The Competitiveness of Global Port-Cities:

The case of Shanghai – China

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ABSTRACT

This working paper offers an evaluation of the performance of the port of Shanghai, an analysis of the impact of the port on its territory and an assessment of policies in this field. It examines port performance over the last decades and identifies the principal factors that have contributed to it. The effect of the port on economic and environmental questions is studied and quantified where possible. The major policies governing the port are assessed, along with policies governing transport and economic development, the environment and spatial planning. Based on the report's findings, recommendations are proposed with a view to improving port performance and increasing the positive effects of the port of Shanghai.

JEL classification: R41, R11, R12, R15, L91, D57

Keywords: ports, regional development, regional growth, urban growth, inter-regional trade, transportation

摘要

该工作报告评估了上海港发展现状和政策，分析了港口对城市的影响。报告回顾了过去数十年上海港口的发展情况，归纳了港口发展的主要贡献因素，研究和量化分析了港口对经济和环境的影响，评价了港口管理、交通和经济发展、环境、空间规划等方面的政策。基于报告的主要发现，作者提出了提升上海港口绩效、强化港口积极影响的建议。

JEL 分类代号：R41, R11, R12, R15, L91, D57

关键字：港口，区域发展，区域增长，城市发展，区域内贸易，交通运输

FOREWORD

This study is the tenth in a series of case studies within the *OECD Port-Cities Programme*, directed by Olaf Merk (OECD), which attempts to identify the impact of ports on their territories and possible policies to increase the positive impacts of ports on their territories.

This working paper is part of a series of *OECD Working Papers on Regional Development* published by the OECD Public Governance and Territorial Development Directorate. The study was written in partnership of the OECD with the Shanghai International Shipping Institute (SISI). From the OECD side, the project was led by Olaf Merk (Administrator OECD Port-Cities Programme), with the participation of Jing Li (Consultant OECD) and César Ducruet (CNRS – Université de Paris I Panthéon-Sorbonne). The project team from the side of SISI was led by Zhen Hong (Secretary-General of SISI and professor at Shanghai Maritime University); deputy leader was Zhao Nan (Deputy Director of Port Research Department of SISI and lecturer at Shanghai Maritime University); members of the project team were Angela Xu Mingying (Deputy Director of International Cooperation Department of SISI, Shanghai Maritime University), Xie Wenqing (a member of Port Research Department of SISI), Du Xufeng (a member of Port Research Department of SISI), Wang Jinggai (a member of Port Research Department of SISI).

The paper can be downloaded on the OECD website: www.oecd.org/regional/portcities

Further enquiries about this work in this area should be addressed to:

Olaf Merk (olaf.merk@oecd.org) of the OECD Public Governance and Territorial Development Directorate.

前言

本研究是 OECD 港口城市项目的第十项案例研究。港口城市项目由 Olaf Merk (OECD)主持，旨在分析港口对城市的影响，提出强化港口发展对城市积极影响的政策。

本工作报告由 OECD 公共治理与区域发展局发布，是 OECD 区域发展系列工作报告的一部分。该研究由 OECD 和上海国际航运研究中心（SISI）共同完成。OECD 方面，研究由 Olaf Merk（港口城市项目负责人）主持，李菁（OECD 顾问）和 César Ducruet（法国国家科学研究中心，巴黎第一大学）参与。SISI 方面，课题组组长是真虹（上海国际航运研究中心秘书长，上海海事大学教授），副组长是赵楠（上海国际航运研究中心港口研究室副主任，上海海事大学讲师），课题组成员包括徐明瑛（上海国际航运研究中心国际合作部副主任，上海海事大学）、谢文卿（上海国际航运研究中心港口研究室研究员）、杜旭丰（上海国际航运研究中心港口研究室）以及王静改（上海国际航运研究中心港口研究室）。

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EXECUTIVE SUMMARY

Shanghai has witnessed spectacular port development. Its port volume almost tripled over the last decade to 736 million tonnes in 2012. Despite the impact of the global crisis, Shanghai has experienced steady growth in cargo output: on average 4.9% per year over 2008-2012. Since 2010, Shanghai is the world's largest container port, with recorded volume of 32.5 million containers (TEUs) in 2012. Shanghai is an efficient and well-connected port: it has low vessel turnaround times (improved significantly over the last decade) and an extensive network of connections with inland ports along the Yangtze. New port development located in Yangshan, an offshore port connected by a 31-kilometre bridge, has eased port-related congestion and freed up old port land for urban redevelopment.

This port development has substantially contributed to the urban economy of Shanghai. The total value added generated by the port-related sectors (direct, indirect and induced) was approximately RMB 355 billion in 2010, which represented 21% of Shanghai's GDP. The total port-related employment was 2.3 million jobs, accounting for 21% of total employment in Shanghai. Approximately 40% of these economic impacts were direct economic effects. Indirect economic impacts of the port were largest in shipping, ship finance and cargo handling.

One of Shanghai's main challenges is environmental sustainability. Shanghai is striving to develop itself as a green and ecological port city. Management of bulk terminals is currently being improved and the government has set targets for reduction of CO_2 emissions, energy consumption, waste and waste-water. Measures that should help to achieve these targets include retrofitting equipment (such as RTGs), implementation of onshore power, operation of "container truck-and-trailer transport platform".

Shanghai has the opportunity to become one of the world's largest trans-shipment hubs. Although it is the world's largest container port, Shanghai is not the best-connected port; Singapore and Hong Kong play a more central role in port networks, and can be considered the main global port hubs. This is related to the relatively limited share (one-fifth of the port volume) of ship-to-ship trans-shipment in Shanghai. One of the three pillars in the port strategy is to develop Shanghai as the main trans-shipment hub in Northeast Asia. The offshore port area of Yangshan is well positioned for trans-shipment; with ongoing expansion, its capacity will reach 25 million TEU by 2020. Lifting the national cabotage restrictions would help to develop Shanghai as a trans-shipment hub.

Shanghai could develop into a world leading maritime services centre. This goal is part of a larger strategy of the Shanghai government, the "Two Centre" initiative, launched in 2009. This aims to develop Shanghai as an international centre for finance and shipping. Policies to promote Shanghai as a shipping centre include preferential tax and customs policies, ship management, shipping brokerage, shipping finance, shipping education and research, as well as the Shanghai Shipping Exchange, established in 1996, and the Shanghai Containerised Freight Index, launched in 2009. Maritime businesses are encouraged to locate in the various free zones related to the port.

Shanghai is to rise as the first international free port in China. As part of China's new round of reform, China （Shanghai）Free Trade Zone was established in October 2013. Facilitating measures such as free flow of cargo and capital within the Zone, have intensified the opening up of Shanghai to the outside world while the transformation of government into a more service-oriented role aims to improve the city's international appeal.

摘要

上海港口发展惊人。过去十年，上海港吞吐量已增长 2 倍多，2012 年达到 7.36 亿吨。2008-2012 期间，尽管存在经济危机负面影响，上海港货物吞吐量仍以年均 4.9%的速度稳定增长。2010 年起，上海港跃升为世界第一大集装箱港口，2012 年集装箱吞吐量达 3250 万 TEU，创历史新高。上海港作业效率高，港口通达性强，体现为船舶周转时间短（过去十年来大幅提升）、与长江沿岸内陆港口联动范围广。位于洋山的新港（通过一座长为 31 千米的跨海大桥与上海城区陆地相连）开发缓解了港口拥堵，同时让出原有港口用地支持城区改建。

港口发展对上海城市经济贡献巨大。2010 年，港口相关产业对上海经济总增加值贡献（包括直接、间接和波及贡献）约为 3550 亿元人民币，占上海 GDP 总量的 21%；港口相关产业直接就业人数达 230 万人，占城市就业总人口的 21%。近 40%的经济贡献为直接贡献，港口间接经济贡献主要来自于航运、航运金融和货物装卸。

环境可持续发展成为上海港面临的一大挑战。上海正努力发展成为绿色生态港口城市。当局加强了对上海港散货码头的管理，制定了降低 CO_2 排放、减少能源消耗和废物废水排放的目标。有助于实现节能减排目标的措施可能包括改进设备（RTG 等）、使用码头岸电、优化集卡拖车运输体系等。

机遇在握，上海港或成为全球最大转运枢纽中心。虽然上海港是全球第一大集装箱港口，但它并非通达性最佳的港口。新加坡和香港在港口网络中处于更中心的位置，堪称全球主要港口枢纽中心。这与上海港相对较小的水水中转比例（货物吞吐量的五分之一）有关。港口发展战略的三大支柱之一是让上海港成为东北亚地区主要转运枢纽。洋山离岸港区是发展转运的绝佳地点。按照目前的发展速度，到 2020 年，洋山港吞吐能力可能扩大至 2500 万 TEU。取消沿海运输限制将促进上海转运中心发展。

上海可发展成为全球领先航运服务中心。这一目标是上海市政府发展战略的一部分。2009 年，上海市政府提出“两个中心”建设，将上海打造成为国际金融中心和国际航运中心。为了推动上海国际航运中心的发展，上海市政府实施了一系列的政策和措施，涉及税收和通关、船舶管理、航运经纪、航运金融、航运教育和研究等。1996 年，上海航运交易所成立；2009 年，上海集装箱运价指数发布，也是扶持性政策措施得以实施的体现。在与港口相关的诸多自由区内开展海运业务也获得积极鼓励。

上海将成为中国首个国际自由港。随着中国新一轮改革开放步伐的加快，2013 年 10 月中国（上海）自由贸易实验区应运而生。区内货物、资本的自由流通等管理措施的推出使上海对外开放层次得到进一步提升，同时管理型政府向服务型政府的职能转变也将使上海更具国际吸引力。

1. PERFORMANCE

1.1 Performance of Shanghai Port

1.1.1 Growth in Throughput

Shanghai is a major hub port located at the Yangtze River Delta-front estuary, which is the center of China's mainland coast. The port is well situated at the junction of east-west Yangtze River shipping routes and north-south coastal shipping routes. Shanghai has witnessed rapid development because of its ideal location and abundant coastal resources over the past decade, with the cargo throughput soaring 178.96% from 264 million tons in 2002 to 736 million tons in 2012, highlighted by the explosive growth in throughput of cargo for foreign trade (238.32%) and for containers (277.72%). Shanghai was ranked the first in the world for seven consecutive years from 2005 to 2011 in cargo throughput, and has been the number one port in terms of container throughput since it surpassed Singapore in 2010 (Table 1.1).

Table 1.1 Cargo and Container Throughput of Shanghai

	Cargo Throughput (million ton)	Foreign Trade Cargo Throughput (million ton)	Container Throughput (thousand TEU)
2002	263.84	106.09	8 612
2003	316.21	129.68	11 283
2004	378.96	158.36	14 554
2005	443.17	184.92	18 085
2006	537.48	212.68	21 719
2007	561.45	255.74	26 152
2008	581.70	273.77	28 006
2009	592.05	232.34	25 002
2010	653.39	302.25	29 069
2011	727.58	337.78	31 739
2012	736.00	358.83	32 529

Source: Author's own elaborations based on Shanghai Port Statistical Yearbook (2003-2012)

Despite the impact of the global financial crisis since 2008, Shanghai has experienced steady growth in its cargo throughput. From 2003 to 2012, it recorded an average 11.06% growth in cargo throughput, with a higher average growth rate in foreign trade cargo (13.64%) than domestic trade cargo. In terms of container throughput, the average annual growth rate was at 14.91%, which is slightly lower than that of other ports in China. This is mainly because of the large base at Shanghai port that is undergoing steady development, as opposed to the rapid growth that other smaller ports have been experiencing. During 2003-2007 Shanghai grew on average by 25% per year, a growth rate lower than that of Lianyungang, Yingkou and Ningbo-Zhoushan, yet higher than that of Taizhou, Qingdao and Shenzhen. From 2008 to 2012, the sluggish global seaborne trade had significantly dragged down the growth of domestic ports and especially of Shanghai. With imports and exports accounting for nearly 50% of its total throughput, Shanghai had an average 5.7% growth in cargo throughput and an average 4.9% growth in container throughput, growth rates that were just slightly better than the other foreign trade-oriented port – Shenzhen (Table 1.2).

第一章港口发展现状分析

1.1 上海港发展现状

1.1.1 港口吞吐量增长情况

上海港位于长江三角洲前缘，居中国大陆海岸线的中部，扼长江入海口，地处长江东西运输通道与海上南北运输通道的交汇点，是中国主要的沿海枢纽港。在过去十年中，中国经济高速增长，上海港凭借优越的地理位置和得天独厚的海岸线资源实现了快速发展。货物吞吐量从 2002 年的 2.64 亿吨增长到 2012 年的 7.36 亿吨，增幅达到 178.96%。其中，外贸货物吞吐量和集装箱吞吐量增长尤为迅速，2002-12 年增幅分别达到 238.32%和 277.72%%。2005-11 年，上海港货物吞吐量已连续七年保持世界第一，而集装箱吞吐量也在 2010 年超越新加坡连续三年位居世界第一（表 1.1）。

表 1.1　上海港历年货物与集装箱吞吐量

	货物吞吐量（百万吨）	外贸货物吞吐量(百万吨)	集装箱吞吐量（千 TEU）
2002	263.84	106.09	8 612
2003	316.21	129.68	11 283
2004	378.96	158.36	14 554
2005	443.17	184.92	18 085
2006	537.48	212.68	21 719
2007	561.45	255.74	26 152
2008	581.70	273.77	28 006
2009	592.05	232.34	25 002
2010	653.39	302.25	29 069
2011	727.58	337.78	31 739
2012	736.00	358.83	32 529

数据来源：作者根据《上海市港口统计年鉴（2003-12 年）》整理

尽管受到 2008 年以来全球金融危机的冲击，但上海港吞吐量增长依然保持稳定。2003-12 年，上海港货物吞吐量年均增幅突破两位数，达到 11.06%，其中外贸货物吞吐量年均增长 13.64%，好于内贸。集装箱吞吐量年均增速为 14.91%，略低于中国其他港口，主要由于上海港集装箱吞吐量基数相对较大，已处于发展稳定阶段，而其他港口规模较小，正处于快速成长阶段。2003-07 年，是上海港集装箱业务发展最为辉煌的阶段，年均 25%的增速虽不及连云港港、营口港和宁波-舟山港，但快于台州港、青岛港和深圳港。而在 2008-12 年，由于全球海运贸易的低迷，中国主要港口增长均出现明显萎缩。尤其外贸进出口占总吞吐量近 50%的上海港，年均货物吞吐量和集装箱吞吐量增速分别为 5.7%和 4.9%，仅略好于以外贸为主的深圳港（表 1.2）。

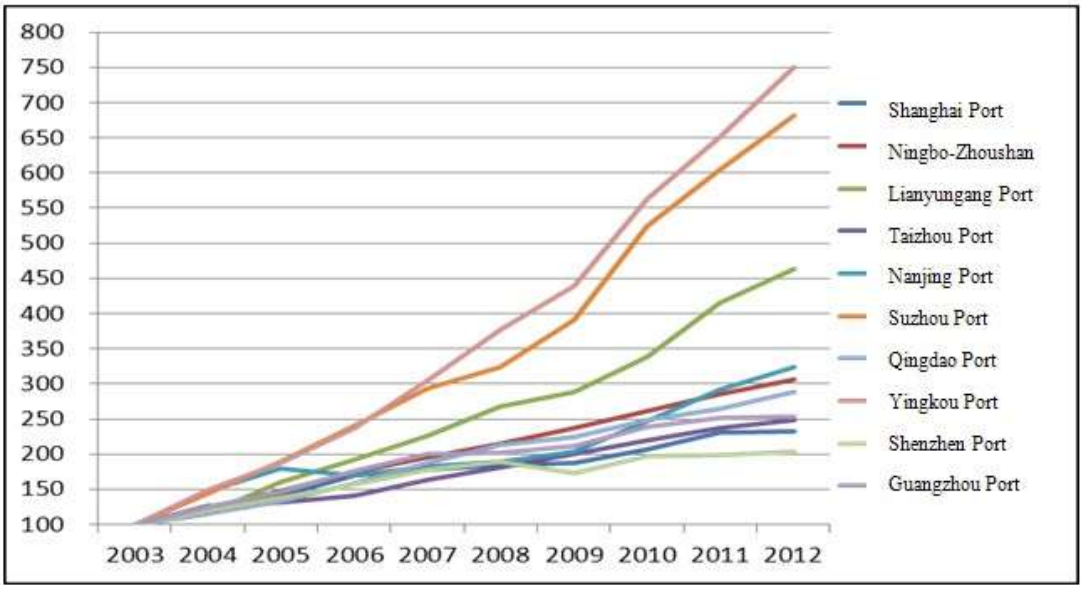
Table 1.2 Average Growth of Major Ports in China (2003-2012)

	Cargo Throughput Growth Rate /%			Foreign Trade Cargo Throughput Growth Rate /%			Container Throughput /%		
	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012
Shanghai	11.1	16.5	5.7	13.6	19.3	8.0	14.9	25.0	4.9
Ningbo-Zhoushan	14.5	19.5	9.5	19.1	26.1	12.2	25.0	38.1	11.8
Lianyungang	18.3	21.0	15.5	17.6	20.5	14.6	40.4	59.4	21.5
Taizhou	13.1	17.3	8.9	27.4	30.9	23.8	16.7	10.0	23.5
Nanjing	14.0	15.7	12.3	11.0	-1.6	23.5	23.1	28.7	17.5
Suzhou	24.7	30.7	18.7	18.9	19.6	18.3	36.0	46.3	25.8
Qingdao	12.9	16.8	9.0	14.5	18.3	10.8	15.8	22.7	9.0
Yingkou	25.7	31.6	19.9	17.6	11.4	23.9	32.3	35.5	29.2
Shenzhen	11.8	20.6	2.9	15.8	27.3	4.2	12.7	23.0	2.4
Guangzhou	12.8	20.6	4.9	11.3	14.5	8.1	23.0	36.4	9.7

Source: Based on *China Statistical Yearbook (2002-2012)* and data from China's Ministry of Transport

From the perspective of growth rates, the performance of Shanghai over the past decade gets abreast of relatively mature ports like Ningbo-Zhoushan, Nanjing, Qingdao and Guangzhou, yet lags behind some of the booming counterparts including Suzhou, Yingkou and Lianyungang. The gap between the "Top Three" and other ports was relatively small in 2003-2005 (the growth rates of both groups registered 0-100%), but this gap increased from 2006 onwards. In the year of 2009, when the crisis substantially impacted the shipping market, the upward trend of the traffic at Shanghai Port started to slow down the growth pace. Because of its large base in cargo throughput, along with the burgeoning development of neighboring ports, it experienced rather stagnated growth by comparison with all major ports but Shenzhen from 2009 to 2012 (Figure 1.1).

Figure 1.1 Growth in Total Throughput of Major Domestic Ports (2003-2012)



Source: Author's own calculations based on *China Statistical Yearbook (2002-2012)*

Note: The cargo throughput of various ports in the year 2003 is rendered as 100 (base point), and the growth rates in subsequent years are calculated on a non-dimensionalized basis.

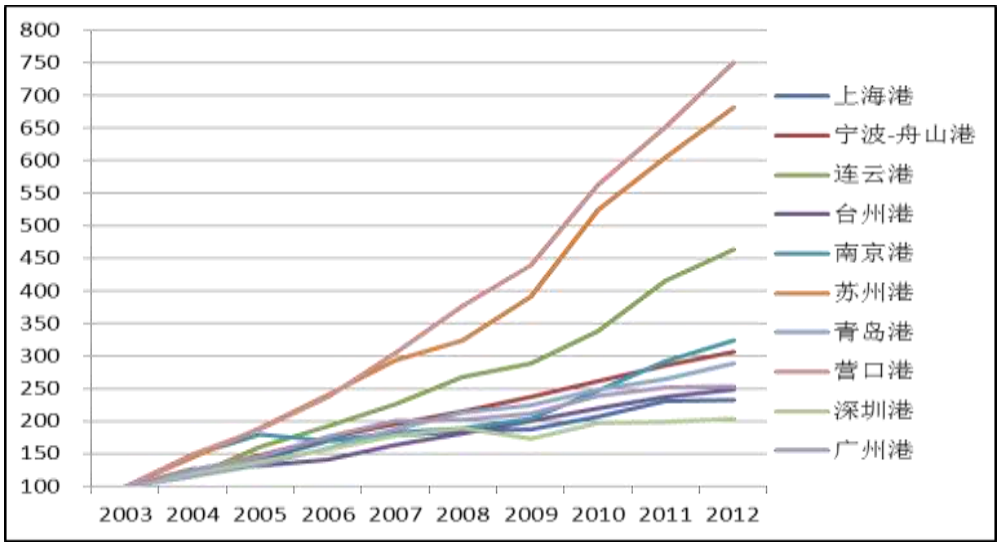
表 1.2　中国主要港口年均增长率（2003-12 年）

	货物吞吐量增长率/%			外贸货物吞吐量增长率/%			集装箱吞吐量增长率/%		
	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012	2003-2012	2003-2007	2008-2012
上海港	11.1	16.5	5.7	13.6	19.3	8.0	14.9	25.0	4.9
宁波-舟山港	14.5	19.5	9.5	19.1	26.1	12.2	25.0	38.1	11.8
连云港	18.3	21.0	15.5	17.6	20.5	14.6	40.4	59.4	21.5
台州港	13.1	17.3	8.9	27.4	30.9	23.8	16.7	10.0	23.5
南京港	14.0	15.7	12.3	11.0	-1.6	23.5	23.1	28.7	17.5
苏州港	24.7	30.7	18.7	18.9	19.6	18.3	36.0	46.3	25.8
青岛港	12.9	16.8	9.0	14.5	18.3	10.8	15.8	22.7	9.0
营口港	25.7	31.6	19.9	17.6	11.4	23.9	32.3	35.5	29.2
深圳港	11.8	20.6	2.9	15.8	27.3	4.2	12.7	23.0	2.4
广州港	12.8	20.6	4.9	11.3	14.5	8.1	23.0	36.4	9.7

数据来源：作者根据《中国统计年鉴（2002-2012）》、中国交通运输部数据计算所得

从增长幅度来看，上海港与宁波-舟山、南京、青岛、广州等相对成熟的港口基本保持一致，而苏州、营口、连云港三个港口在近十年的发展中表现出明显的高成长性。在 2003-05 年苏州、营口、连云港增长幅度与其余港口差别还不大，增长指数保持在 100-200 之间，而从 2006 年开始，上述三个港口的增长幅度和其余港口便拉开了差距。在危机影响最为严重的 2009 年，上海港吞吐量虽未出现下滑，但增长动力已明显不足，在高基数与周边港口快速兴起的双重压力下，2009-12 年上海港增幅小于其他主要港口（除深圳）（图 1.1）。

图 1.1　中国主要港口总吞吐量增长指数（2003-12 年）

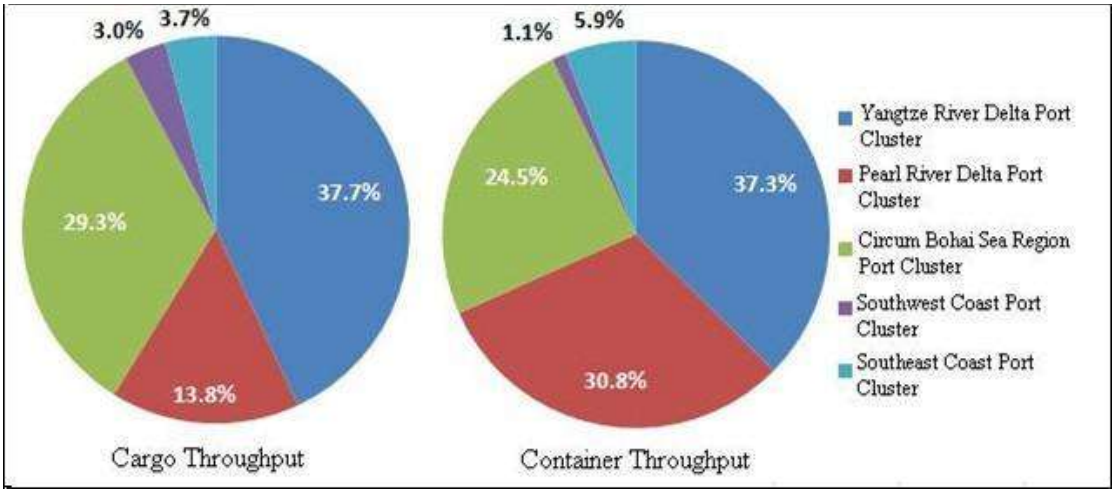


数据来源：作者根据《中国统计年鉴（2003-12）》计算所得

注：将各港口 2003 年货物吞吐量设为 100（指数），其余每年各港口的增长指数是基于 2003 年基期指数进行统一无量纲处理。

Shanghai is one of the most important ports of the Yangtze River Delta Port Cluster which comprises eight major coastal ports and 26 inland river ports above designated size, and features the highest port density and the largest throughput among the five port clusters in the country. In 2010, ports in the Yangtze River Delta handled 3.36 billion tons of cargo and 54.45 million TEU of containers - both representing over 30% of China's total - and made great contributions to domestic economic development (Figure 1.2).

Figure 1.2 Market Share of Domestic Port Clusters by Throughput (2010)



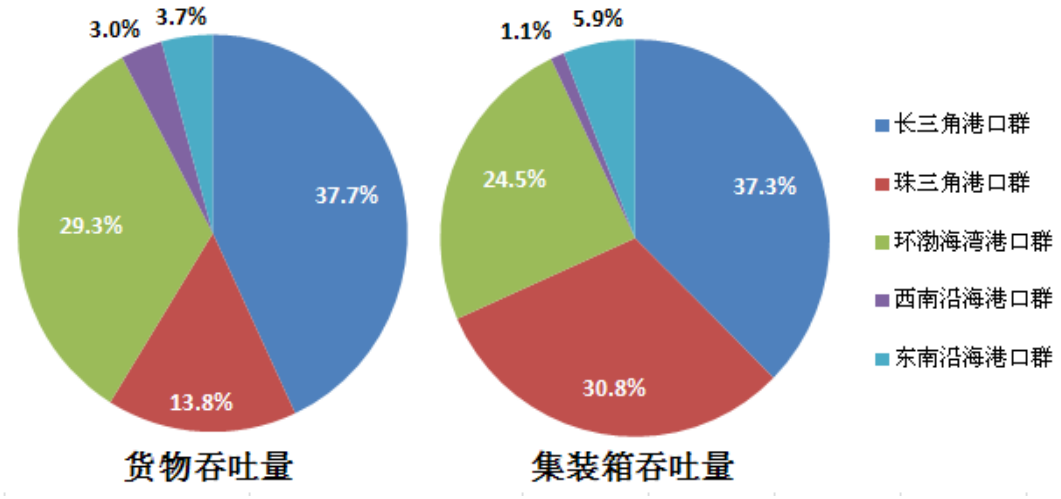
Source: Author's own calculations based on *China Port Development Report (2010-2011)*

Note: The Yangtze River Delta refers to the City of Shanghai, Zhejiang Province and Jiangsu Province; the Pearl River Delta to Guangdong Province; the Circum-Bohai Sea Region to Liaoning Province, Shandong Province, Hebei Province and the City of Tianjin; China's southwest coast to Guangxi Zhuang Autonomous Region and Hainan Province; and China's southeast coast to Fujian Province.

Over the last decades, Asian ports have registered an expanding share of container handling volume on the global market. In 1972 around 20% of world port activity took place in Asia; in 2009 this share had increased to more than half of total port activity (Merk, 2013). As indicated in Figure 1.3, the market share of container handling volume taken by Far East, Southeast Asia and South Asia added up to 56.2% in 2012, 2.8 percentage points higher than in 2008 (including a 2.3 percentage points increase in the Far East ports). The eastbound shift of the economic and shipping center has also triggered off a spurt in China's market share of container throughput. Shanghai had a 5.3% market share of world container handling volume in 2012, outperforming Singapore (5.1%) and Hong Kong (3/7%) (Table 1.3).

长三角港口群主要是指江浙沪地区的港口，由 8 个主要沿海港口和 26 个规模以上内河港口组成，是中国五大港口群中港口分布密度最高、吞吐量最大的港口群，而上海港又是这个港口群中最为主要的港口之一。2010 年长三角地区港口分别完成货物和集装箱吞吐量 33.63 亿吨和 5445.33 万 TEU，均占中国港口总量的三成以上，为中国经济发展做出了巨大贡献（图 1.2）。

图 1.2　中国各港口群吞吐量所占市场份额（2010 年）

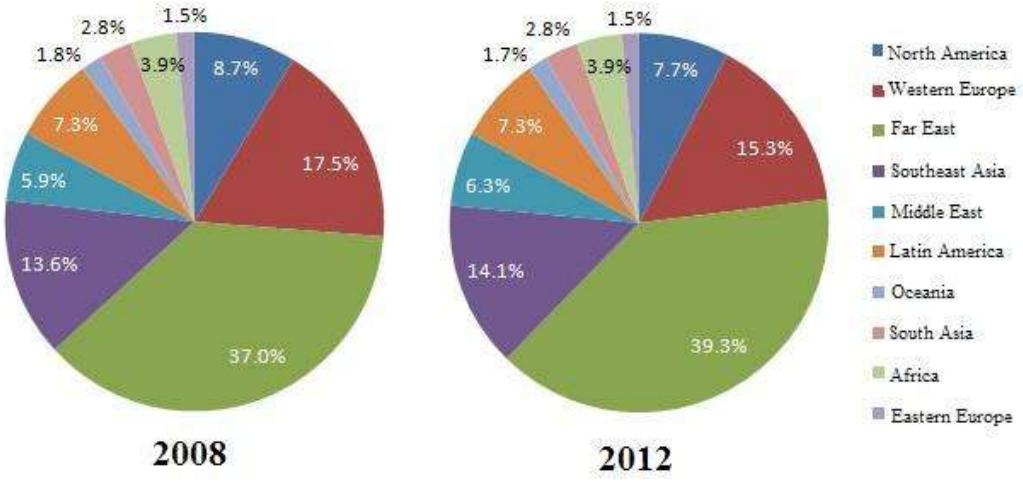


数据来源：作者根据《中国港口发展报告（2010-2011）》计算所得

注：长三角指上海市、浙江省和江苏省；珠三角指广东省；环渤海湾指辽宁省、山东省、河北省和天津市；西南沿海指广西壮族自治区和海南省；东南沿海指福建省。

从港口集装箱处理量在全球的市场份额来看，近五年，亚洲地区集装箱处理量在全球的市场份额快速扩张。1972 年，全球约 20%的港口作业活动发生在亚洲；2009 年，这一份额已提升至过半（Merk，2013）。从图 1-3 中可以发现，2012 年远东、东南亚以及南亚三者集装箱处理量的市场份额已超过 50%，达到 56.2%，较 2008 年提升了 2.8 个百分点，尤其是远东地区的市场份额较 2008 年扩大了 2.3 个百分点。随着经济中心和航运中心的东移，中国港口集装箱吞吐量在全球的市场份额也得到提升，其中，2012 年上海港集装箱处理量在全球集装箱处理量的市场份额已达到 5.3%，新加坡和香港的市场份额分别为 5.1%和 3.7%（表 1.3）。

Figure 1.3 Market Share of Global Ports by Container Throughput (2012)



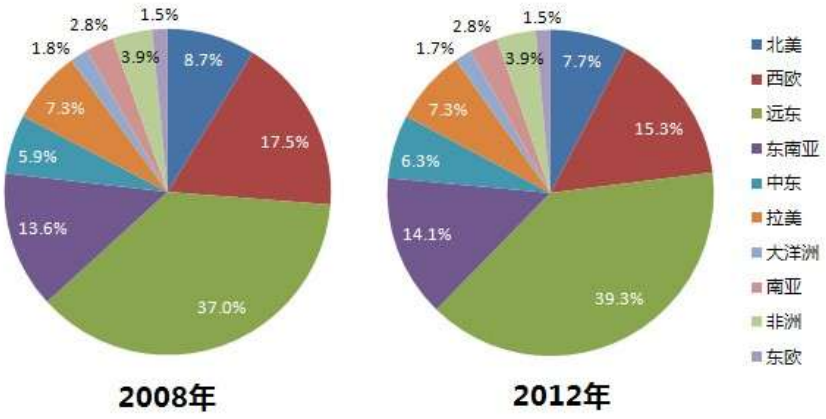
Source: Author's own calculations based on Drewry's Container Market Annual Review and Forecast 2012/13, 1Q 2010,and 1Q 2013

Table 1.3: Throughput and Market Share of Global Top 20 Container Ports

Rank	Port	Country	2012 Container Throughput/million TEUs	2011 Container Throughput/million TEUs	Growth Rate (%)	2012 Market Share (%)
1	Shanghai	China	32.53	31.74	2.5	5.3
2	Singapore	Singapore	31.65	29.94	5.7	5.1
3	Hong Kong	China	23.12	24.38	-5.2	3.7
4	Shenzhen	China	22.94	22.57	1.6	3.7
5	Busan	Korea	17.04	16.18	5.3	2.8
6	Zhoushan - Ningbo	China	16.83	14.72	14.3	2.7
7	Guangzhou	China	14.74	14.42	2.2	2.4
8	Qingdao	China	14.50	13.02	11.4	2.3
9	Dubai	UAE	13.30	13.00	2.3	2.2
10	Tianjin	China	12.30	11.59	6.1	2.0
11	Rotterdam	Netherlands	11.87	11.88	-0.1	1.9
12	Kelang	Malaysia	10.00	9.60	4.1	1.6
13	Kaohsiung	Chinese Taipei	9.78	9.64	1.5	1.6
14	Hamburg	Germany	8.86	9.01	-1.7	1.4
15	Antwerp	Belgium	8.64	8.66	-0.3	1.4
16	L.A.	USA	8.08	7.94	1.7	1.3
17	Dalian	China	8.06	6.40	26.0	1.3
18	Keihin Port	Japan	7.85	7.64	2.8	1.3
19	Tanjung Pelepas	Malaysia	7.70	7.50	2.7	1.2
20	Xiamen	China	7.20	6.47	11.4	1.2

Source: Author's own calculations based on *The Journal of Commerce*

图 1.3　全球各地区港口集装箱吞吐量市场份额（2012 年）



数据来源：作者根据德鲁里集装箱市场回顾与展望 2013 年 1 季度以及 2010 年第一季度报告计算获得。

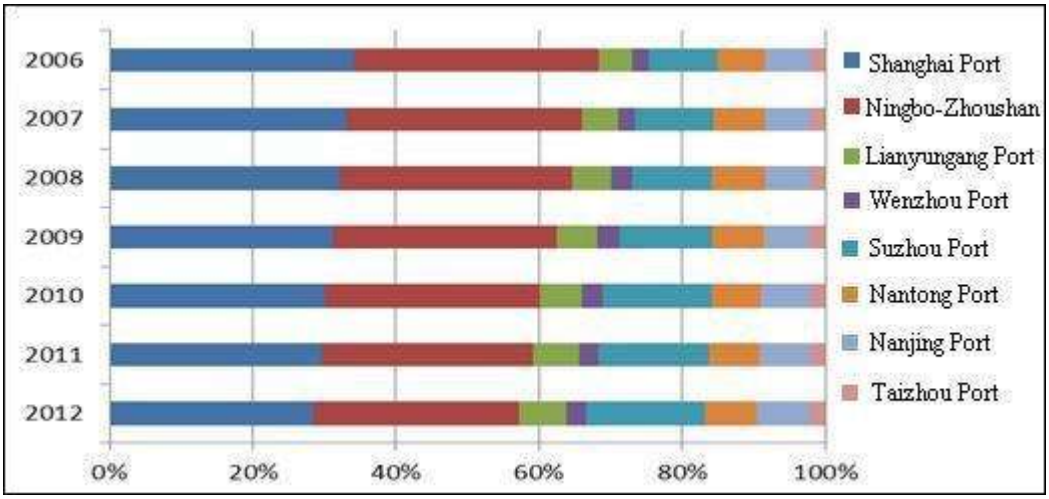
表 1.3　全球前 20 大集装箱港口吞吐量及市场份额

排名	港口	国家	2012 年集装箱吞吐量/百万箱	2011 年集装箱吞吐量/百万箱	增长率（%）	2012 年市场份额（%）
1	上海	中国	32.53	31.74	2.5	5.3
2	新加坡	新加坡	31.65	29.94	5.7	5.1
3	香港	中国	23.12	24.38	-5.2	3.7
4	深圳	中国	22.94	22.57	1.6	3.7
5	釜山	韩国	17.04	16.18	5.3	2.8
6	宁波-舟山	中国	16.83	14.72	14.3	2.7
7	广州	中国	14.74	14.42	2.2	2.4
8	青岛	中国	14.50	13.02	11.4	2.3
9	迪拜	阿联酋	13.30	13.00	2.3	2.2
10	天津	中国	12.30	11.59	6.1	2.0
11	鹿特丹	荷兰	11.87	11.88	-0.1	1.9
12	巴生	马来西亚	10.00	9.60	4.1	1.6
13	高雄	中国台湾	9.78	9.64	1.5	1.6
14	汉堡	德国	8.86	9.01	-1.7	1.4
15	安特卫普	比利时	8.64	8.66	-0.3	1.4
16	洛杉矶	美国	8.08	7.94	1.7	1.3
17	大连	中国	8.06	6.40	26.0	1.3
18	京滨港	日本	7.85	7.64	2.8	1.3
19	丹戎帕拉帕斯	马来西亚	7.70	7.50	2.7	1.2
20	厦门	中国	7.20	6.47	11.4	1.2

数据来源：作者根据“The Journal of Commerce”数据计算所得。

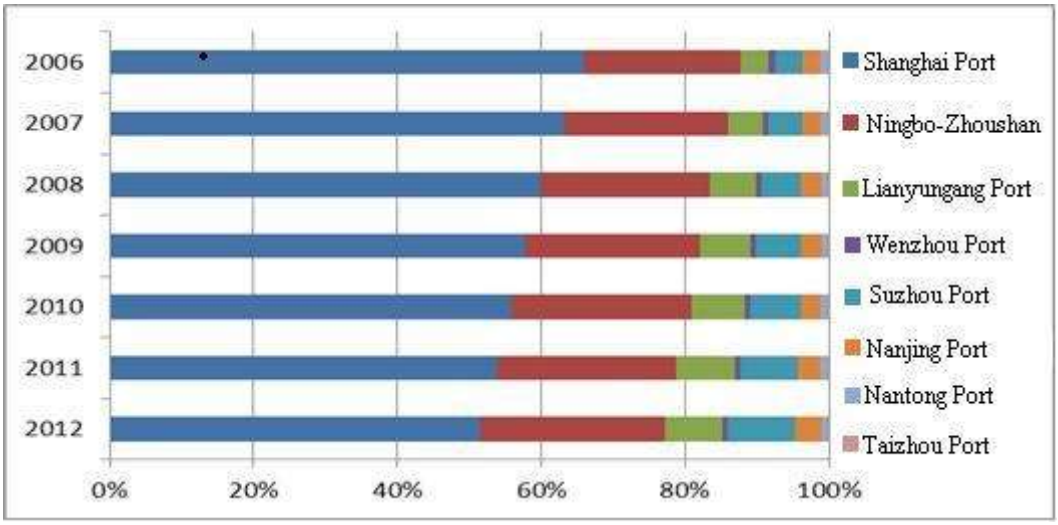
Because of the rapid growth at other regional ports in the Yangtze River Delta Port Cluster, the regional market share of Shanghai is declining with each passing year. The port cluster mainly consists of the "bird-shaped" Shanghai International Shipping Center (SISC), with Shanghai as the head, ports along the Yangtze River as the body, and coastal ports in Jiangsu and Zhejiang as the two wings. So far, the regional market share of Shanghai by cargo throughput has dipped more than 8% points from 36.8% in 2006 to 28.5% (Figure 1.4). Under the influence of competition for container supply with additional international shipping routes developed by Lianyungang, Nanjing and Suzhou, as well as the explosive growth of neighboring medium- and small-sized ports, the market share of Shanghai by container throughput declined from 66.0% in 2006 to 51.6% in 2012, as opposed to increases of Suzhou (5.5% points increase in market share), Ningbo-Zhoushan (4.0%), Lianyungang (4.0%) and Nanjing (1.2%), and the stable performance of Wenzhou, Nantong and Taizhou (Figure 1.5).

Figure 1.4 Market Share Trend of Major Ports in the Yangtze River Delta by Cargo Throughput (2005-2012)



Source: Author's own calculations based on the Statistical Communiqués issued by cities concerned

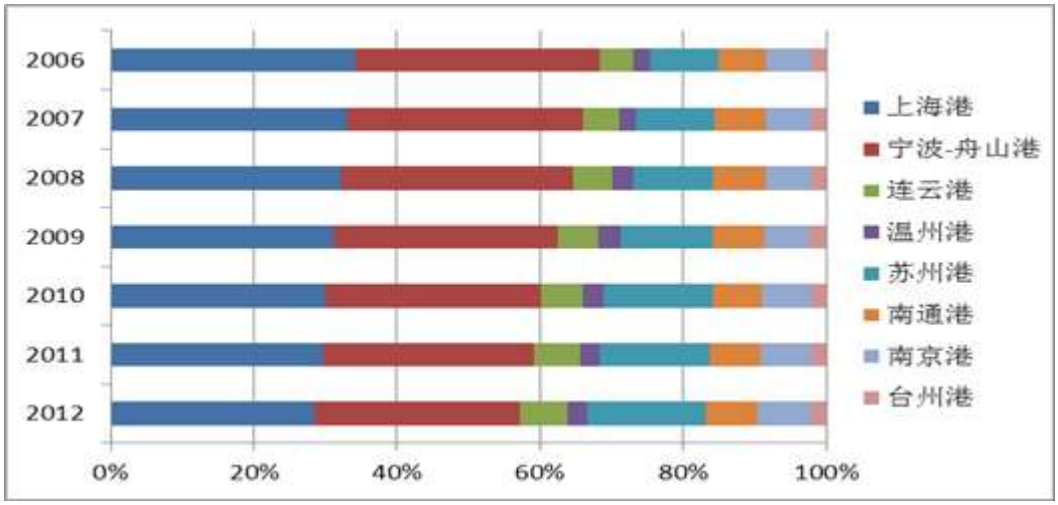
Figure 1.5 Market Share Trend of Major Ports in the Yangtze River Delta by Container Throughput (2006-2012)



Source: Author's own calculations based on the Statistical Communiqués issued by cities concerned in 2012

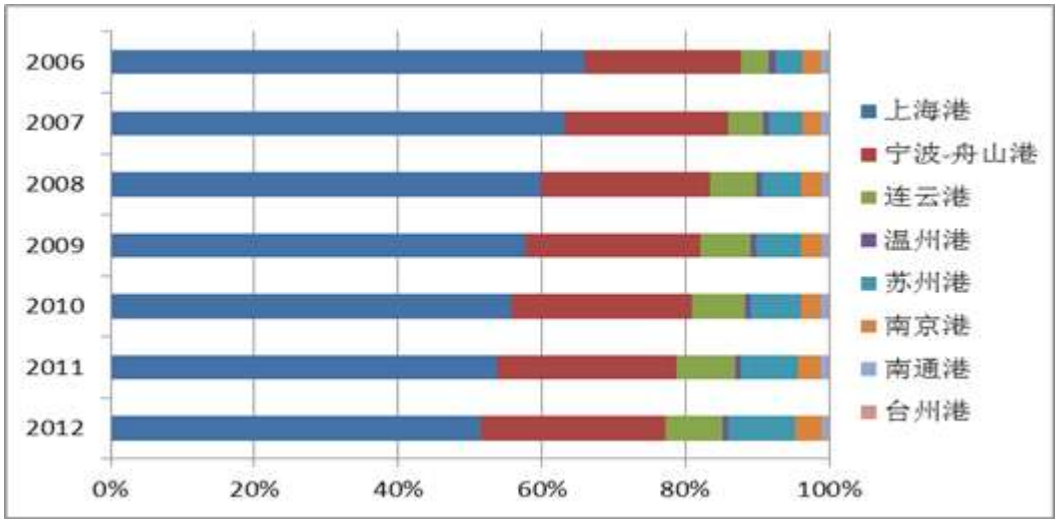
以上海港为首，长江沿江港口为身，浙江、江苏沿海港口为两翼，构建“一体两翼”的上海国际航运中心是现阶段长三角港口群的主要格局。然而，随着长三角港口群内其他港口的快速成长，上海港的市场份额正逐年下跌。目前，上海港货物吞吐量的市场份额已由 2006 年的 36.8%萎缩至 28.5%，份额下滑 8 个百分点以上（图 1.4）。由于连云港港、南京港和苏州港增设国际航线，分流了部分上海港货源，加上周边中小型港口的快速发展，对上海港集装箱市场份额也形成了冲击。2006-12 年间，上海港集装箱吞吐量市场份额从 66.0%下降为 51.6%，而紧邻的苏州、宁波-舟山、连云港、南京等港口市场份额分别上升 5.5%、4.0%、4.0%、1.2%，而温州、南通、台州市场份额基本没有变化（图 1.5）。

图 1.4　长三角主要港口货物吞吐量市场份额变化趋势（2005-2012 年）



数据来源：作者根据各城市统计公报计算所得

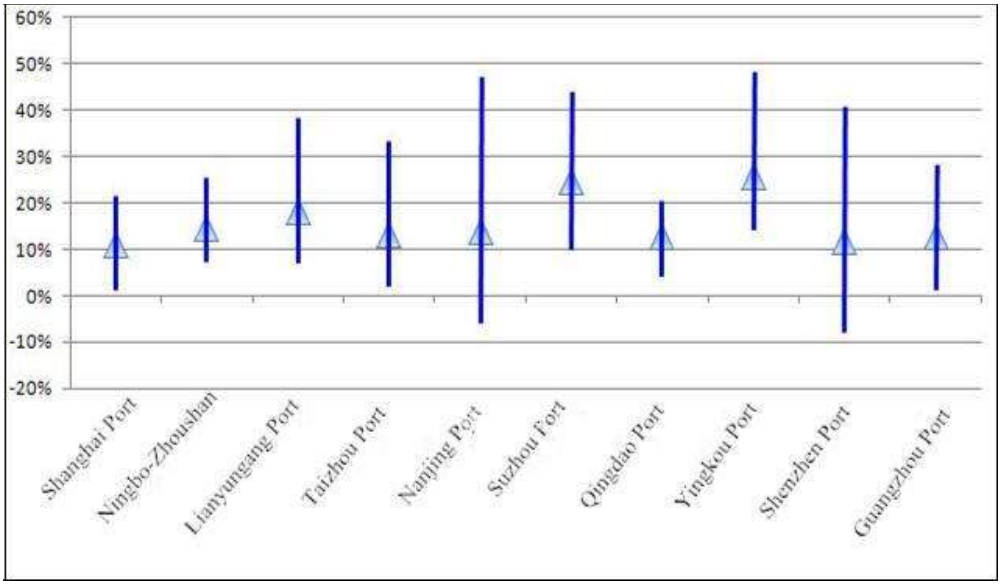
图 1.5　长三角主要港口集装箱吞吐量市场份额变化趋势率（2006-12 年）



数据来源：作者根据 2012 年各城市统计公报计算所得

Despite the downward trend of its market share, Shanghai Port remains to be one of the most important hub ports in China and in the world with steady development. Against the backdrop of the financial crisis, there has been no major fluctuation in terms of the throughput growth, as opposed to be reflected in some of its emerging counterpart ports like Lianyungang, Nanjing and Yingkou, thanks to the stable cargo source and long-term solid business partnership (Figure 1.6).

