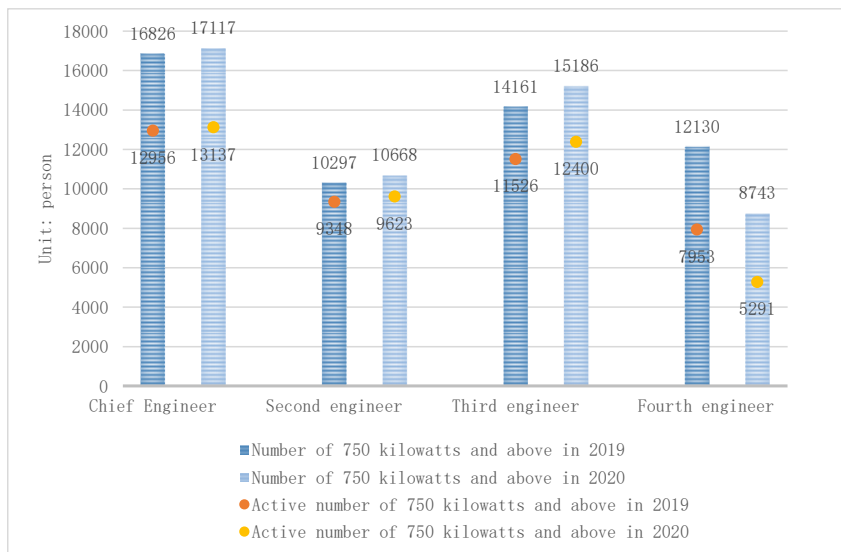


Fig. 5 The number of active crew members of the Engineering Department holding a certificate of competency for international voyages in 2019-2020 (Data source: China Maritime Safety Administration)

### 2.2.2 The number of certificate holders and active number of third officers and third officers on coastal vessels declined

As of the end of 2020, China has 169,685 seafarers holding certificates of competency for coastal navigation, a year-on-year increase of 6.7%. Among them, there are 17,696 captains and 65,786 other senior crew members. In 2020, there were 141,214 active coastal sailing seafarers, accounting for 83.2% of coastal sailing seafarers. In the past two years, the number of license holders and active number of third officers and third officers of coastal vessels has been decreasing. In 2020, the number of active persons affected by the epidemic will be significantly reduced. The number of third officers of coastal vessels has decreased by 30.36% year-on-year. The number of license holders in the pipeline fell by 32.52% year-on-year, the number of active third mates fell by 30.86% year-on-year, and the number of active third-managers fell by 36.30% year-on-year.

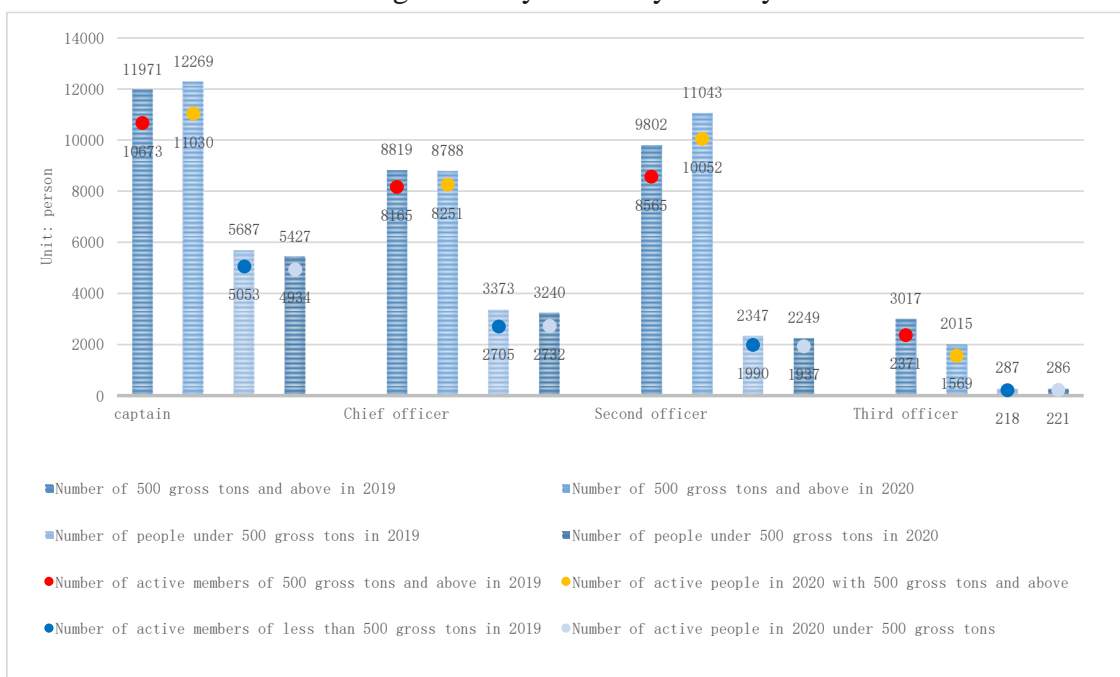


Fig. 6 2019-2020 Active number of captains and deck crews holding a certificate of competency for coastal navigation vessels (Data source: China Maritime Safety Administration)

