Analysis of the Profitability of the Shipbuilding Industry through Market Economy Theory

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ABSTRACT

This study focused on analysis of the profitability of the shipbuilding industry through market economy Theory. The objectives were to study 1). the development cycle of the shipbuilding industry. 2) the development status of the shipbuilding industry. 3). how to enhance the capital strength of China State Shipbuilding Group. 4) the significance of asset restructuring of China State Shipbuilding Group. This paper discussed the characteristics of the industry development cycle, the current status of industry development, and the significance of the restructuring of China State Shipbuilding Group. This study adopted an empirical research method. During the study period, a large amount of data was collected mainly from the online platform. Based on the analysis and comparison of the company's historical operating data, the conclusion could be inferred that China State Shipbuilding Group will usher in great development. The conclusions can provide a reference for future decision-making for the management and investors of the Chinese Group.

KEYWORDS: Cyclical industries, Profitability, Market economy, Shipbuilding Industry

1. Introduction

Since the global economic crisis in 2008, the shipbuilding industry has been oversupplied. As a result, the shipbuilding industry entered a downturn. So that China's shipbuilding industry has been in a state of loss or small profit for more than a decade. As a result, China State Shipbuilding Group has undergone a major asset restructuring. In summary, we have noted the problem of profitability of Chinese ships.

The purpose of this research is to explore the profitability of China State Shipbuilding Corporation. The main content is the cyclical nature of the shipbuilding industry. There is also the current state of the shipbuilding industry. Major asset restructuring of China State Shipbuilding Corporation. In terms of the significance of major asset restructuring, a comprehensive exploration has also been made. Give a clearer outline of the profitability analysis of Chinese ships.

In the past, research in this area mainly focused on the discussion of the development of enterprise scale. Wenlong.Hu (2019) made a study titled "70 Years of China's Shipbuilding Industry:

History, Achievements and Enlightenment". Yixing.Zhang (2017) has done research on the current situation and development prospects of China's shipbuilding industry. In addition, Fu. Guang (2021) has done research on the "Brief History of Chinese Shipbuilding". Other than that Wenjie.Liu (2022) also made good progress in the research of "The Development of the Global Shipbuilding Industry is in the Rising Period of the Industry". The development prospects of China's shipbuilding industry have a clearer outline.

Although there are so many research results, there are still many unsolved problems.

First is the research and development and investment problems in the shipbuilding industry. Second is the decarbonization of the industry. In addition, the issue of decarbonization paths in the shipbuilding industry deserves our attention. And the construction of port infrastructure is also a place that cannot be ignored. Therefore, it can be seen that there are still many places worth in-depth research in this field.

This study explores the following aspects：1. The development cycle of the shipbuilding industry. 2. The development status of the shipbuilding industry. 3. How to enhance the capital strength of China State Shipbuilding Group. 4. The significance of asset restructuring of China State Shipbuilding Group. Through qualitative research and quantitative method, the answers to the above research questions are obtained.

This study has made the following contributions to academic research.

First, we have adhered to the cyclical law of market economic theory. Second is to adhere to the market supply and demand mechanism and market price mechanism of the market economy theory.

This research mainly discusses the following questions. The first is to combine forecast data with historical ratios. The second is the similar citation of inter-period division reports.

The technology roadmap for this article is shown in Figure 1.

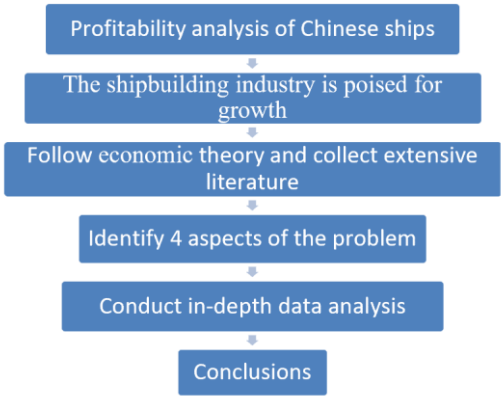

Figure 1 Study the technical route

2. Literature Review

2.1 Business cycle theory

The theory of the economic cycle was proposed by Schumpeter (1939) in the book "Theoretical, Historical and Statistical Analysis of the Economic Cycle of the Capitalist Process", and his content is mainly to say that there are cyclical laws of prosperity and depression in the process of economic development, and the economic cycles constructed by different theories are long and short, and the driving factors are different. According to the theory of economic cycles, economic development will present a cyclical change of expansion, contraction, and re-expansion, and this