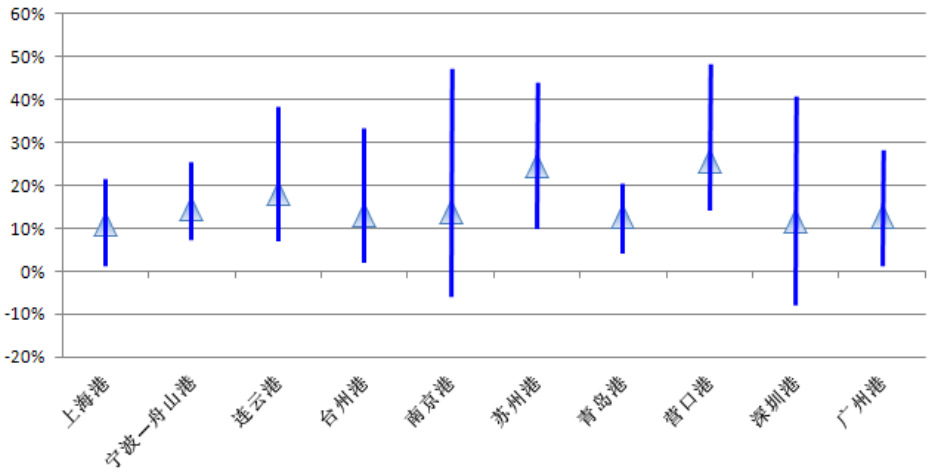
Figure 1.6 Fluctuations in Cargo Throughput of Major Domestic Ports (2004-2012)



Source: Author's own elaborations based on *China Port Statistical Yearbook (2012)*

尽管上海港的在长三角港口群中的市场占有率有下降趋势，但就上海港自身增长来看已处于平稳发展期，其在中国乃至全球仍拥有不可撼动的国际地位。在金融危机中，上海港吞吐量增幅并未出现较大的波动，主要由于多年以来积淀的稳定货源与合作关系。而连云港、南京港、营口港都属于成长性港口，因此港口年增长率存在较大波动（图 1.6）。

图 1-6　中国主要港口货物吞吐量增幅波动（2004-12 年）

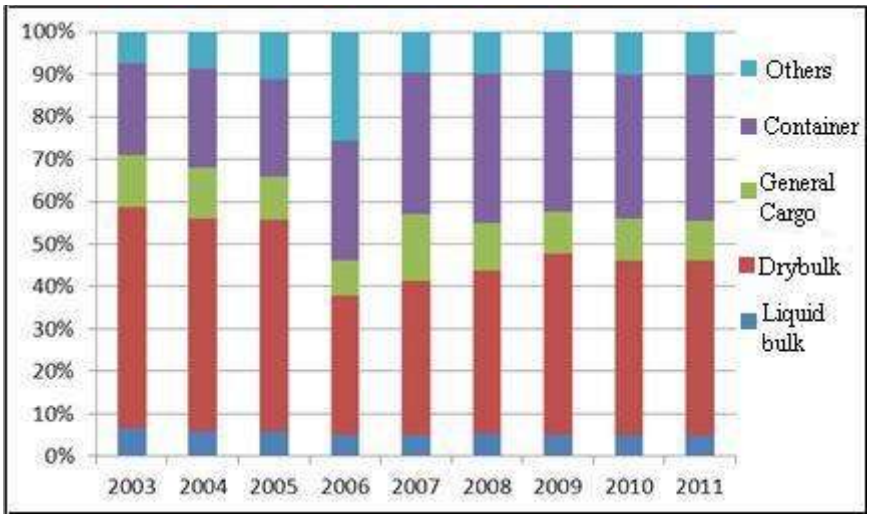


数据来源：作者根据《中国港口统计年鉴（2012）》整理

1.1.2 Cargo Structure

From 2003 to 2011, significant changes took place in the cargo structure at Shanghai port, with all types of cargo except containers showing relative decline. Due to the migration of local heavy industries, dry bulk like coal and iron ores saw its share decrease from 52.0% in 2003 to 41.5% in 2011, yet maintained its position as the most important cargo category of Shanghai; the ratio of liquid bulk and general cargo declined 1.9% and 3.2% respectively; that of containers, however, rose from 21.5% to 34.4%, which became a major pillar in its port business portfolio (Figure 1.7). Such changes are mainly resulted from the economic transition and trade development of the Yangtze River Delta and the requirements placed by cities on environment.

Figure 1.7 Changes in Cargo Structure of Shanghai (2003-2011)



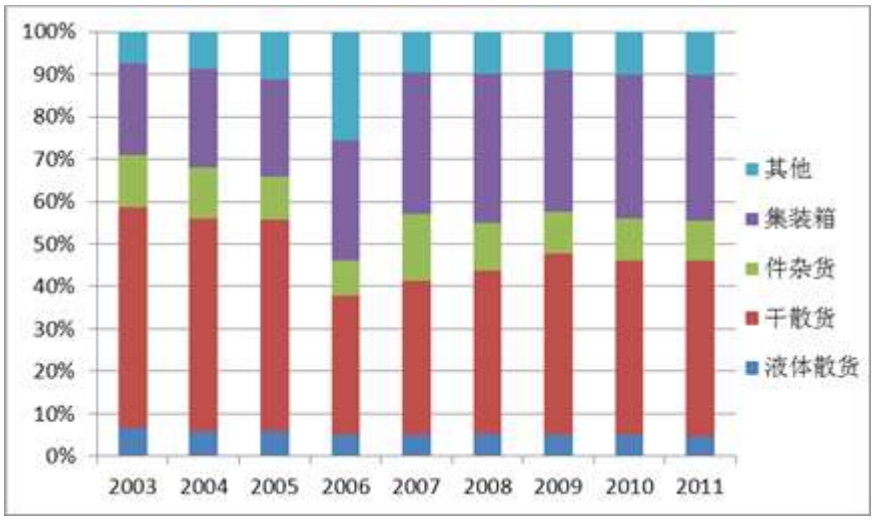
Source: Author's own elaborations based on *Shanghai Port Statistical Yearbook (2011)*

Ports in the Yangtze River Delta are seeking differentiated development based on distinct functional orientations. Shanghai serves as a major container hub port with containers taking up the most substantial proportion of its total throughput. While Ningbo-Zhoushan proves to be a principal oil product loading and unloading port in southern China and a major coastal bulk collection and distribution hub in the country. It handled 144 million tons of liquid bulk in 2011, representing over 20% of its total throughput. Lianyungang which lies in the northern wing of SISC has a strong edge containers and dry bulk. Dry bulk represented 60.7% of its total throughput in 2011, as opposed to the 48.6% proportion in Ningbo-Zhoushan. Wenzhou functions as an important container feed port of Shanghai. Compared with other coastal ports, container throughput represented over 30% of the total in Qingdao, Lianyungang, Shanghai and Xiamen, thereby establishing themselves as the regional container hub ports in the port clusters of Circum-Bohai Sea Region, the Yangtze River Delta and China's Southeast Coast (Figure 1.8)

1.1.2 港口货种结构特点

2003-11 年期间，上海港货种结构发生了明显的变化。除集装箱外，其他货种比例均出现一定程度的下滑。其中，干散货份额下降最为突出，上海重工业的外迁使得煤炭、铁矿石等干散货占比已由 2003 年的 52.0%下降至 2011 年的 41.5%，但仍不失其在港口的主导地位；液体散货、件杂货比重分别下降 1.9 和 3.2 个百分点；而集装箱占比则由 2003 年的 21.5%上升至 34.4%，成为上海港的支柱型货种（图 1.7）。长三角地区的经济转型和贸易发展，加之城市对环境的要求，是港口货种结构发生变化的主要因素。

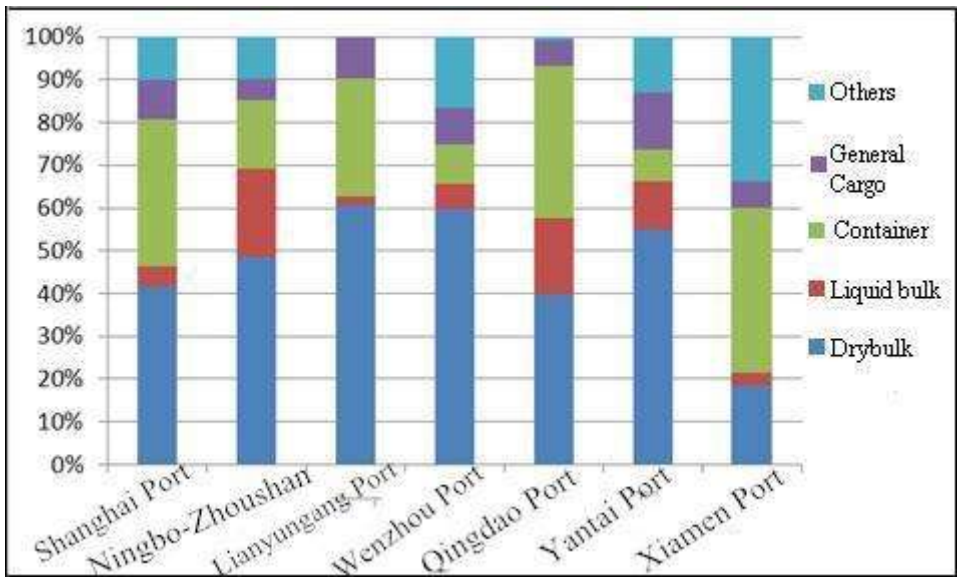
图 1.7　上海港货种结构变化（2003-11 年）



数据来源：作者根据《上海市港口统计年鉴（2011）》整理

将上海港货种结构与周边宁波-舟山和连云港对比可以发现，上海港集装箱占绝对比例，而宁波-舟山的货种结构以液体散货和干散货等大宗散货为主，是中国沿海主要的散货集散枢纽，连云港则兼具干散货和集装箱。2011 年，连云港和宁波-舟山港的干散货吞吐量分别占各自总货物吞吐量的 60.7%和 48.6%，而宁波-舟山港作为南方主要油品接卸港，液体散货吞吐量达到 1.44 亿吨，占全港吞吐量的 20%以上。长三角相邻港口货种结构形成了差异化发展的特点，各港口功能定位相对明确：上海港是集装箱的主枢纽港；宁波-舟山是大宗散货的集散中心；连云港作为上海国际航运中心的北翼，干散货运输优势明显；而温州港是上海港集装箱的重要喂给港。对比其他沿海港口，厦门、青岛、连云港和上海的集装箱吞吐量在其吞吐量中的占比均超三成，因此也构成了环渤海、长三角和东南沿海三个港口群中的区域型集装箱枢纽港（图 1.8）。

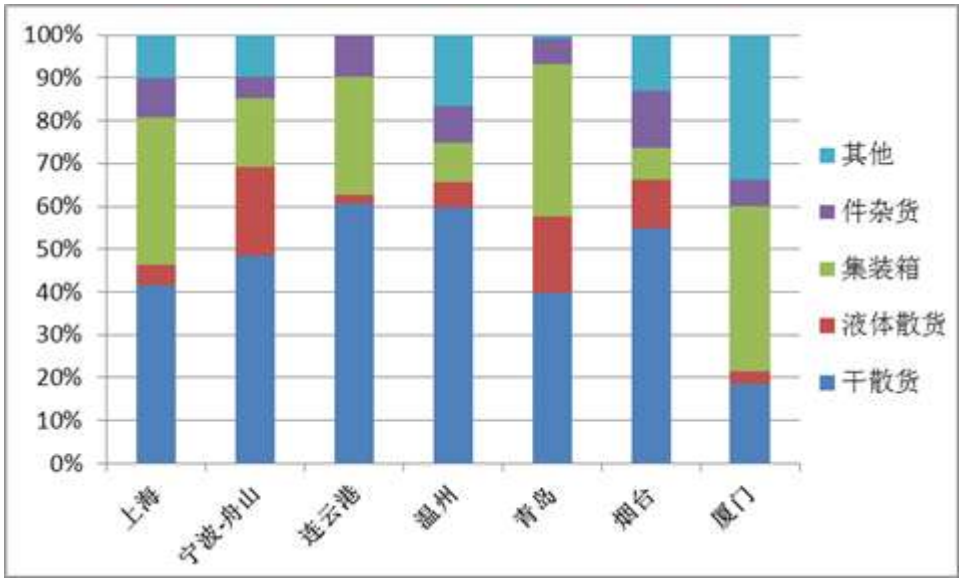
Figure 1.8 Cargo Structure of Some Domestic Ports (2011)



Source: Author's own elaborations based on data from various port authorities

Similar to the cases of other international metropolises, economic growth has led to an ever-growing proportion of container throughput in Shanghai. So far, it has recorded balanced development of cargo and container throughput, with the proportion of containers being much higher than that in the neighboring Ningbo-Zhoushan, yet lower than that in Hong Kong, Singapore, Busan and other international container entrepots (Figure 1.9). Ports like Singapore and Hong Kong, are mostly bolstered by their service industry, and the port and shipping sectors in particular. In addition, these ports are featured by advanced container trans-shipment business on account of their proximity to the main international container shipping routes. But Shanghai hinges on the huge demand for bulk shipping driven by the economic development in China's vast hinterland. Nevertheless, given the migration of China's coastal sectors and the restructuring of the local industries, the cargo structure of Shanghai is expected to go through a new round of adjustments, with container throughput reaching a further increase in its proportion.

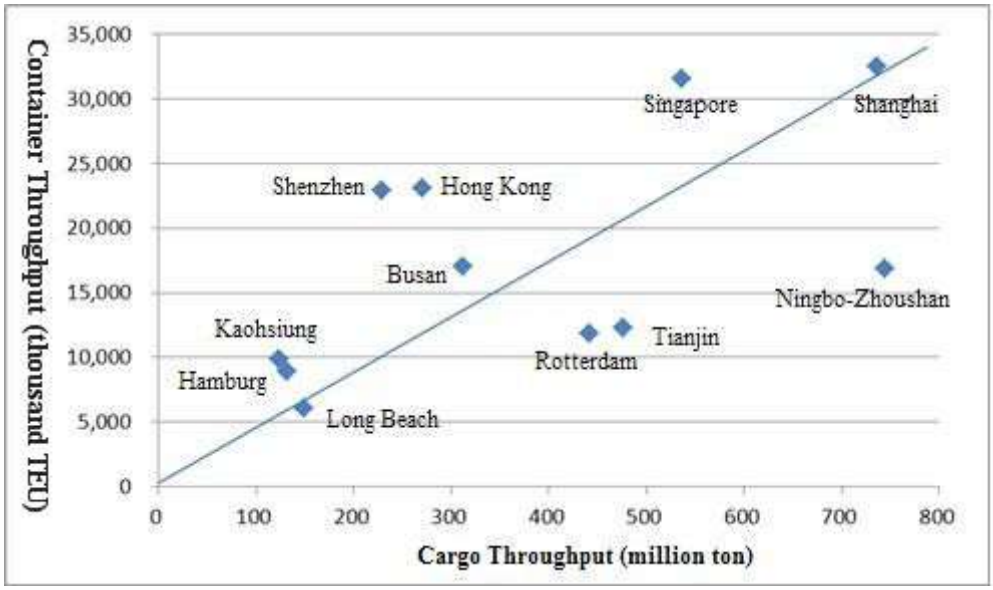
图 1.8　中国部分港口货种结构（2011 年）



数据来源：作者根据各港口管理局资料整理

上海如同其他国际大都市一样，随着经济的繁荣，货物吞吐量中集装箱所占比重越来越高。目前上海港集装箱与货物吞吐量的发展处于相对均衡的状态，港口集装箱吞吐量比重远高于相邻的宁波-舟山港；但与香港、新加坡、釜山等国际集装箱中转港相比仍略显不足（图 1.9）。上海港在发展过程中仍依托于腹地经济，与新加坡、香港的经济、贸易发展方式不同。中国腹地经济的发展产生了大量大宗散货的运输需求，而新加坡、香港经济结构以服务业为主，港口航运是其服务业中的重要板块，而且由于其靠近国际集装箱主干航线，因此集装箱中转业务发达，并在货物吞吐量结构中占据绝对优势。然而，随着中国沿海产业转移，上海产业结构转型，上海港货物结构将在未来进一步实现调整，港口运输货物结构中集装箱比例有望进一步提升。

Figure 1.9 Cargo and Container Throughput of Major Global Ports (2012)

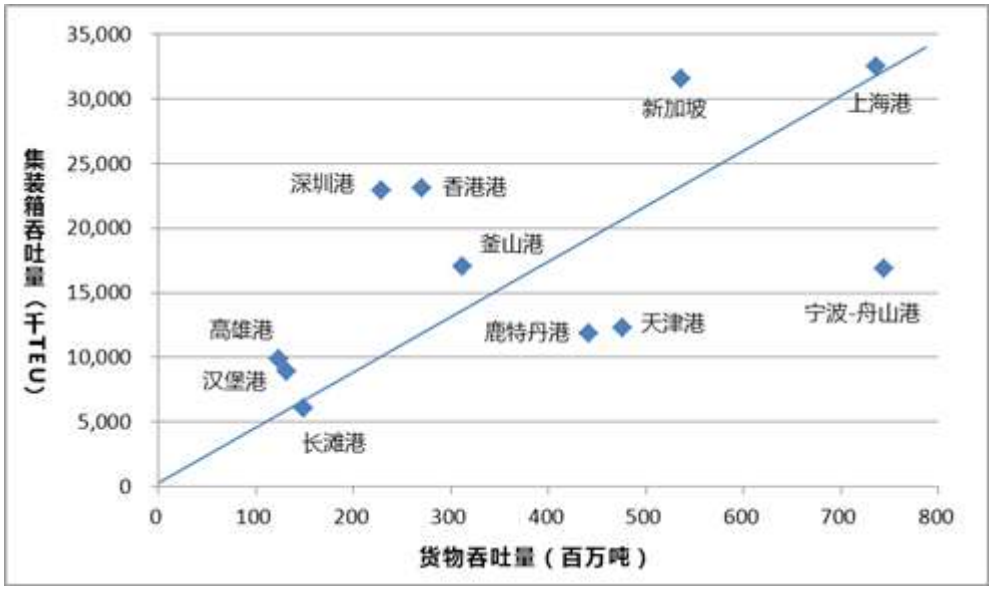


Source: Author's own elaborations based on the *Global Port Development Report (2012)* issued by SISI

1.1.3 Collection, Distribution and Transport

The majority of Shanghai's hinterland is in the Yangtze River Delta, which can extend to a 300-400 km radius and makes road transport the favorable means for goods movement. Road transport, which is comparatively more cost-effective, is the main mode for container collection and distribution. However, its proportion declined with each passing year from 85.0% in 2004 to 74.1% in 2010, as a result of the increasing pressure on road resources and rising awareness of environmental protection. Geographical, institutional and technical constraints have caused arrested development of rail transport, which only represents less than 1% of the modal share. The past years have witnessed the big strides of waterway transport, with its proportion soaring from 14.5% to 25.7%, which is mainly due to the robust construction of shipping channels along the Yangtze River and inland river ports. Inland cities along the inland waterways are becoming the economic hinterland with the greatest potential for Shanghai port (Table 1.4). As for seaborne and inland waterway transshipment, international business and freight for domestic trade recorded steady growth from 2005 to 2010, and the Yangtze River feeder services registered more than half of the total, which is the biggest source for water-to-water trans-shipment. Contrary to the rapid development of other modes of transport, coastal feeder services are beset with stagnated growth, with their proportion declining from 24.8% in 2005 to 17.0% in 2010 despite substantial increase in freight volume (Table 1.5). As a preferable mode to alleviate on the impacts on road traffic and to achieve sustainability growth, the development of a robust inland waterway transportation network will be one of the focus and goals in future port planning in China. In this sense, Shanghai no doubt will play a major role in facilitating this transformation.

图 1.9　世界主要港口货物吞吐量与集装箱吞吐量间联系（2012 年）



数据来源：作者根据上海国际航运研究中心《全球港口发展报告（2012）》整理

1.1.3 港口集疏运体系发展

上海港腹地主要集中于江浙沪等长三角地区，处于公路合理经济的运输范围内（300-400 公里），因此公路运输自然而然地成为了绝对的主力军。但随着道路资源和环境问题的日益严峻，2004-11 年，上海港集装箱公路集疏运比例呈逐年递减趋势，已从 2004 年的 85.0%下降到 2010 年的 74.1%；由于区位、技术、体制等因素铁路集疏运发展较慢，占比尚不足 1%；水路集疏运体系近些年得到了快速发展，在集疏运体系结构中的比例由 14.5%迅速上升到 25.7%，其主要得益于近年长江水道和内河港口的大力建设，沿江地区已成为上海港最具潜力的经济腹地（表 1.4）。就 2005-10 年上海港水水中转量来看，国际中转和内贸中转量持续稳定增长，而长江内支线中转量占比达到一半以上，成为水水中转量的主要支撑。在其他中转方式快速增长的情况下，沿海内支线发展相对迟缓，沿海内支线运输在全部水水中转运输中所占比例由 2005 年的 24.8%下降至 2010 年的 17.0%，但绝对量依然保持明显增长（表 1-5）。水路集疏运作为缓解公路交通压力、创建绿色港口最为理想的集疏运方式，未来在上海港仍将得到大力支持并实现快速发展。

Table 1.4 Container Collection and Distribution in Shanghai

	Port Container Transport	Via Road		Via Waterway		Via Railway	
		Cargo Collection and Distribution /thousand TEU	%	Cargo Collection and Distribution /thousand TEU	%	Cargo Collection and Distribution /thousand TEU	%
2004	12705	10796	84.97%	1845	14.52%	64	0.50%
2005	15645	13157	84.10%	2435	15.56%	53	0.34%
2006	18210	14626	80.32%	3500	19.22%	84	0.46%
2007	21413	16573	77.40%	4738	22.12%	102	0.48%
2008	22808	17509	76.77%	5199	22.79%	100	0.44%
2009	24188	17766	73.40%	6337	26.20%	85	0.35%
2010	27544	20404	74.10%	7068	25.70%	72	0.20%

Source: Data from Shanghai Municipal Transport and Port Authority and *Shanghai Port Statistical Yearbook (2010 and 2011)*

Table 1.5 Water-to-water Trans-shipment in Shanghai

	International		Coastal Feeder		Yangtze River Feeder		Domestic Trade	
	Throughput /thousand TEU	%	Throughput /thousand TEU	%	Throughput /thousand TEU	%	Throughput /thousand TEU	%
2005	400	8.21%	1210	24.84%	2836	58.24%	424	8.71%
2006	785	11.26%	1384	19.85%	3995	57.30%	808	11.59%
2007	1277	13.48%	2092	22.07%	5135	54.19%	972	10.26%
2008	1434	13.41%	2256	21.09%	5798	54.20%	1209	11.30%
2009	1432	14.33%	2018	20.19%	5234	52.37%	1311	13.12%
2010	1475	13.38%	1870	16.96%	6120	55.52%	1559	14.14%

Source: Data from Shanghai Municipal Transport and Port Authority and Shanghai International Port (Group) Co., Ltd.

Compared with other domestic coastal ports, waterway transport takes up the biggest share of cargo collection and distribution in Shanghai, which is mainly because a large amount of bulk and general cargo is shipped to the port from cities along the Yangtze River. In 2011, inland waterway transport accounted for 77.2% of the total cargo volume in Shanghai. This ratio is also comparably high in Ningbo-Zhoushan, which takes up for 68.2% due to its proximity to the inland waterway system. However, in terms of rail transport, Shanghai has a much lower proportion than that in Ningbo-Zhoushan, and Lianyungang (34.1%), Qingdao (39.2%) and Xiamen (34.9%). The less developed sea-rail transport has affected the cargo canvassing of Shanghai (Figure 1.10).

表 1.4　上海港集装箱集疏运量及比例

	港口集装箱货运交通量	公路集装箱货运交通		水路集装箱货运交通		铁路集装箱货运交通	
		集疏运量/千 TEU	比例/%	集疏运量/千 TEU	比例/%	集疏运量/千 TEU	比例/%
2004	12705	10796	84.97%	1845	14.52%	64	0.50%
2005	15645	13157	84.10%	2435	15.56%	53	0.34%
2006	18210	14626	80.32%	3500	19.22%	84	0.46%
2007	21413	16573	77.40%	4738	22.12%	102	0.48%
2008	22808	17509	76.77%	5199	22.79%	100	0.44%
2009	24188	17766	73.40%	6337	26.20%	85	0.35%
2010	27544	20404	74.10%	7068	25.70%	72	0.20%

数据来源：上海市交通运输和港口管理局、《上海港口统计年鉴》（2010 年版、2011 年版）

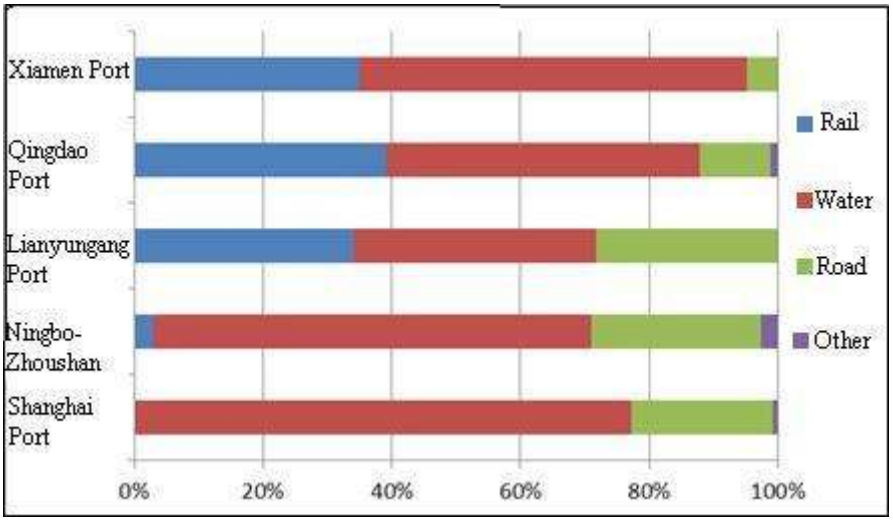
表 1.5　上海港水水中转吞吐量及比例

	国际中转		沿海内支线中转		长江内支线中转		内贸中转	
	吞吐量/千 TEU	比例/%	吞吐量/千 TEU	比例/%	吞吐量/千 TEU	比例/%	吞吐量/千 TEU	比例/%
2005	400	8.21%	1210	24.84%	2836	58.24%	424	8.71%
2006	785	11.26%	1384	19.85%	3995	57.30%	808	11.59%
2007	1277	13.48%	2092	22.07%	5135	54.19%	972	10.26%
2008	1434	13.41%	2256	21.09%	5798	54.20%	1209	11.30%
2009	1432	14.33%	2018	20.19%	5234	52.37%	1311	13.12%
2010	1475	13.38%	1870	16.96%	6120	55.52%	1559	14.14%

数据来源：上海市交通运输和港口管理局、上海国际港务集团

与中国沿海的其它港口城市相比，上海港货物吞吐量的集疏运结构中水路运输占了很大比例，主要是由于长江是上海港的重要货源腹地，长江沿线城市大量的散杂货一般通过水路运输至上海港。2011 年，上海港水路运输在全部集疏运体系中占比达到 77.2%，宁波-舟山港也相对较高，占 68.2%。然而与宁波-舟山、连云港、青岛、厦门四个港口相比，上海港铁路集疏运比例过低。尤其是连云港、青岛和厦门，三个港口的铁路集疏运比例分别占到本港货物集疏运的 34.1%、39.2%和 34.9%。长期以来，上海港海铁联运发展的滞后对港口的揽货能力产生了一定的影响（图 1.10）。

Figure 1.10 Cargo Collection and Distribution of Some Domestic Ports (2010/2011)



Note: Data for Qingdao and Ningbo came from 2010.

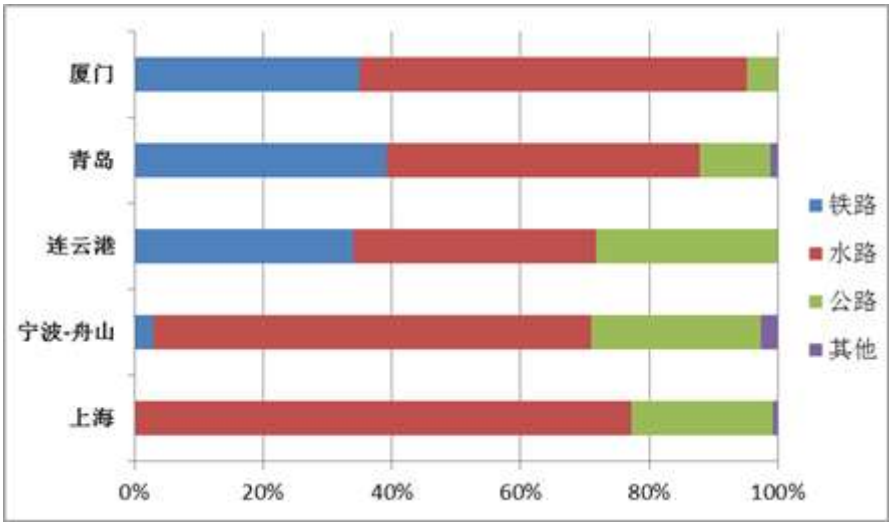
Source: Author's own elaborations based on data from various port authorities

1.1.4 Port cargo handling efficiency

Shanghai Port stretches over a vast area and includes the southern bank of the Yangtze River , both sides of Huangpu River, the northern shore of Hangzhou Bay, the waterfront of Chongming, Changxing Island and Hengsha Islands, Yangshan Deep-water Port Area and inland river port areas in the city. As of the end of 2012, Shanghai has 1,183 berths of all types along 123 kilometres of quays, with 612 berths for container handling along 74 kilometres of quays. The total handling capacity reached 642 million tons, with that of seaports amounting to 500 million tons and inland-river ports to 142 million tons. In fact, Shanghai recorded a cargo throughput of 720 million tons in 2012, with the ratio of handling capacity to throughput being 1:1.12, slightly lower than the moderate loading standard of 1.1:1 as specified in the national plan. On the other hand, the design container throughput of 20.04 million TEU was in sharp contrast with the actual throughput of 32.53 million TEU, with the ratio of handling capacity to throughput being 1:1.62, indicating a high degree of berth utilization and serious overcapacity. This is a challenge: overloaded ports might eventually suffer from declining cargo supply and market share.

The port of Shanghai shows low vessel turnaround times, which indicates high cargo handling efficiency. While port efficiency studies vary in terms of their timeframe and calculation models, the performance indicator of vessel turnaround time is considered to be a relatively balanced assessment. It is an important determinant for a port's competitiveness as quick turn-around time facilitates more throughput and reduces port congestion. An overview of the average vessel turn-around time at different ports in the world is provided in Figure 1.11. The findings suggest that the most time efficient ports are located in East Asia, Europe and the Caribbean. A comparison of the development of the average vessel turn-around time over time shows that Chinese ports have dramatically lowered their average vessel turnaround times (Figure 1.12).

图 1.10　中国部分港口货物集疏运比例（2010/11 年）



注：青岛和宁波港的数据为 2010 年数据
数据来源：作者根据各港务局数据整理

1.1.4 港口生产效率

上海港港域宽阔，覆盖市辖长江口南岸、黄浦江两岸和杭州湾北岸，崇明岛、长兴岛、横沙岛沿岸，洋山深水港区以及上海内河港区。截止 2012 年底，上海港共拥有各类码头泊位 1183 个（生产用泊位 612 个），已用岸线总长 123 公里（生产泊位岸线 74 公里）。其中公用码头 176 个，岸线总长 27 公里；专用码头 1007 个，岸线总长 48 公里。海港总通过能力达到 5 亿吨，再加上内河港口 1.42 亿吨的通过能力，上海港全港的总通过能力可以达到 6.42 亿吨，而 2012 年上海港实际处理货物吞吐量 7.2 亿吨，通过能力与实际吞吐量的比为 1:1.12，略高于国家规划要求的 1.1:1 的适度超前速度。而全港集装箱设计通过能力仅为 2004 万 TEU，与实际 3253 万 TEU 的实际吞吐量形成鲜明对比，通过能力与实际吞吐量的比达到 1:1.62，码头资源利用率较高，港口生产能力严重超载。由于港口生产能力超载，港口将产生拥堵问题，甚至可能导致部分货源或市场份额的流失。这将是一大挑战。

上海港船舶周转时间较低，这表明该港货物装卸效率较高。虽然不同港口效率研究的时间评估和统计模式不尽相同，船舶周转时间仍被认为是常用的绩效评估指标。它是港口竞争力的重要决定性因素，因为周转时间短有助于提高吞吐量、减少港口拥堵。图 1.x 显示了全球不同港口的平均周转时间。我们发现，效率最高的港口在东亚、欧洲和加勒比地区较为集中。对比平均船舶周转时间的发展变化情况可知，中国港口已经大大缩短了平均周转时间（图 1.x）。

Such substantial improvement in time efficiency can also be observed in Shanghai, as the required time for vessel turn-around is reduced from 1.5 days in 1990 by nearly 75% to 0.4 days in 2011 in the past two decades (Table 1.7). Furthermore, Shanghai boasts efficient cargo handling operations. In 2011, the port recorded an average turnaround time of 0.4 day, as opposed to 1.5 days in 1990 and 0.9 day in 2000. Apparently, alongside the construction of entrance and departure channels and the optimization of port scheduling, comes shortened non-productive turnaround time and substantially improved service efficiency (Table 1.6). In order to strengthen its competitiveness for accommodating the next generation of 18,000 TEU mega-size container vessels, Shanghai has been constantly improving its stevedoring efficiency. In 2007, the maximum quantity of containers handled per ship-hour was 690.93, and the maximum quantity of containers handled by a bridge crane per hour was 97. Such figures saw a further increase to 850.53 and 123.16 respectively in the following year, and the latter peaked to 128.24 in 2009. Nevertheless, another domestic competitive coastal port Qingdao outperforms Shanghai, with higher cargo handling efficiency and reaching the top in Daily Maersk Efficiency Rankings (2013). As for cargo throughput per 100 meters of quay, the port of Shanghai only stretches to 620,000 tons/100 meters, outpacing Ningbo-Zhoushan but still lagging behind Rotterdam, Singapore and, in particular, Hong Kong.

Table 1.6 Average Turnaround Time

Year	1990	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Time（Day）	1.5	0.9	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Source: Author's own elaborations based on *Shanghai Statistical Yearbook (2011)*

Table 1.7 Throughput per 100 Meters of Quay (2012)

Port	Rotterdam	Hamburg	Singapore	Hong Kong	Shanghai	Zhoushan
Throughput (10,000 tonnes)	44153	13150	53759	27033	73600	74400
Quays (in kms)	56	33.6	66	10.69	119.2	170
Throughput per quay （10,000 tons /100 m）	79	39	81	253	62	44

相应地，上海港装卸效率和作业效率也较高，2011 年上海港服务船舶的平均在港停泊时间仅为 0.4 天，而 1990 年和 2000 年，该数据分别为 1.5 和 0.9 天，可见在近 20 年的时间内，随着上海进出港航道建设及港内调度的优化，上海港非生产性停泊时间得到缩短，港口服务效率明显提升（表 1.6）。在面对船舶日益大型化，上海港集装箱装卸效率逐年提升。2007 年上海港最高船时量达到 690.93 自然箱/小时，桥吊单机最高效率达到 97 自然箱/小时；2008 年上海港集装箱效率进一步提升，最高船时量达到 850.53 自然箱/小时，桥吊单机最高效率达到 123.16 自然箱/小时；2009 年，桥吊单机最高效率更是突破 128.24 自然箱/小时。然而中国沿海港口中上海港的集装箱装卸效率不是最高的，据马士基全球码头作业效率综合排名（2013）显示，青岛港是全球码头装卸效率最高的港口。从每百米岸线完成的货物吞吐量来看，上海港单位岸线的利用率虽高于宁波-舟山港，但与鹿特丹、新加坡、尤其是香港比起来仍显不足，上海港每百米岸线吞吐量仅为 62 万吨/百米（表 1.7）。

表 1.6　船舶平均在港停泊时间

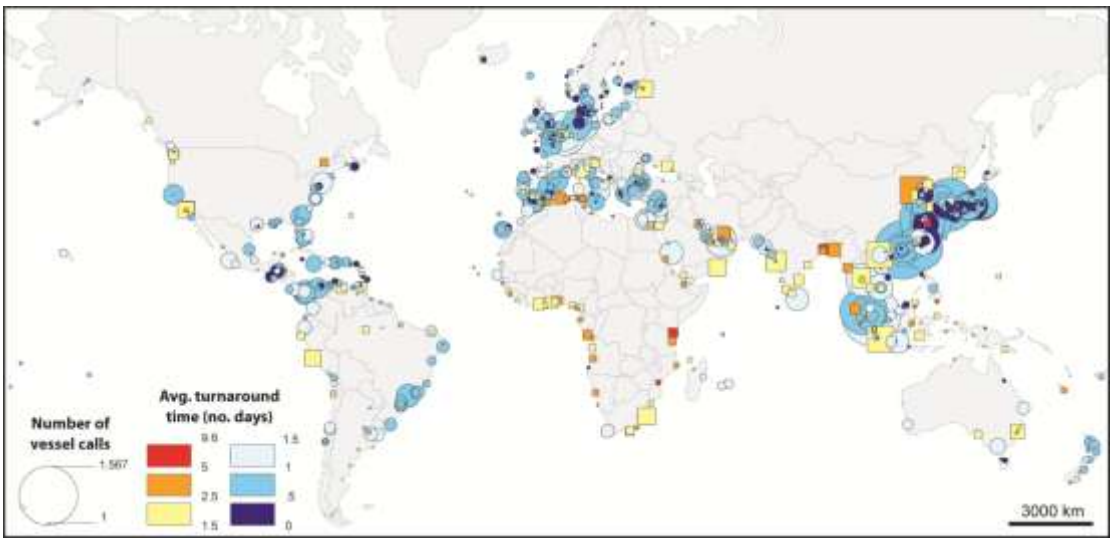
年份	1990	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
时间（天）	1.5	0.9	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4

数据来源：作者根据《上海市港航统计年鉴（2011）》整理。

表 1.7　2012 年各港口每百米岸线吞吐量

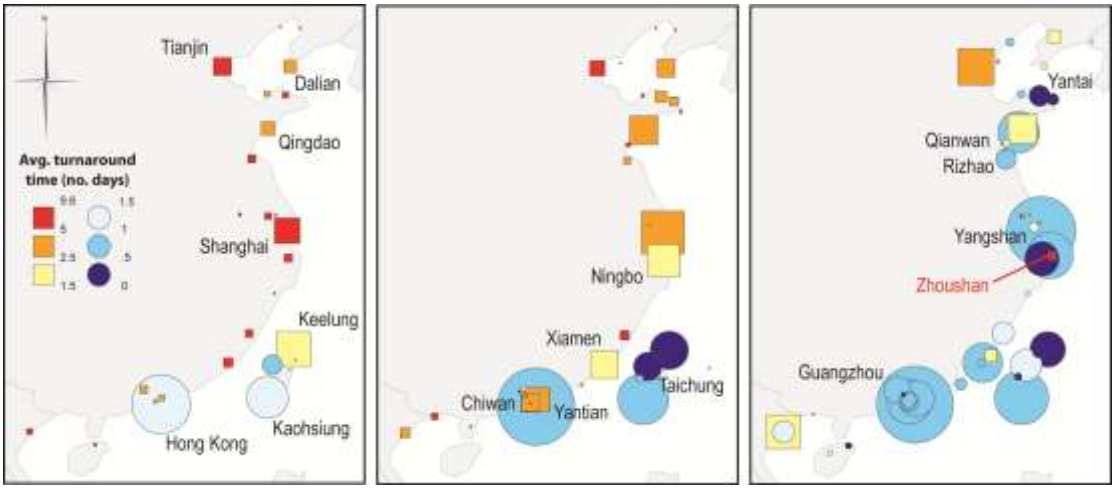
港口	鹿特丹	汉堡	新加坡	香港	上海	宁波-舟山
港口吞吐量/万吨	44153	13150	53759	27033	73600	74400
岸线长度/公里	56	33.6	66	10.69	119.2	170
每百米岸线吞吐量（万吨/百米）	79	39	81	253	62	44

Figure 1.11 Average turnaround time of world ports (May 2011)



Source: Ducruet and Merk 2013

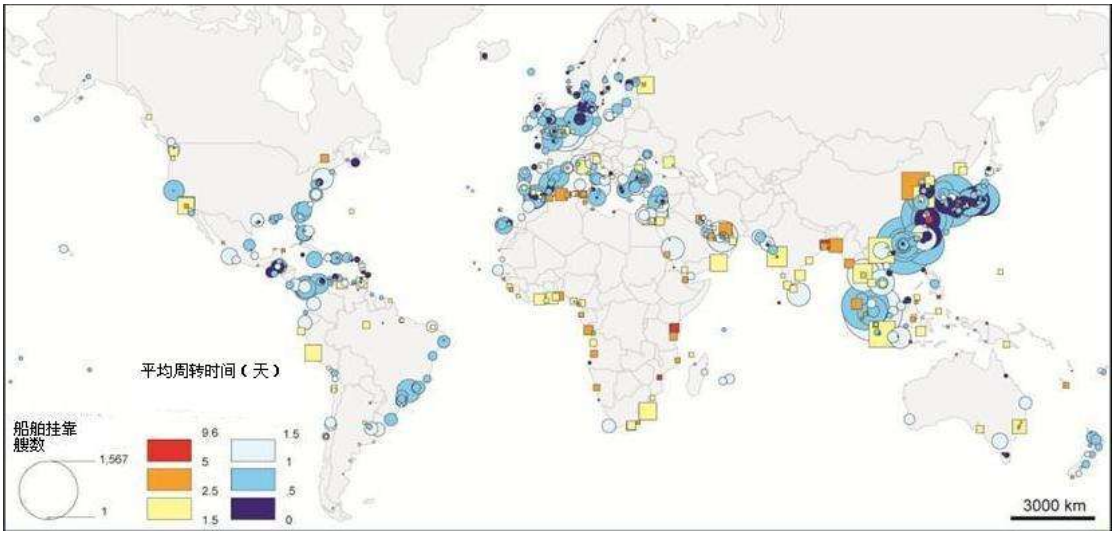
Figure 1.12 Average turnaround time in ports in China (May 2011)



Source: Based on Ducruet and Merk 2013

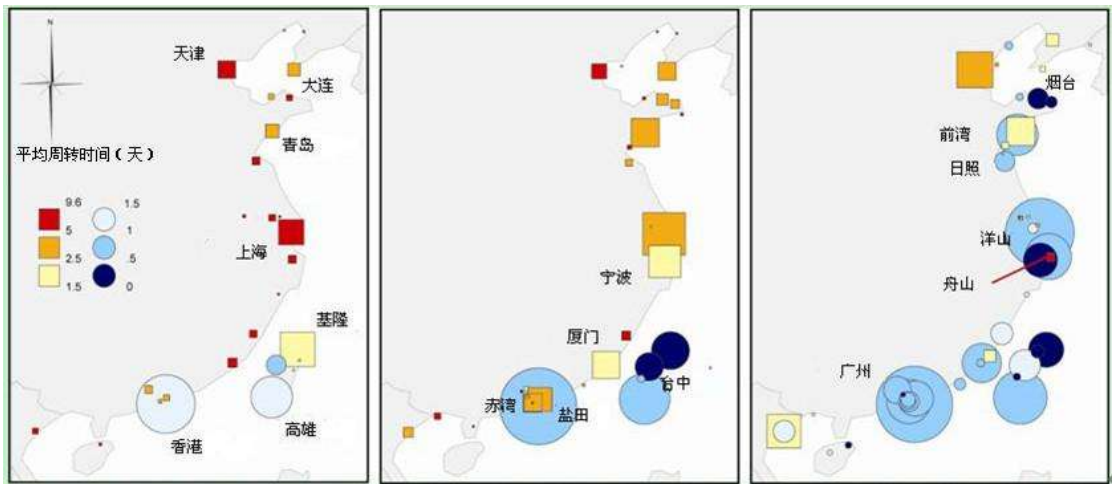
As the major terminal operator, Shanghai International Port (Group) Co., Ltd. (SIPG) employs a specialized information system for public berth operations, storage yard management and logistics services, which probably has a positive impact on port efficiency.