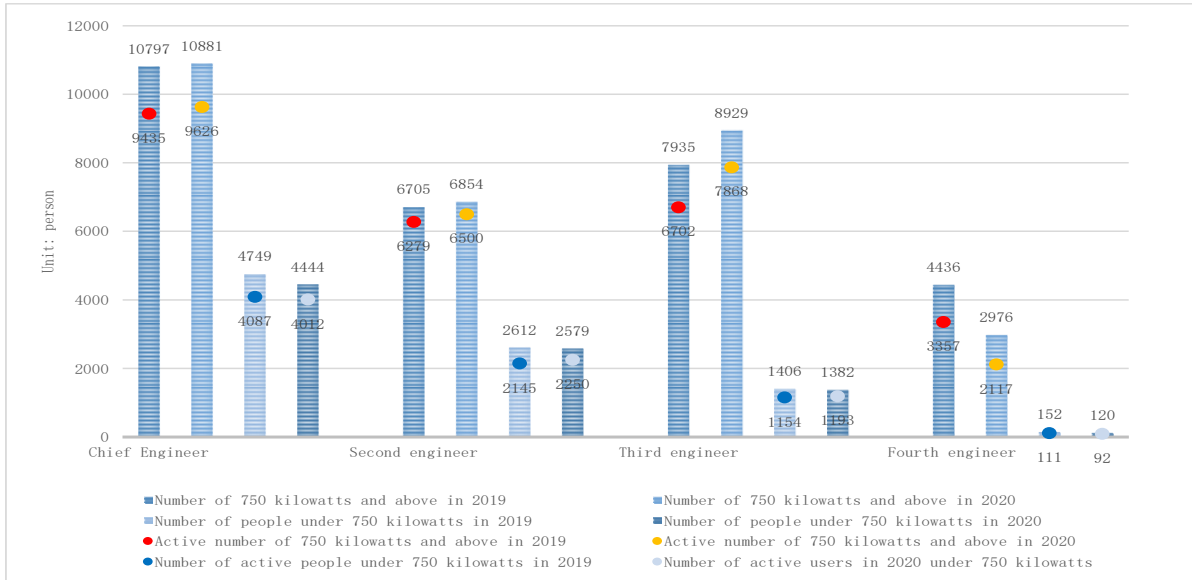


Fig. 7 The number of active crew members of the Engineering Department holding a certificate of competency for coastal navigation and sea-going vessels from 2019 to 2020 (Data source: China Maritime Safety Administration)

### 3. Analysis of the matching degree of supply and demand of Chinese seafarers

#### 3.1 There is a large gap in demand for some crew members

##### 3.1.1 Some types of coastal sailing ships have a large gap in demand for crews for some duties

Affected by the epidemic in 2020, the gap in demand for some crew members has significantly expanded. The main deck positions for coastal ships that have a demand gap are the captain and the third officer. The third officer has the largest demand gap. In 2020, the number of active third officers on coastal ships of all levels is lower than the minimum safe manning number. In addition, there is also a large gap in the demand for captains for coastal ships of less than 500 gross tonnage. At the same time, the positions of the engineering department with demand gaps are mainly chief engineer, chief engineer and third engineer. Among them, the job with a greater demand gap is the three-tube wheel. In 2020, the number of active three-tube wheels for coastal ships of 750 kilowatts and above and less than 750 kilowatts is much lower than the minimum safe manning number, of which coastal ships of less than 750 kilowatts The demand gap for the three-tube wheel has further widened.

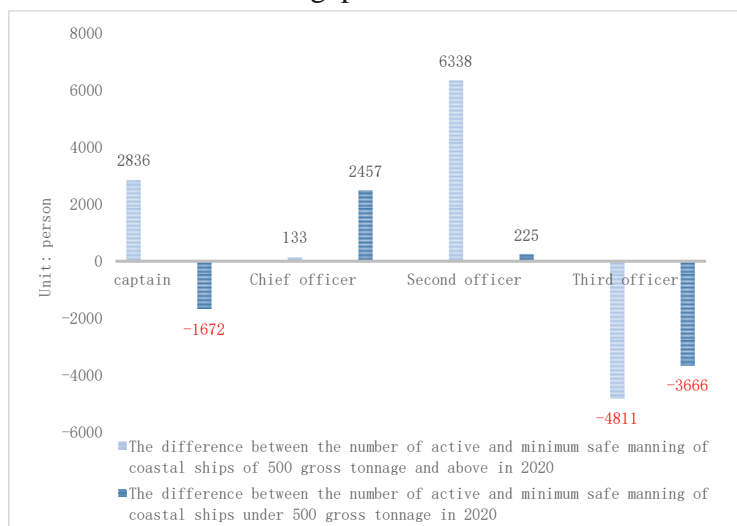


Fig. 8 The supply and demand status of the crew of the deck department of coastal sailing ships in 2020 (Data source: China Maritime Safety Administration)