cyclical change has a certain regularity in terms of time sequence and duration. A 10-year economic cycle proposed by the French economist, a 3-4 year economic cycle proposed by the British economist Kitchin in 1923, and a 50-60 year economic cycle proposed by the Russian economist Kondratiev (1925) in "Long Fluctuations in Economic Life". In 1936, the famous modern British economist John Maynard Keynes discussed the theory of the economic cycle from the perspective of psychological factors in the book "General Theory of Employment, Interest and Money". In 1942 Schumpeter published Capitalism, Socialism and Democracy, which combined economics and sociology with the study of social institutions based on innovative theories. He made a comprehensive analysis of the phenomena of business cycles in human history (Schumpeter, 1934; 1939). The American economist Hubbert (1937) wrote a book on the business cycle, Boom and Bust, which extensively collected theories of economists in the capitalist countries at that time, found their common ground, and then made a comprehensive explanation of the occurrence and development of the capitalist economic cycle. It is precisely because the economic cycle in the modern capitalist market economy is constantly repeated, especially after the three major recessions of the world from 1873 to 1896, 1929 to 1933 and 2007 to 2008, that the economic cycle has become an important area of economic research in modern times. The economics community needs to draw nourishment from Schumpeter's theory of entrepreneurship and innovation in order to truly understand the essential characteristics of the operation of the market system and the causes of economic growth and fluctuations (Acemoglu, 2009).

2.2 The current state of practical use of cycle theory

Since its introduction, market economics theory has been applied in many fields, and Yi Li (2001) uses this theory in the field of administration. Xudong Li (2002) then used this theory in the field of law. In the field of higher education resource allocation, Zhihui Cai (2008) also used this theory. Xian Liu (2016) used this theory in the field of China's competitive sports market, which also made the level of this theory broader. Therefore, the current situation of applied research on this theory is in the ascendant.

2.3 Supply and demand theory

1776 Adam Smith (1723-1790) The Wealth of Nations Publication became the cornerstone of modern economics. The concept of economic freedom put forward by him has become the theoretical basis and operating principle of the market economy. In the 1870s, Carl Menger of Austria (1840-1921), Jevons (1835-1882) of England, and Walras of France (1834-1910) proposed the theory of marginal utility value almost simultaneously. They adhere to the idea of equilibrium analysis, use higher mathematical methods, carry out the revolution of research methods, regarding economic activity as a whole, emphasize that the market pricing of products and factors of production is related to the scarcity of resources, and oppose the labour theory of value, believe that the value of commodities does not depend on the amount of labour but depends on people's subjective evaluation of their utility, consumption increases, utility decreases, and it is the

minimum utility that determines the value of commodities, which Menger's student Wiesel (1851-1926) called "marginal utility". In mainstream Western economics, mathematical models have since become indispensable. John Maynard Keynes (1883-1946). His representative work is "General Theory of Employment, Interest and Money". He argues against Saye's Law that demand is a function of supply (supply creates demand) and advocates that supply is a function of demand (demand creates supply). He pioneered the analysis of the total amount, and proposed that due to the role of the law of consumption tendency, the law of marginal returns of capital, and the law of flow preference, the economic crisis caused by insufficient effective demand and overproduction was triggered, theoretically explained the unstable factors and unbalanced trends of the market economy, advocated the close integration of the monetary economy and the physical economy, opposed "laissez-faire", and proposed state regulation and intervention. The role of the state in regulating and intervening in the economy is called the "visible hand".

2.4 Application status of supply and demand theory

Since its introduction, the theory of supply and demand has been applied in many fields. Hicks (1937, Modigliani (1944, Klein 1947, Chick (1983, Meltzer (1988, Coddington (2003) et al. have made their interpretations of the true meaning of the General Theory or the true meaning of the Keynesian Revolution. Sinong Jia, Qinglu Guo and Qun Zuo (2017) use this theory in the field of (medical health care). Then, Jinyuan Tao and Xinjun Wang (2020) applied the theory of supply and demand to the field of public cultural products, which also made the level of this theory broader. Brian, Howard and Peter (1995) in The Guide to Modern Macroeconomics Comparative studies of various schools of thought have found that the relevant research literature is still growing exponentially. Therefore, the applied research of theory is now in full swing.