图 1.11 全球港口平均周转时间（2011 年 5 月）



来源：Ducruet and Merk 2013

图 1.12 中国港口平均周转时间（2011 年 5 月）



来源：Ducruet and Merk 2013

上海港主要码头运营商上海国际港务集团的专业信息应用系统已覆盖公共码头作业、仓储场站、物流运输等业务领域，对提升港口的效率有积极的作用。

Various studies on port performance consider Shanghai to be one of the most efficient ports. Domestically, scholars and researchers have compared Shanghai with other major coastal ports in China and the results are indicative of the high efficiency that Shanghai possesses in its port operations, despite of the different methodologies these studies have employed (Table 1.8). On the international level, many studies look at the performance benchmarks on container terminals by using the main matrix of input and output such as terminal infrastructure elements including throughput, berth length, terminal area, quayside cranes, yard equipment both in terms of their utilization rates (TEU per hectare, TEU handled per crane, and vessels per berth, etc.) and productivity (moves per crane-hour, vessel service time, and truck time in terminal, etc.). Using the most common mathematical models for port efficiency evaluation, such as the Data Envelopment Analysis (DEA), many studies concluded that the container terminals in Shanghai are among the most efficient terminals and are technically efficient, but indicated mixed results on scale efficiency (Wang et al, 2003; So et al, 2007; Munisamy and Singh, 2011). Whether the terminals are operating at the most optimal productive scale size is subject to the specific methodology and year of the study that is conducted

Table 1.8 Cargo handling Efficiency Evaluation

	Score	Rival	Score	Methodology	Source/Author
Shanghai	2.96	Ningbo-Zhoushan	2.17	PCA and Clustering	Shen Yinan（2011）
		Suzhou	-0.38		
		Nanjing	-0.74		
		Lianyuangang	-1.22		
		Wuxi	-1.39		
		Nantong	-1.40		
Shanghai	47.42	Busan	46.54	Fuzzy Evaluation	Lv Xiaoyan（2007）
Shanghai	1	Dalian	0.97	DEA Relative Effectiveness Evaluation	Bi Gongbing, Luo Yan, Guo Xiaodan, Liang Hui（2010）
		Guangzhou	1.00		
		Ningbo-Zhoushan	1.00		
		Qingdao	0.81		
		Shenzhen	0.63		
		Tianjin	0.95		
		Xiamen	1.00		
Shanghai	90.5	Ningbo	81.2	AHP	Xu Jia（2007）
		Zhousan	75.1		
		Nantong	71.5		
		Taicang	74.5		

1.1.5 Inland River Ports

Composed of Baoshan, Jiading, Minhang and other seven terminals, the inland river port area of Shanghai is mainly engaged in waterway transport along the Yangtze River. The terminals in the city proper have been gradually transformed into passenger ferries, while those in the suburbs are making big strides. With the development of the waterway collection and distribution is given strategic priority, more investment in inland port construction and improvement in cargo handling capacity could be foreseen in the near future in Shanghai.

不少港口绩效研究表明，上海是作业效率最高的港口之一。在中国，学者和研究人员将上海同其他中国沿海主要港口做比较。尽管研究方法不同，但他们的研究结果显示，上海港口作业效率较高（表 1.8）。放眼全球，许多研究考察的是集装箱码头绩效基准，从吞吐量、岸线长、码头面积、岸吊、堆场设备等码头基础设施切入，统计它们的使用率（每公顷吞吐量、每台起重机装卸量、泊位装卸船舶艘数等）和作业效率（起重机小时吊运次数、船舶服务时间、码头集卡作业时间等），做出投入产出评估。通过使用最常用的港口效率评估方法和模型，比如数据包络分析，许多研究结论认为，上海集装箱码头是效率最高的码头之一，技术层面效率的确高，但对其规模效益的评估结果却不尽相同（Wang et al, 2003; So et al, 2007; Munisamy and Singh, 2011）。判断上海港码头究竟是否以最优生产规模运营，还要看研究的具体方法和时间。

表 1.8　港口生产效率评价

	得分	竞争者	得分	理论方法	来源
上海	2.96	宁波-舟山	2.17	主成分分析和聚类	沈寅安（2011）
		苏州	-0.38		
		南京	-0.74		
		连云	-1.22		
		无锡	-1.39		
		南通	-1.40		
上海	47.42	釜山	46.54	模糊评价法	吕晓燕（2007）
上海	1	大连	0.97	DEA 相对有效性评价	毕功兵，罗艳，郭晓丹，梁暉（2010）
		广州	1.00		
		宁波-舟山	1.00		
		青岛	0.81		
		深圳	0.63		
		天津	0.95		
		厦门	1.00		
上海	90.5	宁波	81.2	AHP 层次分析法	徐葭（2007）
		舟山	75.1		
		南通	71.5		
		太仓	74.5		

1.1.5 上海港内河码头

上海港内河港区由闵行、嘉定、宝山等十处码头组成，主要承担长江沿线的水运需求。就上海中心市城区的内河码头而言，其港口功能已逐渐退化，转而发展为客轮码头；相反市郊区县的内河码头正逐步发展壮大。由于内河航运及海港的水路集疏运仍是未来上海港发展的重点任务，因此上海内河港口的投资建设力度正逐渐加大，而码头通过能力也随之提高。

Table 1.9 Passenger Arrivals and Departures at Shanghai Port

Year	Arrivals & Departures/million people	Domestic Lines/million people	International & Regional Lines/ million people
2008	51.0385	34.5635	16. 475
2009	56.9996	40.8965	16.1031
2010	71.7009	50.9878	15.0955
2011	74.5588	52.3484	22.2104
2012	78.7084	54.7374	23.9709

As of 2011, Shanghai had recorded 1,332 operators of inland river ports (with 1,895 booths) along a coastline of 99,668m, with 57 of the operators engaged in perishable goods handling. The cargo throughput of inland river ports in Shanghai had registered 103.26 million tons, up 14.48% from year to year, with inward freight taking the biggest share, of which the majority was imported from Jiangsu, Zhejiang and Anhui. Cargo from the three provinces accounted for 76.41% of Shanghai's total imports (that from Jiangsu for 36.26%, that from Zhejiang for 34.44% and that from Anhui for 5.71%). The huge shipping demand will spur the sustained development of inland river transport and the collection and distribution system in Shanghai (Table 1.10). A number of inland river channels in Shanghai will be completed in the short-run, thereby supporting more vessels to engage themselves in inland river transport and alleviating the pressure on road traffic in the city (Figure 1.13).

Table 1.10 Cargo Throughput of Inland River Ports in Shanghai (2003-2011)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total/M Ton	98.57	105.74	107.49	67.08	69.18	73.62	97.37	90.19	103.26
Arrival/ M Ton	84.35	94.40	95.75	60.89	61.85	65.10	89.65	79.83	88.10
Departure/ M Ton	14.18	11.34	11.75	6.19	7.33	8.52	7.73	10.36	15.16

Source: Author's own elaborations based on *Shanghai Port Statistical Yearbook (2011)*

Figure 1.13 Shipping Network Layout of Inland River Terminals in Shanghai

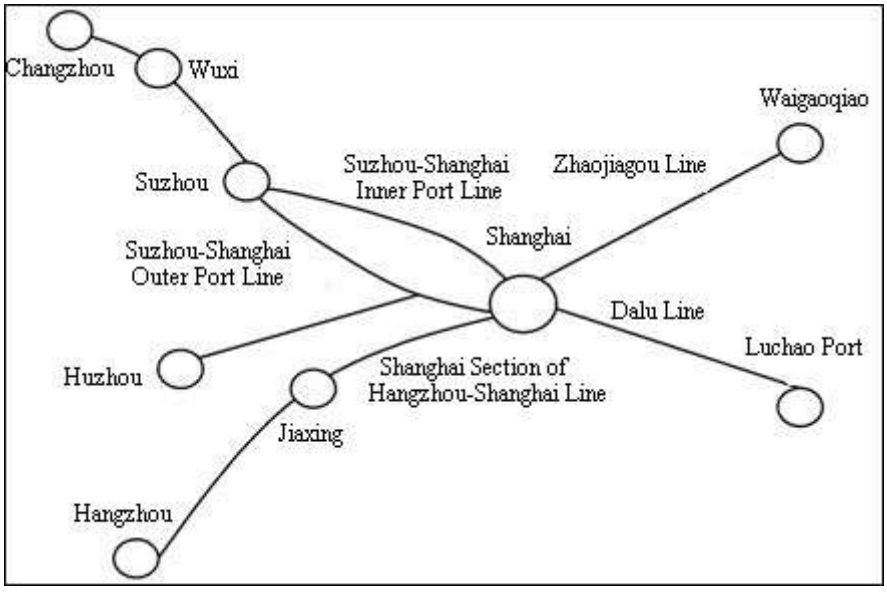


表 1.9　上海港口旅客到发量

年份	进出港旅客/万人	国内航线/万人	国际及地区航线/万人
2008	5103.85	3456.35	1647.5
2009	5699.96	4089.65	1610.31
2010	7170.09	5098.78	1509.55
2011	7455.88	5234.84	2221.04
2012	7870.84	5473.74	2397.09

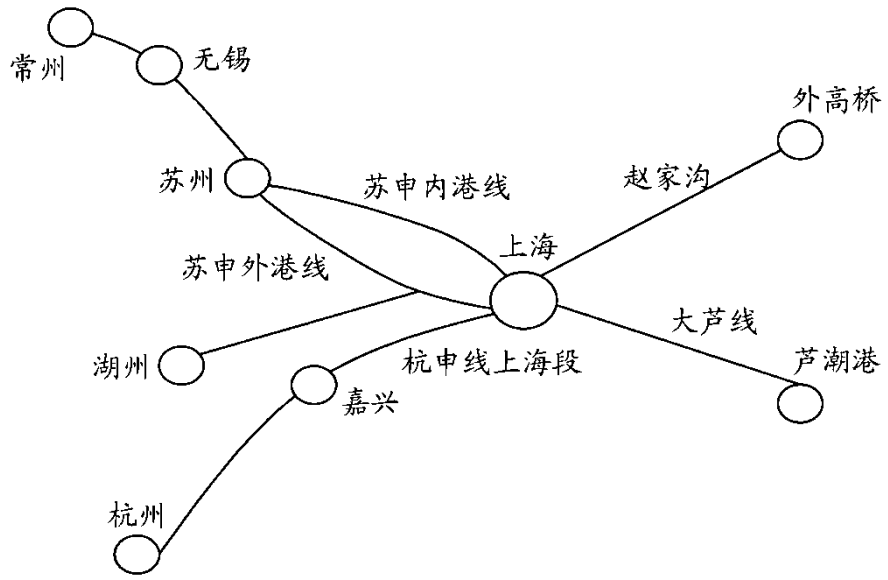
2011 年，上海全市共有 1 332 家内河港口经营单位，占用岸线资源 99 668 米，码头泊位 1 895 个，其中 57 家从事危险品货物港口作业。2011 年，全市内河港口货物吞吐量为 10 325.81 万吨，同比增长 14.48%。其中以进港货物为主，而进港的货源主要以江、浙、皖为主，来自三省的进港量占上海港全部进港量的 76.41%，其中江苏省 36.26%、浙江省 34.44%、安徽省 5.71%。巨大的运输需求将推动上海港继续发展内河航运，并不断完善港口集疏运体系（表 1.10）。上海港多条内河航道也将在近期完工，这将进一步支持更大规模的内河船舶从事内河航运，以缓解上海港的公路压力（图 1.13）。

表 1.10　上海港内河货物吞吐量（2003-11 年）

	2003	2004	2005	2006	2007	2008	2009	2010	2011
总计/百万吨	98.57	105.74	107.49	67.08	69.18	73.62	97.37	90.19	103.26
进港/百万吨	84.35	94.40	95.75	60.89	61.85	65.10	89.65	79.83	88.10
出港/百万吨	14.18	11.34	11.75	6.19	7.33	8.52	7.73	10.36	15.16

数据来源：作者根据《上海市港口统计年鉴（2011）》整理

图 1.13　上海港内河码头运输网络图

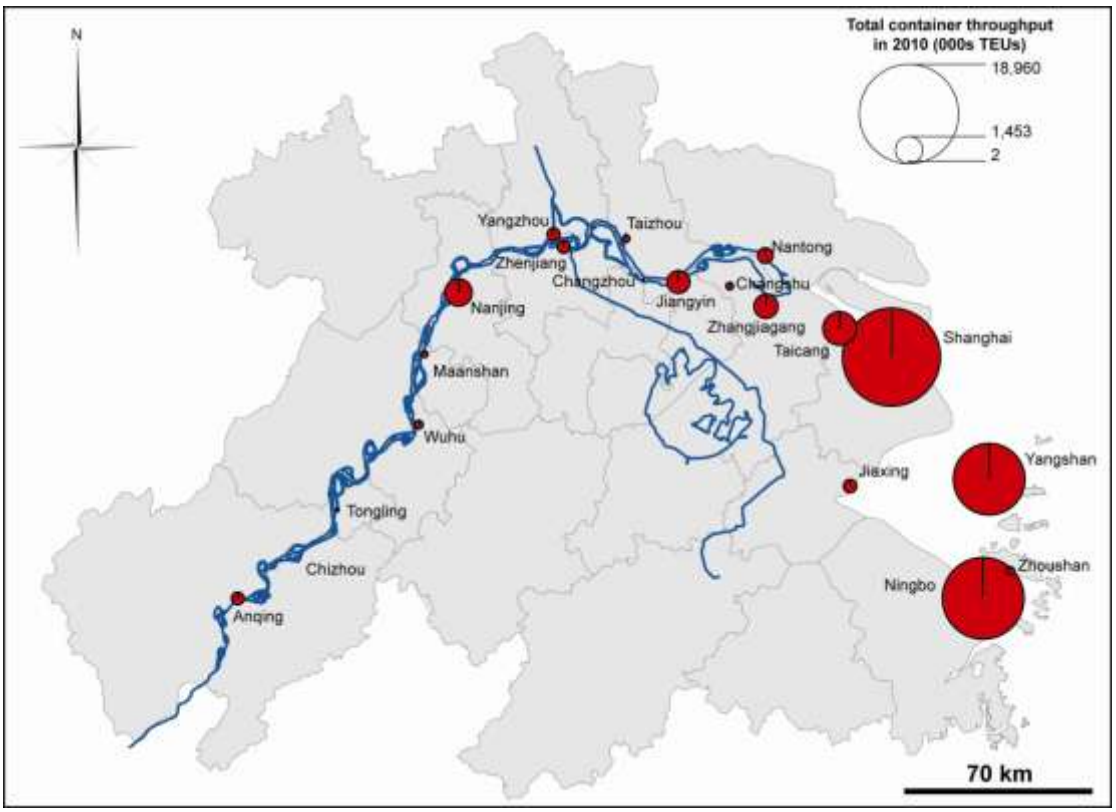


1.2 Synergies

1.2.1 Functional Orientations

Shanghai Port is the dominant seaport in the Yangtze River Delta Port Cluster, which also includes the ports of Ningbo-Zhoushan, Lianyungang, Suzhou, Wenzhou, Taizhou and Wenzhou. Located at the junction of China's coast and the "golden waterway" of the Yangtze River and adjacent to east-west international shipping routes, Shanghai not only enjoys an ideal gateway location, diversified port functions and an advanced collection and distribution network, is also favored to be the first or last port of call for international container liners and a major coastal hub port in China. Figure 1.14 depicts the dominant role of Shanghai in terms of container transport in the Yangtze River Delta region with its direct hinterland connections. Complemented by the newly constructed deep water container port in Yangshan, not only the capacity for handling more container traffic in Shanghai is expanded, the evolution of port development and the associated transport activities also spurs the transformation of new urban development in those less populated areas, with emphasis on port-related industries and logistics services. In addition, the dominance and imperatives of Shanghai in the container sector is further solidified by its abundant worldwide coverage and high density of its international container shipping network which has made Shanghai a premier container hub port in the Far East. Since the development of the Shanghai International Shipping Centre was defined as a national strategy in 2009, Shanghai has been recognized as the hub port of the Yangtze River Delta Port Cluster while Lianyungang, Nanjing and Suzhou, as well as many ports in the lower stream of the Yangtze River function as feeder ports of Shanghai (Figure 1.16).

Figure 1.14 Main container ports in the Yangtze River Delta region (TEU, 2010)

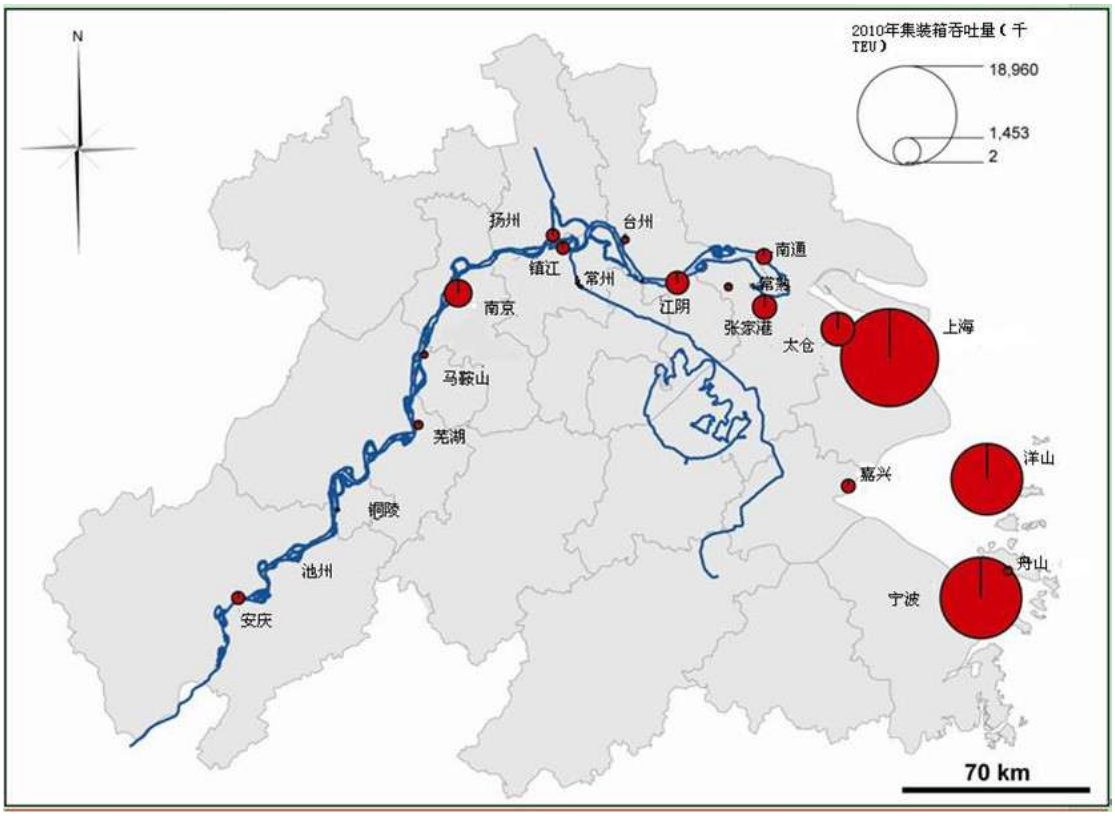


1.2 上海港与周边主要港口（长三角沿海地区）协同性分析

1.2.1 港口功能定位比较

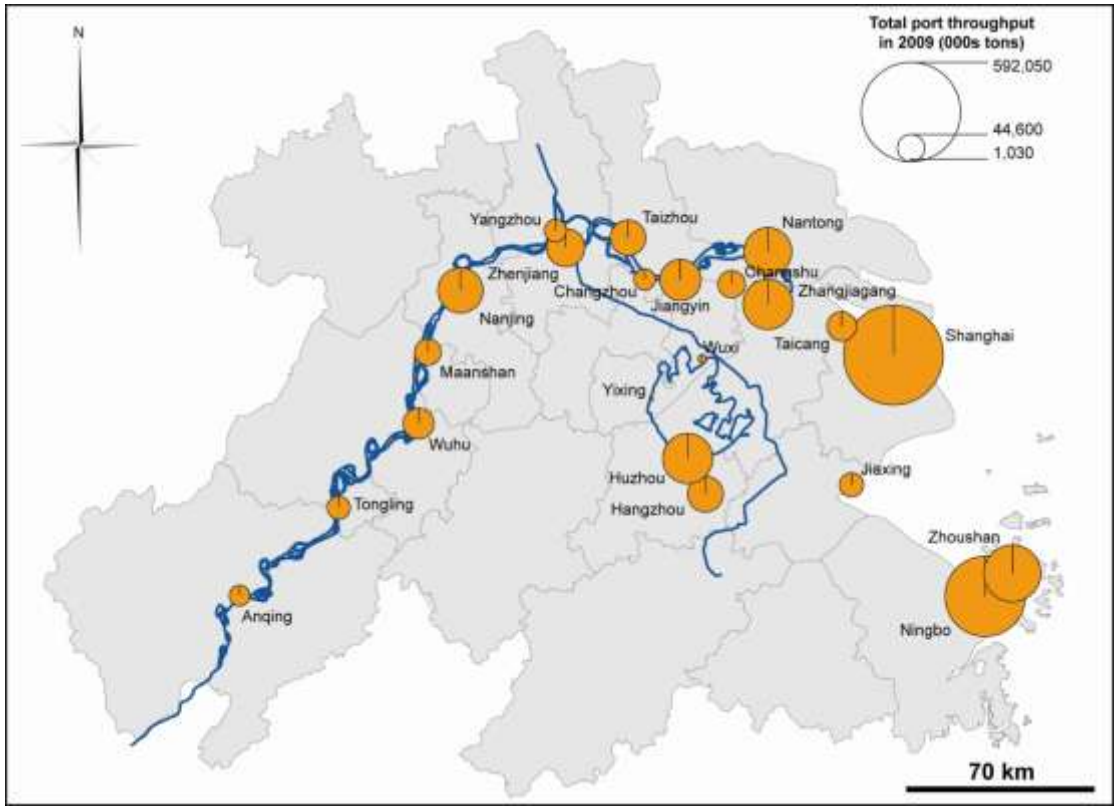
长三角沿海港口群主要包括上海、宁波-舟山、连云港、苏州、温州、台州和南京等港口。从集装箱专业化角度分析：上海港位于中国海岸线与长江“黄金水道”交汇点，毗邻全球东西向国际航道主干线，地理位置优越，港口条件完备，集疏运网络相对发达，适合成为国际集装箱班轮干线的首靠港和尾靠港，更适合发展成为中国沿海的主枢纽港。图 1.14 显示了上海港的直接腹地连接及其在长三角地区集装箱运输中的重要作用。有了新建成的洋山集装箱深水港，一方面，上海港集装箱吞吐能力大幅提升；另一方面，侧重临港工业和物流服务的港口发展和运输活动也促进了人口稀少地区的城镇化转变。此外，上海港集装箱国际航线网络覆盖范围大，航班密度高，因此也是远东地区的国际集装箱枢纽港。自 2009 年，上海港建设国际航运中心上升到国家战略以来，其在长三角港口群中的集装箱枢纽港地位越加凸显，苏州、南京、连云港等长三角沿海港口及长江下游港口都成为了上海港的喂给港（图 1.16）。

图 1.14 长三角地区主要集装箱港口（2010 年）



Due to urban industrial restructuring and the migration of the secondary industry that is dependent on coal and crude oil into the hinterland, dry bulk and liquid bulk shipping is gradually becoming the less dominant business sector at the Shanghai Port. On the contrary, Ningbo-Zhoushan has seized the opportunity of industrial transition and upgrading in Shanghai by heavily investing in bulk terminal construction, and become a bulk hub port featuring the largest throughput in the world on the strength of its ideal location and advanced port infrastructure. Many ports along the Yangtze River are also handling more and more throughput as economic development and urbanization in inland cities continues to grow, which leads to the rising demand for raw materials to build infrastructure. Figure 1.15 provides an overview of total throughput at ports along the Yangtze River in 2009, which is a clear indication of Ningbo-Zhoushan and Shanghai being the two largest and most important ports in the Yangtze River Delta region.

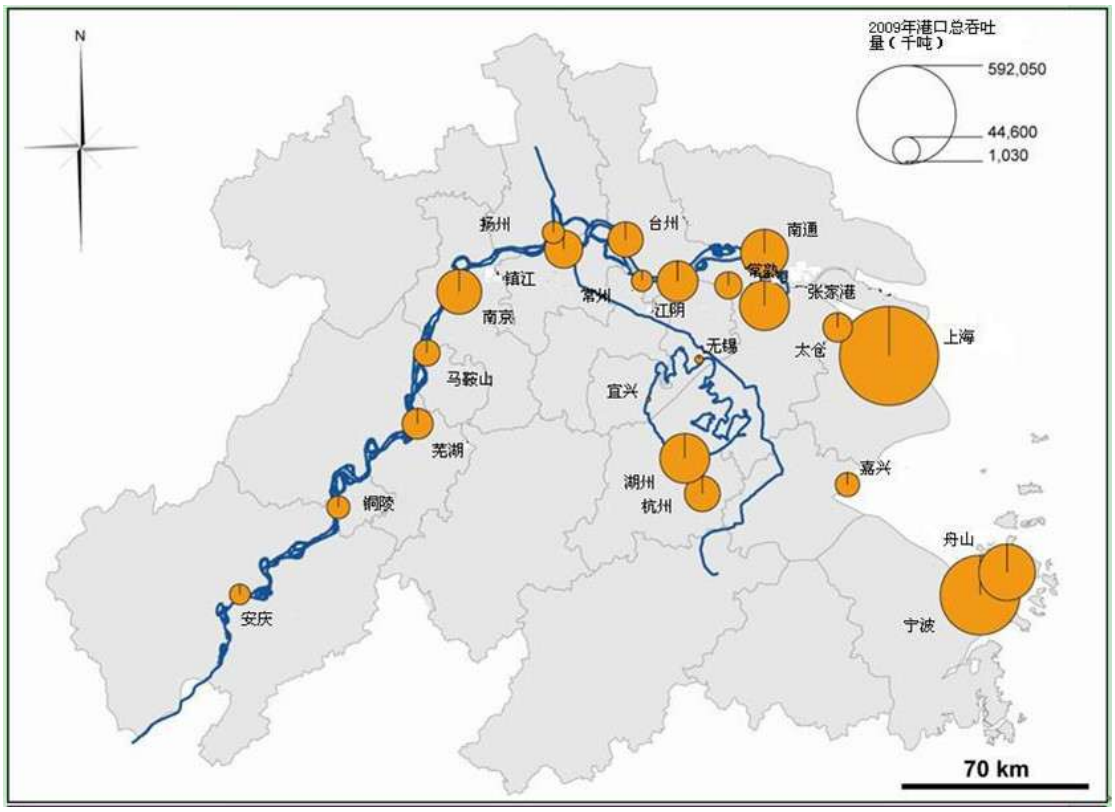
Figure 1.15 Main ports in the Yangtze River Delta region (tonnage, 2009)



Driven by local economic and social development, Lianyungang is a major coastal port which lies on the southwestern shore of Haizhou Bay in the central part of China's coast and the northeastern edge of Jiangsu Province. It specializes in containers and bulk shipping for the northern part of the Yangtze River Delta and the coastal area on the south of Bohai Bay, and functions as an important hub of the comprehensive transport system of the country. It is a key port for energy and raw material shipping according to the national plan, and a container feeder port.

在干散货和液体散货的运输中，由于上海城市产业转移，产业结构调整，依靠煤炭、原油的第二产业逐渐内迁，因此上海港在大宗散货运输方面的主导地位逐渐淡化；与之相对的是宁波-舟山港抓住上海港产业转型升级的机遇，凭借其优越的港口条件和地理位置，投资大宗散货码头的建设，成为全球吞吐量最大的大宗散货枢纽港。随着经济的发展和内陆城市的城镇化发展，基础设施建设所需原材料的需求不断扩张，许多长江沿岸港口吞吐量也日益增加。图 1.15 显示了长江沿岸港口2009 年吞吐总量情况。不难看出，宁波-舟山和上海是长三角地区最大最重要的两个港口。

图 1.15 长三角地区主要港口（2009 年）



连云港位于中国沿海中部的海州湾西南岸、江苏省的东北端，是中国综合运输体系的重要枢纽和沿海的主要港口。连云港以当地社会经济发展为依托，以集装箱和大宗散货运输为主要货种，服务于长江三角洲北部地区和渤海湾南部沿海地区，是国家规划的能源和原材料运输的重要口岸，也是沿海集装箱支线港。

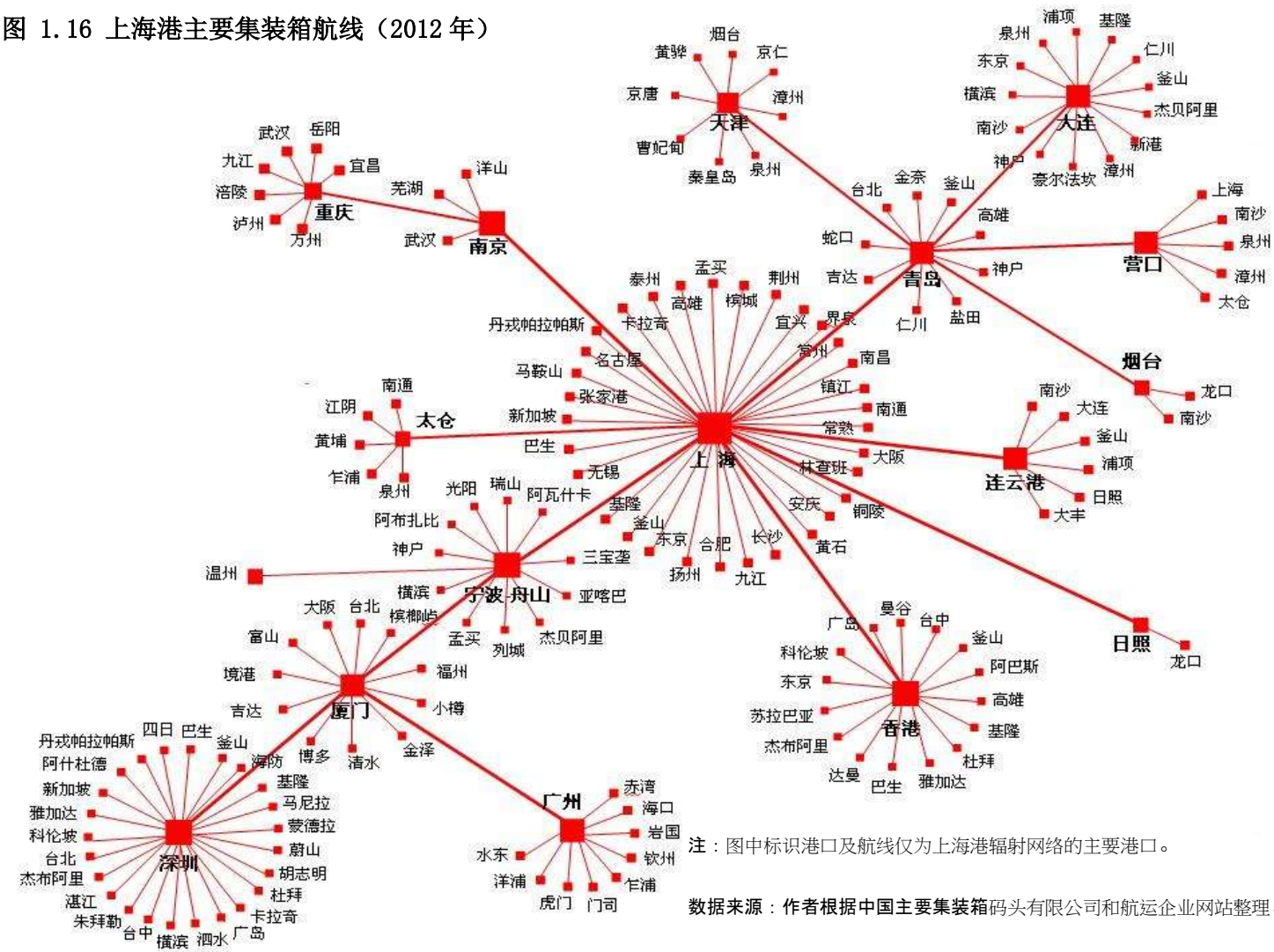
Due to the constraints in water depth of the Yangtze River Delta, large-size vessels and container liners in particular have to call at deep-water ports like Shanghai for trans-shipment first, and then move the freight to other ports through barges of lighter tonnage. In this case, Suzhou and Nanjing are mainly engaged in domestic trade and serve as feeder ports for Shanghai and Ningbo-Zhoushan.

Resource integration of the Yangtze River Delta Port Cluster has gradually brought into shape a port layout with SISC as the mainstay, Nanjing, Suzhou and Taizhou as the subsidiary, and Ningbo-Zhoushan and Lianyungang as the supplement, thus contributing to the economic and social development of the Yangtze River Delta and riverside areas.

长三角其他港口大多分布于长江沿岸，由于长江水深条件的限制，大型船舶尤其是大型集装箱船必须在上海港等深水港靠泊中转，然后再通过小吨位的驳船运达其他港口。因此，苏州、南京等港口主要从事内贸运输，为上海港或宁波-舟山港的喂给港。

长三角港口的资源整合使港口群正在逐步形成以上海国际航运中心建设为主体，以宁波-舟山、连云港为补充，充分发挥南京、苏州、台州等港口辅助的作用，服务于长江三角洲及长江沿线地区的经济社会发展的格局。

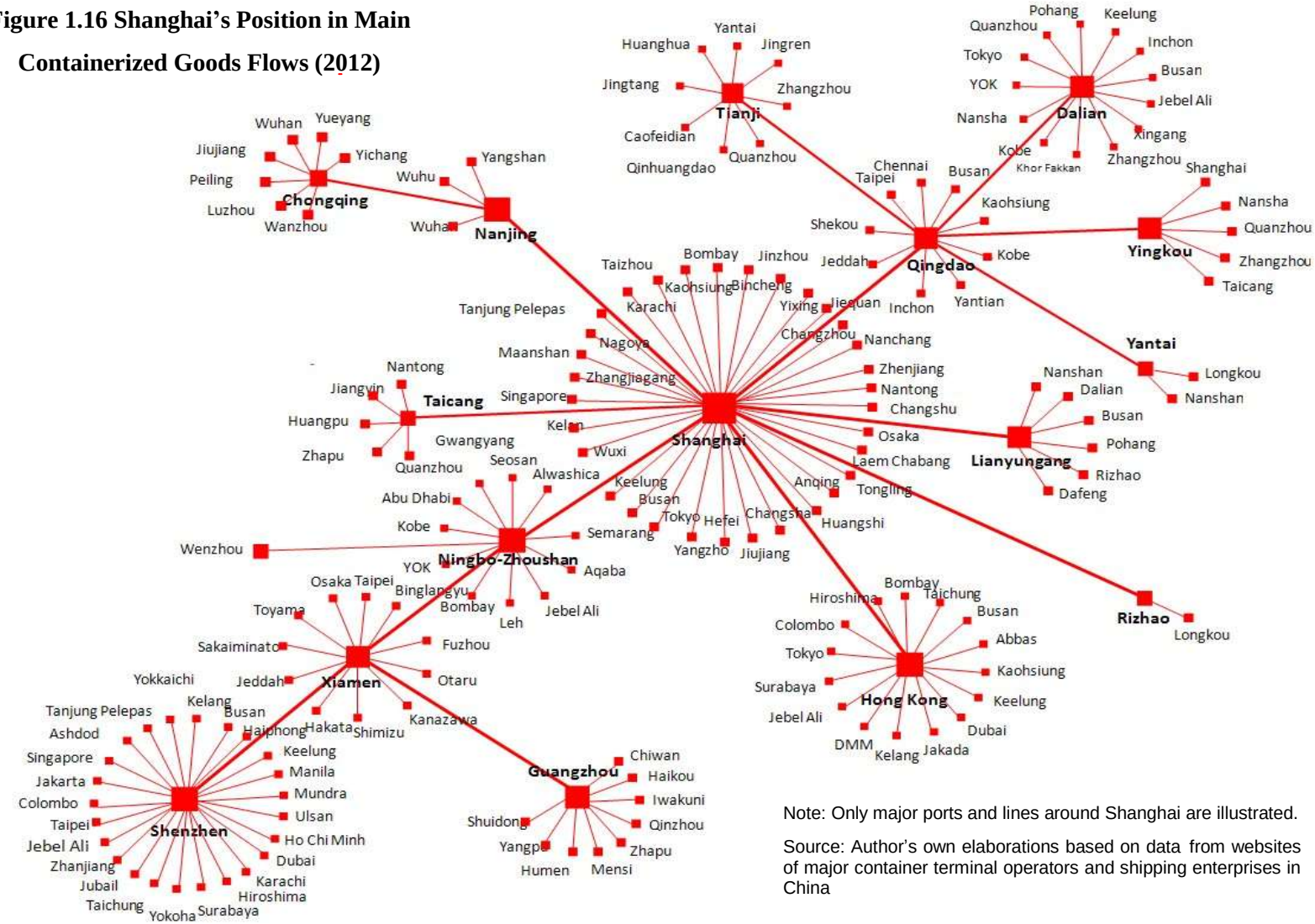
图 1.16 上海港主要集装箱航线（2012 年）



注：图中标识港口及航线仅为上海港辐射网络的主要港口。

数据来源：**作者根据中国主要集装箱**码头有限公司和航运企业网站整理。

Figure 1.16 Shanghai's Position in Main Containerized Goods Flows (2012)



Note: Only major ports and lines around Shanghai are illustrated.

Source: Author's own elaborations based on data from websites of major container terminal operators and shipping enterprises in China

1.2.2 Overlaps in Hinterland

Data of the Fourth Comprehensive Transport Research in Shanghai suggests that the Yangtze River Delta accounted for 74% of the port's container throughput in 2008. Shanghai accounted for 28%, Jiangsu for 37% and Zhejiang for 9%. Other provinces along the Yangtze River accounted for 21%, indicating that the port's main container supply came from southern Jiangsu, northern Zhejiang and other areas along the Yangtze River. In comparison, Ningbo-Zhoushan is mainly engaged in cargo shipping in Zhejiang, while Lianyungang concentrates on cargo from northern Jiangsu and Huaihai Economic Zone. From a holistic point of view, the hinterland of Shanghai overlaps with those of Lianyungang and Ningbo-Zhoushan in Jiangsu, Zhejiang and Anhui Province (Figure 1.17).

Figure 1.17 Hinterland of Major Ports in the Yangtze River Delta

Source: Author's own elaborations based on data from websites of various ports

As two adjacent, export-oriented large international ports, Shanghai and Ningbo-Zhoushan are beset by fierce competitions for overlapping cargo supply from areas on the south of the Yangtze River. Given the geographical constraints of Nanjing as an inland-river port along the Yangtze River with hinterland being encompassed by that of Shanghai, Nanjing is positioned as a feeder port of the latter. Lianyungang, a gateway of the Eurasian Land Bridge to the north of the Yangtze River, has assumed shipping services along Longhai-Lanxin Railway and is less subject to competitions for overlapping hinterland though it is also situated in the vicinity of Shanghai.