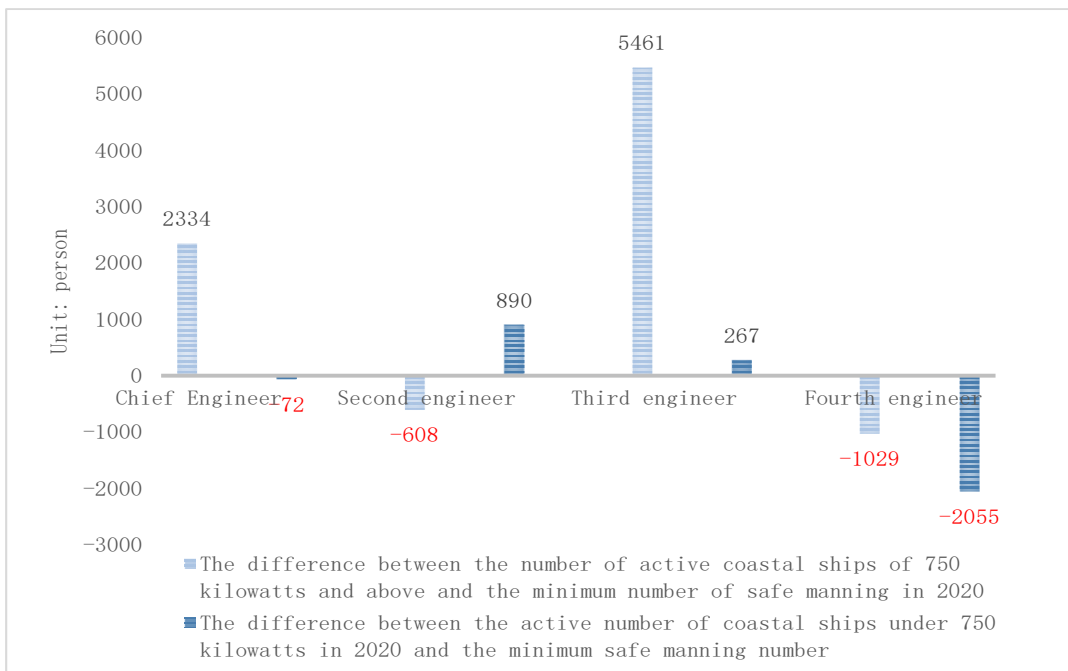


Fig. 9 Supply and demand status of the crew of the Marine Engineering Department of Coastal Navigation in 2020 (Data source: China Maritime Safety Administration)

### 3.1.2 There is a large demand gap for third mates and third-tube rounds of inland watercraft

Affected by the epidemic in 2020, the shortage of crews for third-tube ships of inland waterways has intensified. As of the end of 2020, there were only 2,569 third mates holding valid certificates of competence for inland river ships of 1,000 gross tonnage and above, a year-on-year decrease of 17.74%. There were only 1,873 third crew members holding valid certificates of competence for inland river ships of 500 kilowatts and above, which was a year-on-year decrease. Reduce by 15.25%. The number of third officer and third officer holding a valid certificate of competency are far below their minimum safe manning numbers. Among them, the shortfall in demand for the third officer is particularly serious, with a gap of 12,105[3].

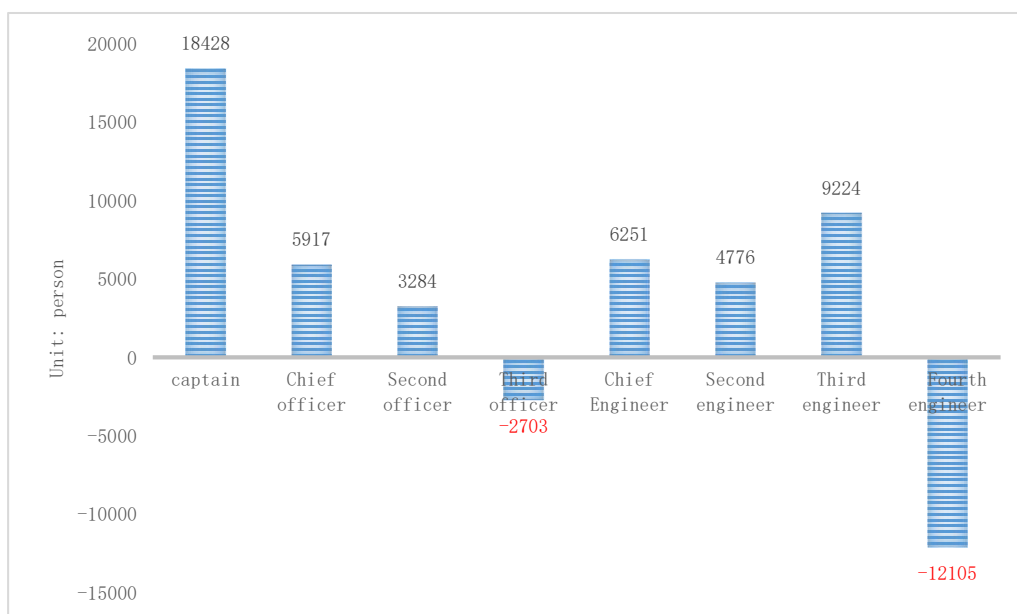


Fig. 10 Supply and demand of crew members of inland rivers in 2020 (Data source: China Maritime Safety Administration)

### 3.2 Factors such as the epidemic have a huge impact on the supply and demand of seafarers

Affected by the new crown pneumonia epidemic and other factors, the overall supply and demand of seafarers in China will change greatly in 2020. Although the supply and demand of seafarers in different shipping areas and different positions are still divided, the overall situation is in shortage. If not regulated, a seafarer system may appear. Sexual scarcity.