2.5 Price Theory

Human exploration of price theory has a long history. As early as 2,000 years ago, Aristotle studied commodity exchange, and he believed that there must be something equivalent in the exchange of commodities. Ricardo used the term in his 1817 book Principles of Political Economy and Taxation as the title of one of the chapters, On the Influence of Demand and Supply on Price. He devoted himself to the study of hypotheses used to establish his theory of supply and demand. The French mathematician Gounod first developed a mathematical model of supply and demand, which was accompanied by related diagrams in Gounod's 1838 book Researches into the Mathematical Principles of Wealth. In the late 19th century, the marginal utility school emerged, led by the British economist Jevons, the Austrian economist Menger, and the French economist Vallas. What their theories have in common is that prices are determined by the marginal price of production decisions

2.6 Application status of price theory

Since its introduction, price theory has been applied in many fields, and the more representative articles are A. Myrck Freeman (1979), Palmquist (1980),

Butler（1982）, Smith & Huang （1995）, Nelson（2004）. Yanjing Zhao (2011) uses this theory in urban development research. Then, Qiuxia Li (2018) used this theory in the field of the stock market. In the field of aquaculture, Yao Wang, Yi Zhang and Yunhui Ai (2018) also used this theory. Jianhua Liu and Guihua Wu (2018) also use this theory in the field of hotel management, which also makes the level of this theory broader. Therefore, the current situation of applied research on this theory is in the ascendant.

2.7 Conceptual framework

Business Cycle Theory: Cyclical fluctuations in national income and economic activity. The economic cycle is a fluctuation seen in the overall economic activity of countries that organize activities mainly by commercial enterprises. The expansion of one cycle in many economic activities occurs almost simultaneously, followed by the same pervasive recessions, contractions, and recoveries linked to the expansion phases of the next cycle. The order of this change is repeated, but not timed. The duration of the economic cycle is more than one year to several years or decades. They are not divided into shorter periods with similar characteristics close to their own amplitude.

Supply and demand theory: it is a tool of microeconomic analysis, the main force that drives the market, determines the price of goods in the market, and determines the output of goods in the market. Buying determines the demand for an item, and the seller determines the supply of an item.

Price Theory: The price formation mechanism dominated by market formation prices. The prices of the vast majority of goods and services are formed by the market, and the prices of a few important goods and services (such as those provided by the public sector that are closely related to consumer goods) are set by the State. The prices of goods and services are determined by value and are affected by supply and demand. A reasonable price reflects both changes in value and changes in supply and demand.

2.8 Literature review

Taking the theory of business cycles, supply and demand theory, and price theory as the keywords, this paper collects and retrieves relevant works, literature, etc. in chronological order. Learn about the relevant theories and the current application status of each theory.

3. Research Methods and Design

3.1 Research Methods

This study uses Qualitative Analysis and Quantitative research. From 1950 to 2020, obtaining worldwide shipbuilding data from Clarkson Research; from January 1, 2020, to October 31, 2021, obtain the Shanghai Export Container Freight Rate Index and the Baltic Dry Bulk Index; from 2005 to 2020, obtain data on the number of single shipyards above the designated size of Clarkson Research; and from 2007 to 2020, obtain the annual report data of China Shipbuilding (stock code: SH600150). Sampling is conducted by direct access to authoritative statistics and data audited and publicly disclosed by intermediaries. A total of 21 groups of samples in 4 categories were obtained. All samples are obtained and then compared and analyzed by financial analysis formula.

Financial analysis formula: total=I*PGross-R

Gross Margin=(operating income - operating cost)/operating income *100%

Gross profit margin: Gross margin is an important indicator of a company's profitability. Usually the higher the gross profit margin, the higher the profitability of the enterprise and the stronger the ability to control costs.

3.2 Study Design

This study is based on the analysis and design of market economic theory. Divide the content you want to explore into four categories, and then conduct targeted data acquisition.

The first category is mainly the cyclical exploration of the industry, and 1 set of statistics is obtained. The second category is mainly the exploration of the current situation of the industry, and 4 sets of statistics are obtained.

The third category is mainly to explore the restructuring of listed companies and obtain two sets of public financial data. The fourth category is mainly the comparative analysis of the financial data of listed companies, and 14 sets of public financial data are obtained.