1.2.2 货源腹地重叠情况

根据上海市第四次交通调查数据表明，2008 年上海集装箱吞吐量的 74%来源于长三角，其中，上海本地占 28%，江苏占 37%，浙江占 9%；其它长江沿线各省份的货源量占 21%，意味着长三角中上海、江苏南部和浙江北部地区以及长江沿线地区均是上海港的主要货源腹地；而宁波-舟山港主要服务于浙江省的货物运输；连云港货源腹地为苏北和淮海经济区。总体而言，上海港和连云港及宁波-舟山港在江浙皖地区的腹地重叠率相对较高（图 1.17）。

图 1.17　长三角主要港口货源腹地

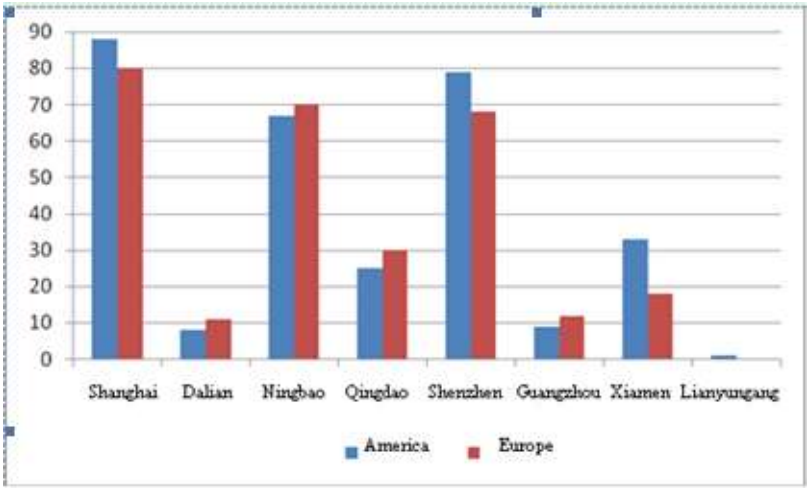
数据来源：作者根据各港口网站整理

由于上海港和宁波-舟山港同为经济外向型的国际大港，地理位置毗邻，其位于长江以南的货源重叠度相对较大，货源争夺现象也略显严重；由于南京港的货源腹地基本被上海港覆盖，且受长江沿线内河港的地理位置制约，其港口功能主要定位于上海港的喂给港；而连云港作为欧亚大陆桥的桥头堡承担了陇海、兰新铁路沿线的货运需求，虽亦邻近上海港但位于长江以北，腹地重叠引起的竞争相对缓和。

1.2.3 Overlaps in International Shipping Routes and Correlation of Ports

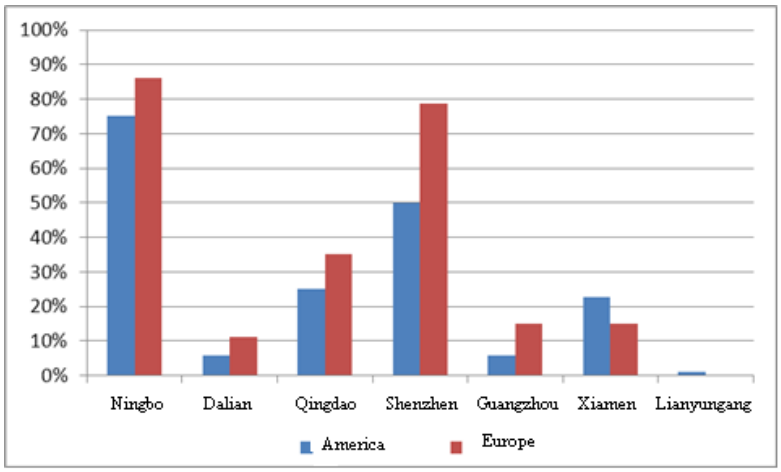
As the world's No.1 international container hub port, Shanghai attracts more international shipping routes than its peers. It has 88 routes to Americas, nine more than the runner-up Shenzhen, and 80 to Europe, ten more than Ningbo-Zhoushan in the second place (Figure 1.18). Since the routes are not subject to frequent changes, such preponderance will remain in the short run. However, the high-density routes of Shanghai heavily overlap with those of neighboring ports and especially Ningbo-Zhoushan, with the overlap rate of routes to Europe and Americas registering 86.3% and 75.0% respectively (Figure 1.19). The huge shipping demand in China will give rise to high costs of cargo collection and distribution on condition that all freight is handled by a single port, while an additional port of call will facilitate cargo canvassing and timely distribution.

Figure 1.18 International Shipping Routes of Major Domestic Coastal Ports (2012)



Source: Author's own calculations based on data from major liners in the world (May 2013)

Figure 1.19 Overlaps of Shanghai with other coastal ports in international shipping routes (2012)

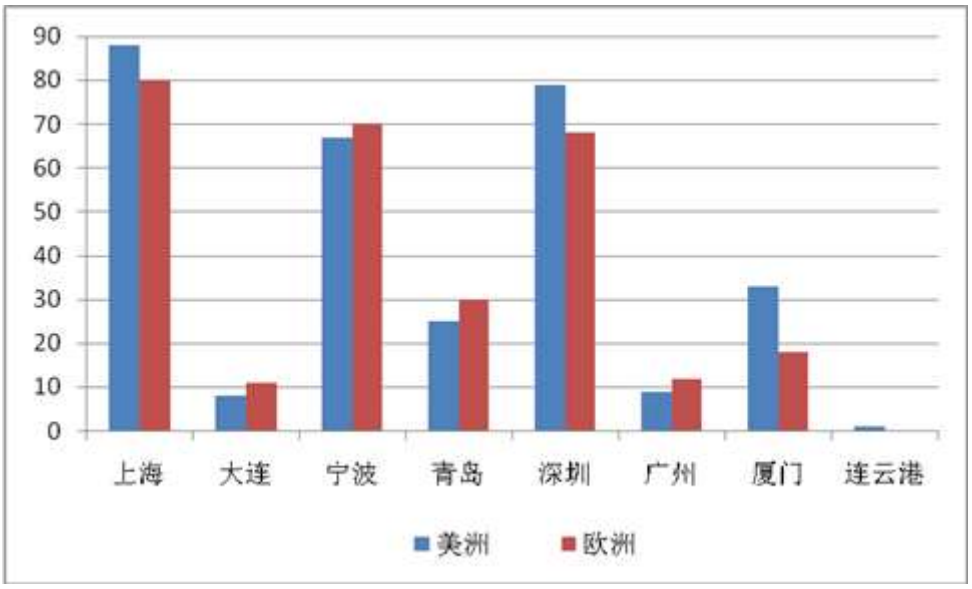


Source: Author's own calculations based on data from major liners in the world (May 2013)

1.2.3 远洋航线及港口重叠情况

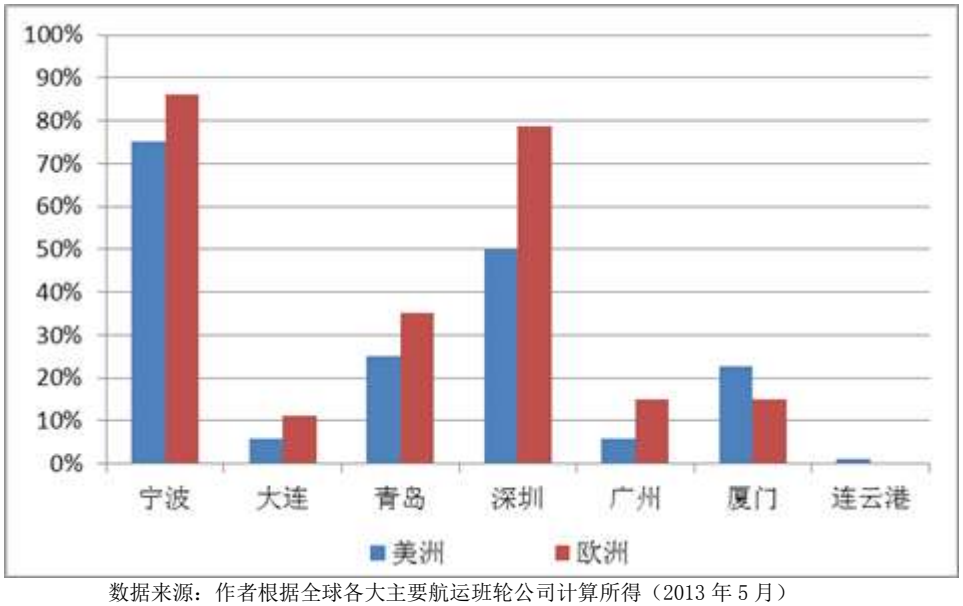
上海港作为全球第一的国际集装箱枢纽港，其远洋航线的数目远远多于其它港口，其中上海至美洲和欧洲的航线分别达到 88 和 80 条，高于第二位的深圳和宁波-舟山港 9 条与 10 条（图 1-18），由于班轮航线相对固定，轻易不会变更，因此短期内这种优势难以被超越。但上海港密集的航线却与周边港口形成了较大的重叠，其中上海港和相邻宁波-舟山港的航线重叠率最高，欧线和美线分别达到 86.3%和 75.0%（图 1.19）。这主要是由于中国巨大的货运需求使得单个港口装卸的集疏运成本较高，不如直接增加挂靠港，更便于船舶揽货和货物的及时疏运。

图 1.18　中国主要沿海港口国际航线（2012 年）



数据来源：作者根据全球各大主要航运班轮公司计算所得（2013 年 5 月）

图 1.19　上海港与其他沿海港口国际航线重叠率（2012 年）



数据来源：作者根据全球各大主要航运班轮公司计算所得（2013 年 5 月）

Regional ports could be complementary to each other if they have limited functional overlaps. Data show that ports in the Yangtze River Delta heavily overlapped with each other, with the correlation of Shanghai and Ningbo-Zhoushan (0.93) coming out top, much higher than the 0.6 correlation of Hong Kong, Shenzhen and Guangzhou in the Pearl River Delta Port Cluster in 2009 (Table 1.11). Homogeneous competitions seem unavoidable to Shanghai and Ningbo-Zhoushan, the world's Top Two ports and close neighbors which are both featured by large business volume, overlapping economic hinterland and the status as destinations of international shipping routes. However, they are functionally complementary to each other with substantial differences in the type of freight and the mode of cargo collection and distribution. With more emphasis placed on bulk cargo than containers, Ningbo-Zhoushan replaced Shanghai as the global leader in overall throughput, while the latter specializing in container business will maintain its position as the world's No.1 container port.

Table 1.11 Overlaps of Major Global Ports on a Regional Scale (2009)

Region/Country	Major Port	Container Throughput (thousand TEU)	Corelation Factor of Ports
Pearl River Delta	Hong Kong Shenzhen Guangzhou	50423	0.6
Strait of Malacca	Singapore Kelang Tanjung Pelepas	39175	0.89
Yangtze River Delta	Shanghai Ningbo	35504	0.93
Circum Bohai Sea Region	Qingdao Tianjin Dalian	23512	0.83
Rhine Scheldt Delta	Rotterdam Antwerp Zeebrugge Amsterdam	19583	0.75
Korea	Busan Kwangyang	13764	0.79
San Pedro Bay	Los Angeles Long Beach	11815	0.84
Hale Golan Bay	Hamburg Bremen JadeWeser Port	11585	0.4
Tokyo Bay	Tokyo Yokohama Shimizu	6365	0.74

Source: Merk, O., Hesse. M. (2012), "The Competitiveness of Global Port-Cities: the Case of Hamburg", OECD Regional Development Working Papers, 2012/06, OECD Publishing

在同一个港口群中，港口之间腹地重叠小、功能互补有利于构建分工合作、和谐稳定、可持续的港口群。根据 2009 年数据分析，上海港所处的长三角地区港口重叠情况较为严重，上海与宁波-舟山港的重叠相关性高达 0.93，在港口重叠相关性中居首位，远高于珠三角港口群中香港、深圳和广州 0.6 的重叠相关性（表 1.11）。究其原因，主要因为上海与宁波-舟山港同时作为世界第一和第二大港口，庞大的业务规模和相邻的地理位置、相对重叠的经济腹地以及国际远洋航线的同时挂靠，难免产生同质竞争，但就货种和集疏运方式而言，其差异化仍十分明显。以散货为主、集装箱为辅的宁波-舟山港的吞吐量已超越上海港成为世界第一大港，而专注与发展集装箱业务的上海港将继续巩固全球第一大集装箱港口的地位，两个港口在功能上具有一定的互补性。

表 1.11　世界主要港口群重叠情况（2009 年）

地区	主要港口	集装箱吞吐量(千 TEU)	港口间重叠相关性
珠三角	香港港 深圳港 广州港	50423	0.6
马六甲海峡	新加坡港 巴生港 丹绒柏乐巴斯港	39175	0.89
长三角	上海港 宁波港	35504	0.93
渤海湾	青岛港 天津港 大连港	23512	0.83
莱茵斯凯尔特河三角洲	鹿特丹港 安特卫普港 泽布吕赫港 阿姆斯特丹	19583	0.75
韩国	釜山港 光阳港	13764	0.79
圣佩德罗湾	洛杉矶港 长滩港	11815	0.84
黑尔戈兰岛湾	汉堡港 不莱梅港 威廉港	11585	0.4
东京湾	东京港 横滨港 清水港	6365	0.74

数据来源：Merk, O., Hesse. M. (2012), “The Competitiveness of Global Port-Cities: the Case of Hamburg”, OECD Regional Development Working Papers, 2012/06, OECD Publishing

1.2.4 Competition

Competition within the Yangtze River Delta Port Cluster is highlighted by the jostling between Shanghai and Ningbo-Zhoushan. Given their small sizes and substantial differences in hinterland, freight type and shipping routes, Suzhou, Nanjing and Lianyungang are in sharp contrast with Shanghai in functional orientations, hence pose less of a threat to Shanghai as its competitors. However, the port of Ningbo-Zhoushan is a close neighbor and rival of Shanghai in view of their ambitious development goals, while fiercely competing for cargo from the aforementioned overlapped hinterlands of Zhejiang Province (Cullinane et al 2005; Comtois and Dong, 2007).

There is extensive research on the competition of ports in this region, which have a common focus on the ports of Shanghai and Ningbo-Zhoushan, but provide different comparative perspectives. Cullinane et al (2005) provided analysis on the competitiveness of the two ports and concluded that Ningbo had at that time a price advantage vis-à-vis Shanghai. By measuring the overlapping hinterland for ports of Shanghai and Ningbo-Zhoushan, Comtois and Dong (2007) argue that the inter-port competition has been underpinned by the increasing commercialization and the corporate involvement in port ownership and management. This study also pointed out that the issue of logistics and flow analysis lies in the central of the competition and it seems difficult to develop an integrated strategy of port development for the Yangtze River Delta region due to the fragmented structure for port administrations. Another study looks at the level of cargo concentration and the degree of inequality in container port operation for ports along the Yangtze River (Veenstra and Notteboom, 2011). The findings of this study suggest that the Yangtze River ports are undergoing a regionalization phase, led by the Port of Shanghai. It is evident that the battlefield for domestic cargo is undoubtedly in the hinterlands where both ports strive to expand in order to capture the ever-growing demand in those inland markets.

As early as 2004, Ningbo-Zhoushan has been proactively attracting cargo supply from the hinterland by setting up Ningbo Ocean-going Vessel Company and launching the "No.1 strategy" of connecting international and coastal container shipping routes with channels along the Yangtze River. Over the past two years, container shipping routes from Ningbo to Shangrao, Taizhou, Nantong, Zhangjiagang and Taicang have been successively put into service. Additionally, the completion of Hangzhou Bay Bridge has led to a larger shared hinterland of Shanghai and Ningbo-Zhoushan, and attracted more cargo from northern Zhejiang and southern Jiangsu, while the accelerated construction of dry ports in the hinterland has managed to reduce the costs of cargo owners, with the aim of attracting cargo supply and enhancing the competitiveness of Ningbo-Zhoushan.

On the other hand, SIPG has also developed the "Yangtze River Strategy" to proactively integrate cargo supply from the Yangtze River Basin. Through financial participations, such as the purchase of a 55% stake in Wuhan Port Group Co., Ltd. and a 70% stake in Jiujiang Port Company Ltd. as well as other forms of cooperation with inland ports such as Wuhu, Chongqing, Nanjing, Nantong etc., Shanghai intends to expand its hinterland market in order to ensure the continuous cargo supply. Therefore, Shanghai is establishing itself as a premiere gateway of China and a multimodal hub port that infiltrates the inland market with direct delivery access and improved logistics functions by building a robust inland waterway network that links the port with inland destinations (Figure 1.20 and Figure 1.21).

1.2.4 港口间竞争现状

长三角港口群间的竞争主要以上海和宁波-舟山两个港口之间的竞争为主。苏州、南京、连云港等港口规模相对较小，货源腹地、货种、航线差异较大，功能定位与上海港有很大区别，港口间合作大于竞争。而上海港和宁波-舟山港同为国际型大港，紧凑的空间、有限的货源与远大的发展目标之间形成了一定的矛盾，两者在浙江有共同的腹地资源（Cullinane 等，2005; Comtois and Dong, 2007），港口货物吞吐量必然此消彼长。

关于该地区港口竞争的研究为数不少，通常关注的都是上海港和宁波-舟山港，只是对比研究的角度不同。Cullinane 等人（2005）就两港竞争力的比较研究表明，相对于上海，宁波当时有价格优势。通过衡量上海和宁波-舟山重叠的腹地资源，Comtois 和 Dong (2007)则认为，商业化程度的不断提升及港口经营权和所有权的公司化界定加剧了两港间竞争。该研究也指出，物流和货物流向是竞争分析的核心，由于港口管理结构分散，长三角地区港口发展似乎很难有整体战略。另有一项研究关注的是长江沿岸港口货物集中度和集装箱港口经营的不均衡（Veenstra 和 Notteboom, 2011）。结论显示，在上海港的带动下，长江沿岸港口正经历区域化进程。显然，对于国内货物的争夺集中在腹地，因此，两大港口都在力争扩大腹地，从而满足不断扩大的内陆市场运输需求。

早在 2004 年，宁波-舟山港就开始积极吸引腹地货源来港作业，为此专门成立宁波海洋船公司，并启动打通长江“海进江”航线的 1 号战略，将宁波的远洋和沿海、长江集装箱运输串联起来；近两年，宁波港至上饶、台州、南通、张家港和太仓的集装箱航线也陆续运营；此外，杭州湾跨海大桥的建成，使宁波-舟山港与上海港的交叉腹地进一步扩大，吸引浙北和苏南的货源；而在内陆地区加快建设“无水港”以降低货主成本，吸引货源，提高宁波-舟山港的竞争力。

同样，上港集团也以上海港为母港，制定了“长江战略”积极整合长江流域的货源。2003-08 年，上海港先后与武汉港、芜湖港、重庆港、南京港、南通港、九江港进行合作，其中参股 55%武汉港务集团、投资 70%九江港务集团，间接掌控了这些内河港口，有效保障了上海港的货源。上海港正欲建设成为中国主要门户港和多式联运枢纽港，通过直达运输网络深入内陆市场，同时构建强大的内河航线网络提升港口物流功能（图 1-20 和图 1-21）。

Figure 1.20 Inland port-cities along the Yangtze River (by total container throughput)

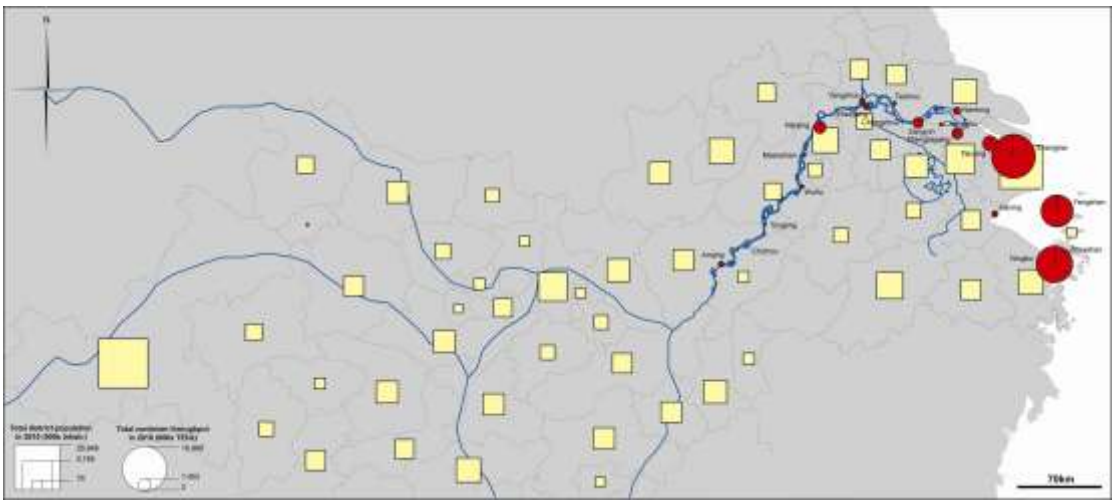


Figure 1.21 Inland port-cities along the Yangtze River (by total throughput)

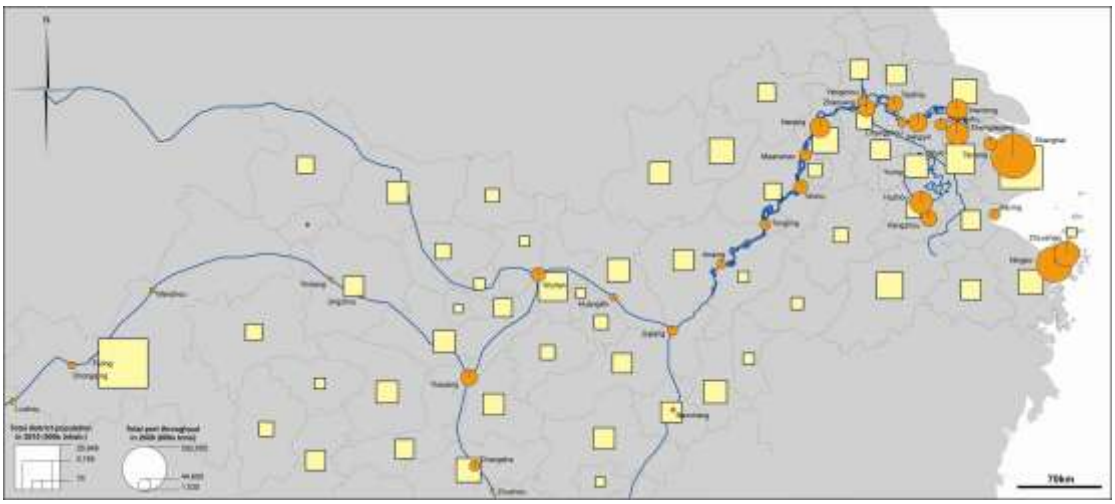


图 1.20 长江沿岸内陆港口城市（按集装箱总吞吐量）

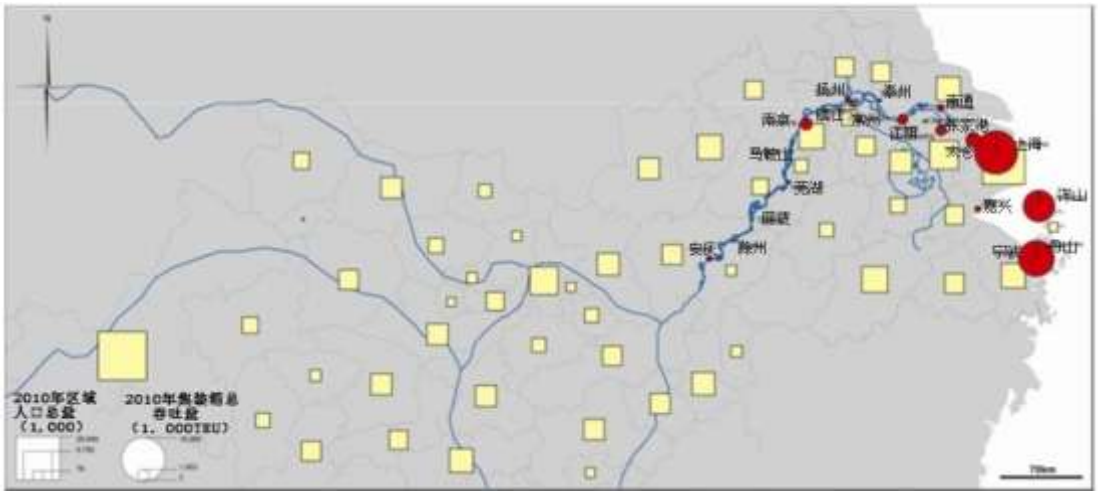
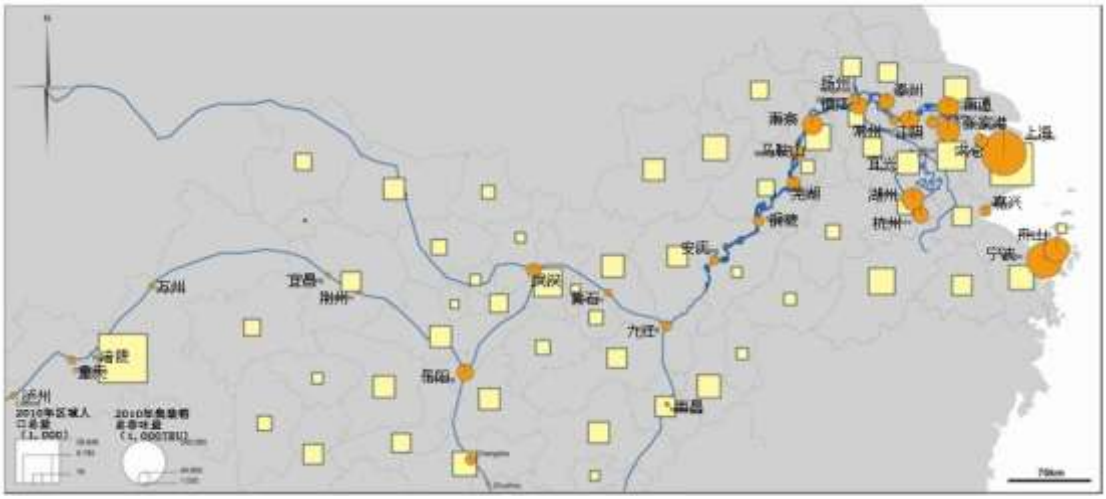


图 1.21 长江沿岸内陆港口城市（按货物总吞吐量）



Both as hinterland-based ports though, Shanghai benefits from the construction of international shipping center and stands out from Ningbo in international transshipments. Relying on the Yangshan Port which was put into operation in 2006, Shanghai has, in answer to a sudden spurt in container throughput, opened up more international lines and shipping schedules basically required by international transshipments of a certain scale, leading to a significant improvement in container transshipping capacity and an expansion in transshipment proportion from 3.61% in 2006 to 5%. The pilot program of "international transshipments of LCL containers" recently implemented in Shanghai might also facilitate international transshipments.

1.2.5 Cooperation

In regards of functional orientations, Shanghai differs from the neighboring Ningbo-Zhoushan to a great extent from the perspective of the state policymakers. It is clearly specified in the *Opinions of the State Council on Boosting Development of Modern Service and Advanced Manufacture Industry and Establishing International Financial and Shipping Center in Shanghai (2009)* that a "bird-shaped" international shipping center shall be built with Shanghai as the head, ports in Jiangsu and Zhejiang as the two wings, and those in the Yangtze River basin as the body, in a bid to conduct close cooperation with other domestic ports premised on a rational division of labor.

This project of the Shanghai International Shipping Center (SISC) requires Shanghai and neighboring ports like Taicang and Ningbo-Zhoushan to define differentiated port functions, clarify the division of labor, and draw on each other's competitive advantages. Dislocation competition is to be the leitmotif of harmonious development of Shanghai and its neighbors. Established for maintaining the overall development of the Yangtze River Delta Port Cluster, the Shanghai Port Management Committee (with a Vice Minister of Transport appointed as its director and a Vice Mayor/Governor of Shanghai, Jiangsu and Zhejiang respectively as its deputy director), will make comprehensive plans at the national level to coordinate the competitions among ports in the Yangtze River Delta, indicative of the importance attached to port resource integration and coordinated development by the government.

The committee has spurred the constant improvement of regional cooperation with respect to ports and shipping. With Shanghai Transportation Trade Association and other institutions concerned, they jointly set up Shanghai International Shipping Center Development & Promotion Organization - a non-governmental cooperation and exchange platform for relevant entities from the Yangtze River Delta and other areas in the Yangtze River basin. The issuing of the *Work Plan for Promoting and Optimizing the Port and Shipping Information Platform for the Yangtze River Delta*, the *Guiding Opinions on Promoting Regional Port and Shipping Cooperation in the Yangtze River Delta*, and the *Tentative Proposal for Regional Port Planning for the Yangtze River Delta* and other guidance for trans-provincial actions has directed the cooperation among regional ports.

The interconnection between Shanghai and Ningbo-Zhoushan can be dated back even further if viewed from capital investment by China Merchants Holdings (International) Company Limited (CMHI), the second largest shareholder in both Shanghai International Port (Group) Co., Ltd. and Ningbo Port Company Limited. Right before the listing of Ningbo Port Company Limited in 2010, Ningbo Port and SIPG jointly set up Shanghai Port & Shipping Equity Investment Co., Ltd., with registered capital of 0.5 billion RMB and each party holding 50% equity. This has opened a new chapter for even closer capital cooperation between the two ports (Figure 1.22).

在国际中转货物方面，上海和宁波-舟山港虽同属腹地型港口，但相较之下建设国际航运中心的上海颇具优势。依托 2006 年运营的洋山港，随着港口集装箱吞吐量的快速扩张，上海港国际航线和航班密度都不断加大，形成了一定的国际中转所需的基本的航线航班要求，上海集装箱转运国际中中转能力已取得了因此显著提升，其国际中转比例已由 2006 年的 3.61%扩大至 5%。近期，在上海试点开展的“国际中转集拼业务”也将为上海发展国际中转业务提供了良好更好的契机。

1.2.5 港口间合作现状

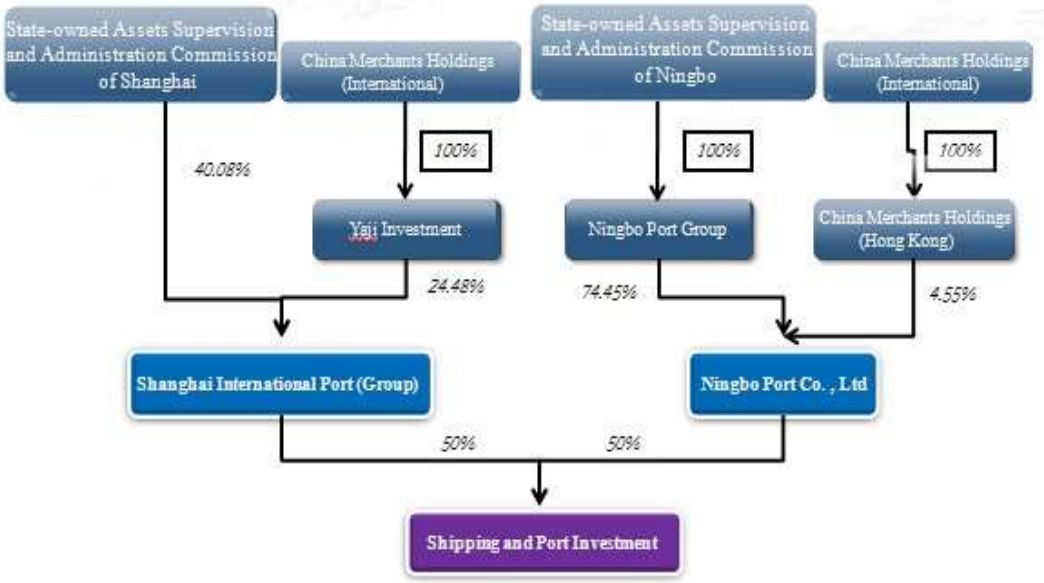
从国家政策与行政管理层面看，上海港与周边宁波-舟山等港口有着明显的定位差异。在国务院 2009 年颁布的《意见》中明确提出，上海港要“形成以上海为中心、以苏浙为两翼、以长江流域为腹地，与国内其他港口合理分工、紧密协作的国际航运枢纽港。”

“一体两翼”的政策定位表明太仓和宁波-舟山等周边港口需要与上海港形成港口功能层次分明，港口经营分工明确，港口之间优势互补的发展格局。“错位竞争”将是上海与周边港口和谐发展的主基调。为维护长三角港口群共同发展而成立的上海组合港管理委员会在国家层面进行统筹，以交通运输部一位副部长为主任，以上海、江苏、浙江两省一市的分管副市长和副省长为副主任共同协调长三角地区港口间的竞争，表现出了政府对促进港口资源整合、协调发展的重视。

在上海组合港管委会的推动下，区域港航协作机制不断得到完善，并与上海市交通运输行业协会、航运中心建设等相关单位共同发起成立了上海国际航运中心发展促进会，建立了民间形式的长三角及长江流域合作交流平台。《推进和完善长三角地区港航信息化建设的工作方案》、《推进长三角区域港航合作的指导意见》和《长三角区域港口规划协商方案》等系列跨行政区域的意见方案出台，降低了区域港口间出现无序竞争的可能性。

从资本层面看，上海与宁波-舟山港早有关联，而招商局国际集团就是这两大港口资本的契合点。无论是在上港集团还是宁波港股份有限公司都占据第二大股东的位置。2010 年，在宁波港股份有限公司上市前夕，宁波港进一步与上港集团联合成立了上海港航投资有限公司，公司注册资金 5 亿双方各持 50%股权。至此，两港间的资本合作变得更加紧密（如图 1.22）。

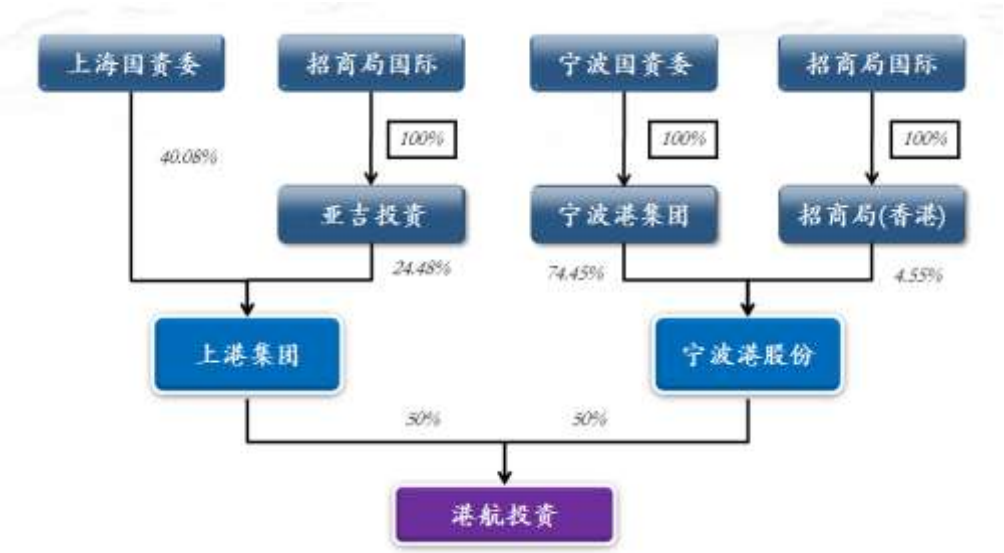
Figure 1.22 Fund Structure of Shanghai Port & Shipping Equity Investment Co., Ltd



Source: Author's own elaborations based on websites of various ports

In a nutshell, Shanghai enjoys the status of "international shipping center" which is unparalleled in China. The construction of Yangshan Port has turned Shanghai into an international container hub and a strategic hub in China's international shipping development, whereas Ningbo-Zhoushan, endowed with advantageous water depth, has the makings of a sub-hub and an "outer port" for Shanghai international shipping center. Nanjing, Taicang, Changshu, Jiaxing and Nantong, amongst others, are expected to become feeder ports transferring goods from the middle and lower reaches of the Yangtze River to Shanghai. The strategy of competition and cooperation will result in substantial benefits in reducing overlapped port construction and vicious competition, helping resource sharing amongst ports and triggering off coordinated sound development amongst clusters.

图 1.22 上海港与宁波港合资示意图



数据来源：作者根据各港口网站整理

总体而言，上海港具有其它港口所无法具备的国际航运中心的地位，其通过洋山港的建设发展成国际集装箱枢纽港，成为中国国际航运发展的战略性枢纽港。而宁波-舟山港则具有优越的自然水深条件，可以发展成为次枢纽港，成为上海国际航运中心的“外港”。而南京、太仓、常熟、嘉兴、南通等港口则可以成为支线喂给港，成为长江中下游货物转运上海的枢纽。实施竞合战略将在降低港口重复建设和恶性竞争方面取得实效，使各港口间分享各种资源，以此促进整个地区港口群的良性竞争和协同发展。

2. IMPACT

2.1 Socioeconomic impact

2.1.1 Port-related employment and value added

As a world-renowned port-city, Shanghai Port has a vital bearing on municipal development, especially on the urban economy and employment boosted by the port and port-related industries. Ports are not defined as an independent national economic sector in China, which makes it hard to calculate the direct contribution of the port industry to the national economy and employment. For this case study, an input-output model has been adopted, processing the value added indicators of port-related industries to identify the economic effect on the metropolis. Based on research conducted by Jiang Chaoyan (2012), six port-related industries have been selected in this report based on their functions, covering 26 specific sectors (Table 2.1).

Table 2.1 Category of Port-related industries

Category	Description	Specific category based on 144 industries in China
Infrastructure Construction	Including port infrastructure, shipping channel construction & maintenance and infrastructure for cargo collection & distribution	Real estate and civil engineering construction
		Other construction
Port operation	Including port pilotage, towing, cargo handling, cruise service, container handling as well as cooperation and exchange among ports	Loading & unloading and other cargo handling service
		Hoisting and transport equipment manufacturing
		Warehousing
		Ship building and floating device manufacturing
Shipping and related business	Including shipping business, vessel registration, ship transaction, shipping agency, maritime trial and arbitration, shipping consultancy, ship survey, rescue and salvage as well as port equipment manufacturing	Leasing
		Waterway transport
		Commercial service
		Water production and supply
		Other equipment manufacturing
		Scientific exchange and advertising service
		Telecommunication and other information transmission service
Shipping finance	Including shipping finance, marine insurance and shipping freight derivative development	Banking
		Securities
		Insurance
		Other financial service
Cargo collection & distribution service	Including road transport, railway transport and air transport	Railway transport
		Road transport
		Pipeline transport
		Air transport
Shipping management and service	Including administrative management, maritime management, port management and service as well as shipping & port related associations	Public administration and social organization
		Public facility management
		Radio, TV, film and motion picture
		News and publishing
		Professional technology service

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

第二章港口对城市发展的影响分析

2.1 港口对城市社会经济影响分析

2.1.1 港口相关产业对城市就业及经济的直接贡献

港口在上海城市发展中占有非常重要的地位，港口业及其相关产业对上海市的就业和经济的拉动作用非常明显。由于中国现行的国民经济行业分类中没有对港口相关产业进行单独的划分，且港口相关产业被分割包含在中国现行产业部门分类的多个部门之中，因此要直接分析港口业对国民经济和就业的直接贡献是很难实现的。针对这一情况，在研究中利用投入-产出乘数模型，将与港口产业相关的产业部门的增加值指标量进行转化处理，而后得出港口对其所在城市的经济贡献度。

根据学者姜超雁（2012）的研究，可将中国现行的 144 个产业部门按职能，遴选出与港口相关的六大类，26 个具体产业部门（表 2.1）。

表 2.1　上海港口相关产业划分

港口相关产业分类	筛选依据	中国 144 部门筛选结果
基础设施建设	包括港口基础工程建设、航道建设与养护、集疏运基础设施建设。	房屋和土木工程建筑业
		其他建筑业
港口运营	包括港口引航、拖带、理货业务、邮轮业务、港口集装箱业务、港口合作与交流。	装卸搬运和其他运输服务业
		起重运输设备制造业
		仓储业
		船舶及浮动装置制造业
航运及相关业务	包括航运业务、船舶登记、船舶交易、航运经纪、海事审判和仲裁、航运咨询、船舶检验、救助和打捞、港机制造。	租赁业
		水上运输业
		商务服务业
		水的生产和供应业
		其他专业设备制造业
		科技交流和推广服务业
		电信和其他信息传输服务业
航运金融	包括航运融资、航运保险、航运运价指数衍生品开发。	银行业
		证券业
		保险业
		其他金融服务
其他集疏运服务	包括公路运输、铁路运输、航空运输。	铁路运输业
		道路运输业
		管道运输业
		航空运输业
航运管理与服务	包括港航行政管理、海事管理、口岸管理与服务、港航及相关行业协会。	公共管理和社会组织
		公共设施管理业
		广播、电视、电影和音像业
		新闻出版业
		专业技术服务

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

In light of the relationship between 26 sectors and ports, the sum of each sector's annual value added to GDP (times certain coefficients), translates into the direct port-related value added. The same process applies to the calculation of direct port-related employment. Our calculations, based on this methodology, show that in 2010, the direct port-related value added of Shanghai totalled RMB 130.743 billion, representing 7.62% of metropolitan GDP. Direct port-related employment amounted to 841,696, representing 7.72% of total metropolitan employment, which represent spectacular increases since 2002, namely RMB 108.687 billion and 494,747 (Table 2.2). After Yangshan Deepwater Port Area was put into large-scale operation, the capacity of Shanghai Port saw a significant improvement in addition to an ever-growing port environment. Given the migration of economic centres to the East China and the rapid development of China's imports and exports, Shanghai Port witnessed a soaring throughput and diversified port functions characterized by the burgeoning port logistics, value-added simple processing as well as traditional loading and unloading business. The economies of scale and expanding industrial cluster of Shanghai Port attracted a wealth of shipping and related businesses to the city. Therefore, Shanghai Port made greater contributions to urban economy in 2007 and 2010 than in 2002. The rapid development of port industries leads to growing urban employment.

Table 2.2 Direct port-related employment and value added in Shanghai

	2002	2007	2010
Direct value added (Billion yuan)	22.056	73.72	130.74
% share of GDP	4.08%	6.05%	7.62%
Direct employment	346 949	584 877	841 696
% share of total employment	4.38%	6.43%	7.72%

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

Among all the port-related sectors, port operation, shipping and related business, shipping finance and cargo handling & distribution service have contributed most to urban economy and employment, outshining infrastructure construction as well as shipping & port management and service (Table 2.3). It is clear that port-related industries are a key driver of urban economic development. Cargo handling & distribution service, in particular, is playing an important role in port and urban economic development. Considering the large number of enterprises and institutions involved and the considerable business volume, the sector has made significant contributions to the urban economy and employment.

Table 2.3 Direct port-related employment and value added of Shanghai in 2010

Port-related sectors	Value added (Billion yuan)				Direct employment			
	2002	2007	2010	% share 2010	2002	2007	2010	% share 2010
Infrastructure construction	1.05	2.57	4.05	3.1%	13 137	26 321	49 218	5.8%
Port operation	4.18	16.85	32.45	24.8%	101 253	132 144	159 665	19.0%
Shipping and related business	4.57	17.02	32.24	24.7%	98 105	151 619	218 336	25.9%
Shipping finance	5.85	17.34	26.87	20.6%	42 521	102 614	169 045	20.1%
Cargo collection & distribution service	5.88	18.69	33.25	25.4%	83 304	159 792	215 497	25.6%
Port & shipping management &service	0.53	1.26	1.87	1.4%	8 629	12 387	29 935	3.6%
Total	22.06	73.72	130.74	100.0%	346 949	584 877	841 696	100.0%

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

通过计算上述产业部门与港口之间的隶属关系，将它们每年的 GDP 增加值乘以相应转换系数再求和，即可得到当年港口相关产业对上海城市经济的直接贡献值。同样，将各部门每年的就业人数乘以相应转换系数，即可得到当年港口相关产业的直接就业人数。本报告的统计显示， 2010 年，港口相关产业对上海市经济增加值带来的直接贡献达到 1 307.43 亿元，占 GDP 总量的 7.62%；港口相关产业直接就业人数为 841 696 人，占城市总就业人数的 7.72%。与 2002 年相比，2010 年上海港口相关产业的直接经济贡献值与直接就业人数分别增加了 1 086.87 亿元、494 747 人（表 2.2）。在洋山深水港区建成及规模化运作后，上海港的港口能力显著增强，口岸环境日益完善。同时，伴随着经济中心东移，中国进出口贸易的快速发展，上海港口生产业务得到快速增长。而且港口业务功能不断多元化，除传统的装卸服务外，港口物流、简单的加工增值服务也得到迅速发展。上海港规模经济效应和对产业的集聚效应不断增强，吸引了大量的航运相关产业集聚到上海。因此，对比 2002 年、2007 年和 2010 年，上海港对城市经济的贡献度日益加大，港口产业的快速发展也使得港口从业人员需求不断增加，带动大量城市人员就业。

表 2.2　港口相关产业对上海市经济与就业的直接贡献及比重

	2002	2007	2010
直接经济贡献（十亿元）	22.06	73.72	130.74
占 GDP 总值的比重	4.08%	6.05%	7.62%
直接就业人数（人）	346 949	584 877	841 696
占总就业人数的比重	4.38%	6.43%	7.72%

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

在所有港口相关部门中，港口运营、航运及相关业务、航运金融以及其他集疏运服务四个部门对城市经济及就业的带动作用最为显著，而基础设施建设和航运管理与服务两个部门所产生的经济贡献效果相对较弱（表 2.3）。可见，港口相关产业的运营是带动城市经济发展的关键因素。尤其，集疏运服务对于港口和城市经济发展都具有不可替代的作用，良好的集疏运服务是保障港口吸引力和稳定货源的基础，而且由于从事集疏运服务的企业和部门较多、业务量较大，因此对于城市经济和就业人数的贡献效果非常显著。

表 2.3　2010 年上海港口相关产业对城市经济与就业人数的直接贡献

相关部门	GDP 增加值（十亿元）				直接就业人数（人）			
	2002	2007	2010	2010 年占比	2002	2007	2010	2010 年占比
基础设施建设	1.05	2.57	4.05	3.1%	13 137	26 321	49 218	5.8%
港口运营	4.18	16.85	32.45	24.8%	101 253	132 144	159 665	19.0%
航运及相关业务	4.57	17.02	32.24	24.7%	98 105	151 619	218 336	25.9%
航运金融	5.85	17.34	26.87	20.6%	42 521	102 614	169 045	20.1%
其他集疏运服务	5.88	18.69	33.25	25.4%	83 304	159 792	215 497	25.6%
航运管理与服务	0.53	1.26	1.87	1.4%	8 629	12 387	29 935	3.6%
总计	22.06	73.72	130.74	100.0%	346 949	584 877	841 696	100.0%

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

Thanks to technology and service innovation in port industries, the value added of port industries per unit has been constantly rising. From 63 600 yuan in 2002 to 150 740 yuan in 2010, the unit value added of Shanghai port-related industries have increased by 146%, an annual growth rate of 18.25%. However, compared with per unit employment brought about by other city industries, the said figure remains lagged behind. This is mainly due to the fact that port-related industries have value added that tends to leak away to other regions and relatively low labour intensity.