#### 3.2.1 The total number of Chinese seafarers is in short supply

Affected by factors such as the new crown pneumonia epidemic, the China Seafarers Supply and Demand Index (CSSDI) shows that the overall supply and demand of Chinese seafarers in 2020 has changed significantly from 2019, with a decrease of 9.63. The overall situation is in short supply, with a gap of 4.2%. The supply-demand relationship of seafarers is shifting from structural differentiation to systemic shortage: the supply and demand of seafarers in different shipping areas and different positions is still differentiated. If it is not regulated, there may be a systemic shortage of seafarers.

#### 3.2.2 The supply-demand relationship of seafarers in the international navigation area has dropped sharply, and the proportion of active seafarers has accelerated

According to CSSDI, as of the end of 2020, although the overall surplus of seafarers in the international shipping area is still 9.26, it has significantly evolved from the overall supply-demand relationship in 2019 to the direction of supply and demand, a decrease of 19.12%. This decline is the most dramatic change in the relationship between supply and demand for seafarers in international shipping areas since CSSDI tracked and reflected the supply and demand status of Chinese seafarers in 2012. In 2020, the number and proportion of active seafarers with service qualifications in the international shipping zone will accelerate the decline. Not only did the proportion of active seafarers drop from about 50% to 32.11%, the number of active seafarers dropped for the first time, from 264,242 to 190,422. In addition, affected by the new crown epidemic, the number of seafarers dispatched abroad has dropped significantly for the first time in recent years. In 2020, there are 250 seafarer dispatch agencies in China, with 122,304 dispatched seafarers and 114,843 dispatched seafarers, which are 21.3% and 16.5% lower than the previous year respectively. Among them, the number of expatriates/number of expatriates dropped the most drastically for the third tube round and third mates. The number of expatriates fell by as much as 32.3% and 27.5%, and the number of expatriates fell by 27.7% and 22.7%, respectively.

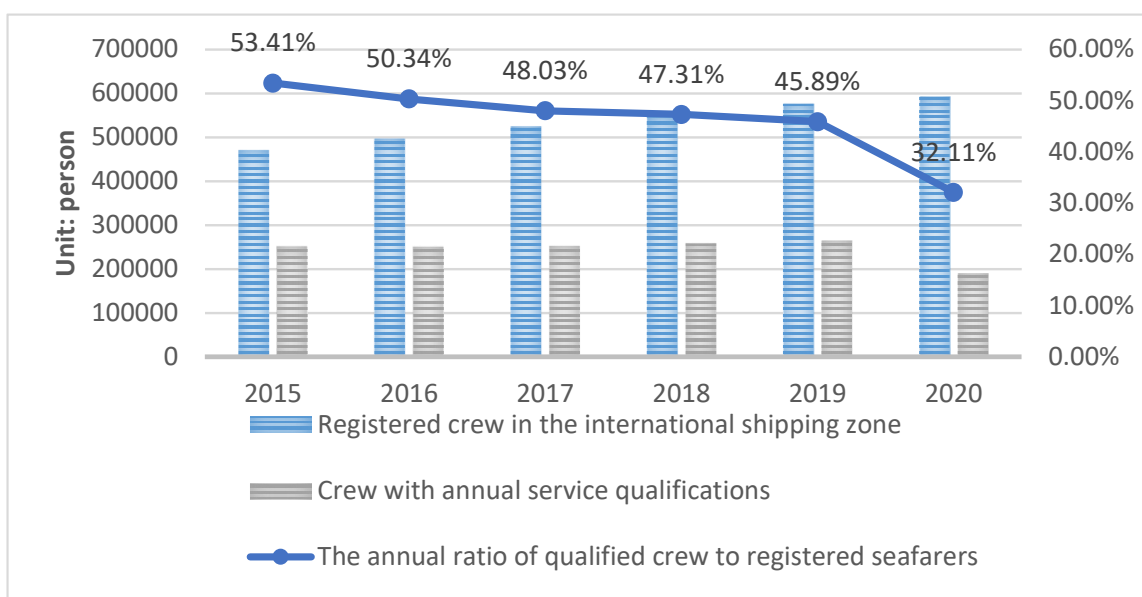


Fig. 11 Seafarer registration and actual ship situation in the international shipping zone from 2015 to 2020 (Data source: International Maritime (China) Research Center)



### 3.2.3 The relationship between supply and demand of seafarers in coastal navigation areas continues to be in short supply

In 2020, the supply-demand relationship of seafarers in various positions in the coastal shipping area will continue the differentiation trend of 2017-2019. The supply and demand relationship of seafarers of different positions will be quite different, which is reflected in the supply and demand of seafarers in third mates, third-line crews, mechanics, captains, etc. The relationship is severely in short supply (the degree of shortage is as high as 36.7%, 20.62%, 19.87%, and 19.48% respectively), and the supply and demand of the second officer and the second officer are surplus (up to 24.2%, 17.03%). In 2020, the overall shortage of seafarers in the coastal navigation area is 13.22%, which is no significant drop from 9.89% in 2019. However, there is no job in a more balanced supply and demand state.

In addition, affected by factors such as increasing market demand, unfavorable foreign epidemic prevention and control, and difficulties in shifting and repatriation, in 2020, the number and proportion of active crews in coastal shipping areas will increase significantly for the first time in recent years. The number of seafarers with service qualifications in the coastal navigation area rose from 112,774 to 141,214, and the proportion of seafarers with service qualifications rose from about 50% to 65.62%. This is in sharp contrast with the situation in the international shipping area, and indirectly confirms that a new development pattern in which the domestic big cycle is the main body and the domestic and international double cycles are mutually promoting is taking shape, which has significantly boosted domestic coastal trade and transportation [4].