4. Analysis of the Findings

4.1 Industry development cycle

The development cycle of the international ship market is affected by a combination of factors. The renewal and reinvestment cycle of about 25 years for ships is the main internal factor. Factors such as the prosperity or depression of the world economy, the great changes in international maritime rules, and large-scale wars are important external factors that will lengthen or shorten the ship market cycle.

The destruction of ship assets in World War II resulted in a newbuilding market cycle of fewer than 15 years. The shipbuilding cycle from the 1950s to the 1970s was largely unaffected by external factors. The single-hull tanker phase-out convention adopted by the IMO (International Maritime Organization) in 2003 and the rapid development of China's economy have superimposed, extending the market cycle of the last new building ship to more than 30 years (China Shipbuilding Industry Association website, 2021). Since the financial crisis, the newbuilding market has undergone more than 10 years of adjustment, as shown in Figure 2.

Source: World new ship orders World new ship orders
New ship orders are 5-year average

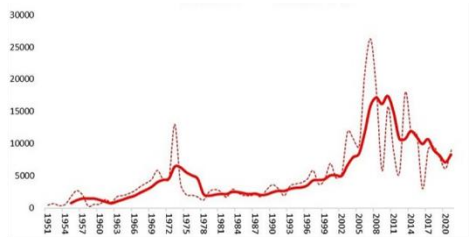

Figure 2 Order trends in the newbuilding market since 1950

Source: Clarkson Research

4.2 The current situation of industry development

4.2.1 International shipping policies contribute to shipping demand

In recent years, IMO legislation on environmental protection has gradually accelerated, and relevant conventions on ballast water and carbon emissions have come into force.

The final installation deadline for ballast water treatment systems is September 2024, and middle-aged ships will choose to

install additional equipment, and older ships will choose to update because it is difficult to recover their investment.

Under the carbon neutrality target, EEXI (Existing Ship Energy Efficiency Design Index) and CII (Carbon Intensity Index) will be officially implemented in 2023, and ships need to reduce the main engine power and speed, thereby reducing market capacity in disguise; the new building will quickly shift to alternative energy sources (LNG, hydrogen, ammonia) power. In addition, European countries are beginning to consider taxing carbon ships.

4.2.2 Shipping boom is rising

The existing shipping vessels include three main ship types: container ships, dry bulk carriers and oil tankers. At present, container transportation and dry bulk cargo transportation are in a period of rising prosperity, and the volume of new shipbuilding contracts has exploded. Because of the carbon emission problem of oil, the oil tanker market is in a downturn, and the demand for shipbuilding will gradually shrink in the future, but the installation of coastal wind power equipment is in an upward period, and the installation of wind turbines and ships is a new growth point.

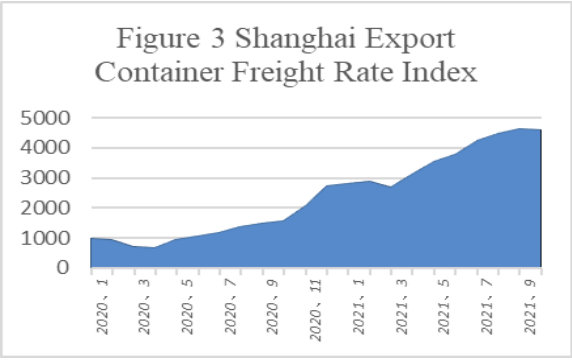

Figure 3 Shanghai Export Container Freight Rate Index

Source: Shanghai Shipping Exchange

4.2.3 Global shipyard bankruptcies and restructurings

Since the financial crisis, due to the sharp reduction in orders and the continuous decline in ship prices, there have been hundreds of bankruptcy liquidations and mergers and acquisitions of shipbuilding enterprises around the world. From 2012 to 2016, the capacity adjustment of the shipbuilding industry was mainly based on suspension, bankruptcy and liquidation, and gradually spread from small and medium-sized enterprises to large shipbuilding enterprises; From 2016 to 2020, the adjustment of the shipbuilding industry will shift to mergers and acquisitions between large and medium-sized enterprises, including the acquisition of high-quality shipyard assets by advantageous enterprises as well as mergers and reorganizations of large conglomerates.