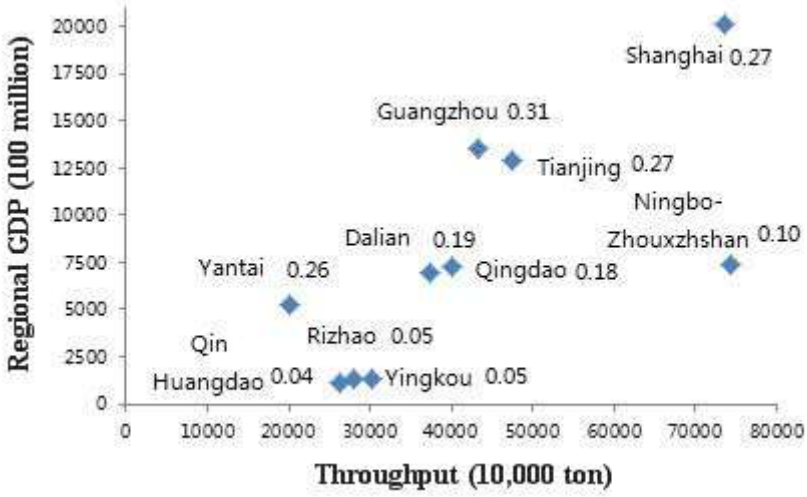
Table 2.4 Comparison of unit employment of Shanghai port-related industries and city average

	2002		2007		2010	
	Port-related industries	City average	Port-related industries	City average	Port-related industries	City average
Value added (billion yuan)	22.06	540.88	73.72	1218.89	130.74	1716.60
Employment (thousand people)	346.95	7920.40	584.88	9090.80	841.70	10907.60
Unit employment value added (thousand yuan/per head)	63.57	68.29	126.05	134.08	155.33	157.38

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

It is complicated to define how ports and urban economy interact with each other. Due to a number of related factors and limited data for various indicators, there is no authoritative study in China to indicate economic impact of major coastal ports in China. This means it is difficult to assess whether the economic impact of Shanghai is large or small compared with other ports in China. In term of port throughput and GDP, 10,000 tonnes cargo handled in Shanghai Port can lead to RMB 27 million to GDP, ranking second among China's Top Ten Ports after Guangzhou Port (Figure 2.1), which fully reveals the vital role of Shanghai Port in urban economic and social development. Port development has paved the way for the prosperity of other related industries.

Figure 2.1 Cargo throughput of China's major coastal ports as share of GDP



Source: The author's calculation based on *Global Port Development Report 2012*

伴随港口产业科技、服务的创新，港口单位就业的增加值不断提升。从 2002 年上海港口相关产业每单位就业为城市创造增加值 6.36 万元，到 2010 年的 15.74 万元，增幅 146%，年均增速达到 18.25%，实现了跨越式增长（表 2.4）。但与城市产业平均单位就业所创造的增加值相比，始终处于落后地位，这主要是由于港口相关产业这主要是由于港口相关产业的附加值可能流向了其他地区，劳动密集度较高。

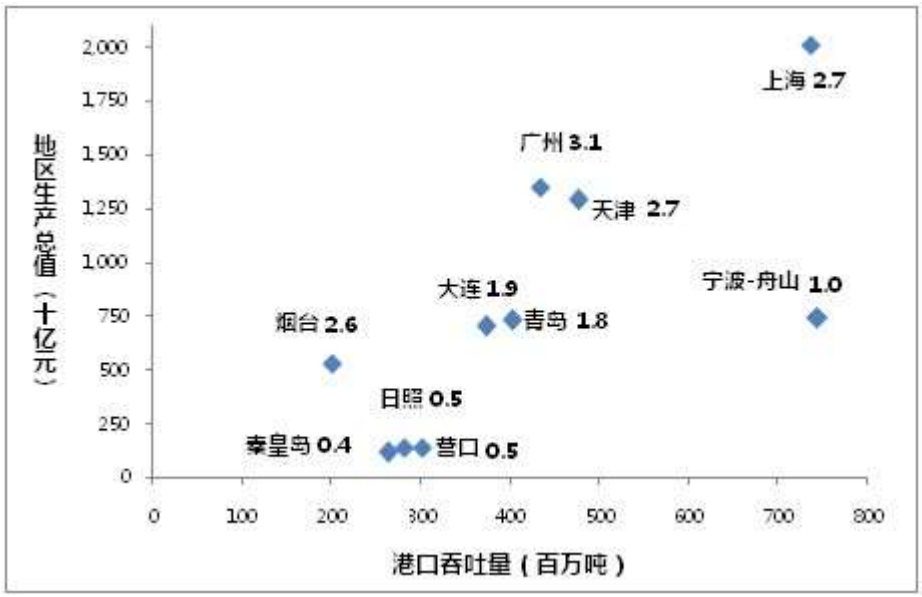
表 2.4　上海港口相关产业与城市平均单位就业增加值比较

	2002		2007		2010	
	港口相关	城市平均	港口相关	城市平均	港口相关	城市平均
产业增加值/十亿元	22.06	540.88	73.72	1 218.89	130.74	1 716.60
就业人数/千人	346.95	7 920.40	584.88	9 090.80	841.70	10 907.60
单位就业增加值/千元/人	63.57	68.29	126.05	134.08	155.33	157.38

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

港口与城市经济发展的互动关系十分复杂，由于相关因素太多且各类指标的统计数字十分有限，目前中国还没有对各主要沿海港口的经济贡献度进行系统的研究，因此，要比较上海港与其他港口的经济贡献值十分困难。但简单地从港口吞吐量与城市 GDP 的关系来看，上海港每产生 1 万吨货物吞吐量对应上海 0.27 亿元的 GDP，在中国前十大港口中排名第 2，仅次于广州港（图 2.1）。充分说明了上海港的发展在城市经济和社会发展中具有举足轻重的作用，港口的发展为其他产业的发展奠定了坚实基础。

图 2.1　中国沿海主要港口货物吞吐量与 GDP 关系



数据来源：作者根据《2012 全球港口发展报告》计算得到

2.1.2 Indirect and induced employment and value added

The Port of Shanghai has significant indirect economic effects on the urban economy. Based on the port-related industry classification explained in the previous paragraph, the *Shanghai Input/output Table* issued by Shanghai Municipal Government can be adjusted accordingly to form a new input/output table exclusive for port industry. The new table reveals the extent of the indirect economic link of the port with other economic sectors. The indirect economic contribution can be calculated on the basis of input/output multiplier model. In 2010, the indirect value added was approximately RMB 60.4582 billion, representing 3.5% of Shanghai's GDP. To be specific, shipping and related business, shipping finance and port operation turned out to be the greatest contributors, representing 29.61%, 26% and 22.14% respectively of total indirect value added. (Table 2.5)

Table 2.5 Indirect value added in Shanghai in 2010

	Indirect value added (billion yuan)			% share of total indirect value added
	2002	2007	2010	/
Infrastructure construction	0.3694	1.043	1.841	3.04%
Port operation	1.863	7.640	13.383	22.14%
Shipping and related business	3.565	11.785	17.904	29.61%
Shipping finance	3.209	8.894	15.720	26.00%
Cargo collection & distribution service	2.296	7.048	11.378	18.82%
Port & shipping management and services	0.056	0.121	0.233	0.39%
Total	11.360	36.532	60.458	100.00%

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

Without detailed statistic of employment for different sectors, it is hard to figure out the indirect port-related employment merely based on the input-output model. In this case, the study introduces employment per unit of GDP (total social employment/GDP in a specific year), which multiplies indirect value added of a certain sector, equalling to employment of the sector. In 2010, the indirect employment was 384,163, taking up 3.5% of total social employment (Table 2.6). Compared with 2002, the indirect employment saw a sharp increase, with fast-growing employed people in port operation sector, exhibiting the striking role of port development in boosting employment.

Table 2.6 Indirect employment in Shanghai

	2002	2007	2010
Infrastructure construction	5 409	7 781	11 697
Port operation	27 285	56 984	85 035
Shipping and related business	52 209	87 897	113 765
Shipping finance	46 998	66 336	99 887
Cargo collection & distribution service	33 621	52 567	72 300
Port & shipping management and services	826	902	1 480
Total	166 347	272 468	384 163
% share of total employment	2.1%	3.04%	3.5%

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

2.1.2 港口相关产业对城市就业及经济的间接与波及贡献

上海港相关产业对城市的间接经济贡献同样明显。按照前文中对港口相关产业的划分，将政府公布的《上海市投入产出表》进行调整处理，从 144 部门的统计中提取出与港口相关的产业部门，并乘以相应的转换系数后，重新构建具有单独港口产业的投入产出表，然后利用投入-产出乘数模型，便可计算出上海港口相关产业对地区经济的间接贡献。根据计算，2010 年，港口相关产业对上海市经济增加值带来的间接贡献为 604.582 亿元，占 GDP 总量的 3.5%。其中，航运及相关业务、航运金融以及港口运营三个部门的贡献值最大，分别占间接经济贡献总量的 29.61%、26.00%、22.14%（表 2.5）。

表 2.5　2010 年港口相关产业年对上海市经济的间接贡献及占比

	间接经济贡献（十亿元）			各部门贡献值占比
	2002	2007	2010	
基础设施建设	0.3694	1.043	1.841	3.04%
港口运营	1.863	7.640	13.383	22.14%
航运及相关业务	3.565	11.785	17.904	29.61%
航运金融	3.209	8.894	15.720	26.00%
其他集疏运服务	2.296	7.048	11.378	18.82%
航运管理与服务	0.056	0.121	0.233	0.39%
总计	11.360	36.532	60.458	100.00%

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

由于缺乏详细的分行业就业人数统计数据，因此并不能直接通过投入-产出乘数模型计算出由港口间接效应带动的就业人数。基于此，本文采用单位 GDP 就业人数（社会总就业人数/当年国内生产总值）的概念，将单位 GDP 就业人数乘以相应部门的 GDP 间接贡献值，即可得到当年港口相关产业间接拉动的就业人数。经计算，2010 年，港口相关产业为上海带来的间接就业人数为 384 163 人，占社会总就业人数的 3.5%（表 2.6）。与 2002 年相比，上海港口相关产业的间接就业人数大幅提升，其中港口运营部门带动的间接就业人数增长最快，表明港口业的发展对就业岗位的带动作用十分明显。

表 2.6　上海港相关产业间接就业人数

	2002	2007	2010
基础设施建设	5 409	7 781	11 697
港口运营	27 285	56 984	85 035
航运及相关业务	52 209	87 897	113 765
航运金融	46 998	66 336	99 887
其他集疏运服务	33 621	52 567	72 300
航运管理与服务	826	902	1 480
总计	166 347	272 468	384 163
占总就业人数的比重	2.1%	3.04%	3.5%

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

The multiplier of Shanghai Port is 1.46 (the multiplier, pointing to indirect and direct contribution), meaning that 100 million yuan of additional supply in port-related industries leads to 46 million yuan of additional demand to various sectors of national economy (Table 2.7). The multiplier of Shanghai Port is smaller than that of Hamburg but higher than Rotterdam and Antwerp. Benefiting from the advanced manufacturing industry in Hamburg, the city enjoys greater indirect port-related value added as urban industrial production demands huge port production. As for large-sized hub ports like Rotterdam and Antwerp, most ofthe traffic is non-local cargo, revealing a relatively small effect of port activity on other sectors of local economy. With industrial economy transition, Shanghai is in the transition become a regional hub port as large-scale industries and manufacturing sector are moving outwards to suburban areas while the service industry is thriving. Despite a shrinking proportion of local cargo shipped via port, Shanghai is building itself as a leading maritime centre in the world with various shipping service enterprises clustering in Shanghai, which aims to generate large direct economic effects in the shipping and related industry.

Table 2.7 Multipliers for major ports in China and Europe

	Multipliers
Shanghai Port	1.46
Hamburg Port	1.71
Rotterdam Port	1.13
Antwerp Port	1.18

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7); Merk, O., Hesse. M. (2012), Competitiveness of Global Port-Cities: the Case of Hamburg, OECD Regional Development Working Papers, 2012/06

Note: Multiplier comparison of Shanghai Port, Hamburg Port, Rotterdam Port and Antwerp Port will not be substantially affected by the slight differences in methodology, as multipliers indicate the ratio of indirect economic contributions to direct economic contributions.

The forward and backward synergy effect of port-related industries encourages production, improves efficiency and further increases the income of employed people. Part of the additional income will translate into consumption and boost social demand, thus stimulating a new round of production and income increase. Such a virtuous economic circle enhances economic benefits, which is of port industry to regional consumption. In 2010, the indirect port-related value added of Shanghai was RMB 163.74 billion, representing 9.54% of GDP; the indirect port-related employment amounted to 1,112,350, representing 10.2% of total employment. Port development has exerted a positive effect on virtuous circle of urban economy. (Table 2.8).

Table 2.8 Induced port-related employment and value added of Shanghai

	2002	2007	2010
Indirect value added (in RMB 100 million)	201.1	817.84	1 637.44
% share of GDP	3.72%	6.82%	9.54%
Indirect employment	298 546	626 852	1 112 350
% share of total employment	3.77%	6.90%	10.20%

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

上海港口相关产业对社会经济的经济贡献乘数为 1.46，表明港口相关产业每增加 1 亿元的使用，就可以对国民经济各部门带来 0.46 亿元的生产需求（表 2.7）。将上海港与欧洲汉堡港、鹿特丹港、安特卫普港的经济贡献乘数比较，上海港的经济贡献乘数低于汉堡港，但高于鹿特丹港与安特卫普港。这是由于汉堡本地的制工业比较发达，城市工业生产对港口的运输需求巨大，因此港口对城市的间接贡献度较大；而鹿特丹以及安特卫普港均为大型枢纽港，港口的大部分货源并不来自本地，因此其港口经济活动对本地其他国民经济部门的带动作用较小；上海随着产业经济的转型，大型工业和制造业逐步外移，服务产业在国民经济中的比重逐步提升，上海也逐步成为区域型的枢纽港服务周边城市，虽然仍有一定比例的本地货源通过港口运输，但在吞吐量中所占份额有所降低，此外随着上海国际航运中心建设加速，大量的航运服务企业集聚上海，因此航运及相关产业产生的直接贡献度较大。

表 2.7　中、欧主要港口经济贡献乘数

	经济贡献乘数
上海港	1.46
汉堡港	1.71
鹿特丹港	1.13
安特卫普港	1.18

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7），Merk，O.，Hesse. M.（2012），Competitiveness of Global Port-Cities: the Case of Hamburg，OECD Regional Development Working Papers，2012/06，OECD Publishing

注：虽然上海港与汉堡港、鹿特丹港、安特卫普港在计算方式和数据统计方式上略有差别，但经济贡献乘数反映间接贡献和直接贡献的比值，因此横向结果比较不会受到明显影响。

港口相关产业的前向和后向波及效应使有关产业扩大生产、提高效益，并进一步促使这些产业从业人员的收入增加。而部分增加的收入又将用于消费，于是增加了社会的最终需求，从而刺激进一步扩大生产，导致收入的进一步增加，以此循环，带动经济效益提高。这一效益即为港口产业对所在区域经济的消费波及贡献。经计算，2010 年，港口相关产业对上海市经济增加值带来的波及贡献为 1 637.44 亿元，占 GDP 总量的 9.54%；港口相关产业波及就业人数为 1 112 350 人，占总就业人数的 10.2%，上海港对城市经济产生的波及效果十分显著，港口发展对促进城市经济良性循环有着积极的意义（表 2.8）。

表 2.8　港口相关产业对上海市经济的波及贡献及比重

	2002	2007	2010
波及经济贡献（十亿元）	20.11	81.78	163.74
占 GDP 总值的比重	3.72%	6.82%	9.54%
波及就业人数（人）	298 546	626 852	1 112 350
占总就业人数的比重	3.77%	6.90%	10.20%

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

In 2010, port-related industries made an aggregate contribution of RMB 354.945 billion to GDP, representing 20.68% of Shanghai's total; port-related employment was 2,337,956, accounting for 21.43% of Shanghai's total. In particular, nearly 40% of the contributions came from direct economic effect, while over 60% were attributable to indirect benefits of port-related economic activities and the virtuous cycle. The port-related value added multiplier is 1.72 (economic contribution multiplier, referring to indirect, direct and induced value added) (direct benefits of RMB 100 million of port-related industries will translate into indirect benefits of RMB 172 million of Shanghai) (Table 2.9), indicating that the industries have spurred the development of relevant sectors and stimulated the total social demand, with the value added multipliers of shipping and related business, shipping finance and cargo handling & distribution service coming out top. The analysis above implies that port-related industries in Shanghai have generated significant economic and social benefits, serving as an important driver of economic and social development.

Table 2.9 Port-related multipliers of value added of Shanghai in 2002, 2007 and 2010

	2002	2007	2010
Infrastructure construction	0.66	0.73	0.9
Port operation	1.32	1.65	1.72
Shipping and related business	1.52	1.63	1.75
Shipping finance	1.53	1.71	1.82
Cargo collection & distribution service	1.56	1.64	1.76
Port & shipping management and services	0.4	0.44	0.67
Total	1.43	1.6	1.72

Source: Jiang Chaoyan, Zhang Jieshu, Zhen Hong (2012). A Probe in Contribution of International Shipping Centre Construction to Shanghai Economic Development, Science Development, 2012 (7)

综合来看，2010 年港口相关产业给上海整体经济带来的 GDP 贡献累计达到 3 549.45 亿的，占 2010 年上海 GDP 的 20.68%；拉动总就业人数为 2 337 956 人，占上海市总就业人数的 21.43%。其中，近 40%的贡献值由港口相关产业的直接效益产生，而超过 60%的贡献值归功于港口相关产业经济活动所产生的间接效益以及通过一轮一轮循环活动产生的波及效益。港口相关产业的经济贡献乘数为 1.72（港口相关产业每创造 1 亿元的直接效益，即可为上海创造 1.72 亿元的间接及波及效益）（表 2.9）。说明上海港口相关产业在实现了对自身直接贡献的同时，还拉动了关联产业的发展，刺激了社会的总体需求，其中航运及相关业务、航运金融以及其他集疏运服务三个部门的经济贡献乘数最大。通过上述分析，可以得出结论，上海港口相关产业的经济和社会效益显著，并在上海市经济和社会发展中起到了巨大的引擎作用。

表 2.9　上海港相关产业经济贡献乘数

	2002	2007	2010
基础设施建设	0.66	0.73	0.90
港口运营	1.32	1.65	1.72
航运及相关业务	1.52	1.63	1.75
航运金融	1.53	1.71	1.82
其他集疏运服务	1.56	1.64	1.76
航运管理与服务	0.40	0.44	0.67
综合	1.43	1.60	1.72

数据来源：姜超雁，张婕姝，真虹（2012），国际航运中心建设对上海经济发展的贡献度研究，科学发展，2012（7）

2.2 Port-city Interface

Shipping industry has a vital bearing on the formation of the city of Shanghai and its economic development. Ever since the reform and opening-up, the gradual expansion of Shanghai Port has exerted profound influence over port-related industries, traffic and warehousing.

2.2.1 Land Use and Spatial Layouts

Migration of Ports along Huangpu River

For a long time, terminals along Huangpu River have played an important role in the economic development, foreign trade and population flow of Shanghai. In 1997, public terminals in Huangpu Port Area recorded a throughput of 78.75 million tons, registering 86% of the total of public terminals in Shanghai; 3.28 million passengers have departure from and 2.76 million have arrived in Shanghai via these terminals on many major international and coastal shipping routes or channels along the Yangtze River. Nevertheless, due to the fast growth in urban economy, and the ever-increasing vessel size for container shipping, terminals along Huangpu River are no longer able to meet the shipping demand due to channel width and water depth constraints. Therefore, such terminals have quitted the shipping routes, and the industrial bases along both sides of the river have been gradually taking their new looks: waterfront parks, shopping streets, and ferries for urban transport, leisure activities and entertainment; solid waste, waste water, air emissions and noise pollution have been eliminated effectively, greatly improving local residents' livelihood. The cargo handling functions originally assumed by the terminals are now assigned to the three major port areas - Baoshan, Waigaoqiao and Yangshan (Figure 2.2) - with a clear-cut division of labour: Luojing Port in Baoshan specializes in containers for domestic trade; Waigaoqiao is mainly engaged in transporting containers from the hinterland, supplemented by container trans-shipment, to the point that carriers from feeder routes may call at Shanghai; Yangshan focuses on seaborne transport and international trans-shipment.

Compared to other ports in the world, the port of Shanghai ports occupies a rather small share of the metropolitan land surface, especially with the majority of port operations moved further from the urban core areas in the city. Among some selected port-cities, Antwerp, Rotterdam and Long Beach, have a very large share of urban land (up to one third) used to port activities. As the comparisons between port-cities would require caution in terms of the variation in different administrative boundaries among cities, it is still useful to stress that the impacts of port development projects on land use is prevalent as they compete for land with other potential users. In a metropolitan city with extremely dense population like Shanghai, the completion for city surface is fierce. The economic dimension of the port land use derives the question of opportunity cost for the land. In most cases, the agglomeration effects and high job density are generally considered to be the factors for urban economic growth. As a result, the presence of large port areas appears to become a constraint because of the low public accessibility to the port areas, thus it may not generate the agglomeration effects associated with urban areas such as knowledge spillovers. However, there could still be clustering effects in port areas that might be dependent on size, as will be discussed in the following section. In fact, the new port area in Shanghai – Yangshan, is seen as one of the key strategic port development project that is expected to be a value-added and integrated industrial, logistics and shipping complex rather than a sole transshipment node (Wang and Ducruet, 2012).

2.2 港城交界面

在上海发展的历史进程中，航运对其城市的形成和经济的发展起着举足轻重的影响。尤其是改革开放以来，随着上海港规模的不断扩大，对城市临港工业、交通、仓储等功能布局产生了深刻影响。

2.2.1 土地利用与空间规划

黄浦江港口外移

上海港是一个百年老港，长期以来，黄浦江上的码头对上海的经济发展、对外贸易以及人员交流都发挥了重要作用。1997 年黄浦江港区公用码头完成吞吐量 7 875 万吨，占全港公用码头的 86%，并承担了国际、沿海和长江沿线发送旅客 328 万人次和到达 276 万人次的任务。然而，随着城市经济的不断发展以及船舶大型化的不断深入，黄浦江两岸的码头已经无法满足上海对航运的需求（航道宽度、水深严重不足）。因此目前黄浦江码头已经撤离了所有外贸货运航线，黄浦江两岸的工业基地也逐渐转变成绿意盎然的亲水公园和商业购物街、并设立摆渡码头，供市民两岸往来、休闲娱乐；早先城市工业的“三废”排放、噪音污染等得到有效缓解，周边市民的居住环境也得到明显改善。而黄浦江港口原本承担的生产任务现在被分摊到了宝山、外高桥以及洋山三大港区（图 2.2），并明确了具体分工——宝山罗泾港区以运输内贸集装箱为主；外高桥港区以腹地集装箱运输为主，中转箱为辅，供内支线挂靠上海港；洋山港区则主要以远洋运输和国际中转业务为主。

同全球其他港口城市相比，上海港口所占城市面积比重非常小，大部分港口业务已迁离城区中心，而安特卫普、鹿特丹和长滩等港口占城市面积的比例却非常大（近三分之一）。虽然港口城市比较研究要求我们审视不同城市的行政边界，但是我们仍需要强调，港口发展项目对城市用地影响显著，因为港口建设与其他用地项目形成了竞争关系。在上海这样人口稠密的大都市，用地竞争激烈。从经济角度衡量港口用地，就是衡量土地的机会成本。多数时候，城市的聚集效应和高就业密度被认为是城市经济发展的推动因素。于是，由于多数普通民众不参与港口作业和临港产业，港口不像城区那样通过知识溢出等方式产生聚集效应，使得大型港口的出现反成了城市经济进一步发展的制约。然而，那部分依托面积扩张可能产生的聚集效应仍然存在，本报告还将对此有所阐述。事实上，作为上海新兴港口区域，洋山正是战略发展重点之一。按照规划，它将被打造为高附加值的综合性航运物流枢纽，而非仅仅是一个转运节点。

Figure 2.2 Land surface of the port and the city of Shanghai (2010)

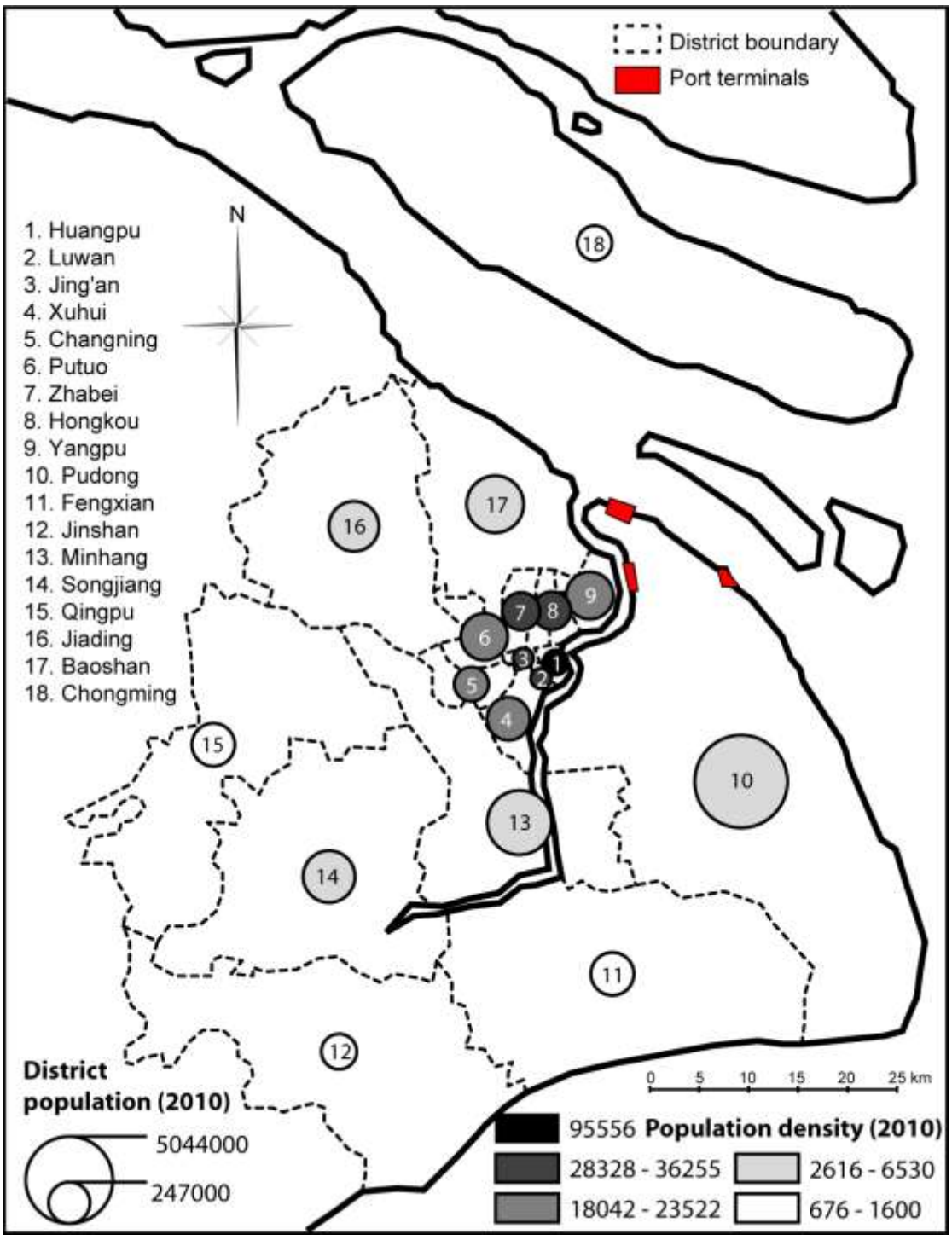
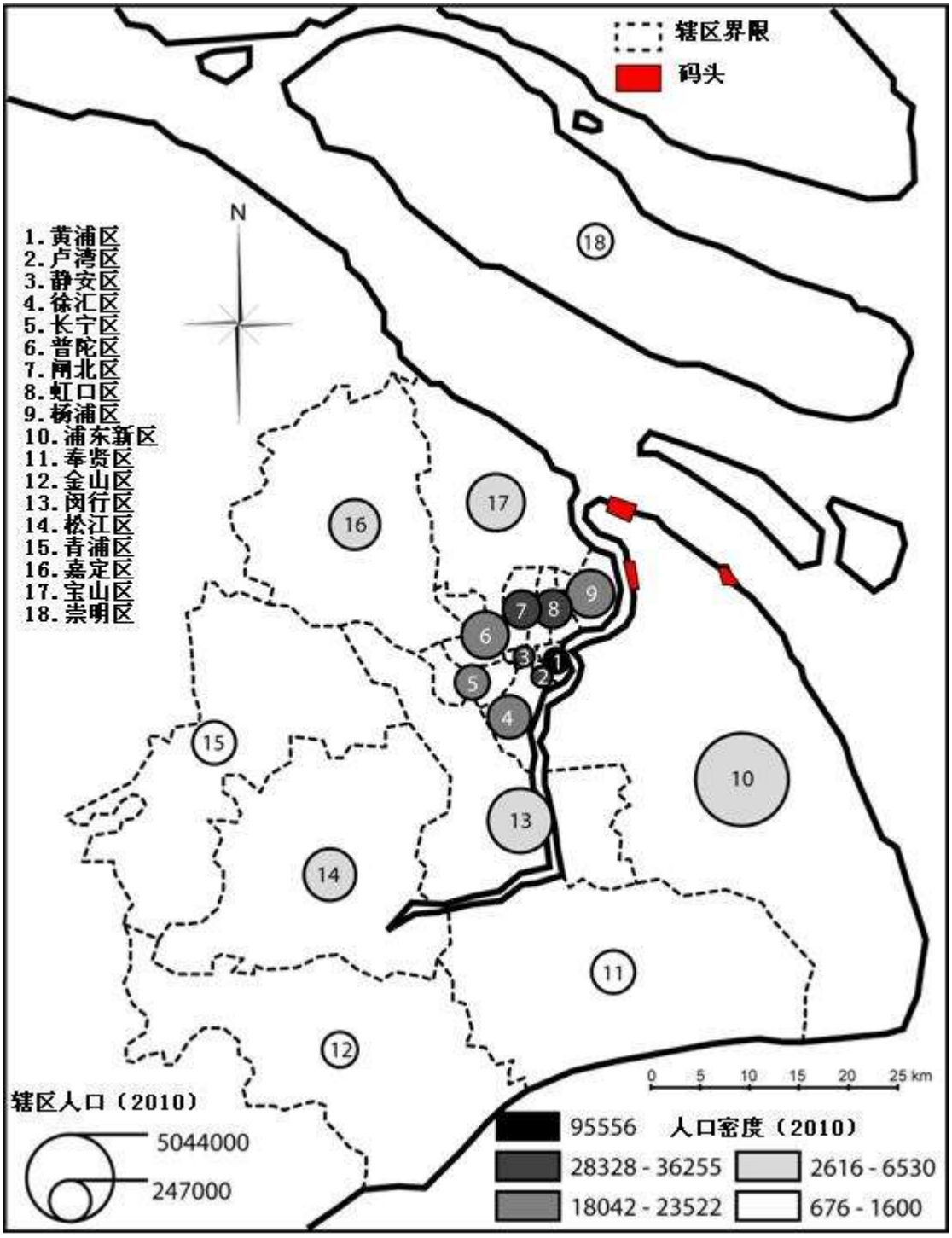


图 2.2　上海港和城区（2010 年）



The migration of ports to outer areas is in line with international shipping development trends. Although it will lead to increasing expenses for land transport and other forms of cargo handling and distribution, the additional expenditures are dwarfed by reduced shipping costs due to larger-sized vessels and shorter turnaround time. In addition, the impacts of the Yangshan deep water port development on the urban surface in Shanghai are large due to the unprecedented physical relocation of port facilities and the associated industrial and service activities that has been undertaken in order to ensure the cargo transfers. The lack of space in the urban central areas and the intense competition among East Asian ports fostered the expansion of port facilities that requires land beyond the urban core, which potentially creates tensions among relevant stakeholders, namely local authorities (Wang and Ducruet, 2012). In this case, the administrative tensions refer to the Zhejiang Provincial government who is geographically responsible for the area of Yangshan and Shanghai Municipal government who is designated to manage the new port by the state council.

Concentration of port-related industries

Concentration of port-related industries will contribute most to port-city development, which in turn will enable the industries concerned to reduce shipping costs and stay ahead of competitions. In accordance with government planning and policy, there are industrial clusters and parks around major port areas in Shanghai, including Waigaoqiao Bonded Logistics Park, Yangshan Bonded Zone, Jinqiao Export Processing Zone and other logistics parks specializing in bonded logistics and export processing; Baosteel Base, Changxing Shipbuilding Base, Lingang Equipment Industry Base, Jinshan-Fengxian Chemical Industry Base and other heavy-chemical industry bases; and North Bund Shipping Service Cluster (see Figure 2.3).

Figure 2.3 Port-related Industry Clusters in Shanghai

Source: Author's own elaborations based on data about Shanghai Port

港口外移是全球港口为了适应国际航运业发展而进行建设的大趋势。当然，港口外移将导致陆上运输费用提高或其它集疏运成本的增加，但增加部分的费用远低于船舶大型化所带来的货运成本降低，以及船舶进出港时间的减少和由此带来的货物资金成本的节约。此外，洋山深水港发展对于上海城区的影响主要来自于前所未有的港口基础设施及相关工业和服务业的迁移。城区中心空间有限，而来自东亚其他港口的激烈竞争引发的港口基础设施扩张迫使港口在城区中心以外拓展土地面积。这导致地方当局等利益相关方之间关系紧张（Wang 和 Ducruet, 2012）。在本案例中，这种行政关系紧张可能出现在浙江省政府和上海市政府之间，前者是洋山地理位置所属管辖，后者则是国务院指定的洋山港管理者。

临港产业的集聚

临港经济的集聚是港口城市发展的最强动力，依托于港口的发展，港口相关产业可以降低运输成本以获得更大的成本优势和竞争优势。在政府规划与政策引导下，目前上海港的几大港区周围，产业集群已渐成规模，并形成了各具特色的临港园区，例如：外高桥保税物流园、洋山保税港区、金桥出口加工区等以保税物流、出口加工为主要业务的物流园区；宝山钢铁基地、长兴岛上海船舶基地、临港装备产业基地、金山奉贤化工基地等重化工业区；还有航运服务业高度聚集的北外滩航运服务集聚区等等（图 2.3）。

图 2.3 上海临港产业集聚现状

数据来源：作者根据上海港资料整理

The development of port-related industries and port-related industrial parks in particular has a vital bearing on land use in Shanghai. Industrial companies migrated to the coastal area have left behind considerable land space in the city proper, which could be reused to accommodate public facilities, and to develop residential areas and commercial service zones. The transition and upgrading of urban functions will bring about an optimized urban layout so as to meet the growing needs for housing and living. Given the increasing pressure on land and population, the concentration and migration of port-related industries is the inevitable direction for the modernization of cities.

2.2.2 Access

As one of China's largest transport hubs and hinterland-based port-cities, Shanghai has seen a traffic system integrating railway, road, coastal and inland river transport. With the Yangtze River Delta as Shanghai's hinterland, the cost-effective road transport takes the majority share of cargo handling and distribution in the port. Nevertheless, considering the ever-growing cargo throughput and limited road access, the road transport-dominated cargo collection and distribution model has exerted great stress on urban traffic.

The two major container port areas (Waigaoqiao and Yangshan) are both located in the eastern part of Shanghai, while the hinterland borders the city on the west. In this case, all cargo from the hinterland has to be shipped through the whole city to the port areas via Shanghai-Nanjing or Shanghai-Hangzhou Expressway, and such long-distance transportation has added strain on urban road traffic. Currently, the outer ring road which is the trunk route of urban freight and passenger transport has recorded the busiest traffic flows. According to a research conducted by Xiao Hong (2007), the average daily traffic of the outer ring road was above 30,000 pcu (Passenger Car Unit).[1] After Yangshan Port came into operation, the water-to-water trans-shipment capacity saw some improvement. The policy of "tax refund at port of departure" (Box 1) issued by the state also encourages Shanghai to develop inland river shipping to mitigate the adverse effect of road transport on urban traffic. However, because the cargo in Shanghai port is expected to grow continuously, along with the fact that most of the cargo destination is still within short range of the port, road transport with its lower costs and higher flexibility is expected to remain the most significant mode for cargo handling and distribution system at Shanghai Port.

[1] This is a vehicle unit used for expressing highway capacity. One car is considered as a single unit, but cycle or motorcycle as half car unit. Bus or truck, causing a lot of inconveniences because of its huge size, is regarded as equivalent to 3 cars or 3 PCU.

临港产业，尤其是临港工业园区的开发对上海市的土地利用格局产生了巨大的影响。工业企业向沿海迁移，给中心城区腾出了相当大的土地空间，用于公用设施、居民住宅区以及商业服务区的建设。市区功能因此得到了改造和提升，进而完善城市总体布局，以满足越来越多的居住、生活需求。在土地和人口压力越来越大的情况下，临港产业向港区集聚迁移是城市实现现代化发展的必然选择。

2.2.2 交通连接

上海是中国最大的综合交通枢纽和腹地型港口城市之一，现已形成集铁路、公路、沿海、内河等多种方式于一体的综合交通运输体系。不过，由于上海港内陆腹地主要集中在江浙沪等长三角地区，处于公路合理经济的运输范围内，因此公路运输在集疏运体系中所占比重较大。然而，随着上海港货物吞吐量的不断增加，上海道路资源日益紧张，以公路为主的集疏运方式已经给上海城市的交通带来了很大的压力。

由于上海的两个主要集装箱港区（外高桥港区和洋山港区）均分布在上海市的东部，而其陆域腹地又都在城市西侧，因此货物要到达港区就必须经由沪宁、沪杭高速公路穿市而过。货物如此东西向的大流动，直接增加了城市道路的负荷。目前上海市流量密集的公路主要集中在外环线，外环线不仅是城市客运的主要干道，也是目前城市货运的主要干道。根据学者肖红（2007）的有关研究，目前外环线全线的交通量都在 30000pcu/日以上（Passenger Car Unit，标准车当量数，是将实际的各种机动车和非机动车交通量按一定的折算系数换算成某种标准车型的当量交通量）。而洋山港开港运营以后，水水中转能力得到加强，同时国家颁布“启运港退税”（Box1）等政策也在积极鼓励上海发展内河运输以缓解公路运输对城市交通带来的不利影响。但由于上海港日益增长的货物吞吐量以及大部分货物运距较短，因此短期内公路运输在上海港集疏运体系中仍将占据较大份额。

Box 1. Tax refund at the port of departure

Issued by the Ministry of Finance, the General Administration of Customs and the State Administration of Taxation, the policy of tax refund at port of departure applies to container cargo that clear customs in Qingdao or Wuhan (port of departure), carried by Shanghai Puhai Shipping Co Ltd or Sinotrans Hubei International Trade Co Ltd, and depart Shanghai Yangshan Bonded Port Area directly via waterways as of August, 2012.

Departing from Qingdao or Wuhan and transshipped overseas via Yangshan Bonded Port area, the exported cargo is entitled to apply for tax refund when leaving the port of departure, one week earlier than the previous practice, thus accelerating the capital flow of export enterprises. Therefore, the introduction of this policy will attract more inland and coastal transit in Shanghai. Administrative procedure :

1. The tax refund filing for export enterprises at ports of departure shall be conducted through tax authorities in advance.

2. Based on the application of export enterprises, the local customs of port of departure should issue export goods declaration (for export tax refund) (hereinafter referred to as Refund certificate copy) for the export goods that meet the policy conditions.

3. Export enterprises shall declare and handle export refund to tax authorities with Refund certificates copy and other related material.

4. Upon arrival of all the cargo (listed on Refund certificate copy) in Yangshan Bonded Port Area, Shanghai customs shall deal with verification for goods in transit and the customs at port of departure shall perform verification for clearance of such cargo.

5. The customs shall provide data of refund certificate copy to State Administration of Taxation and monthly send normal clearance data and data of the cargo not actually reaching Shanghai Port. The State Administration of Taxation will provide clearance data with tax refund to customs.

6. Tax authorities shall handle tax refund for export enterprises and adjust the amount of tax refund based on refund certificate copy and clearance verification.

Box 1 启运港退税

由财政部、海关总署和国家税务总局联合发布，自 2012 年 8 月起，对从青岛、武汉（合称启运地）启运报关出口，并由上海浦海航运公司或中外运湖北有限责任公司承运，从水路转关直航运输经上海（离境地）洋山保税港区离境的集装箱货物，试点实施启运港退税政策。

“启运港退税”即从青岛前湾或武汉阳逻港（启运港）发往洋山保税港区（离境港）中转至境外的出口货物，一经确认离开启运港口就被视作出口并可办理退税。“启运港退税”可使企业办理退税的时间提前一周左右，对加快企业资金周转作用明显。因此，为上海开展内河和沿海中转业务提供了一定的优势。

其主要流程：

1. 出口企业提前向税务机关进行启运港退税备案。

2. 启运地海关依出口企业申请，对从启运港启运符合条件的货物办理放行手续后签发出口货物报关单（出口退税专用）（以下称退税证明联）。

3. 出口企业凭退税证明联及相关材料到税务机关办理退税手续。

4. 在退税证明联所列全部货物进入离境港后，离境地海关办理转关核销手续，启运地海关办理结关核销手续。

5. 海关将已启运并签发退税证明联的报关单数据实时发送给国家税务总局，每月将正常结关核销和未实际到达离境港货物的报关单数据发送给国家税务总局。国家税务总局将已退税的报关单数据反馈海关。

6. 主管出口企业出口退税的税务机关，根据国家税务总局清分的退税证明联及结关核销报关单数据，为出口企业办理退税及调整已退税额。

2.3 Environmental Impact

2.3.1 Discharge by Vessels

Vessel emissions have become one of the major sources of environmental pollutants in Shanghai, with ocean-going container liners being the main culprit. According to a recent research (Fu et al, 2012), as the main engines of ocean-going vessels are much more powerful and consume more energy than those of inland river ships, the emissions of the former is 26-100 times more than that of the latter. Ocean-going vessels, which only take up 5% of the total number of ships that berth at Shanghai, thus become a main source of air pollutants in the port area, accounting for 92%, 74% and 97% of PM, NO_X and SO_X discharge respectively (Table 2.10).