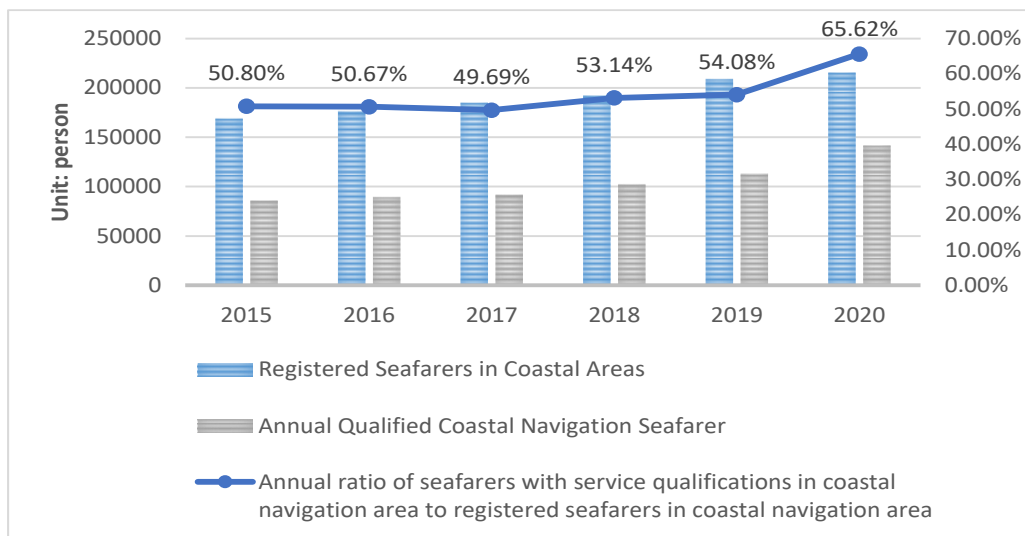


Fig. 12 Seafarer registration and actual ship situation in coastal navigation areas from 2015 to 2020 (Data source: International Maritime (China) Research Center)

### 3.3 China International seafarers' salaries continue to rise

Under the influence of the global new crown pneumonia epidemic, the mobility of international seafarers in countries such as the Philippines has been restricted, while the epidemic in China has been well controlled. China's international seafarers have been favored by many international shipping companies. Therefore, the shortage of Chinese seafarers' supply has promoted the increase of China's international seafarers' salaries. Rise rapidly. Since July 2020, the salaries of China International's seafarers on dry bulk carriers have continued to increase, with the salary increase of the second officer, third officer, second officer and third officer all exceeding 30%. In July 2021, the salary of the third officer and the third officer increased by more than 50% year-on-year, the salary of the third officer increased by 54.92%, and the salary of the third officer increased by 54.58% year-on-year. The salary gap between the second officer and the second officer Significantly reduced.



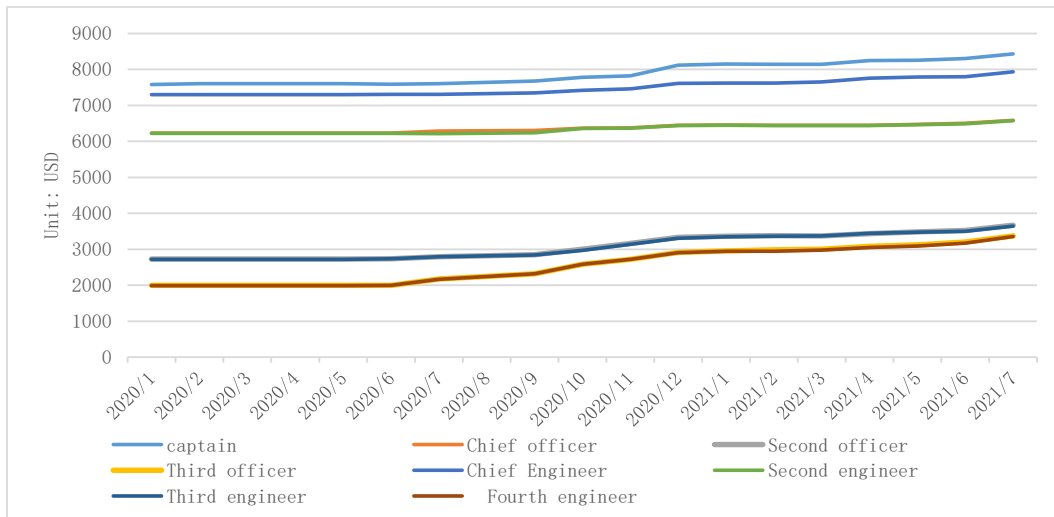


Fig. 13 China International Seafarers Salary on Dry Bulk Carriers for July 2020-2021 (Data source: Shanghai Shipping Exchange)

### 3.4 The salary of coastal bulk cargo crews has risen rapidly

Affected by the epidemic, the shift of international crews has been blocked, causing the wages of ocean-going bulk cargo ships to continue to rise. The wages of third mates and third-in-charge ships have increased significantly. In August 2021, the wages of the third mate and third-line crew of ocean-going bulk cargo ships increased by 122.22% compared with the wages of August 2019 when the epidemic had not yet occurred.