After the above two rounds of production capacity adjustment, under the role of the market, the number of active monohull shipyards with more than 10,000 tons of ship orders or delivery records has decreased from 440 to about 180 in 2016, and has remained stable; in 2020, due to the impact of the epidemic and market correction, the number of shipyards receiving orders or delivering ships has fallen to about 150. It should be emphasized here that the competition of shipbuilding enterprises concentrated in the three countries of China, Japan and South Korea is still sufficient, and a market monopoly situation has not been formed.

At present, the global shipbuilding capacity is stable at about 120 million dwt, with an average annual completion volume of about 90 million DWT and a capacity

utilization rate of 75% , which is at the normal level of industrial development.

Figure 4 Number of monohull shipyards with orders or delivery performance of ships of more than 10,000 tons from 2005 to 2020

Source: Clarkson Research

4.2.4 Global shipbuilding market patterns

In the past 10 years, the three major indicators of China's shipbuilding have long occupied the first place in the world, and the world shipbuilding industry has generally maintained a "three-legged" competitive pattern between China, South Korea and Japan. Baiquan Chen (2020) of the China Shipbuilding Industry Economics and Market Research Center, in the study "New Characteristics of the World Shipbuilding Industry Pattern", pointed out that the overall pattern remains stable, the new competitive situation and trends are constantly evolving, and the competition in the world shipbuilding industry has shown a series of new characteristics.

From January to September 2021, the three major indicators of world shipbuilding are shown in Figure 5

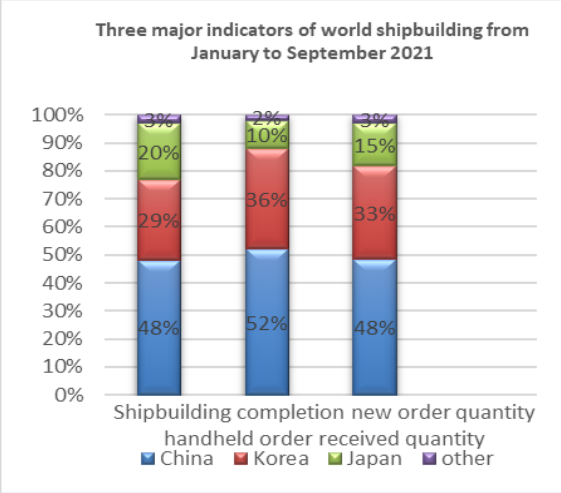

Figure 5 Three major indicators of world shipbuilding from January to September 2021

Source: Clarkson Research

4.3 Major asset restructuring of China State Shipbuilding Corporation

The formerly listed companies under China Shipbuilding Industry Group Co., Ltd. (commonly known as Beijing) include China Heavy Industries (601989 Shanghai), China Dynamics (600482 Shanghai) and China Emergency (300527 Shenzhen), etc., the former China State Shipbuilding Corporation Limited (commonly known as CSSC) listed companies include China Shipbuilding (600150 Shanghai), CSSC Defense (600685 Shanghai, 00317 Port) and CSSC Technology (600072 Shanghai) and so on. China Heavy Industries and China Shipbuilding corporations are the flagship listed companies of the two shipbuilding groups, respectively.

China Heavy Industries, China Dynamics, China Shipbuilding and China Shipbuilding Defense are four listed companies that undertake the military, civilian and engine business of North Ship and South Ship, of which China Heavy Industry undertakes the military ship and civilian ship business of North Ship, China Dynamics undertakes the engine business of North Ship, China Ship undertakes the civilian ship and engine business of South Ship, and China Shipbuilding Defense undertakes the military ship business of South Ship. The business segments of China Shipbuilding and CSSC Defense are not in line with the unified deployment of China Shipbuilding Group, and the asset restructuring since 2016 is to re-integrate the business segments of the two listed companies, intending to integrate the shipbuilding business of China Shipbuilding and CSSC Defense integrating the engine business of CSSC. At the same time, all 4 listed companies

have completed the debt-to-equity swap work.

4.3.1 Major asset restructuring of China Heavy Industries

In 2018, the company completed the issuance of shares to purchase assets and acquired 42.99% of the equity of Dachuan Heavy Industry and 36.15% of the equity of Wuhan Shipbuilding Heavy Industry held by 8 counterparties, including China Cinda, China Orient, China Venture Capital Fund, Structural Adjustment Fund, Chinese Life, Huabao Investment, China Merchants Ping An and Guohua Fund. After completion, 3.8 billion new shares of common stock were issued for 5.78 yuan per share, the company's net assets increased by 21.963 billion yuan, and the total net assets attributable to the shareholders of the listed company were 84.436 billion yuan, an increase of 32.48% year-on-year.