Table 2.10 Proportion of Vessels Discharging Major Pollutants in Shanghai in 2010

Waters	Ship Category	Ship Ratio	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC
Outer Port	Oceanic vessel (International + Coastal)	5	92	92	92	74	97	73	72
	Inland waterway (Inland waterway + Regular)	55	2	2	2	7	1	7	8
Inland Waterway	Inland waterway	40	6	6	6	19	2	20	21
Total		100	100	100	100	100	100	100	100

Source: Fu Qingyan, Shen Yin, Zhang Jian (2012), Research on the List of Air Pollutants Discharged by Vessels in Shanghai, Journal of Safety and Environment, Vol. 5, pp.57-63.

Air pollutants discharged by vessels are proportional to cargo throughput. Therefore, being the largest container port in the world has also contributed to the severe air pollution at the Shanghai port due to the frequent vessel activities, of which the impacts are much more serious than other world-renowned ports. A research by Fu Qingyan (2012) found out that the pollutants discharged by vessels in Shanghai were approximately ten times more than in Kaohsiung and 29 times more than in Los Angeles. China has not adopted the Environmental Ship Index (ESI) to encourage the use of vessels fueled by low-sulphur fuel, nor has it taken any mandatory measures like the establishment of Sulphur Emission Control Areas (SECA) in the United States. But the pollution caused by vessels has drawn attention from various stakeholders of Shanghai, which could facilitate the improvement of air condition at ports and surrounding areas.

2.3.2 Port Operations

The large business volume leads to severe pollution in port areas in Shanghai. The recently published report of *Shanghai Port Environmental Quality Sampling Survey (2012)* showed that the overall environmental quality of Shanghai was still far from satisfactory. The air pollution index fell within the interval of "moderately polluted", with PM2.5 as the primary pollutant in the port areas; the day-night average sound level only reached Class-III of GB 3096-2008; and chemical oxygen demand (COD) and determination of biochemical oxygen demand after 5 days (BOD5) slightly exceeded the criteria in discharged water. The environmental quality of port areas in Shanghai remains to be greatly improved.

2.3 港口对城市环境的影响分析

2.3.1 船舶排放的影响

上海作为全球第一大港口城市，船舶排放已成为城市环境污染的重要来源之一，其中以集装箱远洋船的排放最为严重。根据学者伏晴艳、沈寅、张健（2012）的研究表明，由于远洋船的主机功率远高于内河船舶，其单船排放是普通内河船舶的 26～100 倍，因此远洋船已成为港区内船舶大气污染的主要来源。占进出上海港船舶总数 5%的远洋船，却排放了 PM、NO_X和 SO_X总量的 92%、74%和 97%（表 2.10）。

表 2.10　2010 年上海港船舶主要污染物排放分担率

水域	船种	船舶数比例	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC
外港	远洋船（国际+沿海）	5	92	92	92	74	97	73	72
	外港内河（内河+定期）	55	2	2	2	7	1	7	8
内河	内河	40	6	6	6	19	2	20	21
总计		100	100	100	100	100	100	100	100

数据来源：伏晴艳，沈寅，张健（2012），上海港船舶大气污染物排放清单研究，安全与环境学报，Vol. 5，pp.57-63.

船舶的大气污染排放量与进出港船舶数和港口货物吞吐量均成正比。目前上海港已连续三年蝉联全球第一大集装箱港，因此其船舶排放量高于其他国际知名港口。伏晴艳（2012）等研究表明，2010 年上海港的船舶排放量大约为高雄港的 10 倍、洛杉矶港的 29 倍。目前，中国虽尚未采用欧洲船舶环境指数（ESI）等体系引导船公司自发采用低硫型船舶，或美国等地区 SOX 排放控制区（SECA）的做法强制船舶使用低硫燃料，但船舶的污染问题已引起上海港各方的关注，因为这对改善港区及航道周边空气环境有着积极作用。

2.3.2 港区运作的影响

由于上海港业务量庞大，上海港港区的污染情况也比较严重。据最新发布的《上海港环境质量（抽样）报告书（2012 年）》显示 2012 年上海港总体环境质量仍然欠佳，港区内空气污染达到中度，其中可吸入颗粒物为首要污染物；各港区昼夜噪声依然存在（处于国家声环境质量三类标准）；排放水质中化学需氧量和五日生化需氧量超标情况略为突出。因此，上海港港区环境质量仍亟待改善。

Regarding energy consumption as the source of pollution, Shanghai has rendered significant achievements in energy restructuring and consumption reduction over the past years. The proportions of power and diesel, the main energy resources consumed in port operations, are changing quickly. Prior to 2005, the consumption of diesel was much greater than that of other energy. Oil-related energy would generate much waste gas and other pollutants, causing severe adverse effect on ports and surrounding areas. After 2005, power consumption has seen a gradual increase, and such techniques which replace oil with power found greater application. Innovative techniques and optimized processes have reduced energy consumption and environmental pollution in Shanghai in recent years. In 2008-12, cargo throughput of SIPG's terminals rose by more than 36%, as opposed to the decline in overall energy consumption, with the energy consumption per 10,000 tons of handled cargo and the energy consumption per RMB 10,000 of output value dropped by 26.93% and 37.82% respectively, indicating substantial reduction of pollution incurred by port operations (Table 2.11).

Table 2.11 SIPG's Statistics for Energy Consumption

Item	Unit	2008	2009	2010	2011	2012
Throughput	Ten Thousand Tons	36913	36502	42835	48442	50238
Diesel Consumption	Ton	128585	109233	123852	130139	127066
Fuel Consumption	Ton	51262	53368	53608	56692	55628
Power Consumption	Ten Thousand KWh	27853	27468	30542	34495	36085
Water Consumption	Ten Thousand Cubic Meter	609.5	597.7	624.4	590.4	562.9
Direct Energy Consumption	Ton Standard Coal	271287	245466	266842	281317	275160
Indirect Energy Consumption	Ton Standard Coal	113911	112034	125075	104743	109378
Comprehensive Energy Consumption	Ten Thousand Ton Standard Coal	38.64	35.75	39.26	38.6	38.45
Throughput per Unit Energy Consumption	Ton Standard Coal per Ten Thousand Ton	10.47	9.79	9.17	7.97	7.65
Production per Unit Energy Consumption	Ton Standard Coal per Ten Thousand Yuan (RMB)	0.238	0.236	0.224	0.183	0.148

Source: Author's own elaborations based on *SIPG Sustainable Development Report 2012*

2.3.3 Cargo Transport

Among all modes of shipping, road transport has caused the severest pollution to urban environment. According to the calculations based on the *Statistical Communiqué on Road and Waterway Transport Industries* issued by China's Ministry of Transport in 2012, the consumption of standard fuels by rail transport was only 7-9% of that by road transport, while CO_2 and NO_x discharge per 10,000 tons of handled cargo by waterway transport was 0.3 and 0.5 times of that by road transport respectively. Moreover, waterway transport requires less land resources and can be deemed as a clean mode of shipping. Hence, some international major ports like Rotterdam and Hamburg have both taken an active part in restructuring the intermodal transportation system by increasing the proportion of rail and waterway transport, with emphases placed on sea-river and sea-rail transport.

能源消耗作为污染的源头，近年上海港在改善能源结构、降低能耗方面取得了显著的成效。电力和柴油作为上海港生产中消耗的主要能源，其结构比例正在悄然发生变化。2005 年前港口柴油的消耗量远大于其他能源，而石油类能源必然导致大量废气等污染的发生，对港区内及港区周边居住区造成了严重的负面影响。在 2005 年以后，港区电力使用率逐渐提高，“油改电”等技术的应用范围也逐步扩大。总体来看，通过技术革新、流程优化，上海港的能耗及环境污染正逐年降低。2008-12 年上港集团旗下码头货物吞吐量增幅达到 36%以上，然而港口综合能耗不增反减，单位吞吐量能耗、单位产值能耗分别下降 26.93%和 37.82%，极大地改善了港区生产对环境的污染（表 2.11）。

表 2.11　上港集团能源消耗统计

项目	单位	2008	2012	变化率/%
吞吐量	万吨	36913	50238	36.10
柴油消耗量	吨	128585	127066	-1.18
燃油消耗量	吨	51262	55628	8.52
电力	万千瓦时	27853	36085	29.56
水	万立方米	609.5	562.9	-7.65
直接能耗	吨标煤	271287	275160	1.43
间接能耗	吨标煤	113911	109378	-3.98
综合能耗	万吨标煤	38.64	38.45	-0.49
单位吞吐量能耗	吨标煤/万吨	10.47	7.65	-26.93
单位产值能耗	吨标煤/万元	0.238	0.148	-37.82

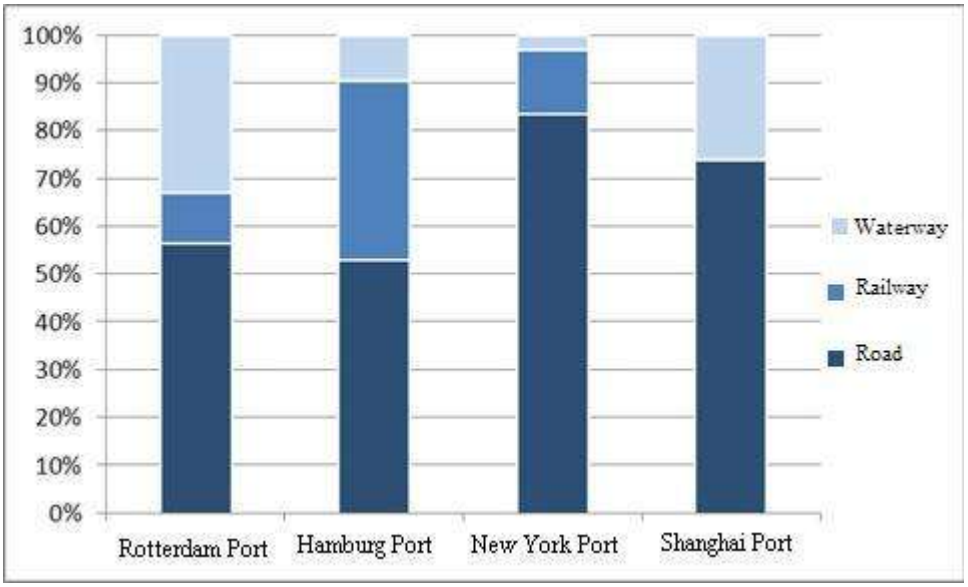
数据来源：作者根据《上港集团 2012 年可持续发展报告》整理

2.3.3 货物运输的影响

在各种运输方式中，公路运输对城市环境造成的污染最为严重，据中国交通运输部 2012 年发布的《公路、水路交通行业统计公报》计算，在中国，铁路运输每千吨公里耗标准燃料仅为公路运输的 7%-9%；而水路运输单位货运量所排放的二氧化碳和氮氧化物分别为公路的 0.3 和 0.5 倍，而且水路运输对土地资源占用较少，是非常清洁的一种运输方式。因此，如鹿特丹、汉堡等国际知名的港口城市都在积极转变集疏运结构，着重提高铁路、水路的集疏运比例，重点发展海河联运和海铁联运。

Shanghai lags behind the above-mentioned port-cities in its cargo modal split structure with limited types of shipping modes and a low proportion of clean modes (Figure 2.4). The further increasing container throughput and excessive dependence on road transport have contributed to urban traffic congestion, and created noise and exhaust fume to the outer and middle ring roads. So far, transport accounted for one-fifth of the total energy consumption in Shanghai. The accelerated restructuring of the intermodal system and the fulfillment of low-carbon transport are pressing tasks facing Shanghai's cargo transport development.

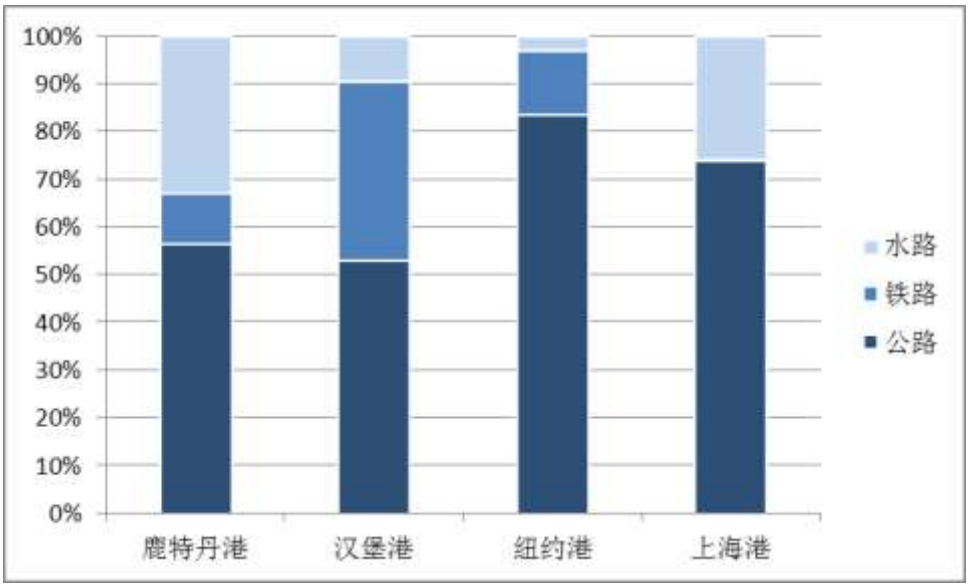
Figure 2.4 Modal shares of port hinterland traffic in selected ports (2010)



Source: Author's own elaborations based on data from websites of Shanghai Municipal Transport and Port Authority and other port authorities

与上述城市相比，上海港目前的集疏运结构还存在一定的问题，主要体现在集疏运方式过于单一，清洁运输方式所占比例过低等方面（图 2.4）。随着上海港集装箱运量的进一步增长，过度依靠公路来进行集疏运使得上海公路负担不断加重，导致城市中外环线道路拥挤并产生大量噪声污染和汽车废气污染。目前上海交通能耗已占城市能耗总量的五分之一，加速转变货运结构，实现低碳运输是上海港货运发展的当务之急。

图 2.4　2010 年上海港与境外国际枢纽港集装箱集疏运比例结构



数据来源：作者根据上海市交通运输和港口管理局及各港务局网站数据整理

3. POLICIES AND GOVERNANCE

Shanghai Port has adjusted its development goals and orientation to the transition and upgrading of urban economy over the past years. As part of the policy to create what has been labeled "Shanghai International Shipping Centre" (SISC), Shanghai is proactively extending its service functions and coverage, promoting the mutual development of port and shipping industries, giving scope to the synergy and positive externality of the port and the economy, as well as generating greater benefits to the port and the city.

3.1 Strategic Planning

The construction of Shanghai Port is in line with the overall requirements of economic and social development at the national and regional levels. Following the implementation of the *Opinions*, Shanghai has taken an active part in industrial restructuring and vigorous development of advanced manufacturing and modern service industries, with the aim of building an innovative international hub port featuring efficient logistics services, a scientific cargo collection and distribution system and a complete set of service functions. According to the guidance later proposed by Shanghai Municipal Government on implementation of the *Opinions*, the development strategies of the port can be summarized as follows:

(1) To build a comprehensive traffic network serving the Yangtze River Delta. In order to meet the requirements for regional economic integration, Shanghai will, on the basis of promoting infrastructure construction, integrate port resources in the delta, bring into shape a port layout where various players can clarify the division of labor and draw on each other's competitive advantages, enhance the development and coordination with inland river transport, and give scope to the advantages of the region.

(2) To establish itself as an international container hub port in Northeast Asia. According to the *Twelfth Five-Year Plan of the People's Republic of China for National Economic and Social Development*, the construction of container terminals, especially Waigaoqiao and Yangshan Deep-water Port Areas, was defined as a key project in Shanghai, with a view to enhancing the international competitiveness of the port.

(3) To optimize cargo collection and distribution model and increase the proportion of sea-rail transport. By relying on the "golden waterway" of the Yangtze River, Shanghai will strive to develop water-to-water international container trans-shipment business, give scope to Luchao Port Container Terminal and railway access, and gradually increase the proportion of sea-rail and sea-river direct transport.

(4) To extend port functions and improve service quality. According to the *Twelfth Five-Year Plan on Modern Logistics Development in Shanghai* and the *Opinions*, Shanghai will bring into full play its comprehensive service functions, take pains with the establishment of a comprehensive test area for international shipping development, and strive to develop modern logistics, trade shows, R&D and processing, bonded delivery of futures and other business so as to attract the procurement, allocation, operation and settlement departments of trans-national companies and international shipping enterprises to move into the port.

第三章港口政策与管理

随着近年城市经济的转型升级，上海港的增长目标与发展定位也做出了相应的调整。顺应上海产业结构中“服务”取代“制造”的总趋势与上海国际航运中心建设的总要求，上海港积极开拓服务功能、延伸服务领域，在实现港口效益提升的同时，促进港航产业的共荣发展，有效发挥港口经济的协同性与正向外部性。

3.1 港口发展战略规划

上海港的建设发展密切配合国家地区社会、经济发展的总体需要。上海在 2009 年国务院出台《推进上海加快发展现代服务业和先进制造业建设国际金融中心和国际航运中心的意见》（以下简称《意见》）后，积极推进城市产业结构转型，大力发展现代服务业和先进制造业，并以建设物流服务高效、集疏运体系科学、服务功能健全的国际航运枢纽港为目标实现创新发展。结合随后上海市政府出台的相关实施意见，可将上海港的发展战略归纳为以下几点：

1）建设服务长三角地区的综合交通网络。为适应区域经济一体化发展的要求，上海港将在继续加强港口基础设施建设基础上，整合长三角港口资源，形成分工合作、优势互补的港口格局，促进与内河航运的联动发展，发挥区域整体优势。

2）加快成为东北亚国际集装箱枢纽港。在《中华人民共和国国民经济和社会发展第十二个五年计划》中将集装箱码头工程作为上海港的重点建设任务。尤其是推进外高桥港区和洋山深水港区的建设，增强港口的国际竞争力。

3）优化集疏运方式，提升海铁联运比例。依托长江黄金水道，大力开展国际集装箱水水中转业务，提高江海直达比例，并有效发挥上海芦潮港集装箱中心站及铁路通道作用，逐步提高海铁联运比例。

4）拓展港区功能，提升服务质量。依据《上海市现代物流业发展“十二五”规划》和《意见》要求，上海港将充分发挥口岸综合服务功能、探索建立国际航运发展综合试验区，并大力开拓现代物流、贸易展示、研发加工、期货保税交割等业务，以吸引跨国企业采购分拨中心、营运结算中心以及国际航运企业入驻。

(5) To seek mutual benefits and win-win situation in the course of internationalization. Shanghai will make comprehensive plans for implementing the national policy of "attracting foreign investment and tapping into global markets", and give approval for joint investment and operation and other diversified models, so as to promote the services and profits of the port.

According to the overall goal of SISC construction proposed by the national and municipal governments as well as the opinions on vigorous development of port logistics, SIPG has worked out the three major strategies for port development in the future, from the local, regional and global perspectives: the Yangtze River Strategy, the Northeast Asia Strategy, and the Internationalization Strategy (Box 2), so as to provide guidance to the sustainable development of port business.

Box 2. Shanghai's three strategies for container business development

To maintain the healthy development of container business is a top priority of SISC construction, and a core task of SIPG's strategic development. Through the implementation of the Yangtze River Strategy, the Northeast Asia Strategy, and the Internationalization Strategy, Shanghai aims to increase its dominance in the trans-shipment business and further establish itself as an international hub port in Northeast Asia.

1) The Yangtze River Strategy. As a direct cargo source of Shanghai, the Yangtze River basin is the cornerstone of development and a core area for maintaining the current growth of the port. The Yangtze River Strategy aims to direct cargo flow along the river, improve the concentration capacity and coverage of Shanghai, and realize stable growth in its container throughput.

2) The Northeast Asia Strategy. As an indirect cargo source, Northeast Asia is a core area for further establishing Shanghai as an international hub port. In the future, the port will manage to increase its share of container trans-shipment business in Northeast Asian markets and seek strong development based on the strength of Yangshan Port.

3) The Internationalization Strategy. As a major approach to implementing the Internationalization Strategy, the exploration of overseas markets presents the third strategy for Shanghai. The expansion of terminals and related industries is intended to develop internationalized operational capacity and managerial expertise, and gradually bring into shape a trans-regional and trans-national operational pattern involving domestic and international markets.

5）互利共赢，提高对外开放水平。上海港将统筹国家“引进来”和“走出去”的发展方针，逐步允许合资、合营等多元化的经营模式，以共同推进上海港服务水平和经营效益的提升。

根据国家和市政府建设航运中心的总体目标和大力发展港口物流的具体意见，上港集团已从本土、区域和全球的视角制定了未来港口发展的三大主战略：即《长江战略》、《东北亚战略》和《国际化战略》（Box 2），以引导上海港业务的可持续发展。

Box 2 上海港集装箱发展三大主战略

保持集装箱持续健康发展，是建设上海国际航运中心的重中之重，也是上港集团战略发展的核心任务。通过实施长江战略、东北亚战略和国际化战略，将使港口在中转业务上实现突破，确立和巩固上海港作为东北亚国际航运枢纽港的地位。

1、 长江战略

作为上海港直接货源腹地的长江流域，是发展上海母港的立足之本，是维持上海港现有增长能力的核心区域。长江战略的核心，旨在主导长江流域货源流向，增强上海港对长江流域的集聚与辐射能力，实现上海港集装箱量的稳健发展。

2、 东北亚战略

作为上海港间接货源腹地的东北亚地区，是发展上海母港的增量空间，是确立和巩固上海成为东北亚国际航运中心的核心区域。在未来，以洋山为中心提高东北亚集装箱中转市场的占有率，是上海港实现跨越式发展的重要台阶。

3、 国际化战略

作为执行国际化战略的主要方式，全球视野下的海外市场开拓，成为了上海港的必然选择。码头及相关产业的扩张，旨在培养国际化运营能力，提升国际化管理水平，逐步形成辐射国内国际市场的跨地区、跨国经营格局。

It is obvious that Shanghai is undergoing the transition to a high value added economy. Against the backdrop of urban economic restructuring, Shanghai is bound to move its way up in the global value chain. It is attempting to do so by designing a shipping network, positioning itself as a container hub port, optimizing the cargo handling and distribution system, extending port functions, improving service quality and tapping into international markets.

3.2 Coordinating Port-City relations

3.2.1 Optimising cargo handling and distribution

Shanghai's policies on the optimization of cargo handling and distribution structure focus on development of waterway transport and reduction in proportion of road transport. Over the past 20 years, national and municipal governments have issued a series of policies to promote the development of sea-rail shipping markets. For instance, in 1997 Shanghai Lugang Container Multi-modal Transport Co., Ltd. was engaged in the operation of freight trains with fixed fares, fixed stops, fixed runs, fixed schedules and fixed routes; Luchao Port Container Terminal was set up when Yangshan Port was under construction, and the railway network was extended to places close to Waigaoqiao Port Area and Luchao Port. Nevertheless, the railway system, port system and highway system administered by separate authorities in the past led to no direct connection between port and railway in construction, operation, management, etc. Also, for this reason, two railway container terminals at Yangpu and Luchaogang with railway lines did not cross the port area, and multimodal port-marine-railway transport in Shanghai was far from established at a large scale. In order to respond to these challenges, the Chinese Administration has initiated an administrative reform creating one super ministry, incorporating the Ministry of Railway into the Ministry of Transport. The idea behind this is that the reform will not only benefit establishing a comprehensive transport system from the perspective of whole China, but also facilitate the development of marine-railway transport.

Given the migration of manufacturing industry to the hinterland and the large-scale development in the western region of China, the development of sea-rail transport will become an important market for Shanghai to extend its business to the hinterland. Hence, the port has been promoting railway transport over the past years. From 2006 to 2010, the Shanghai-Nanjing and Shanghai-Hangzhou High-speed Railways were successively put into service, thus indirectly promoting the cargo shipping capacity of railways. As per the railway network plan (2011-2015) issued by railway authorities, more railway lines will lead to Shanghai and be extended to areas close to Waigaoqiao Port Area and Luchaogang Container Terminal, setting the stage for sea-rail transport in Shanghai. According to the *Cabinet Reshuffle Plan* issued by China's State Council in 2013, the administrative responsibilities of railway development planning and policy-making are transferred from the former Ministry of Railways to the Ministry of Transport, which is responsible for formulating comprehensive plans for railway, road, waterway and civil aviation development. Such initiative is thought to be conducive to the accelerated construction of China's comprehensive transport system and the development of sea-rail transport in Shanghai.

从上海港的发展规划中不难发现，上海港正在经历“量增”到“质升”的转变。搭建网络布局、定位集装箱枢纽港、完善港口集疏运体系、开拓港区功能、提升服务质量以及走向国际等发展方针，将配合城市的经济转型同步实现港口的层级提升。

3.2 港口与城市协调发展

3.2.1 优化集疏运体系

整体来看，上海港优化集疏运体系结构的政策侧重于培育发展水路运输，降低公路运输所占比重。在过去二十年中，国家政府和上海市政府也出台了一系列的政策培育海铁联运市场的发展。例如 1997 年上海路港集装箱多式联运有限公司便尝试了“五定班列”的运营，洋山港建设的过程中也配套建设了芦潮港铁路集装箱中心站。并将铁路网络延伸至外高桥港区附近和芦潮港附近。然而，由于之前中国铁路运输与港口、公路运输分属不同机构管理，导致港口和铁路在建设、运营、管理等方面衔接不畅，也因此位于杨浦和芦潮港的两大铁路集装箱处理站及铁路线都未进入港区，上海港海铁联运业务也尚未形成规模。然而，2013 年中国政府进行大部制改革，将铁道部并入交通运输部，此举将有利于从国家宏观的角度构建发展综合运输体系，也将有利于海铁联运的发展。

结合国家制造业内迁、大力开发中西部地区的形势，发展海铁联运将成为上海港辐射内陆的重要支撑之一。因此，近年上海港依然着力推进铁路集疏运体系的建设。在“十一五”期间（2006-10 年）相继建成通车的沪宁城际铁路、沪杭客运专线，间接释放了城市的铁路货运能力，而且在铁路部门已出台的“十二五”时期铁路网规划中，提出将扩大加密上海段铁路线路，铁路线路将被延伸至外高桥港区和芦潮港集装箱中心站附近，在基础设施方面为上海港海铁联运的发展奠定了基础。而且 2013 年，中国国务院发布《国务院机构改革和职能转变方案》，将铁道部拟订铁路发展规划和政策的行政职责划入交通运输部，由交通运输部统筹规划铁路、公路、水路、民航发展。这一举措有利于中国加快推进综合交通运输体系的建设，对于上海港海铁联运的发展有一定的积极作用。

Waterway transport is of primary significance to the transition and development of Shanghai. As the most clean and environment-friendly shipping mode, water-to-water trans-shipment will be another important part for the cargo handling and distribution system of the port in the future. As mentioned in Chapter One, Shanghai's waterway transport volume is growing with each passing year, which is linked to the support from the government and industries. At the beginning of 2011, the State Council issued the Opinions on *Accelerating the Development of Waterway Transport along the Yangtze River and Other Inland Rivers*, defining the development of waterway transport as a national strategy, thus providing opportunities for inland river shipping in Shanghai. It is specified in the *Opinions of the Municipal People's Government on Accelerating the Development of Inland River Transport in Shanghai* issued in October that water-to-water trans-shipment to take up no less than 50% of the total business volume in Shanghai by 2020. Seven important tasks are proposed on inland river transport development, coupled with preferential financial policies such as a dedicated fiscal fund, financing via issuing stocks and bonds, and the exemption of business tax on the part of inland river container shipping companies.

Stimulated by the policy support from the government, Waigaoqiao and Luojing feeder route dredging projects, Hangzhou-Shanghai Channel and Zhaojiagou projects have all been completed, and the "1+10" trunk shipping route network has taken shape. Since 2010, SIPG has successively forged partnership with inland ports in Jiaxing, Anji and Wuxi, thus promoting the development of inland river container transport in Shanghai.

Although it is less desirable in terms of energy conservation and environmental protection, road transport is still the workhorse of cargo distribution in the hinterland of Shanghai. Under the guidance of the *Implementation Plan for Pilot Business of Drop and Pull Transport* issued by the central government in 2010 and the *Circular on Issues Concerning the Promotion of Drop and Pull Transport Business in Shanghai* issued by the municipal government in 2011, a series of preferential and support policies including toll exemption or reduction have been proposed for the pilot business of semi-trailer swap transport. A container truck innovation proposal may be launched so as to improve road transport efficiency, reduce energy consumption and fall in line with the ideology of sustainable urban development.

3.2.2 Spatial development of the port-city

The construction of Yangshan Port Area and Lingang New City is the most remarkable achievement of port-city coordinated development in Shanghai. Due to the lack of coasts and land, Shanghai is bound to relocate its ports to exterior areas. As a new powerhouse of container business development in Shanghai, Yangshan Port Area has made a positive effect on urban economic growth and regional logistics development by developing relevant value-added services, agglomerating settlement of port industrial clusters, etc. In order to support the development of Yangshan Deep-water Container Port Area, Lingang New City, which covers an area of 3.16 million km^2, has been established in southeastern Pudong New Area, 76 km away from the city proper (Box 4).

The construction of Yangshan Port is considered to have the most crucial strategic importance for Shanghai to maintain its competitiveness as a premier globalized seaport city. The magnitude of the project and the jurisdictional barriers that it had to overcome demonstrates the will of the central government to create a "polycentric yet more compact multifunctional and multilayered gateway centre upon Shanghai" (Wang and Ducruet, 2012). This reorganization of port infrastructure and cargo flows is undoubtedly critical in the process of urban and port development for the city of Shanghai as this drastically changes the layout of the transportation network due to the subsequent traffic shift. Later on, a number of number of preferential policies were implemented by the central and local governments in order to further promote the development of the Yangshan Port Area (Box 5).

水路集疏运是上海港转型发展的重中之重。水水中转作为港口最为清洁、环保的运输方式将成为上海港未来集疏运体系的又一大支撑力量。正如第一章所提到，上海港的水路集疏运量正处于逐年上升的阶段，这主要得益于政府及行业对于水路集疏运的大力扶持。2011 年初，国务院颁布了《关于加快长江等内河水运发展意见》，将长江等内河水运发展上升为国家战略，为上海市内河航运的发展提供了良好机遇。同年 10 月上海政府发布《上海市人民政府关于加快本市内河水运发展的意见》，明确到 2020 年上海港水水中转业务比例需到达 50%以上，提出了 7 项发展内河水运的重要任务，并为加快内河集疏运体系建设提供了财政专项资金、股票债券筹融资、内河集装箱运输企业免征营业税等相关财税、金融的政策性保障。

在政府部门的大力推动下，随着外高桥、罗泾港区的支线航道疏浚工程顺利完工，以及杭申线和赵家沟等工程的竣工，上海市“一环十射”的干线航道网已初步形成。而上海国际港务集团自 2010 年起，已先后与嘉兴港、安吉港、无锡港建立合作关系，推动了上海港内河集装箱运输的发展。

公路运输作为上海港腹地集疏运的主力军，虽在能耗和污染方面处于劣势，但中央 2010 年推出的《甩挂运输试点工作实施方案》和市政府 2011 年发布《关于促进本市甩挂运输发展有关事项的通知》的指导，为上海港试点甩挂运输（甩挂运输即指，具有动力的牵引车拖带承载货物的无动力挂车至目的地后，将挂车甩下，换上新的挂车将其他货物运抵另一个目的地的运输方式）提供了配套扶持政策和减免通行费等一系列的优惠措施，可以启动集卡改良方案，以提升公路的运输效率、降低单位能耗，顺应城市可持续发展的理念。

3.2.2 城市空间与港口协调发展

洋山港区和临港新城的建设是上海港口与城市和谐发展最为瞩目的成就。由于岸线和土地的稀缺性，上海港口功能的外移已成必然。而洋山港区作为上海港集装箱业务发展的新动力，通过开展相关增值服务、集聚临港产业落户等方面对城市经济的增长和区域物流的发展产生了积极的影响。为承接洋山深水集装箱港区的发展，在距上海中心城区 76 公里的浦东新区东南面新建了占地 315.6 万平方公里的临港新城（Box 4）。

洋山港建设被认为对上海保持国际化海港城市竞争力有很高的战略重要性。该项目规模巨大，且克服了行政管辖限制，这显示了中国中央政府对于将上海建设成为“多中心但多功能、多层次的综合性门户枢纽”的决心（Wang 和 Ducruet, 2012）。港口基础设施和货流的重组无疑在上海城市和港口发展进程中极其重要，因为随后的交通运输变化彻底改变了交通网路布局。不久，中央及市级政府陆续出台了多项政策支持上海洋山港区的建设，目前上海洋山港已拥有多项优惠政策（Box 5）。

The construction of Yangshan Port has not only mitigated the insufficient output of Waigaoqiao Port Area and traffic congestion, but also provided deep-water terminals that can accommodate large-sized vessels. Statistics from Shipping Affairs Office of Pudong demonstrate that the container throughput of Waigaoqiao Port Area registered was 15.36 million TEUs in 2012, down by 2.2% Year-over-Year, while that of Yangshan Port recorded 14.15 million TEUs, up by 8% than the previous year, with international trans-shipment growing 29.3% to 1.2 million TEUs, indicating that a larger number of international containers are being handled by Yangshan. Relying on the advantage of its natural deep-water, Yangshan Port is trying to attract more international container liners to further increase its cargo throughput.

The construction of Yangshan Port and Lingang New City is becoming an important driver of the development of the Shanghai urban economy and development of Shanghai international shipping center. According to *the Medium and Long Term Planning of Lingang Area* launched in 2013, the area is envisioned as an intelligent coastal city with 800,000 resident people featuring integrated high-end manufacturing and service industry, and the city's strength in providing new employment opportunities and promoting GDP may turn even more prominent.

Box 3: Rise of business cities close to ports

The evolvement of port space has been found to generally feature four stages: early urban port, expanding urban port, modern industrial port and urban port away from the waterfront (Bird, 1988). That is, port develops from primitive prototype with terminal facilities located in the heart of city, to expansion towards downstream estuary, and further away from the front waterline.

However, as the port moves further offshore, some business functions of the city are slowly being separated from the port, leaving industrial, logistics clusters to the port. In this way, loss of its business functions may put the port to a less advantaged position. Therefore, the concept "Port-vicinity Business City" comes into being. It refers to a new complex with port functions (such as logistics) and some port-related urban functions. The urban functions are those induced by people who on business traveling in/out of the port area, including education, tourism, shopping, accomodation, etc.

This new progress can not only satisfy the above-mentioned port commuters' need for business functions to add to the charm of the port, but also increase revenue of the city. Nowadays such "Port-vicinity Business City" –concepts have taken shape near Shanghai, as well as Singapore.

Data Source: Zhen Hong, Zhao Nan, (2012), *Global Port Development Report (2011)*

上海洋山港的建设不仅有效缓解了浦东外高桥港区的产能不足与道路拥堵，也为上海港大船接卸提供了优良的深水泊位。据浦东航运办统计，2012 年外高桥港区集装箱吞吐量仅 1 536.3 万标箱，同比下降 2.2%；洋山港完成集装箱吞吐量 1 415 万标箱，同比增长 8%，其中国际中转箱同比大增 29.3%至 120.3 万标箱，表明上海港国际集装箱箱量正快速向洋山港转移。而依托天然深水岸线，未来上海港将源源不断地吸引国际干线集装箱船舶的挂靠。

洋山港与临港新城的建设为上海城市经济以及上海国际航运中心建设起到了巨大的推动作用。在 2013 年公布的《临港地区中长期规划》中，临港地区将建设成拥有 80 万常住人口，集高端制造业与先进服务业为一体的智慧型滨海新城，新增就业机会与创造城市 GDP 的优势也将进一步凸显。

Box 3 “临港商业城的兴起”

从港口空间发展历史来看，一般而言港口的空间转换经历了 4 个阶段，分别是初期城市港口、扩张中的城市港口、现代工业化港口和从水线前沿后撤的城市港口。港口发展的出发点为原始型港口城市，即码头设施都位于城市中心，随着港口的进一步扩建，一般向下游河口转移，直到第四阶段城市的功能从水线前沿后撤。

然而随着港口的外移，城市的部分商业功能逐渐与港口剥离，大量的工业、物流产业群集聚在港口，港口附近商业功能的缺失可能导致港口本身吸引力的降低，为此“临港商业城”概念顺势兴起。所谓“临港商业城”是指集港口本身的功能（例如：物流、工业）以及部分与港口相关的城市功能于一体的新型综合体。其中与港口相关的城市功能是指向往来港口办理相关业务的人员在港口附近区域提供商业服务的功能，主要包括教育、休闲旅游、市政服务、购物商业、居住、办公等。

“临港商业城”的发展不仅可以满足往来港口人员对于商业功能的需求，从而增加港口的吸引力，还可提升港口城市的经济收入。目前上海、新加坡等港口附近已表现出“临港商业城”的雏形。

资料来源：真虹，赵楠，（2012），《全球港口发展报告（2011）》

Box 4: Construction of Lingang New City in Shanghai

After the project of SISC construction was expressly proposed by the State Council in January 1996, the municipal government announced the development of areas close to the ports in support of SISC construction and port-city coordinated development. In April 2012, the main part of Lingang New City was officially named as Nanhui New City.

The areas close to the ports can be divided into the main part and industrial area (including the main industrial zone, heavy equipment zone, logistics park and comprehensive zone). Covering an area of 241 km^2, the industrial area boasts a constellation of modern equipment manufacturing industry, with five bases specializing in the manufacturing of automobiles and parts, key components of large-sized vessels, power generation, transmission and transformation devices, ocean engineering equipment and spare parts for aviation. Relying on Yangshan Bonded Port and Pudong International Airport, the logistics park is vigorously engaged in bonded or non-bonded logistics. The concentration and coordinated development of the port-related equipment manufacturing industry and modern logistics will offer support for capacity building in Yangshan.

In September 2012, the Party Committee and Municipal Government of Shanghai adjusted and optimized the management scheme for the development of areas close to the ports. The Port-related Industry Area Management Committee and Nanhui New City Management Committee merged into the Management Committee for the Development of Areas Close to Ports. It is clearly specified in the *Measures for Management of Areas Close to Ports in Shanghai (2013)* that the Management Committee affiliated with the municipal government is within the jurisdiction of Pudong New Area which is liable for making comprehensive plans for the development of the area.

The development of areas close to ports can support the migration of logistics enterprises in Yangshan Bonded Zone. Currently, PFSYIDA Cold Chain Logistics Base and OOCL Port-related Project have been completed and put into service, while Caterpillar Logistics Project (Phase II), K Line Zhenhua Project and LTD Port-related Project are under way. In the future, the areas close to the ports will strive to develop trade, finance and other value-added logistics services, with emphases placed on exhibition and trade of imported red wine, high-end food and couture

Figure 3.1 Layout of Areas Close to the Ports

Box 4:上海临港新城建设

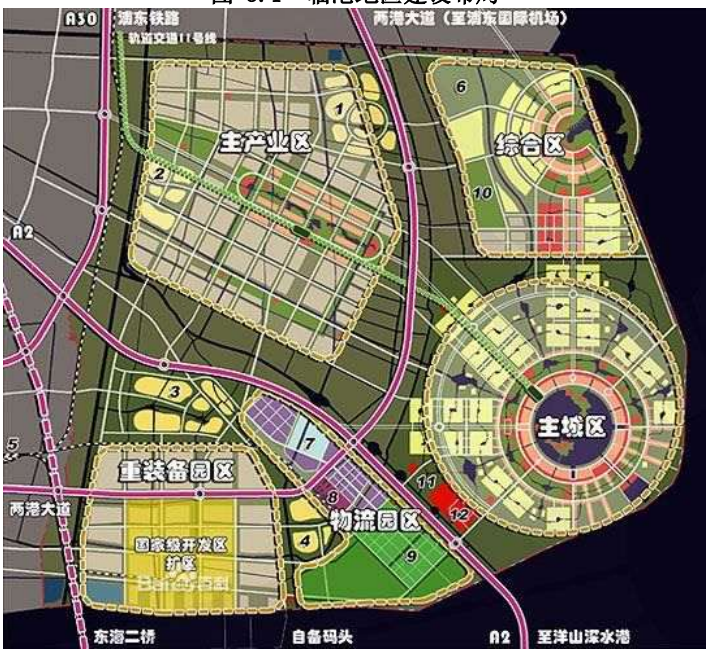
1996 年 1 月，国务院明确提出要建设上海国际航运中心，上海市政府为配合上海国际航运中心的建设，实现港、区、城的联动发展而提出同步推进临港城区的开发。2012 年 4 月，临港新城主城区正式更名为南汇新城。

临港地区可以分为主城区和临港产业区（包括主产业区、重装备产业区、物流园区和综合区）。其中，上海临港产业区集聚了现代装备制造业的主体，面积达到 241 平方公里，已经基本形成了汽车整车及零部件、大型船舶关键件、发电及输变电设备、海洋工程设备、航空零部件配套等五大装备产业制造基地。物流园区依托洋山保税港和浦东国际航空港，大力发展保税物流和非保税物流。随着临港装备制造产业与现代物流业的集聚和联动发展，将为上海洋山港的临港产业与港口物流能级提升产生巨大的推动作用。

2012 年 09 月，上海市委、市政府对临港地区开发建设管理体制进行了调整完善：合并上海临港产业区管委会和南汇新城管委会，成立上海市临港地区开发建设管委会。2013 年起施行的《上海市临港地区管理办法》明确，设立临港地区开发建设管理委员会，为上海市人民政府派出机构，并委托浦东新区管理，负责统筹推进该地区开发建设。这意味着过去的产业区和新城两个管委会将合二为一，临港地区正式纳入了“市属区管”的管理模式。

临港地区的建设可以有效承接洋山保税港区内物流企业的转移。目前，普菲斯亿达冷链物流基地、东方海外临港项目已竣工投运，卡特彼勒物流二期、川崎振华、中特国际物流临港等项目也正在施工中。未来，临港地区将大力开发贸易、金融等物流增值服务功能，重点开展进口红酒、高端食品和服装的展示与贸易。

图 3.1 临港地区建设布局



Box 5: List of Preferential Policies for Yangshan Bonded Zone

As a comprehensive test area for international shipping development, Yangshan Bonded Zone is not only entitled to current preferential policies for bonded zones, export processing zones and bonded logistics parks, but also a test area for hub port construction, policy innovation and functional development of special supervision areas. The current preferential policies are as follows:

Tax exemption: Tariff and import taxes are exempted as for machinery, equipment and materials for capital construction necessitated by corporate construction, production and management devices for the enterprise's own use, office supplies and spare parts of a reasonable quantity, fuel and equipment for production, as well as other stuff imported from abroad into the bonded port area. Value-added processing tax is exempted as to products made by enterprises in the bonded port area to be sold within the area or shipped abroad.

In-port tax rebate: The entry of domestic cargo into the bonded port area will be regarded as exporting and enjoy tax rebate. Subsequent to the entry of such cargo into the bonded port area, its owners may go through tax rebate formalities by producing the tax rebate declaration certificate issued by Yangshan Customs.

Tax rebate for port of embarkation: Owners of cargo from other domestic ports and trans-shipped at Yangshan Bonded Zone may go through tax rebate formalities upon the departure of from the port of embarkation.

Tariff exemption within the bonded port area: Tariff is exempted within the bonded port area for raw materials, spare parts, components and packages needed by enterprises within the said area for processing and exporting, as well as trans-shipment and cargo stored within the area.

Exemption of inspection: Cargo trans-shipped at the bonded port area to other countries is free of inspection and quarantine.

Exemption of Customs duty deposit: The customs duty deposit and write-off systems do not apply to enterprises within the bonded port area.

Convenient settlement: Enterprises within the bonded port area will enjoy a convenient valuation system, and do not need to go through write-off formalities for foreign currency receipts or disbursements included in the item of imports and exports.

Exemption of business tax: Business tax is exempted for enterprises registered in the bonded port area and engaged in international shipping, cargo transport, warehousing and stevedoring.