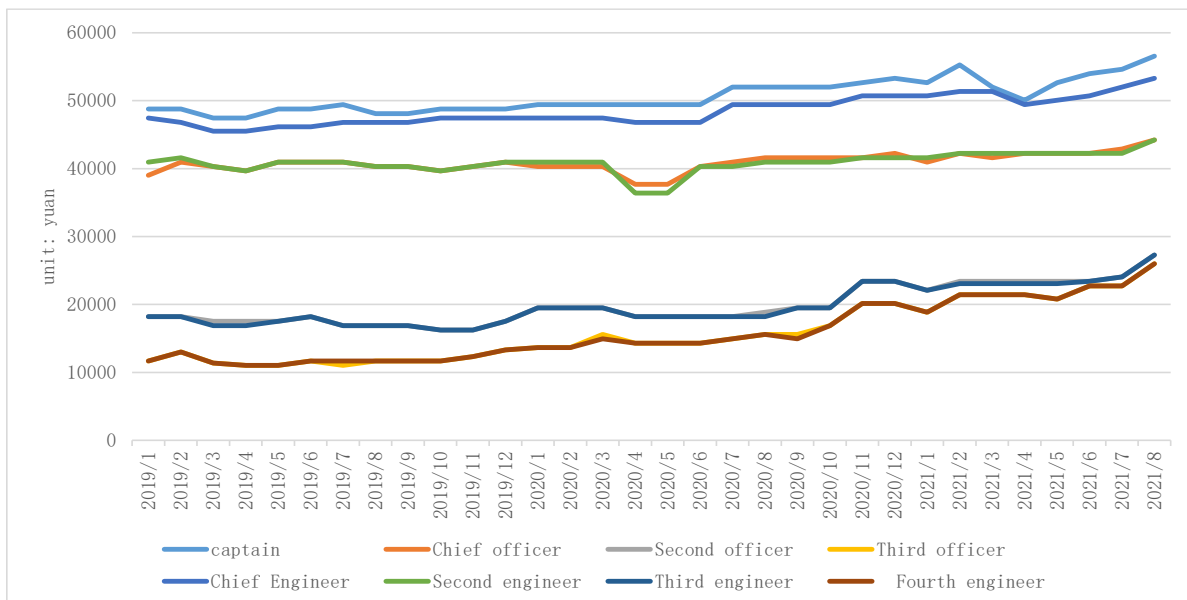


Fig. 14 Employee salaries of ocean-going bulk cargo ships from January 2019 to August 2021 (Note: The staff salaries of ocean-going bulk cargo ships are calculated at the exchange rate of 1 USD = 6.5 RMB; Data source: Shipping Online)

Since the contradiction between supply and demand of the third officer and the third officer is particularly prominent, since October 2020, the wages of the third officer and third officer of Jinyang Bulk Cargo have increased rapidly. In August 2021, the wages of the third officer and third officer of Jinyang Bulk Cargo were more than double the wages of August 2019 when the epidemic had not yet occurred.

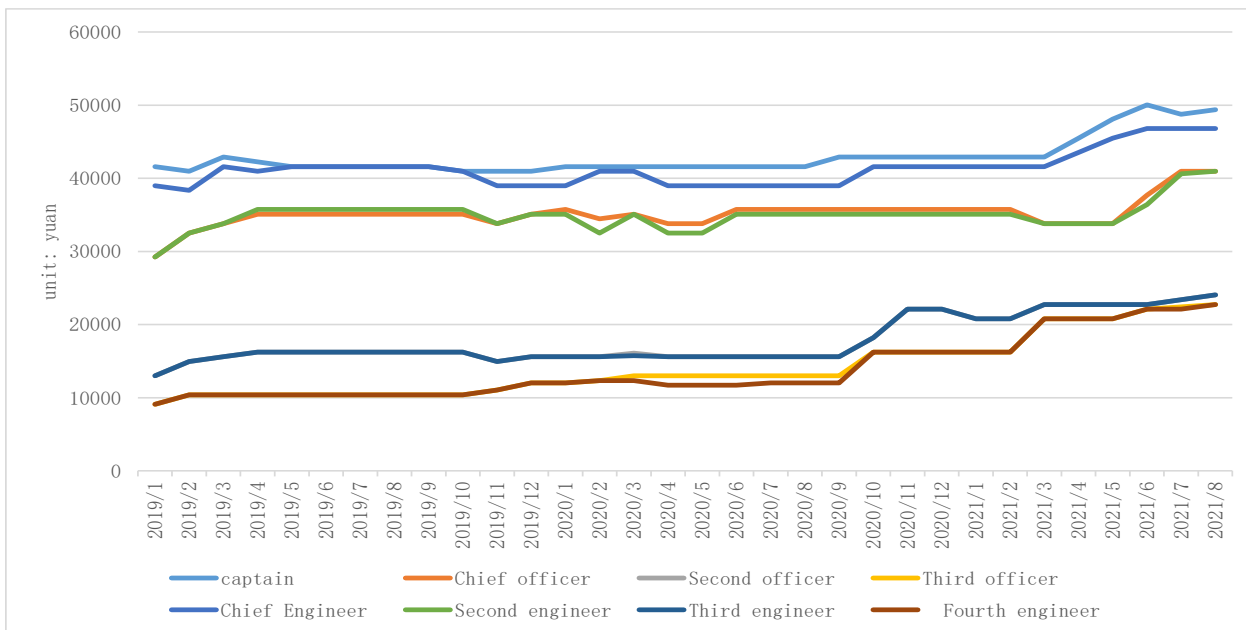


Fig. 15 Employee salaries of offshore bulk carriers from January 2019 to August 2021 (Note: The staff salaries of ocean-going bulk cargo ships are calculated at the exchange rate of 1 USD = 6.5 RMB; Data source: Shipping Online)