As of the end of 2018, the company's total assets of 188.1 billion yuan, important subsidiaries, see Table 1

Table 1 subsidiaries of China Heavy Industries

Unit: 10,000 yuan

Company name	Major products or services	Registered capital	Total assets	Net asset attributable to the parent
Big Ship Heavy Industry	Ship, steel structure parts design, manufacturing, marine engineering	1,498,024.07	9,203,803.70	3,726,435.08
Wu Shipbuilding Heavy Industry	Ship, steel structure parts design, manufacturing, marine engineering	452,491.11	4,578,024.50	1,184,534.89
China Dynamics (20%)	Design of marine diesel engines and spare parts, casting and forgings、fabricate、sale	171,600.00	5,721,000.00	2,592,000.00

Source: Announcement of the results of the issuance of shares by China Shipbuilding Industry Corporation Limited to purchase assets and the change in share capital

4.3.2 Major asset restructuring of China Dynamics

In January 2020, the Company issued shares and convertible corporate bonds to purchase assets and raise supporting funds, and issued ordinary shares and convertible corporate bonds to 8 specific targets, including CSIC Group, China Heavy Industry, China Cinda, Taiping Guofa, China Huarong, Dalian Defense Investment, National Military-Civilian Integration Industry Investment Fund, and BOC Investment, respectively, to purchase 7.79% of the equity of its subsidiary Guanghan Power, 8.42% of the equity of Changhai Electric, 47.82% of the equity of China Shipbuilding Diesel, and 44.94% of the equity of Wuhan Shipbuilding Machinery. 26.47% equity of Hechai Heavy Industry, 35.29% equity of Shaanxi Chai Heavy Industry, and 48.44% equity of Heavy Tooth Company, the total consideration of the underlying assets is 10.063 billion yuan. The issue price of the common stock for the purchase of assets is

$20.23. A total of 465,685,657 shares and 6,425,000 convertible corporate bonds were issued.

4.3.3 Major asset restructuring of Chinese ships

In 2020, the company completed the work of issuing shares to purchase assets (step 1), acquired 36.2717% of Waigaoqiao Shipbuilding, 21.4598% of CSSC Chengxi, 100% of Jiangnan Shipbuilding, 51% of Guangzhou Shipbuilding International and 30.9836% of the equity of Huangpu Wenchong held by 20 specific objects such as China State Shipbuilding Industry Group, and after the completion of the transaction, Waigaoqiao Shipbuilding, CSSC Chengxi and Jiangnan Shipbuilding became wholly-owned subsidiaries of the company, and Guangzhou Shipbuilding International became the company's holding subsidiary. Whampoa Wenchong became an important shareholding company of company. After completion, 2.8 billion new shares were issued for 13.14 yuan per share, the company's net assets increased by 37.3 billion yuan, and the total net assets attributable to the shareholders of the listed company were 45.777 billion yuan, an increase of 196.94% year-on-year. In 2020, the company completed the establishment of the power group (step 2), with 100% equity of Hudong Heavy Machinery, and the controlling shareholder CSSC Group contributed 100% of the equity of CSSC Power, 51% of the equity of the Power Research Institute and 15% of the equity of CSSC Mitsui, and established CSSC power group in a joint venture. After the completion of the transaction, the company holds 63.77% of the equity of CSSC Power Group. Up to now, China Shipbuilding and CSSC Defense have not completed the third step of major asset restructuring, that is, China Shipbuilding has exchanged the equity of CSSC Power Group with the remaining equity of CSSC Defense holding Guangzhou Shipbuilding International and Huangpu Wenchong. The purpose of step three is to solve the problem of competition between China Shipbuilding and CSSC Defense. By the end of 2020, the company's total assets are 152.5 billion yuan, important subsidiaries, see Table 2