Offshore accounts: Enterprises within the bonded port area are allowed to open offshore accounts so as to facilitate settlement for their overseas business.

Customs declaration: Enterprises within the bonded port area which are engaged in multiple transactions outside the area may go through customs declaration formalities in a lump sum.

Box 5. 洋山港保税区优惠政策一览

作为国际航运发展综合试验区，洋山保税港区不但适用保税区、出口加工区、保税物流园区现行的各类特殊政策，而且也是我国探索枢纽港建设和特殊监管区功能培育和政策创新的实验区。现有的优势政策和监管便利包括：

免税：对境外运入保税港区的企业建设所需机器、设备和基建物资等，企业自用的生产、管理设备和合理数量的办公用品及所需维修零配件，生产用燃料、设备等免关税和进口环节税；保税港区企业生产供区内销售或运往境外的产品，免征区内加工环节的增值税。

入区退税：国内货物进入保税港区视同出口，实行退税。货物入港后凭洋山海关签发的出口退税报关单证明联，即可办理退税。

启运港退税：从国内其他港口启运经洋山保税港区中转的货物，在离开启运地时即可办理退税。

保税：对境外运入保税港区的企业加工出口所需的原材料、零部件、元器件、包装物件以及转口货物和在区内存储的货物实行保税。

免检：对经保税港区中转、转口至境外的货物，一般不再实施检验和检疫处理。

免帐：区内企业不实行加工贸易银行保证金台帐和合同核销制度。

结算便利：区内企业交易实施便利的货币计价制度；区内企业进出境贸易项下的外汇收支，无需办理收付汇核销手续。

营业税免征：对注册在洋山保税港区内的企业从事国际航运、货物运输、仓储、装卸搬运业务取得的收入，免征营业税。

离岸账户：允许企业开设离岸账户，为其境外业务提供资金结算便利。

集中报关：区内企业出区进国内销售货物可集中办理海关申报手续。.

3.2.3 Green Port Policies

Despite their contributions to regional economic growth, areas that are adjacent to ports suffer substantial negative externalities (air and water pollution, noise etc.). The *Opinions on Promoting the Sustained Healthy Development of Coastal Ports* issued by the Ministry of Transport in 2011 attached importance to the promotion of port transition and upgrading and the development of green safe ports. Shanghai has actively worked on integrating environment governance into day-to-day port operation so as to promote the coordinated development of the port, resources and environment. In 2012, it was awarded a grant of RMB 14.93 million for energy conservation and emission reduction projects by the Ministry of Transport.

Greening the port construction in Shanghai has also been a concern for the municipal government. According to the *Guiding Opinions on the Construction of Resource-saving and Environment-friendly Shanghai Port* issued by Shanghai Municipal Transport and Port Authority at the end of 2011, the main tasks of Shanghai were defined as the rational use of coastal resources, the construction of efficient port areas, the promotion of energy-saving and emission-reducing techniques, the application of alternative energy and the enhanced monitoring over pollution discharge. The specific goals are listed in Box 6.

Green port development is catalyzed by the elimination of outdated industrial capacity, the promotion of energy reform and the strengthening of pollution control. The *Implementation Plan for Promoting the Scraping and Upgrading of Over-aged Carriers and Single-hull Tankers* issued in 2010 was an encouragement to the scraping of the old vessels in advance. Through subsidies for the ship owners, the Plan aims to reduce energy consumption and emissions, as well as to decrease operational accidents and mitigate water pollution. The *Scope and Criteria of Subsidies for Over-aged Carriers and Single-hull Tankers* issued in 2012 stimulated the elimination of yellow label vehicles (high-emission gasoline-driven vehicles not meeting China's GB Class I Emission Standards or similar diesel-driven vehicles disagreeing with GB Class III Emission Standards) and contributed to the development of drop and pull transport in Shanghai. The use of RTG which replaces oil with electrical power, the adoption of shore power technology for large container and bulk terminals, the promotion of LNG and other types of energy reform have been included in port development plans. In addition, the newly published *Guiding Opinions on the Prevention and Governance of Dust Pollution at Dry Bulk Terminals* are tailored for bulk terminals specializing in coal and other heavily polluting cargo.

3.2.3 发展绿色港口政策

港口虽然能给区域经济增长和运输便利带来了巨大的贡献，但对于城市空气、水质、噪声等环境方面所产生的负外部性同样显而易见。在交通运输部 2011 年发布的《关于促进沿海港口健康持续发展的意见》中明确强调要着力推动港口转型升级，发展绿色安全港口。上海港积极响应号召将港口环境管理纳入日常经营之中，以促进港口、资源与环境的协调发展，并在 2012 年获得了交通运输部给予的节能减排专项扶持资金 1493 万元。

上海绿色港口的建设也得到了市级政府的高度关注，2011 年底上海市交通运输和港口管理局发布《上海港“资源节约型、环境友好型”港口建设指导意见》，明确将合理利用岸线资源、建设集约化港区、推广节能减排技术、应用替代性能源、加强污染排放监控等方面作为上海港重点任务，并制定了具体的目标（Box 6）。

在具体政策方面主要以淘汰落后产能、推动能源改革和深化污染管控等措施推进绿色港口的发展。2010 年《促进老旧运输船舶和单壳油轮报废更新实施方案》以补贴的形式鼓励老旧运输船舶和单壳油轮提前报废，以降低船舶能耗与排放，减少安全事故和水域污染。2012 年《老旧汽车报废更新补贴车辆范围及补贴标准》加速了上海市黄标车（高污染排放车辆的别称，指未达到国Ⅰ排放标准的汽油车，或未达到国Ⅲ排放标准的柴油车。）的淘汰，并利于推进甩挂运输的开展。轮胎吊（RTG）的“油改电”、在大型集装箱和散货码头使用岸电技术、LNG 能源的推广等能源改革均已被港口当局列入发展计划。此外，新制定的《上海港干散货码头扬尘污染防治管理指导意见》也将对煤炭等高污染性散货码头起到一定的制约作用。

Box 6: Shanghai port's targets on environment ad resources

Saving resources

1. Comprehensive energy consumption of handling 10,000 tons of cargo and proportion of vessels at the port using shore power: following the *Guiding Opinions on the Construction of Low-carbon Transport System* issued by the Ministry of Transport in February 2011.

2. Coastal area utilization efficiency: According to the records of Shanghai Port Statistical Yearbook (2006), the cargo throughput of Shanghai's coastal ports reached 443.174 million tons, and the berths for stevedoring measured 56,795 meters. Calculations show that the coastal area utilization efficiency is 7,803 tons/meter. Cargo throughput of Shanghai has been steadily increasing over the past years. It is predicted that as of 2020, the cargo throughput of berths for stevedoring will have grown to 11,705 tons/meter.

Environmental targets I

1. Proportion of upgraded RTG container cranes for emission reduction: The *Twelfth Five-Year Plan for Energy Conservation and Emission Reduction of Road and Waterway Transport* issued by the Ministry of Transport in June 2011 required the upgrading of 1,600 RTGs to be fueled by electric power instead of diesel

2. Reduction in SO_2 and NO_x emissions, CO_2 emission from handling 10,000 tons of cargo, comprehensive dust prevention and control ratio, comprehensive sewage disposal ratio, and vessel sewage and garbage handling ratio: following the *Policies on Energy-saving and Environment-friendly Road and Waterway Transport Development* issued by the Ministry in February 2009.

Table 3.1: Targets for resource efficiency

No.	Indicator	Unit	Target	Remarks
1	Comprehensive energy consumption of handling 10,000 tons of cargo	10,000 tons of standard coal/10,000 ton	As of 2015, energy consumption should have reduced 5% from 2010; as of 2020, energy consumption should have reduced 8%.	Restrictive Mandatory
2	Proportion of vessels at the port using shore power	%	As of 2020, shore power should have been used by international tanker terminals, major passenger terminals and 30% of large container and bulk terminals.	Referential
3	Coastal area utilization efficiency	10,000 ton/meter	As of 2020, the cargo throughput of berths for stevedoring should have risen 50% from 2005.	Mandatory

Table 3.2 : Environmental port targets

No.	Indicator	Unit	Target	Remarks
1	SO_2 and NO_x emissions		Significant decline	
2	CO_2 discharge of handling 10,000 tons of cargo		As of 2015, such discharge should have dropped by 10% from 2005; as of 2020, such discharge should have dropped by 12%.	Mandatory
3	Proportion of upgraded RTG container cranes for emission reduction	%	100% as of 2015	Mandatory
4	Comprehensive dust prevention and control ratio	%	70%	Mandatory
5	Comprehensive sewage disposal ratio	%	100%	Mandatory
6	Vessel sewage and garbage handling ratio	%	100%	Mandatory

Box 3. 上海港“资源节约型”、“环境友好型”港口评价指标

一、资源节约型指标

1、港口生产单位吞吐量综合能耗、靠港船舶使用岸电率。依据 2011 年 2 月交通运输部《建设低碳交通运输体系指导意见》。

2、岸线使用效能。根据《2006 年上海港口统计年鉴》记载，2005 年上海港海港货物吞吐量为 44 317.4 万吨，生产性泊位长度为 56 795 米，经计算 2005 年岸线使用效能为 0.7803 万吨/米。随着近几年的发展，上海港货物吞吐量稳步增长。预计到 2020 年，上海港单位长度生产性泊位完成的货物吞吐量可以提高至 1.1705 万吨/米。

二、环境友好型指标

1、轮胎式集装箱门式起重机节能减排改造率。依据 2011 年 6 月交通运输部《公路水路交通运输节能减排“十二五”规划》，对具有改造价值的 1 600 台 RTG 实施“油改电”技术改造。2、SO2、NOX 削减量、港口生产单位吞吐量 CO2 排放、粉尘综合防治率、污水综合处理率、船舶污水和船舶垃圾接收率。依据 2009 年 2 月交通运输部《资源节约型环境友好型公路水路交通发展政策》。

序号	指标	单位	目标	说明
1	港口生产单位吞吐量综合能耗	万吨标煤/万吨	到 2015 年，能耗比 2010 年降低 5%；到 2020 年，能耗比 2010 年降低 8%。	约束性
2	靠港船舶使用岸电率	（%）	到 2020 年，国际邮轮码头、主要客运码头以及 30%大型集装箱码头和散货码头使用岸电。	参考性
3	岸线使用效能	万吨/米	与 2005 年相比，2020 年上海港单位长度生产性泊位完成的货物吞吐量提高 50%。	约束性

序号	指标	单位	目标	说明
1	SO2、NOX 削减量比率		显著下降	
2	港口生产单位吞吐量 CO2 排放	（%）	到 2015 年，排放比 2005 年降低 10%；到 2020 年，排放比 2005 年降低 12%	约束性
3	轮胎式集装箱门式起重机；能减排改造率	（%）	到 2015 年，完成 100%	约束性
4	粉尘综合防治率	（%）	70%	约束性
5	污水综合处理率	（%）	100%	约束性
6	船舶污水和船舶垃圾接收率	（%）	100%	约束性

As a terminal operator, SIPG is making proactive efforts at green port construction through procedure transformation, technical innovation, and ecological compensation. In particular, the operation of "container truck-and-trailer transport platform" has sharply reduced idle container trucks (by an estimated 20%), and reportedly saved fuel consumption per tank. In addition, ecological compensation efforts such as the freeing of aquatic animals and plants for water quality restoration have been implemented at the Waigaoqiao project (Phase VI). Green port construction has become a consensus between competent authorities and industry players and a common social responsibility.

3.3 Assets for Metropolis Development

3.3.1 Shanghai as International Shipping Centre

Urban development has borne witness to closer port-city interactions, with port resources as an indispensable factor of urban and regional economy. Land planning, infrastructure construction, industrial restructuring and the orientation of urban development are all closely linked to port industry. Since the State Council decided upon SISC the construction of Shanghai as an International Shipping Centre in 1995 and made a systematic overall planning for the same in 2009, coupled with the Twelfth Five-Year Plan of Shanghai for Accelerating the Construction of SISC developed by the municipal government, the project has promoted urban economy and related industries.

Shanghai has drastically improved its maritime connectivity in the past decade, which has in turn strengthened its competitiveness in becoming an international maritime centre. The more extensive connections a port possesses, the more attractive it is to the shippers because such network would offer direct services and more efficient in-time deliveries of goods. When there is sufficient volume of traffic concentrated on certain routes, then the shipping services between these ports would become more frequent and thus guarantee more reliability. Maritime connectivity not only refers to the number of connections with other ports in the world, but also the place of a specific port in network, namely the centrality. The following two graphs depict the evolution of Shanghai in terms of its maritime forelands from 2004 to 2011 (Figure 3.2 and Figure 3.3). It is clear that the maritime forelands of Shanghai have substantially improved in the last ten years, which resonates the explosive traffic growth for Chinese ports due to its rapid economic development. The comprehensive maritime connectivity certainly has enabled Shanghai to become one of the top choices to various shipping lines and the centrality of its location in such a network has in turn helped the port in expanding its forelands and attracting new traffic.

作为码头运营商的上港集团在流程改造、科技创新、生态补偿等方面对绿色港口的建设正进行积极的尝试。其中“集装箱互拖平台”的运作使得集卡在码头间拖箱的平均周转期减少 20%以上、每箱节约油耗约 0.5 升、人工和轮胎吊费用 3.7 美元；“高架滑触线方案”的创新则实现了港内轮胎吊的“油改电”，而集卡车“油改气”和岸电技术的运用也大幅降低了港区的污染排放；除此以外，放生水生动植物以恢复港区水质的生态补偿工作在外高桥六期也取得明显成效。可见，绿色港口的建设已在政府和企业间达成共识，成为了社会共同的责任。

3.3 港口作为大都市发展的有效资产

3.3.1 国际航运中心建设

在城市发展演变的过程中，港口与城市间的相互作用日益显著，港口资源已经成为城市乃至区域经济形成至关重要的因素。土地规划、基础设施建设、产业布局调整及城市未来的发展定位都与港口产业发展息息相关。自 1995 年党中央国务院于做出建设上海国际航运中心的重大决策，到 2009 年国务院《意见》对上海国际航运中心建设进行系统规划和全面部署，再到 2012 年上海市政府制定的《上海市加快国际航运中心建设“十二五”规划》，上海国际航运中心的发展推动了城市经济和相关产业的发展。

过去 10 年，上海已大大提升了其海运业的连通能力，这也加强了其作为国际航运中心的竞争力。港口的连通范围越广，它对托运人的吸引力就越大，因为这张连通网络可提供运输直达服务，让及时交货效率更高。当充裕的货物量集中在某些航线上时，这些航线上港口间的运输频率将更高，运输服务也将更为可靠。海运连通能力的内涵不仅是一个港口通过航线运输与全球多少其他港口相连通，还要看该港口在航线网络中的地位如何，即它是否位于运输网络的核心位置。下面两幅图（图 3.2 和图 3.3）体现了上海在 2004 年和 2011 年海运覆盖范围的变化。显然，近十年来上海的海运覆盖网络大幅扩大，这与中国经济飞速发展带来的港口货物吞吐量激增的趋势一致。发达的海运连通网络令上海成为众多航线挂靠的首选，它在海运网络体系中的核心位置也助其进一步扩大航线覆盖范围、吸引更多货流。

Figure 3.2 Maritime forelands of Shanghai (2004)

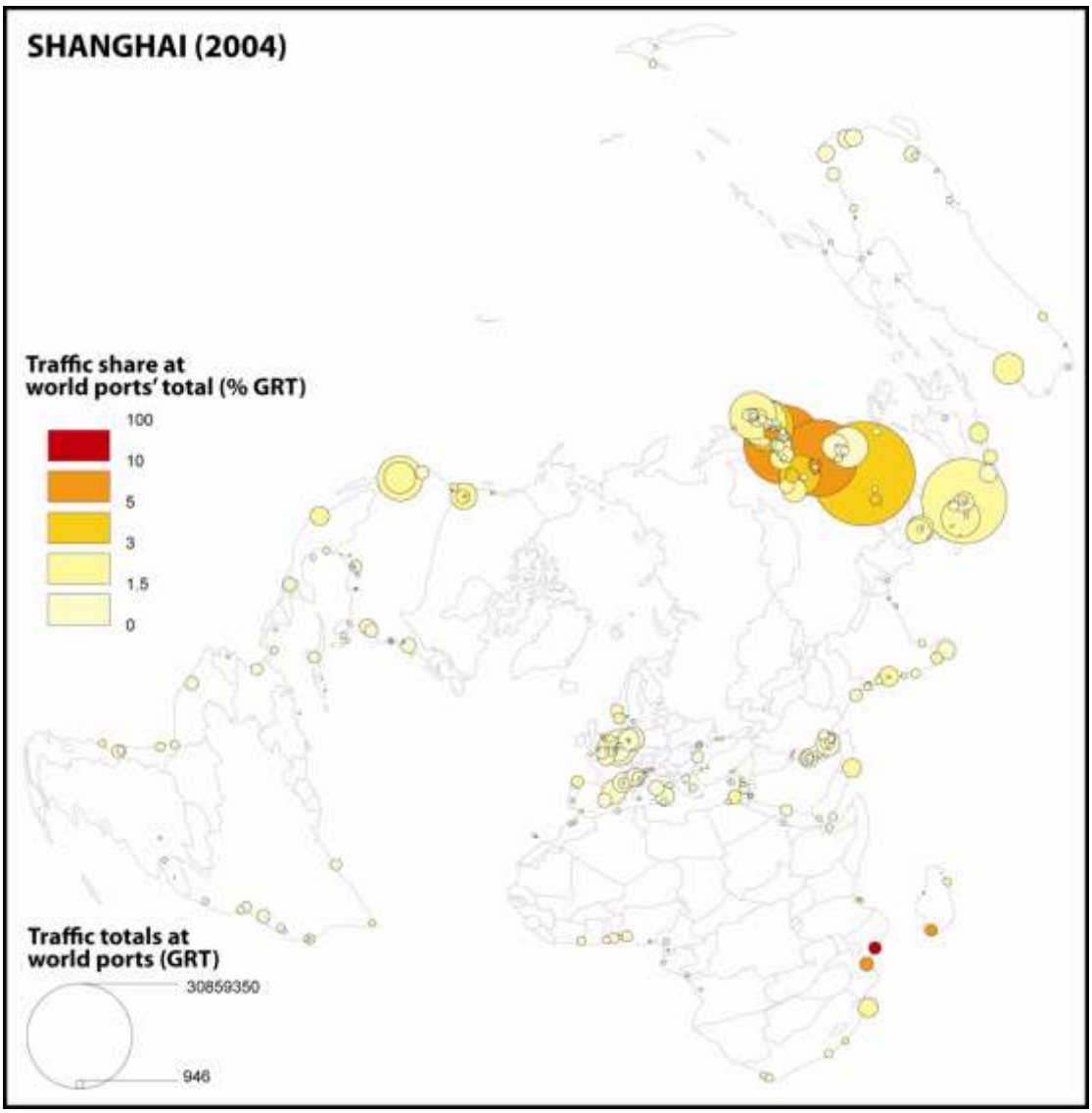


图 3.2 上海港海向腹地（2004）

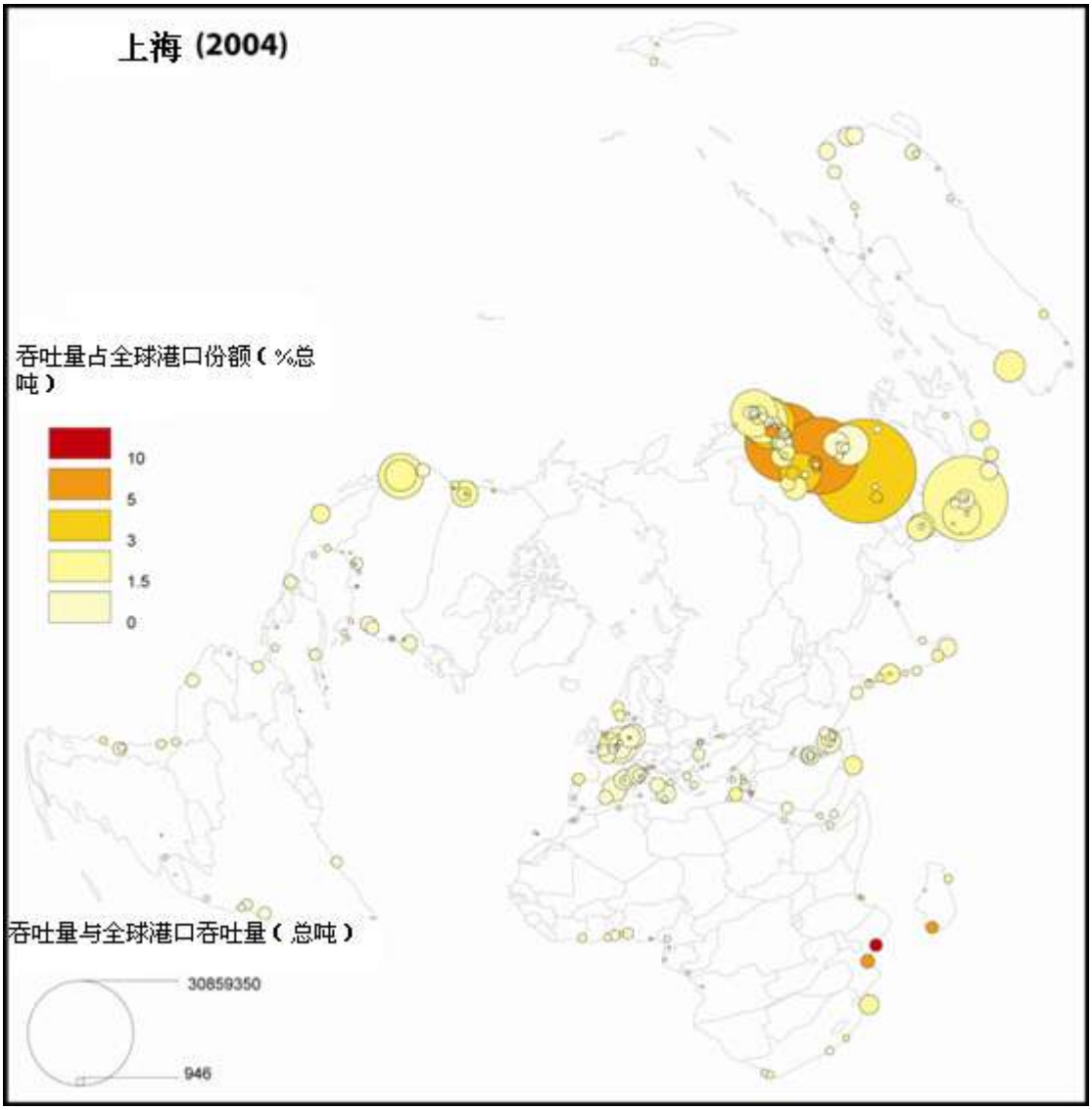


Figure 3.3 Maritime forelands of Shanghai (2004)

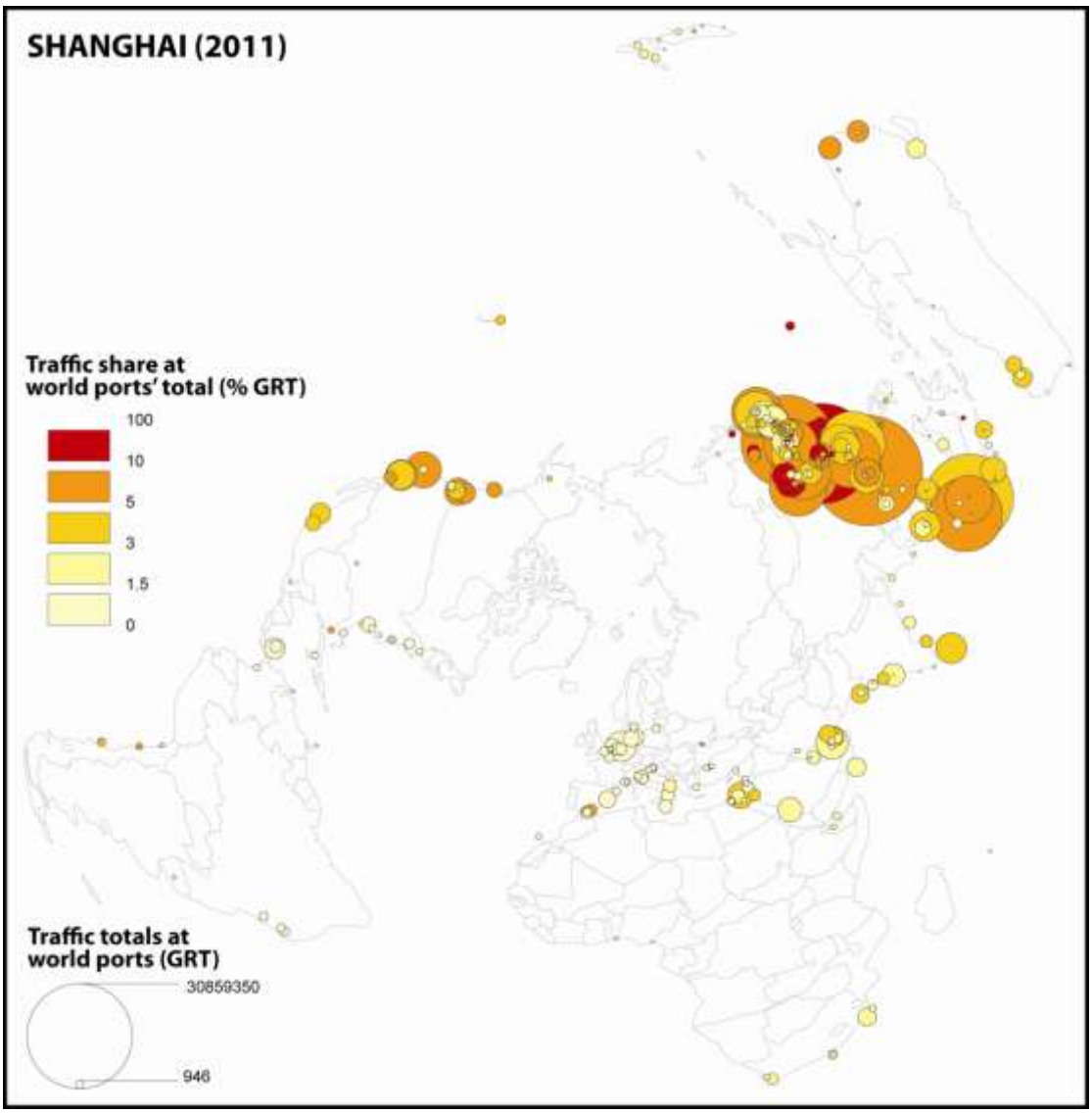
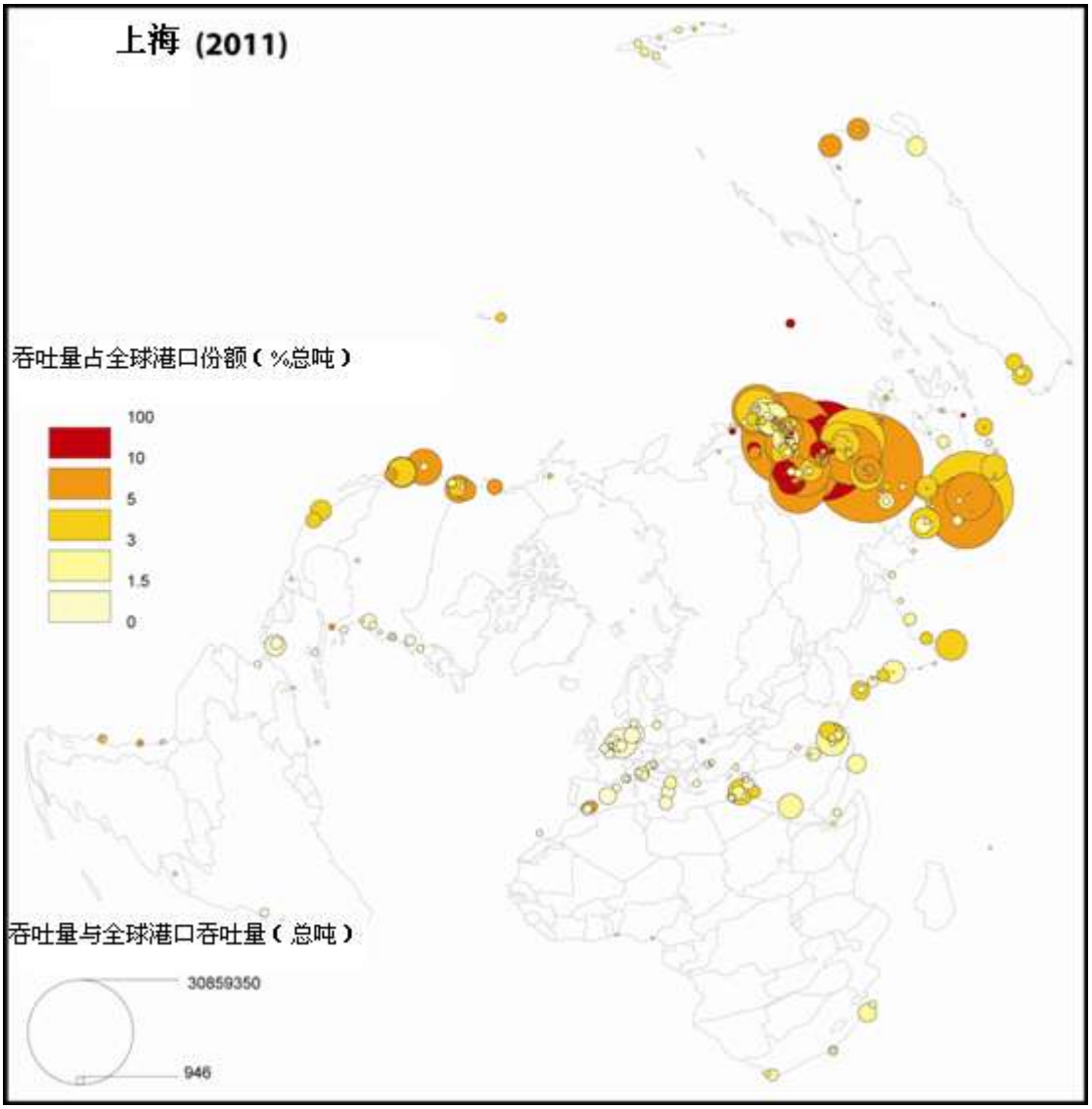


图 3.3 上海港海向腹地（2011）



Ports can be drivers of the development of a shipping-related service industry. Even the world-renowned London International Shipping Center was brought into shape on the occasion of burgeoning domestic trade and terminal business. With the development of port and shipping industries, such high-end service sectors have come into being as shipping finance, marine insurance and arbitration (Zhen and Zhao, 2013). Currently, modern shipping service sectors based on Shanghai Port are emerging. The number of advanced maritime services headquarters in Shanghai is still relatively smaller than other established international maritime centres, but the growth trend is expected to be upward as a result of the implementation of state and local-issued preferential policy instruments. There also appears to be a relatively strong link between the advanced maritime services providers in Shanghai and in London and Rotterdam, which could potentially indicate that these international firms have chosen Shanghai to be one of the main actors in their global service networks (Figure 3.4). Analysis of the localization and connections of these advanced maritime services firms also shows that it is Shanghai that it the dominant location within the Yangtze River Delta; the other port-cities only have a very small concentration of these firms (Figure 3.5)

Figure 3.4 Global network of Shanghai in advanced maritime services

港口助推上海航运服务业的发展。世界首屈一指的伦敦国际航运中心的形成也是依托 19 世纪末其本国贸易和码头业务的高速发展，伴随着港航产业的发展，航运金融、海事保险、海事仲裁等高端航运服务业应运而生（真虹、赵楠，2013）。而今，以上海港为依托的现代航运服务业也正快速崛起。目前上海聚集的高端航运服务机构总部数量与成熟的国际航运中心相比仍比较少，但是，随着更多国家和地区性优惠政策和措施的落实，这一数额的增长趋势仍将是上扬的。上海已有的高端航运服务性机构与伦敦及鹿特丹联系紧密，可能表明这些跨国公司将选择上海作为其全球服务网络的主要支点(图 3.4)。分析一下这些高端航运服务提供商的本土化策略和其全球服务网络，便可知上海是它们在长三角地区的布局核心，而它们在其它港口城市的集聚率较低(图 3.5)。

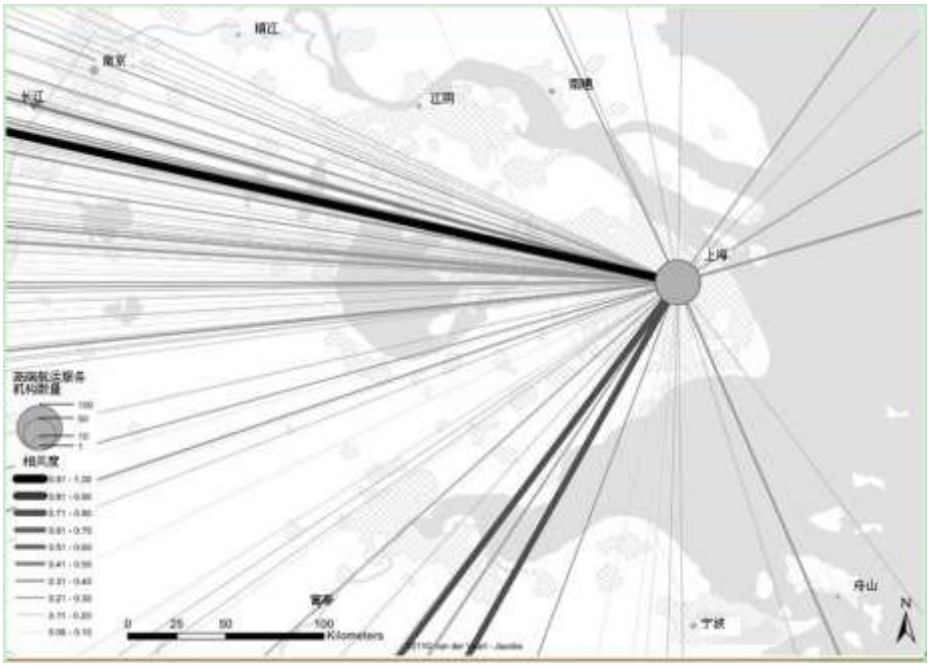
图 3.4 上海高端航运服务机构全球布局网络

Figure 3.5: Localisation and connections of global maritime advanced services firms in the Yangtze River Delta

According to the *Provisions on Ship Trading Management* issued by the Ministry of Transport, combined with the support from the Shanghai Shipping Exchange, China Ship Trading Information Platform was established in Shanghai. In 2012, a total of 286 ships worth over RMB 1.8 billion were involved in transactions, playing a positive role in expanding local ship markets. By issuing revocation of disqualified and non-operating ship managing companies, local ship management and agent markets are gradually expanding.

Shanghai has recorded a relatively low number of registered ships, with only 2,270 ships of 16.88 million tons registered at the port. The preferential policies included in the tax-free ship registration system (Chinese-funded, foreign-owned ships involved in international shipping will be exempted from customs duties and value-added taxes and granted Chinese nationality) have showed limited effect, with only 27 ships of 337,000 tons registered. Unlike Singapore and Greece, China's tax system and complicated registration procedure resulted in insufficient tonnage of registered vessels at home. This is a challenge facing Shanghai and all the other ports in Mainland China. Hong Kong, however, thanks to its convenient vessel registration system, easy and standardized registration formalities and highest-standard all-weather technical support, has witnessed strong development. To attract vessel registration, Hong Kong has also launched a set of preferential policies. To list just a few-- ship registered in Hong Kong may enjoy 29% port tonnage tax preference when calling at any Chinese port; annual tonnage fee for ships registered in Hong Kong has been reduced since 2006; and Hong Kong registered ships are exempt from income tax if profit comes from international shipping. Singapore also provides preferential policies to any ships registered in Singapore, including exemption of ship operating income tax and overseas loan interest withholding tax (only limited to ships collectively registered on the program), no restriction on shipman's nationality and entitling ship owners to low ship registration fee. As China (Shanghai) Free Trade Pilot Zone was established in August 2013 upon approval by the State Council, Shanghai could grasp the opportunity to develop ship registration by simplifying registration formalities, increasing registration efficiency, introducing temporary nationality registration, improving flexibility of registration service, providing quality management of registered ship, and enhancing service awareness on the part of the government, etc.

图 3.5 全球高端航运服务机构在长三角地区的布局



根据交通运输部《船舶交易管理规定》，并在上海航运交易所的积极推动下，上海设立了全国统一的中国船舶交易信息平台，提供船舶交易信息服务。2012 年交易船舶 286 艘、金额超过 18 亿元，对于丰富上海交易市场起到了积极的推动作用。而经过上海市开展的船舶管理市场专项清理整治行动，注销不合格和劝退长期不经营的船舶管理公司后，上海船舶管理与船舶代理市场正逐渐成形。

此外，受船旗国制度与税收限制，上海船舶登记数量略显不足。2012 年，上海港已注册船舶仅 2270 艘、1687.7 万吨。虽然，特案免税船舶登记制度（中资外籍国际航运船舶免征关税和进口环节增值税，转为中华人民共和国国籍）提供了一定的优惠，但收效甚微，目前登记数量仅为 27 艘，33.7 万吨。相较于新加坡、希腊等国，不具竞争力的税费制度和相对复杂的登记流程使得国内登记船舶吨位不足，这是上海乃至全国领域共同面临的挑战。香港方便快捷的船舶注册制度、简单规范的注册手续以及全天候最高标准的技术支援，使得近两年其船舶注册登记业务实现了跨越式的发展，此外香港为了吸引船舶注册还采取了一系列的优惠措施，包括香港注册船舶可在中国港口享受高达 29%的港口吨税优惠，自 2006 年起开始实施香港注册船舶吨位年费减免计划，香港注册船舶从国际营运所得的利润可豁免交利得税等等。同样，新加坡也对注册新加坡的船舶提供优惠政策，包括免除船舶经营所得税和海外贷款利息预扣税（只限集体注册计划的船舶），不限制船员国籍，并让船舶所有人享有具竞争力的船舶注册费等。2013 年 8 月，国务院正式批准设立中国（上海）自由贸易试验区，上海应紧抓自由贸易试验区建设契机，通过简化注册流程手续，提升注册效率，合理引入临时国籍登记，提高注册服务柔性化水平，做好注册船舶质量管理，提升政府服务意识等一系列措施来发展船舶注册登记业务。

As a highly specialized and internationalized service sector, shipping brokerage has considerable value for urban financial development. As China lacks legislation and regulations for shipping broker and ship broker has not been enlisted as legal in China's company registration, shipping brokerage organization cannot operate the business in mainland China so that international shipping brokerage company can only trade outside China. Upon approval by the Ministry of Transport in 2010, world-famous brokers such as Clarkson, Simpson Spence & Young, and Braemar Shipping Services have settled at the North Bund as the first batch of companies awarded shipping broker license across mainland China. Such efforts have not only brought the domestic shipping brokerage sector into existence, but also stimulated the agglomeration of core elements of international shipping service sectors in Shanghai.

Since shipping finance is a shared business of international financial center and international shipping center, such activities as financing, insurance, settlement and fund circulation are imperative to local economic development. In terms of financing services, Bank of Communications, Shanghai Pudong Development Bank and other Shanghai-based domestic banks have successively set up shipping finance departments or shipping service centers so as to promote R&D and marketing of products from the shipping industry and provide package aid (including account management, settlement, wealth management, financing, credit-granting and e-banking) for shipping-related enterprises. After HSBC, Standard Chartered Bank and other foreign-funded financial institutions were involved, the shipping finance service system of Shanghai has been gradually optimized, and shipping insurance, an integral part of shipping finance, has made great headway over the past years. There is a growing number of shipping insurance companies (43 as of 2012), re-insurance companies (four as of 2012) and shipping insurance brokers (324 as of 2012), with their tentacles extended from ship and marine cargo insurance to the promotion and expansion of the pilot business of inland river pollution liability insurance, a positive sign for industrial concentration and business innovation. Moreover, the Derivatives of Freight Index launched by Shanghai Shipping Exchange (Box 7) has proved to be influential in the globe. The derivatives of container freight index registered a turnover of RMB 83.8 billion in 2011, thus facilitated the concentration of international shipping resources in Shanghai.

Box 4. Shanghai Shipping Exchange Freight Index

Approved by the State Council and jointly founded by the Ministry of Transport and Shanghai Municipal People's Government, Shanghai Shipping Exchange (hereinafter referred to as SSE) was incorporated on Nov. 28th, 1996 and became the only national shipping exchange in the country. The establishment of SSE was a major initiative taken by Chinese government to develop domestic shipping markets and provide support for SISC construction.

Shipping derivatives launched by SSE can be divided into three categories: China Import & Export Freight Index Series (China Containerized Freight Index (CCFI), Shanghai Containerized Freight Index (SCFI), China Import Crude Oil Tanker Freight Index (CTFI) and China Import Dry Bulk Freight Index (CDFI)); China Coastal Bulk Freight Index Series (China Coastal Bulk Freight Index (CBFI) and China Coastal Coal Freight Index (CBCFI)); and China Second-hand Ship Price Index (SPI).

The Federal Maritime Commission's mid-year stats showed that CCFI and SCFI-based contracts represented 46% of the total shipping contracts filed with the institution. In the future, SSE will successively launch a series of derivatives such as international dry bulk and oil tanker forward freight trading agreements, thus setting the stage for shipping enterprises to take full control over freight risks.

航运经纪是一个高度专业化和国际化的航运服务业，但对城市金融领域的发展具有明显的价值。由于中国对航运经纪人这一产业缺乏相关立法及规章制度的引导，而且在中国公司注册登记类别中也没有“航运经纪人”一项，因此导致航运经纪组织无法在中国内地开展此项业务，国际航运经纪企业在上海谈妥业务后，只能到境外进行交易，造成上海乃至中国航运经纪产业发展相对滞后。而在 2010 年交通运输部允许上海率先探索和试点国际航运经纪市场准入制度后，历经两轮航运经纪企业的试点工作，包括克拉克森、辛普森、百力马等国际知名航运经纪公司均已落户北外滩，成为中国内地首批获得航运经纪营业执照的企业，不仅填补了我国没有航运经纪公司的空白，也加速了上海国际航运服务核心要素的集聚。

航运金融业作为国际金融中心和国际航运中心的结合点，开展融资、保险、结算、融通等航运金融活动对于上海经济的发展具有重要意义。在融资服务方面，中国交通银行、上海浦东发展银行等在沪中资银行于近年纷纷成立航运金融部或航运服务中心，以加强对航运产业的产品研发和客户营销，并向航运相关企业提供账户管理、结算服务、资金理财、融资授信、电子银行等一揽子金融服务方案。且随着汇丰、渣打等外资金融机构的加入，上海航运金融专业服务机构日渐完善，航运保险作为航运金融的重要组成，近年也得到了长足的发展。航运保险公司（43 家，2012）、再保险公司（4 家，2012）、保险中介机构（324 家，2012）的数量不断增加，业务方面除了传统的船舶保险、海上货运保险外，还积极推进扩大内河船舶污染责任险等试点业务，在机构集聚和业务创新方面都呈现出了良好的发展态势。除此之外，上海航运交易所推出航运运价指数衍生品（Box 7）的国际影响力初步形成。2011 年，上海航交所推出的集装箱运价衍生品单边总计成交金额达到 838 亿元，加速了上海港国际航运资源的集聚。

Box 7：上海航运交易所航运运价指数

上海航运交易所（以下简称航交所）是经国务院批准、由交通运输部和上海市人民政府共同组建，于 1996 年 11 月 28 日成立的中国唯一一家国家级航运交易所，是中国政府为了培育和发展中国航运市场，配合上海国际航运中心建设所采取的重大举措。

上海航交所推出航运衍生品主要可分为三大类：中国进出口外贸运价指数系列（中国出口集装箱运价指数 CCFI、上海出口集装箱运价指数 SCFI、中国进口油轮运价指数 CTFI 和中国进口干散货运价指数 CDFI）、中国沿海散货运价指数系列（中国沿海散货运价指数 CBFI 和中国沿海煤炭运价指数 CBCFI）及中国二手船舶交易价格指数 SPI。

根据美国联邦海事局 FMC 年中统计，在其备案的运输合约中，与上海航交所 CCFI 和 SCFI 指数挂钩的合约占到全部指数挂钩协议的 46%。未来，上海航交所还将陆续推出国际干散货、国际油轮远期运价交易合约等系列产品，可以为口岸航运企业全面控制航运风险创造有利条件。

The specialized shipping service zones, which are the core elements of the SISC, are designed to make great contributions to urban logistics and economic development. Like many cities in China, development zones are the focus of China's efforts towards globalization and modernization (Wei and Leung, 2005). Stimulated by the *Opinions* which include specific policies for Shanghai to set up the Comprehensive Test Zone for International Shipping Development and for a certain area to function as customs, as well as by the *Circular on Pilot Implementation of Port-of-shipment Tax Refund Policies in Shanghai* jointly published by the Ministry of Finance, the General Administration of Customs and the State Administration of Taxation, Shanghai currently boasts a comprehensive bonded zone featuring the most liberal entry system and the greatest profits in China. The Party Committee and Municipal Government of Shanghai have also set up the Comprehensive Bonded Zone Management Committee to promote the coordinated development of "three ports and three zones" (Box 8) through centralized management and preferential policies. In 2012, the Comprehensive Bonded Zone accounted for over 50% of the total turnover and tax revenue of the 111 special customs oversight zones in China. Facilitated by the preferential policies and efforts for tender invitations, the three shipping service clusters in Shanghai (North Bund, Lujiazui and Lingang) have managed to attract various shipping enterprises. So far, more than 1,500 shipping service providers have been located to the clusters, highlighted by the Baltic and International Maritime Council (BIMCO), the world's largest shipping organization. Shanghai is committing efforts to strive to become an international shipping center capable of global resource deployment.