The wages of the coastal Bingyi bulk cargo ship have been rising continuously. In 2020, affected by the global spread of the new crown pneumonia epidemic, the mobility of international crews will be limited, and the supply of domestic crews will continue to be tight. In the second tube and the third tube, the increase in the third mate is particularly prominent. From September 2020 to July 2021, the wages of the third mate of coastal B1 bulk cargo have been higher than the wages of the third mate of ocean bulk cargo. In August 2021, the wages of the third officer of coastal Bingyi bulk groceries more than doubled compared with August 2019. In addition, from November 2020 to July 2021, the wages of the second mate of coastal B-1 bulk groceries have also been higher than those of the second mate of ocean bulk groceries.

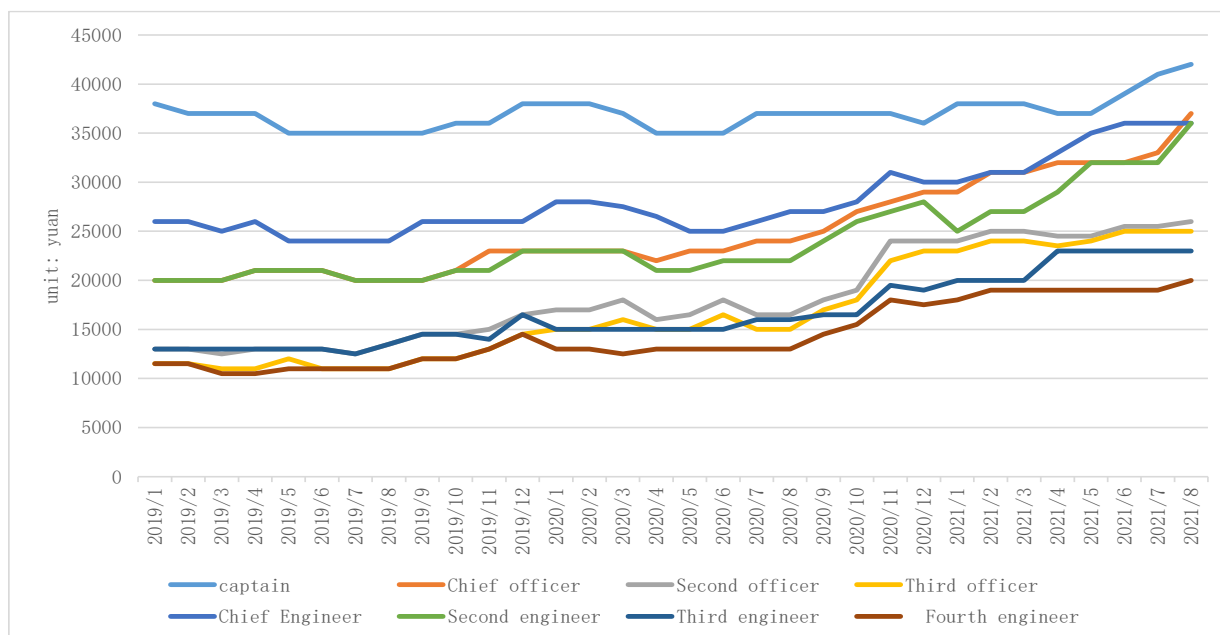


Fig. 16 Employee salary situation of coastal Bingyi bulk cargo ship from January 2019 to August 2021 (Data source: Shipping Online)

The wages of employees on coastal bulk cargo ships have increased rapidly. In August 2021, the wages of the chief mates of coastal third-party bulk cargo increased by 80.95% from August 2019, and the second mates' wages increased by 92.86%. The wages of the major coastal third-tier groceries rose by 71.43% compared with August 2019, and the wages of the second-tier managers increased. 64.29%. In addition, from March 2020 to July 2021, the wages of the second mate of coastal bulk cargoes have been higher than the wages of the second mate of ocean bulk cargoes.