Table 2 Important subsidiaries of China Shipbuilding

Unit: 10,000 yuan

Company name	Major products or services	Registered capital	Total assets	Net asset attributable to the parent
Gangnam Shipbuilding	Ship, steel structure parts design, manufacturing, marine engineering	864,679.30	6,877,425.16	1,727,449.17
Waigaoqiao shipbuilding	Ship, steel structure parts design, manufacturing, marine engineering	448,780.23	2,732,299.50	809,320.50
Nakafushi Chengxi	Ship repair, dismantling, marine engineering equipment manufacturing, repair	122,230.23	1,152,295.70	416,663.75

Guangzhou Ship International	Ship, electrical machinery, general machinery, steel structure parts technical design, manufacture, repair	887,014.46	2,463,872.07	701,500.74
Power Group	Marine diesel engine and spare parts, casting and forgings design, manufacture, sales	520,000.00	1,464,424.18	761,410.47
Whampoa Wenchong	Railways, ships、Aerospace and other transportation equipment manufacturing	361,918.32	2,852,623.74	717,469.85
Chengxi Yangzhou	Shipbuilding, marine supporting equipment manufacturing, etc	130,283.62	248,301.35	130,908.69

Note: The source is the report on the issuance of shares by China State Shipbuilding Industry Co., Ltd. to purchase assets and raise supporting funds and related party transactions

4.3.4 Major asset restructuring of CSSC Defense

In 2020, the company completed the sale of major assets, selling 27.4214% of the equity of Guangzhou Shipbuilding International to China Shipbuilding, leaving only 46.3018% of the equity of Guangzhou Shipbuilding International. CSSC paid the transaction consideration by issuing shares and issued 217,494,916 A-shares to the Company. In addition, the Company holds 54.5371% of the equity of Huangpu Wenchong. China Shipbuilding and CSSC Defense have not yet completed the third major asset restructuring step, that is, China Shipbuilding has exchanged its shareholding in CSSC Power Group with CSSC Defense's holding of the remaining equity interests in Guangzhou Shipbuilding International and Huangpu Wenchong. The purpose of step three is to solve the problem of competition between China Shipbuilding and CSSC Defense. Based on the above, all 4 listed companies have completed the debt-to-equity swap work. However, the asset replacement work of China Shipbuilding and CSSC Defense has not yet been completed.

4.4 The significance of major asset restructuring

4.4.1 Reduce the debt burden of enterprises

Since the global financial crisis, the downturn in international trade has led to insufficient effective demand for new ships, the shipping market has fallen into a deep adjustment, and the three major shipbuilding indicators, especially the number of new orders and handheld orders, have continued to decline sharply. Shipbuilding enterprises have difficulty in receiving orders, production is facing huge challenges, profitability is declining, and the overall situation of the industry is more severe. Since the second half of 2014, international oil prices have continued to fall and are at a low level, affected of this, the offshore equipment industry has also fallen into a depression. Affected by the downturn in the civil ship and marine

engineering equipment market, the asset-liability ratio of listed companies is relatively high and the financial burden is heavier. To effectively implement the structural reform of the supply side, effectively reduce the leverage ratio of enterprises, and support high-quality enterprises with good development prospects but temporary difficulties to tide over the difficulties. In October 2016, the State Council issued the Opinions on actively and steadily Reducing the Leverage Ratio of Enterprises (Guo Fa [2016] No. 54 Document), which encourages enterprises to carry out market-oriented debt-to-equity swaps, enhance their capital strength, and prevent corporate debt risks. With the help of favourable policies, the listed companies affiliated with China State Shipbuilding Group have implemented a market-oriented debt-to-equity swap, which has effectively reduced the debt level and enhanced the development potential of enterprises.

4.4.2 Realize the development of military-civilian integration

At present, under the background of China's significantly rising international status, continuous enhancement of economic strength, increasing overseas interests year by year, and continuous increase in military pressure, the national defense science and technology industry is generally facing a new round of industry development opportunities. On the basis of summarizing the history of the development of global military enterprises and closely combining with the actual situation in China, China's military industry is deepening the road of military-civilian integration development. In 2017, the State Council issued the Opinions on Promoting the In-depth Development of Military-Civilian Integration in the National Defense Science and Technology Industry, pointing out that the military-civilian integration of national defense science and technology industry should adhere to state leadership and market operation, improve and improve policies, break down industry barriers, promote fair competition, achieve survival of the fittest, and accelerate the formation of a pattern of in-depth development of all-factor, multi-field, and high-efficiency military-civilian integration. In order to deepen the reform of military enterprises and promote the comprehensive, coordinated and sustainable development of the national defense science and technology industry, the process of restructuring and listing of China's military enterprises and asset securitization is accelerating. The restructuring of the listed companies affiliated to China State Shipbuilding Group is a concrete deepening and continuous promotion of the requirements for the development of the national military-civilian integration.