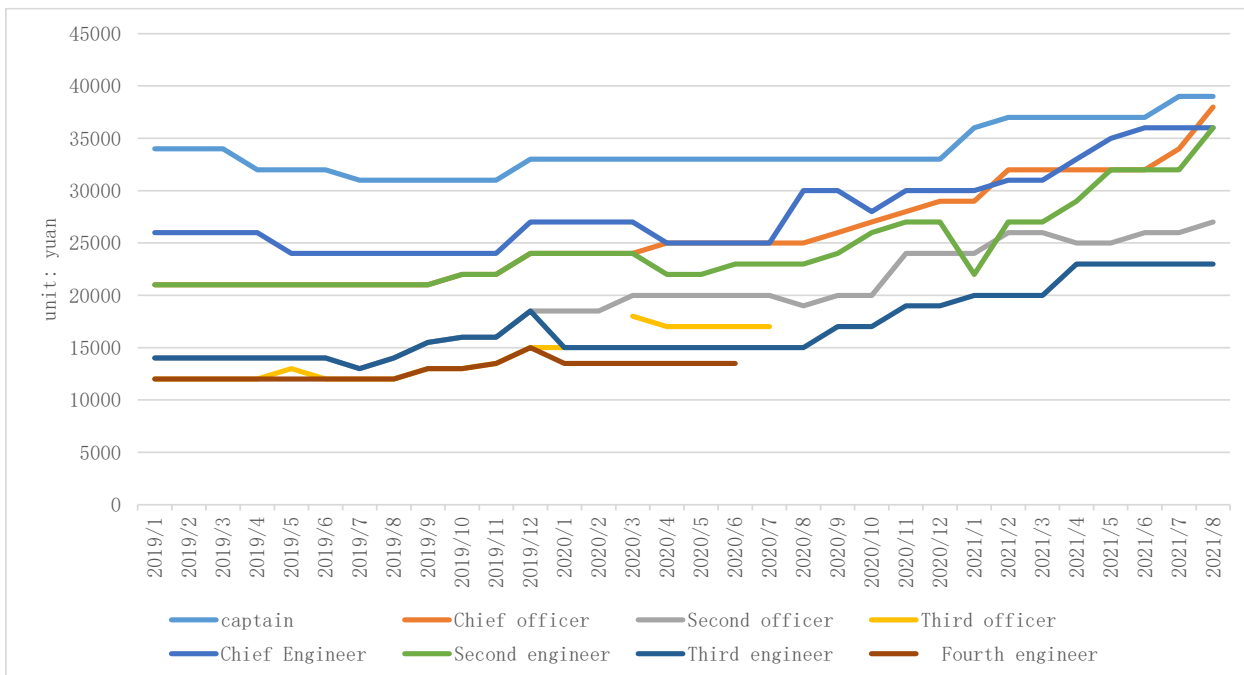


Fig. 17 Staff salaries of coastal bulk cargo ships from January 2019 to August 2021 (Data source: Shipping Online)

## 4. The future development trend of China's crew market

### 4.1 The supply of crew members will continue to be tight

At present, with the transformation and upgrading of China's economic structure, the job opportunities on shore have increased, and the wages are similar to those on board, while the young generation does not have a strong sense of identification with the crew profession. Therefore, in recent years, the proportion of students applying for the nautical profession always hovers at a low level, and the willingness of nautical graduates to go on board is also decreasing, resulting in the contradiction between supply and demand of third mates and third in charge of ships being particularly prominent. Even through the training of mechanic sailors to promote the third mate and third officer, may not be able to change the trend of tight supply of crew.

### 4.2 The demand for crew will continue to expand

In recent years, the global fleet has continued to expand. According to Clarkson's research data, the global fleet has exceeded 100,000. The capacity of China coastal inter-provincial dry bulk carriers is also increasing. As of the end of 2020, China coastal inter-provincial dry bulk carriers totaled 1973, an increase of 221 from the end of 2019, with a tonnage increase of 8.75%, and the fleet expansion has accelerated significantly. At the same time, the conversion of marine fuels under the promotion of environmental protection regulations may accelerate the renewal of ships and the elimination of capacity, which will bring potential impetus to the growth of the global fleet in the future. It is expected that the size of the fleet will continue to expand in the future, and the demand for crews will also continue to increase.

#### **4.3 The epidemic leads to more shortage of Chinese crew members**

China is the most successful country in controlling the epidemic and has completely resumed work and production, while the international epidemic continues to break out, and the traditional crew countries India and the Philippines are deeply affected by the epidemic, which causes many management companies and ship owners to use Chinese crew for ships with full or partial foreign crews because they are worried about the risk of spreading the epidemic caused by using foreign crews. Under the influence of the global spread of the new crown epidemic, Chinese crew members are more favored by international shipowners and are particularly sought after by major shipping companies in the world.

#### **4.4 The overall salary of crew will show a growing trend**

Although the continued outbreak of the epidemic in the Philippines, India and other crew supply countries has caused a certain impact on the international seafarer market and aggravated the contradiction between supply and demand of seafarers, but even if the impact of the epidemic disappears in the future, the crew market will still be because of the decline in the attractiveness of maritime occupations and the rising ratio of dock staffing, the supply of crew will be reduced and the demand will increase in a tight situation. The persistent shortage of seafarers will give impetus to the improvement of crew salary, which is expected to show an overall upward trend in the next few years.

#### **4.5 The mobility of crew market will be higher and higher**

With the gradual marketization and transparency of China's crew salary level in the future, coupled with the fact that crew certificates are controlled by the crew themselves, the crew will be more inclined to move to organizations with high salary levels, and the competition for crew between major organizations will become more intense, leading to the increased mobility of the crew market and the increased volatility of crew salaries. At the same time, the shipping market will be more and more open in the future, the information of crew market will be more open and transparent, the service channel between all kinds of crew will be more perfect, and the flow of crew will be more orderly and free.

### **References**

- [1] Yong Li, Yuliang Zhao, Analysis of the status quo of Chinese seafarers and development countermeasures [J]. Navigation Education Research, 2008, 25(04):9-12.
- [2] Gang Chen, Problems of China's Seafarer Labor Market Supply and Solutions [J]. Navigation Education Research, 2021, 38(02):18-22.
- [3] China Crew Development Report 2020
- [4] 2021 China Seafarers Supply and Demand Index Research Report.