4.5 China's ship profitability has increased

In 2020, China Shipbuilding completed a major asset restructuring, but the scope of the business has not changed. Judging from the annual reports of China Shipbuilding, the scale has become larger and the revenue has increased after the reorganization, and the gross profit margin has been at a low level in recent years, and the gross profit margin level in 2007 is the highest. According to the characteristics of the shipbuilding industry is a strong cyclical industry, based on the operating income in 2020, the gross profit margin of

2007 is applied to measure the profitability of the industry to reach a higher level of prosperity.

Table 3 Gross margin calculation table for 2020

Unit: 10,000 yuan

By product	Operating income	Operating costs	Gross margin（%）
Ship construction	4,320,076.92	3,931,483.38	9
Marine Engineering	392,374.44	351,841.49	10.33
Powered equipment	561,345.42	457,694.30	18.46
Electromechanical equipment	307,549.95	277,586.99	9.74
other	16,066.34	10,979.72	31.66
Internal offset	-201,908.31	-197,908.23	
total	5,395,504.76	4,831,677.65	10.45

Note: The above data is from the2020 annual report of China State Shipbuilding Industry Corporation Limited

Table 4Gross margin calculation table for 2007

Unit: 10,000 yuan

By product	Operating income	Operating costs	Operating margin（%）
Ship construction	1,243,981.94	933,538.98	24.96
Ship maintenance	193,907.37	141,466.53	27.04
Ship support	251,138.25	182,215.06	27.44
Other products	58,707.91	25,624.59	56.35
total	1,747,735.49	1,282,845.18	26.6

Note: The above data is from the 2007 annual report of China State Shipbuilding Industry Corporation Limited

Table 5 2020 Usingthe 2007 Gross Margin Increase Calculation Table

Unit: 10,000 yuan

By product	Operating	Operating costs	Gross	Gross	Higher than

	income		margin（%）	margin for 2007	gross profit
Ship construction	4,320,076.92	3,931,483.38	9	24.96	689,484.28
Marine Engineering	392,374.44	351,841.49	10.33	24.96	57,404.38
Powered equipment	561,345.42	457,694.30	18.46	27.44	50,408.82
Electromechanical equipment	307,549.95	277,586.99	9.74	27.44	54,436.34
other	16,066.34	10,979.72	31.66	56.35	3,966.78
Internal offset	-201,908.31	-197,908.23	12	27	-30,286.25
total	5,395,504.76	4,831,677.65	10.45		825,414.35

According to the above calculations, after the improvement of prosperity, the total profit of enterprises can reach8.25 billion yuan.

5. Conclusion

1. The development cycle of the international ship market is affected by a combination of factors. The renewal and reinvestment cycle of about 25 years for ships is its main internal factor, and it is currently in the downward phase of the fourth cycle and has basically bottomed out.

2. Since the outbreak of the new crown epidemic, container transportation and dry bulk transportation have been in a period of rising prosperity, and the number of newbuilding contract orders has exploded. Since the 2008 financial crisis, there have been hundreds of bankruptcy liquidation and merger and reorganization cases of global shipbuilding enterprises, and the shipbuilding capacity has been significantly cleared, which has substantially reduced the supply of the industry, and the current supply of the shipbuilding industry is short of demand.

3. With the help of the favorable policies introduced by the Chinese government, China Shipbuilding has implemented a market-oriented debt-to-equity swap work, which has effectively reduced the debt level. The restructuring of major assets of China Shipbuilding is conducive to the integration of military and civilian development of enterprises, and China Shipbuilding Group will surely usher in great development.

On the basis of the above three conclusions of this study, the following suggestions are proposed: First, the management of China State Shipbuilding Group should take the large cycle of the shipbuilding industry as an opportunity to study and judge the effective path of ship decarbonization, actively develop technical solutions suitable for it, and enhance the status of the industry in the development. The second is to suggest that investors should focus on the impact of carbon neutrality targets on the shipbuilding industry, with the formation of the industry upgrading trend, China Shipbuilding Group, as the industry's leading enterprise, its value will inevitably be revalued.

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