Box 8: Functions of Shanghai's Three Ports and Three Zones

Shanghai aims to achieve interaction between three ports (Waigaoqiao Port, Yangshan Port and Pudong International Airport) and three zones (Waigaoqiao Bonded Zone, Yangshan Bonded Zone and the Comprehensive Bonded Zone of Pudong International Airport). The bonded zone drives port restructuring to establish a core of the international shipping center, important platform of the international trade center and a major breakthrough point of the international financial center. The Three Zones are to achieve steady, balanced and rapid development while their differences have been fully taken into account.

Yangshan Bonded Port Area is intended as a test ground for international shipping center, where international transshipment, modern logistics, commodity display, bonded storage, futures bonded delivery and other multi-layered businesses shall be vigorously promoted, involving international procurement, LCL service for export, offshore account, LCL transshipment, bonded display, ship chartering, bonded ship registry and so forth. Earnings generated from international shipping, cargo transport, storage, stevedoring and handling, international shipping insurance etc are exempt from business tax

Waigaoqiao Bonded Zone is positioned as an international trade demonstrating area, where import and export, transit trade, bonded display and service trade functions like storage and distribution shall be accented, covering foreign currency pilot program, offshore trade, commodity distribution, extended bonded functions, purchase and distribution, product maintenance, and bonded production materials market, etc. The accumulation of operation centers of transnational corporations shall be encouraged with more supporting policies; subsidized loans are available to growing companies; and state and local supporting policies are accessible to accredited R&D centers and new and high technology companies.

The Comprehensive Bonded Zone of Pudong International Airport is envisioned as a pioneer zone for airport centered services, where aviation port logistics, trade and financial services shall be the priority and airport centered services like air express distribution, international transit and plane chartering are coming into full swing. The mutually functional interaction of the three zones will give fully play to each other's competitive edges in policy and function. Such internation may foster similar chemistry among the three ports, promoting the complementary development of international container hub port and airport hub, and thus bringing into full play the advantages of Shanghai port resources.

航运服务功能区是上海国际航运中心建设的集中体现，对城市物流运输、经济发展具有不可限量的推动作用。与在其他许多中国城市一样，开发区是中国全球化和现代化发展的重心（Wei 和 Leung, 2005）。在国务院《意见》给予上海建立国际航运发展综合试验区、“境内关外”特殊海关监管政策以及财政部、海关总署、国家税务总局联合发布的《关于在上海试行启运港退税政策的通知》等政策激励下，上海拥有了中国最开放、最自由、具有显著经营效益的综合保税区。上海市委和市政府专门还成立了上海综合保税区管委会，通过统一管理、政策聚焦，促进上海“三港三区”(Box 8）的联动发展。2012 年，上海综保区商品销售额和工商税收在中国 111 个海关特殊监管区中的比重超过 50%。上海北外滩、陆家嘴和临港三大航运服务集聚区依托优惠的扶持政策和巨大的招商引资力度，在吸引航运产业方面成效明显，目前累计引进航运服务企业突破 1500 家，尤其世界最大的国际航运组织波罗的海航运公会（BIMCO）代表处也已落户上海，上海向具有全球资源配置能力的国际航运中心又迈进了一步。

Box 8: “三港三区”功能及优惠政策

“三港三区”联动中三港，即外高桥港、洋山港、浦东空港；三区，即外高桥保税区、洋山保税港区、浦东机场综合保税区。以保税区带动港口转型升级，旨在建设国际航运中心的核心区域、国际贸易中心的重要载体以及国际金融中心的重要突破点。“三区”在实现稳定、均衡、快速发展的同时，在目标体系、政策需求和产业重点中实行差别兼顾、错位发展的战略。重点建设国际航运发展综合试验区，大力发展国际中转、现代物流、商品展示、保税仓储、期货保税交割等多层次业务，涵盖国际采购、出口集拼、离岸账户、中转集拼、期货保税交割、保税展示、船舶租赁、保税船舶登记等多方面。政策上对注册在洋山保税港区内的企业从事国际航运、货物运输、仓储、装卸搬运、国际航运保险业务取得的收入，免征营业税。

重点建设国际贸易示范区，大力发展进出口贸易、转口贸易、保税展示、仓储分拨等服务贸易功能，囊括外汇试点、离岸贸易、商品分拨、保税延展、采购配送、产品维修、保税市场等业务，并鼓励跨国公司“营运中心”集聚加大财政扶持力度，对“成长型”企业贷款贴息；注册的外资生产加工企业，以及经认定的研发中心、高新技术企业可享受国家及地方相关政策扶持。

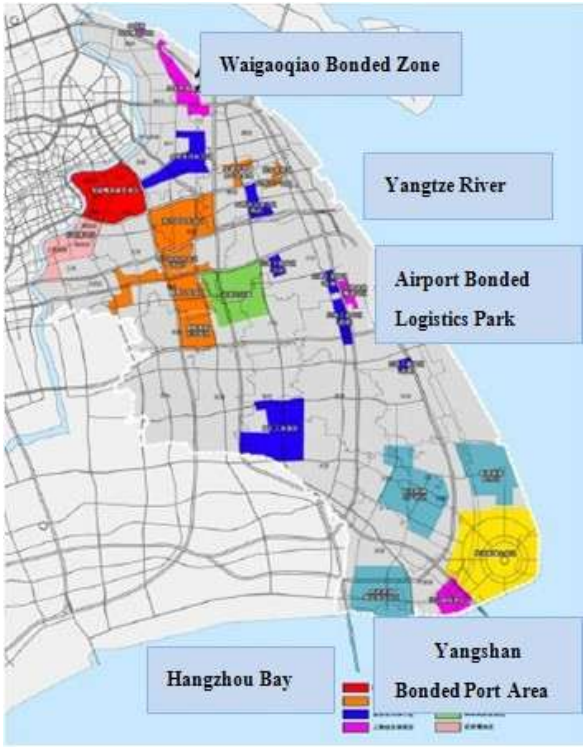
重点建设临空功能服务先导区，大力发展航空口岸物流、贸易和金融服务等功能，配有临空服务（航空快件分拨等）、国际中转、飞机租赁等。

“三区联动”在整合后，将进一步发挥各自政策和功能上的优势，以“三区”带动“三港”联动，实现国际集装箱枢纽港和机场空运枢纽港的互补发展，从而促进上海港口资源优势的发挥。

Table 3.3: Common policies for Shanghai's three ports

Policy	Sketch
Tax break and deferral	Cargoes can be transported between the bonded zones and abroad exempt from tariff, import linkage tax, inspection permit and other conventional customs surveillance and control procedures.
Value added tax free	Imported equipment of companies settled in the zones can be exempt from import value added tax.
Preferential foreign exchange management	Company earnings in foreign currency can be retained with no foreign currency offset requirement. Companies enjoy flexible foreign currency management policy measures designated by the *Administrative Measures on Foreign Exchange in Bonded Supervision Area.*
Export tax rebate	Tax rebate for offshore export shipment of domestic cargo in the Waigaoqiao Bonded Zone; tax rebate applicable to cargo transported to the Yangshan Bonded Port Area, Waigaoqiao Bonded Logistics Zone and the Comprehensive Bonded Zone of Pudong Airport; and tax refund available at the port of departure to cargo transhiped in the Yangshan Bonded Port Area from other domestic ports.
Bonded processing	Raw materials from overseas origins for export manufacturing are duty free. Bonded storage for cargo used for export manufacturing. No deposit or verification is required.
Collective customs declaration	Export-oriented commodities sold at home can be declared collectively.
Storage period	No restrictions on the storage period of cargo in the bonded zones
Market access	Foreign-invested companies can engage in manufacturing, international trade, boned strorage, logistics, distribution, and cargo display, test and aftersales services, etc.

Figure 3.6 Geographic Location Map of the "Three Zones"



Note: the three zones are shown in purple

政策	内容
免税缓税	货物可以在保税区与境外之间自由出入，免征关税和进口环节税，免验许可证件，免于常规的海关监管手续。
增值税率	区内企业进口设备免进口环节增值税。
外汇管理	不实行外汇核销，企业的外汇收入可全额留存，根据《保税监管区域外汇管理办法》，实行灵活的外汇政策。
出口退税	在外高桥保税区国内货物装船离岸出口，办理退税；在洋山保税港区、外高桥保税物流园区、浦东机场综合保税区货物入区视同出口，办理退税；从国内其他港口启运经洋山保税港区中转的货物，在离开启运地时即可办理退税。
保税加工	对境外运入区内的企业加工出口所需的原材料及区内储存货物实行保税。不实行相关保证金及核销制度。
集中报关	区内企业出口进国内销售货物可集中办理海关申报手续，适用“集中报关”通关模式。
储存期限	保税货物在区内储存无期限限制。
市场准入	外商投资企业可以从事生产加工、国际贸易、保税仓储、国内分销、物流、分拨配送、商品展示加工检测及售后服务等业务。

图 3.6 “三区”地理位置图

注：紫色区域为三区面积

.3.2 Education, Research and Innovation

Currently, high-end shipping talents with interdisciplinary knowledge take up a minor proportion in SISC. In order to further strengthen the international competitiveness and sustainable development of Shanghai, Shanghai Urban Construction and Communications Commission clearly specifies in the *Outlines of the Twelfth Five-Year Plan for Talent Development* that equal emphases should be placed on shipping talent introduction and development for the purpose of pooling enough talents and elites necessitated by SISC construction. Pudong New Area, a shipping forefront of Shanghai, has implemented "Pudong shipping elite program" through selection, introduction, training, exchange and stimulation of high-end international shipping talents.

Local shipping institutes represented by Shanghai Maritime University (SMU) have served as shipping talent cultivation bases, and developed considerable technological research and application talents every year. In 2003, SMU jointly launched a postgraduate program with World Maritime University, in order to develop senior management talents specializing in international shipping and logistics. The establishment of Shanghai Senior International Shipping Institute, masterminded by SMU in 2011 and implemented in 2013, was intended to cultivate senior shipping service talents, with emphases placed on master programs and short-term professional training with international accreditation. In terms of technical innovation, Shanghai has strived to promote the development mode of university, institute and industry cooperation and increased fiscal investment year by year. Specifically, various preferential policies such as deducting corporate scientific research cost before tax, providing special fiscal funds for scientific result transformation, and talent introduction in research result industrialization, etc. In the "New-generation Container Terminal Design" challenge sponsored by Singapore Port Authority in 2012, the team made up of members from SMU, Zhenghua Heavy Industries Group and the National University of Singapore won the Gold Prize, thus promoting the international influence of Shanghai in shipping sectors. With the energetic support from the government and institutes, Shanghai International Shipping Institute (Box 9) and other professional shipping institutes have seen a gradual increase in technological research and innovation capacity, and facilitated the transition and upgrading of local port and shipping industries and the sustainable development of the city.

Box 9: Shanghai International Shipping Institute

Shanghai International Shipping Institute (hereinafter referred to as "SISI") specializes in the research and consulting of shipping and port industry development. On the occasion of SISC construction, SISI has made extensive contact with international ports, shipping organizations, enterprises and colleges, established an international shipping research platform supported by top experts at home and abroad, assimilated new ideology, technology, trends and systems of global port and shipping development in a timely manner, and provided advice and information for policy-making by the government, domestic and foreign enterprises and shipping agencies. The three major functions of SISI are consulting for policy-making, information disclosure and talent services.

Currently, SISI assumes and fulfils dozens of consulting and research projects every year, making itself a think tank of the government and enterprises. As an international research institution, it established Shanghai-Hong Kong International Maritime R&D and Communication Centre and conducted cooperative research with World Maritime University Shanghai Office in 2011, and executed MOU on cooperation with multiple shipping-related agencies and institutes from abroad. It hosted ten-odd international seminars and forums of various sizes that year, as well as several other conferences.The fruitful research reports and information services have added fuel to the development of domestic port and shipping industries. The regular issuing of core reports such as shipping market analysis reports and global port development reports has received great attention from the industries concerned, and most estimates and analyses contained therein have been borne out by market development. With the support of over 200 consultants and experts, China Shipping Prosperity Index has become a barometer of China's shipping development. Besides, the operation of China Shipping Database has reportedly found favour with the industries.

3.3.2 教育、科研与创新

目前上海国际航运中心发展过程中复合型的高端航运人才比例较低。为了进一步增强上海港的国际竞争力和可持续发展力，2011 年《上海市城乡建设交通“十二五”人才发展规划纲要》明确指出航运领域的人才开发培养目标，要以引进与培养相结合的手段，充实上海国际航运中心建设所需的人才和关键人才数量。而处于航运前沿的浦东新区也推进实施了“浦东航运领航精英计划”，全面开展与国际市场的接轨的高层次航运人才选拔、引进、培训、交流和激励项目。

在上海以上海海事大学为代表的航运类专业院校成为航运人才的培育基地，每年培养应用型和科研型航运人才不计其数。自 2003 年起，上海海事大学还与世界海事大学合作举办了国际运输与物流硕士项目，旨在培养国际航运与物流的高级管理人才。2011 年上海海事大学筹建上海高级国际航运学院，并于 2013 年正式运作，该学院以培养航运高端服务人才为目标，重点开展研究生学位教育和以国际认证与专业课程学习为标志的短期培训。

科研创新方面，上海市大力推动高校产学研相结合的发展模式，财政投入相应逐年增加，期间分别推出了企业科研费用税前抵扣、科研成果转化财政专项资金、成果转化人才引进等多项优惠政策。在 2012 年新加坡港务局举办的“新一代集装箱码头设计”挑战赛中，由上海海事大学、上海振华重工集团和新加坡国立大学组成的团队摘得金奖，直接提升了上海在航运领域的国际影响力。此外，在政府和高校的大力支持下，上海国际航运研究中心（Box 9）等航运领域的专业研究机构的科研、创新能力不断提升，对上海港航产业转型升级与城市的可持续发展起到了积极的促进作用。

Box 9 上海国际航运研究中心

上海国际航运研究中心（以下简称“研究中心”）是一家专业从事航运、港口业发展研究和咨询的机构。依托上海国际航运中心建设的良好契机，研究中心（SISI）广泛联络国际港口、航运组织、企业和院校，凝聚国内外一流专家共同搭建国际航运研究平台，并及时跟踪全球港口、航运发展的新理念、新技术、新趋势和新制度，为政府和国内外企业与航运机构提供了决策咨询和信息服务。其三大主要功能是决策咨询、信息发布和人才服务。

目前，研究中心每年承担并完成政府和企业的委托咨询研究项目达数十项，已成为政府和企业的智囊。作为国际性研究机构，2011 年研究中心（SISI）引入“沪港国际航运研发和交流中心”和世界海事大学上海代表处进行合作研究，并已和国外多家航运相关机构和研究所签署合作谅解备忘录。全年举办各类大小国际研讨会、论坛十余场次，成功打造了多个具有国际影响力的品牌会议。研究中心（SISI）丰富的研究报告和信息服务为中国港航产业的发展增添了强劲的助力。其中，“航运市场报告”和“全球港口发展报告”等核心研究报告的定期发布（月度、季度、年度），得到了业界的高度重视，大部分预测和分析已被市场发展所印证；而“中国航运景气指数”在 200 多位指数咨询专家的支持下已成为反映中国航运发展的晴雨表；此外，中国最权威的《中国航运数据库》也成功上线运行，获得了众多业界人士的青睐。

3.3.3 Shipping Culture and Cruise Travel

Shipping has become an integral part of local industrial economy, and shipping culture has also infiltrated into every corner of the historical maritime city. Shanghai has laid stress on the preservation and inheritance of shipping history and culture, and the former Shanghai Port Authority organized the compilation of port and shipping annals like *The Vicissitudes of Terminals of Shanghai Port*, *The History of Shanghai Port* and *The Annals of Shanghai Port*. In order that local residents can know more about shipping and inherit and preserve shipping culture, Shanghai has set up the first and the only national maritime museum in China, with its major functions covering the collection of cultural relics, academic research, public education, exhibition and scientific education. The museum also promotes shipping culture through hosting social events, seminars and workshops, cultural research projects, as well as publishing journals in order to raise the public awareness and knowledge in the city's rich maritime culture. In addition, Shanghai boasts a multi-tiered shipping media system. Nevertheless, shipping culture construction is still in its infancy in Shanghai. Thus, oriented towards the future, more policy and financial supports may be available for supporting the promotion of shipping culture and diversified cultural activities may be fostered for the sake of sustaining long-term locam support of shipping and port activities.

As a new economic driver of port-cities, cruise industry has been included in multiple urban industrial plans. At present, Shanghai's cruise terminals have seen a so-called "2+1" pattern, i.e. two major international cruise terminals (International Passenger Transport Center and Wusongkou International Cruise Port) and an emergency terminal (Waigaoqiao Multi-functional Terminal (Phase VI)). With the support of relevant national authorities and the municipal government, Shanghai's cruise industry has seen rapid development, epitomized by advanced terminal facilities and substantial improvements in the capacity for handling ultra-large-sized cruise ships. Wusongkou International Cruise Port can accommodate large international cruise ships of 200,000 tons, with a throughput capacity of 600,000 people. Given the robust growth of cruise markets, Shanghai has ranked first in China in terms of the number of cruise ships calling at the port and passenger throughput. In 2012, Shanghai received 121 international cruise ships, with a cruise passenger throughput of 357,500. With the accelerated concentration of the elements of cruise economy, many international cruise companies have invested in this marker by setting up their branches in Shanghai. In order to cultivate multi-tiered talents specializing in cruise travel, Shanghai has proactively promoted the construction of Shanghai International Cruise Travel Talents Cultivation Base. In addition, the supporting service system of cruise industry is being optimized, including instance, travel agencies, duty-free shops, commercial exhibitions and other derivative business.

The development of cruise industry has attracted great attention from national and international authorities. Such policies have made breakthroughs such as the opening-up of vessel supply markets and cross-strait direct cruise services. China National Tourism Administration has approved the establishment of the Experimental Zone for Chinese Cruise Travel Development in Shanghai, setting the stage for the pilot implementation of cruise industry-related policies in the city. Port services are going through constant reforms, and have borne witness to such flexible models as passageway inspection, on-board inspection and en-route inspection for the sake of reducing the duration of customs clearance. In addition, Shanghai is taking an active part in the application for the 72-hour visa-free transit policy (foreign passengers holding a third country' visa may be allowed to enter/leave China via cruise terminal or stay in the place within 72 hours) for cruise passengers with the national government. This policy not only simplifies custom clearance formalities, but also helps passengers' stay onland, which plays an active role in attracting more passengers, developing "cruise economy" and benefiting Shanghai's tourism industry.

3.3.3 航运文化和邮轮旅游

目前，航运已经成为上海市产业经济的重要板块，航运文化也深入到城市的各个角落。上海城市发展过程中一直非常重视航运历史文化的保存和传承，原上海港务局还组织编修了《上海港码头的变迁》、《上海港史话》、《上海港志》等港航史册。此外，为了使城市居民更多的了解航运，传承航运文化没保护航运文化资源，上海建设了中国唯一一座国家级航海博物馆，其主要功能包括文物收藏、学术研究、社会教育、陈列展示、科普教育等各方面，航海博物馆通过进行航运文化系列宣传、学术研讨会、开展航运文化调查研究、出版航运类学术刊物进一步推进了航运文化的建设。在媒体方面，上海目前已经形成全中国航运媒体最为集中的城市，并形成了多层次并举的航运媒体体系。然而目前上海航运文化推进和发展过程中仍处于起步阶段，未来应进一步加大对航运文化建设的政策、资金支持，开展形式多样的主题教育和宣传活动，出版读物、举办学术沙龙、开设历史陈列馆，从而营造良好的航运文化氛围。

邮轮产业作为港口城市新的利润增长点已被纳入政府的多项城市产业规划之中。目前，上海港邮轮码头已形成了“两主一备”的格局，即拥有两个主要国际邮轮码头，分别为上海港国际客运中心和上海吴淞口国际邮轮港，同时将外高桥六期多功能码头作为邮轮应急靠泊码头。在国家有关政府机构和上海市政府的支持下，上海邮轮产业实现快速发展。邮轮码头设施更加完善，超大型邮轮接待能力明显提升，吴淞口国际邮轮港可停靠 20 万吨级的大型国际邮轮，年通过能力可达 60 万人次。邮轮市场强劲增长，停靠上海港的邮轮艘次和旅客吞吐量在中国位居第一，2012 年上海港接待国际邮轮 121 艘次，邮轮旅客吞吐量达到 35.75 万人次。邮轮经济要素加快集聚，邮轮公司纷纷在上海开设航线并设立公司，同时不断加大市场投入。为了培养邮轮旅游多层次人才，上海积极推进“上海国际邮轮旅游人才培训基地”建设。此外，邮轮配套服务体系逐步完善，旅行社、免税店、商务会展等衍生业务运作良好。

邮轮产业的发展得到了国家国际部门的重视，多点挂靠、船舶供应市场开放和邮轮两岸直航等政策相继突破。国家旅游局批准上海成立“中国邮轮旅游发展实验区”，为上海率先开展邮轮产业先行先试政策创新和突破提供了基础；口岸服务不断改革，“通道检查”、“登轮检查”、“随轮办证”等查验模式灵活运用，加快了通关速度；而且上海市正积极向国家政府申请实行邮轮旅客 72 小时免签政策（对部分国家持有第三国签证的外籍游客，在 72 小时内允许在不持有中国签证的情况下从邮轮码头出入境、停留当地），不仅简化的通关手续，也延长了游客陆上游玩时间、对于促进上海吸引游客、发展“邮轮经济”、辐射城市旅游业有着积极的作用。

Table 3.4 International Cruise Industry in Shanghai

Liner Category	Statistic Index	Unit	2009	2010	2011	2012
Liner at the Homeport	Number of inbound and outbound tourists	Person-time	84 331	170 240	145 505	264 093
	Liner alongside the berth	Ship-time	32	60	74	81
Liner at the Visiting Port	Number of inbound and outbound tourists	Person-time	81 345	93 933	68 850	93 446
	Liner alongside the berth	Ship-time	40	48	31	40
Total	Number of inbound and outbound tourists	Person-time	165 676	264 173	214 355	357 539
	Liner alongside the berth	Ship-time	72	108	105	121

Source: Author's own elaborations based on data from SIPG and Baoshan District Government

Table 3.5 International Cruise Industry Growth in Shanghai

Cruise Type	Statistical Index	2010	2011	2012
Cruises at homeport	Number of inbound and outbound passengers	101.87%	-14.53%	81.50%
	Berthed ships	87.50%	23.33%	9.46%
Cruises at port of calls	Number of inbound and outbound passengers	15.47%	-26.70%	35.72%
	Berthed ships	20.00%	-35.42%	29.03%
Total	Number of inbound and outbound passengers	59.45%	-18.86%	66.80%
	Berthed ships	50.00%	-2.78%	15.24%

表 3.4　上海港国际邮轮产业发展情况

邮轮类型	统计指标	单位	2009	2010	2011	2012
母港邮轮	进出境旅客数	人次	84 331	170 240	145 505	264 093
	靠泊邮轮	艘次	32	60	74	81
访问港邮轮	进出境旅客数	人次	81 345	93 933	68 850	93 446
	靠泊邮轮	艘次	40	48	31	40
总计 Total	进出境旅客数	人次	165 676	264 173	214 355	357 539
	靠泊邮轮	艘次	72	108	105	121

数据来源：作者根据上港集团、宝山区政府数据整理

表 3.5　上海港国际邮轮产业增长情况

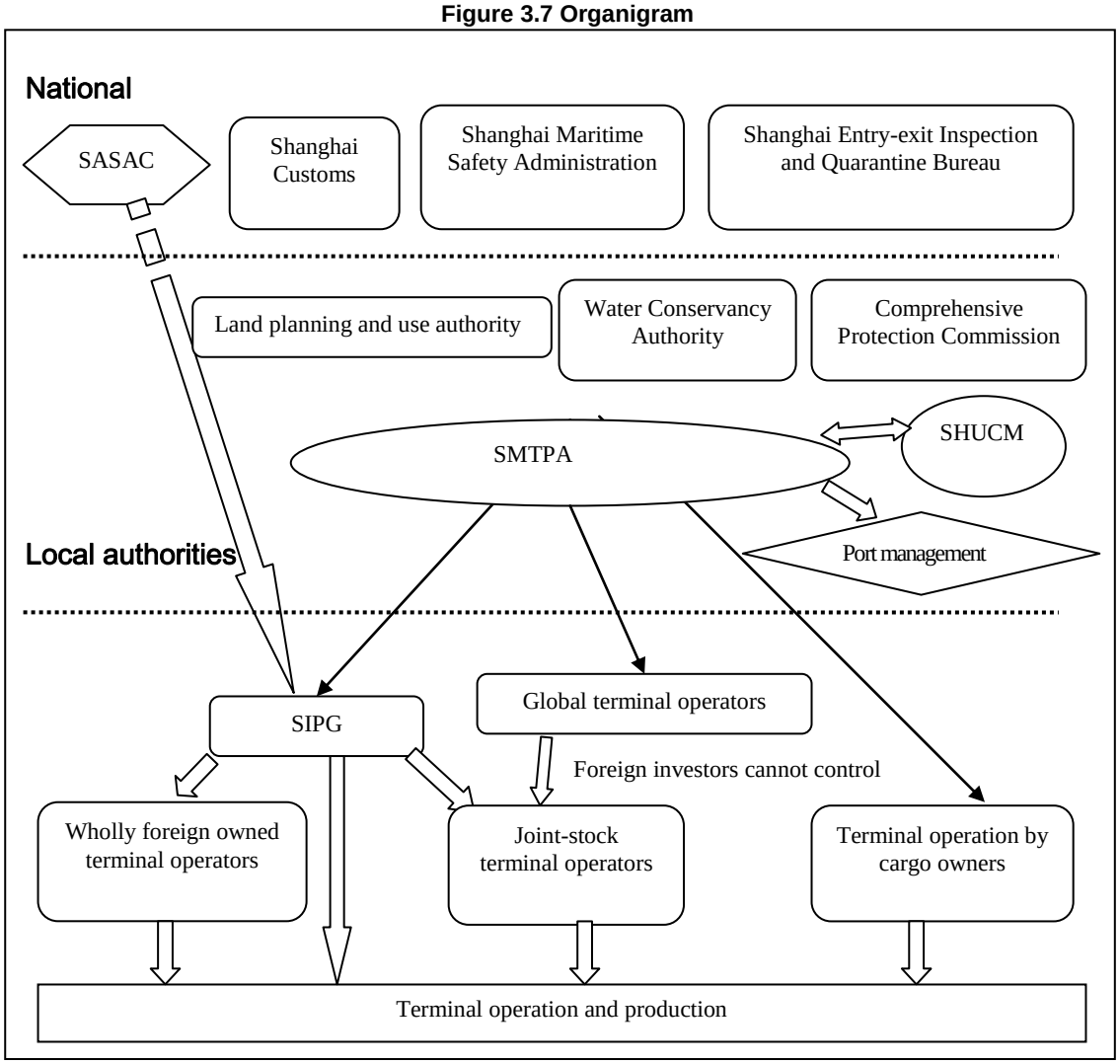
邮轮类型	统计指标	2010	2011	2012
母港邮轮	进出境旅客数	101.87%	-14.53%	81.50%
	靠泊邮轮	87.50%	23.33%	9.46%
访问港邮轮	进出境旅客数	15.47%	-26.70%	35.72%
	靠泊邮轮	20.00%	-35.42%	29.03%
总计	进出境旅客数	59.45%	-18.86%	66.80%
	靠泊邮轮	50.00%	-2.78%	15.24%

3.4 Port Governance

3.4.1 Organizational Structure

Port operation and management in Shanghai involves multiple government organs, including the customs, maritime authorities, inspection and quarantine agencies, water conservancy administrations, land planning and use bureau, Shanghai Urban Construction and Communications Commission (hereinafter referred to as "SHUCM") and Shanghai Municipal Transport and Port Authority (hereinafter referred to as "SMTPA"). Responsible for urban-rural construction, traffic management as well as the planning, construction and fund arrangement of major programs, SHUCM is to make comprehensive plans for urban traffic and functions as a major approval authority of port construction projects. As a port authority reporting to the municipal government, SMTPA is mainly responsible for port supervision and management in addition to port planning and site selection. As per the *Overall Plans for Port Development*, the proposal for site selection shall be submitted by SMTPA to SHUCM and in turn to the Ministry of Transport for approval after negotiations with the National land Resource Administration and Water Conservancy Bureau (only the proposals for terminals of over 10,000 tons and container terminals need to be submitted to the Ministry).

Figure 3.7 Organigram

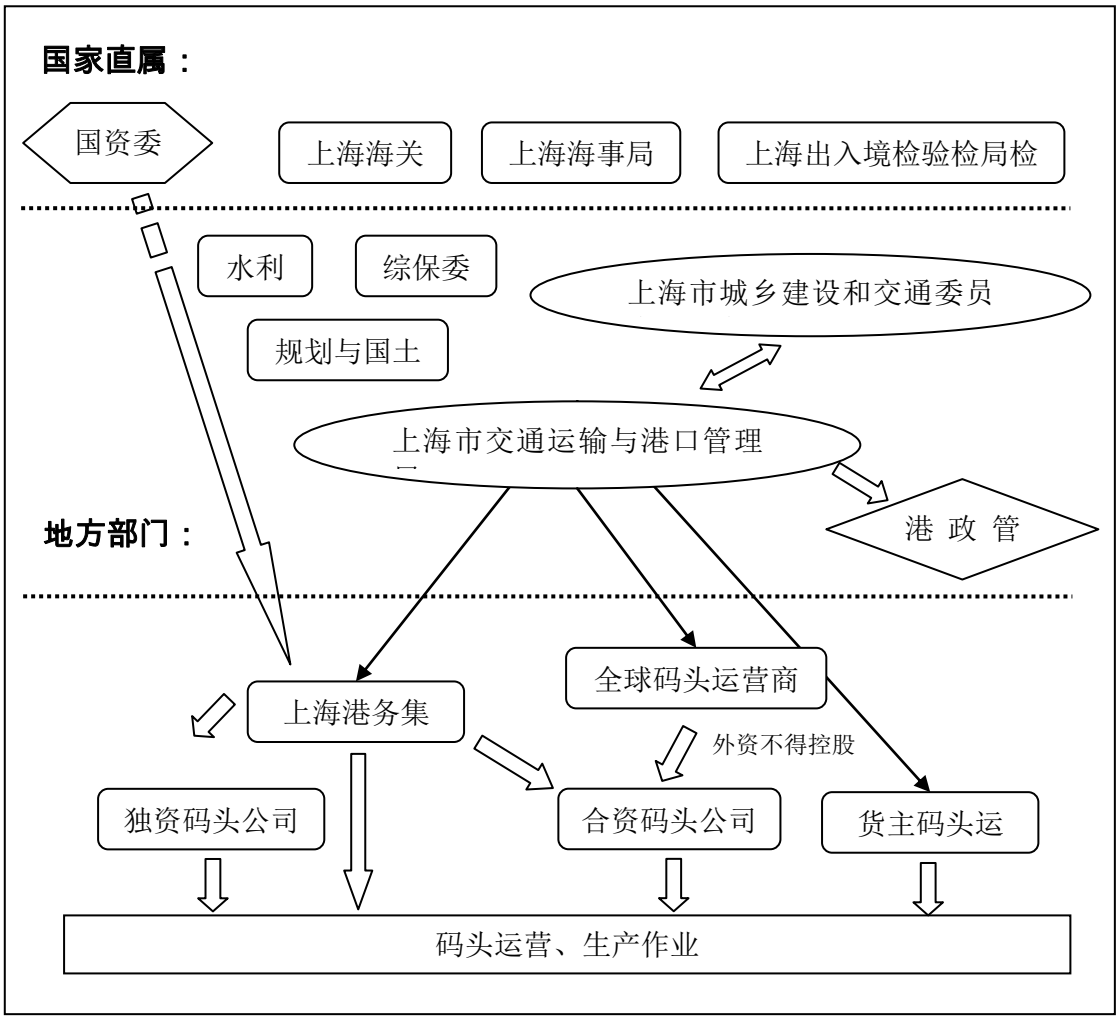


3.4 港口管理体制机制

3.4.1 内部结构

上海港口运营和管理过程中会涉及多个部门，包括海关、海事、检验检疫、水利、规划与国土局、上海市城乡建设和交通委员会（以下简称“建交委”）以及上海交通运输和港口管理局（以下简称“交港局”）等。建交委作为负责城乡建设、交通管理及重大项目规划建设和资金安排等职能的综合部门，统筹城市交通建设，也市港口建设的主要审批部门之一。交港局是上海市政府指派的港口主管部门，主要负责港口的监督与管理，在港口尚未建造开始就参与到港口的规划与选址之中。此外，港口的选址除了需要与交港局编制的《港口发展总体规划》相衔接，还需与规划与国土资源管理局、水利局等部门进行接洽，而后由交港局呈送建交委（并上报交通部），得到批准后方可进行施工建造（仅万吨级码头、集装箱码头需上报国家）。

图 3.7 管理结构图



Unlike SMTPA and SHUCM, the customs, maritime authorities, inspection and quarantine agencies of Shanghai are not affiliated with the municipal government, but the direct reports of the central government. At present, Yangshan and Waigaoqiao, two major container port areas in Shanghai, have accommodated bonded zones and logistics parks which are run by the Management Committee of Shanghai Comprehensive Bonded Zone (affiliated with the municipal government). The large number of port industry-related government organs is overlapping to some extent in administrative authorities. For instance, Yangshan Bonded Zone is jointly run by SHUCM, SMTPA and the Management Committee of Shanghai Comprehensive Bonded Zone; the first two organizations have overlapping authorities in terms of port construction, planning and policy-making. Such a management mode will not only lead to the squandering of administrative resources, but also reduce management efficiency and add strain to enterprises. This means Shanghai ought to implement institutional innovation as soon as possible--integrate identically functional departments and clarify overlaps in responsibilities of Shanghai Urban Construction and Communications Commission, Shanghai Municipal Transport and Port Authority, Shanghai Composite Bonded Area Administrative Committee and so forth, and establish service-based administrative handling and transfer mechanism to further reduce responsibility wrangling and multiple leadership.

3.4.2 Port-city Relationship

Ports play a positive role in promoting urban economic development. Serving as industrial clusters, ports can attract a host of projects and enterprises and in turn boost local economy; therefore, local governments tend to be favoring port development. Likewise, the great initiative and promotion efforts of the government of Shanghai have in a sense ensured rapid development of the port and related industries. For instance, the preferential policies issued by the government have attracted headquarters of shipping enterprises, shipping-related industries, manufacturing and processing sectors to move to Yangshan and Waigaoqiao and bring the port-related industrial clusters into shape, thus having a vital bearing on SISC construction, local economy and business volume of the port. Nevertheless, considering the needs of enterprises, the government inclines to approve the decisions as to convert coastal areas into cargo owner-specific terminals, leading to the reduction of terminal utilization efficiency and hampering the efficient and intensive use of coastal and land resources.

In the course of urban and port development in Shanghai, the government has played a critical role in improving the efficiency of the implementation of port operation and management policies, while market initiatives have suffered by comparison. This is especially evident with the construction of Yangshan port area and the concept of Shanghai International Shipping Centre, which is stimulated by a series of effective public policy actions, while the shipping liners and intermodal transport firms have not yet become the key players in the game (Wang and Slack, 2004). This government-led development approach is a double-side sword. On one hand, it could strengthen the hub status of Shanghai in East Asia; on the other hand, it is after all in the hands of international shipping liners and intermodal logistics firms that will determine the ultimate role and value of Shanghai port in the global maritime network, through a market process (ibid.).

不同于建交委及交港局等部门，上海海关、海事、检验检疫等部门并非上海市政府指派机构，而是中央国家行政机关的直属机构，不受地方政府影响，而受中央国家行政机关直接领导。目前上海港的两个主要集装箱港区洋山和外高桥后方都有保税港区和保税物流园区，而保税港区和保税物流园区的管理主要由上海综合保税区管委会所管理，上海综合保税区是上海市政府的派出机构。可以看到，目前涉及到港口行业相关的政府部门较多，且管理部门之间存在行政职权的交叉和重叠情况。例如，对洋山保税港区的管理，既需要接受建交委、交港局的管理又需要受上海综合保税区管理委员会的管理；在某种程度上，建交委和交港局对于港口的建设、规划、政策制定等方面的行政职能有一定的交叉和重叠。这样的管理模式一方面容易造成行政管理资源的浪费，另一方面容易造成企业多头领导，降低管理效率，增加企业负担。反映出上海亟需实行制度创新，通过明确建交委、交港局、上海综合保税区管委会、上海组合港管委会等部门职能，合并功能雷同的机构，厘清各行政主管机关的职责与权限，并建立以服务为核心的行政受理与转移机制，进而实现减少推诿扯皮和多头领导的尴尬。

3.4.2 与城市的关系

港口对城市经济的发展具有积极的推动作用，尤其是港口具有明显的产业集聚效应，容易吸引大量的项目和企业落户，带动地方经济发展，因此地方政府一般也非常愿意通过加快港口发展来为地方引入项目。同样，上海港在发展过程中地方政府的积极性也非常高，在一定程度上，地方政府的积极推动，使得港口及相关产业得到了快速发展。例如，通过优惠的政策吸引航运企业总部、航运相关产业、加工制造业落户洋山和外高桥，形成了临港产业集群，尤其是在上海国际航运中心建设过程中发挥了非常重要的作用，对地方经济产生巨大贡献，同时也促进了上海港业务量的增长。然而，地方政府在引进项目的同时，由于企业需要，政府同时需要将码头岸线审批给企业使用，这些码头岸线便成为货主码头，降低了码头的利用效率，使得岸线、土地等资源无法得到高效、集约化利用。

上海港口和城市发展过程中，政府发挥了极大的作用，也产生了非常明显的正向效果，而且由于政府的积极参与使得港口运营管理的决策执行效率较高，但市场行为略显不足。洋山深水港和上海国际航运中心建设启动后，这一点尤为突出。期间，一系列公共政策驱动效益明显，而班轮和多式联运公司却尚未成为这一轮建设的主要推手（Wang and Slack, 2004）。这样的政府引领式发展模式是一把双刃剑。一方面，它可以巩固上海在东亚地区的枢纽港地位；另一方面，毕竟通过市场化的运作，国际班轮公司和联运物流公司才是推动建设和发展的最终核心角色，它们也是上海港在国际航运网络中的价值所在（Wang and Salck, 2004）。

China's port operation and management model differs from that of western countries. European and American ports adopt the landlord port management model featured by port area integration, which means that, the port authorities are responsible for the functional planning of the port and logistics parks, the construction of port infrastructures, and the leasing of land or infrastructures to operators; in China, however, they are only liable for port area planning and approval of the use of coastal areas, while the rights to approval and planning of land in logistics parks and industrial clusters belong to land resources bureaus and other organs affiliated with local governments. The Chinese model does not entail a unified and systematic planning of port areas, logistics and industrial parks. Enterprises engaged in construction projects in the logistics parks are reluctant to get the approval from and go through application formalities with multiple authorities. To solve this problem, various competitive authorities shall strengthen communication and match for synchronized planning of terminals and logistics parks, and provide investment companies with quicker services using methods such as unified handling and co-working.

3.4.3 Port Operation and Management

Before 2003, China's port operation and management regime could be divided into three modes: ports managed by the central government, by central and local governments, and by local governments. In such cases, port planning, construction, financing and operation were all decided upon by the government, and the ports failed to fully optimize and deploy resources. Besides, due to the lack of initiative at the local level and the condition of port authorities featured by a combination of government functions with enterprise management, port enterprises were subject to excessive administrative interventions.

After 2003, through the separation of government functions from enterprise management, domestic ports began to be run by local governments which were greatly motivated by the reform. From 2003 to 2009, domestic ports bore witness to heavier investments. In 2001 and 2002, investments in coastal ports only amounted to RMB 25.4 billion, while those in 2003-2005 topped RMB 125 billion, nearly five times more than those of the previous two years. The ten years from 2001 to 2010 had seen a sharp growth in the number and size of berths. As of 2011, the number of coastal berths for stevedoring had risen by 48.8% to 5,532, with 1,422 berths of no less than 10,000 tons (110.0% more than the 2001 level) and, among others, 302 container berths (363.9% more than the 2001 level). The proportion of berths of no less than 10,000 tons in berths for stevedoring grew from 18.2% in 2001 to 25.7%, and that of container berths in berths of no less than 10,000 tons rose from 12.3% to 21.2%.

After the decentralization of port management, the original port authorities are divided into two parts: the port administrations and port coorperations acing as port operators. The port administrations constitute the port authority; on the other hand, its corporate function is separated and incorporated into the former company under the port authority which is reorganized into SIPG, a port group. In this way, the port functional layout goes step by step through the allocation of market resources.

The reform has reportedly produced positive effects on China's port development. However, challenges remain such as intense competition among ports leading to structural overcapacity due to uncoordinated port construction by local governments. Facing these problems, the domestic ports also have taken appropriate measures for proper allocation of port resources-- various ports actively explore administration or market-oriented integration of port resources. For example, some port companies have used capital as a bridge to integrate port resources by mutual participation so as to improve the degree of port resources utilization.

此外，中国港口运营管理模式与欧美港口不同，欧美港口实施港区一体化的地主港管理模式，即港务局负责统一规划港口及后方物流园区的功能，并建设基本的港口基础设施，然后将土地或基础设施出租给经营人经营。在中国，港务局只负责规划港区以及审批码头岸线的使用权，而后方的物流园区及产业集聚区的土地审批权和规划权均不属于港务局，而属于国土资源局等地方市政府的派出机构。这种模式没有实现港区和物流园区以及产业园区的统一规划，使得码头后方的产业发展规划和码头岸线发展规划不能较好的衔接，而且若是企业需要在港口后方建设项目，需要多个部门进行审批并办理手续，给企业带来极大的不便。为有效协调这一矛盾，各主管部门应加强交流与对接，使码头与后方园区从规划起便能在保持同步，而应对企业项目审批则可实行统一受理、联合办公等方式为投资企业提供更便捷的服务。

3.4.3 经营管理体制

2003 年以前，中国港口管理体制主要有三种方式，即由中央管理的港口、中央和地方政府双重领导的港口和由地方管理的港口。在此管理体制下，港口发展计划、建设、财务、经营都要有政府决定，不能充分发挥市场对港口资源的优化配置作用，且地方政府建设的积极性调动不足，港务局政企合一使得港口企业受行政干预过多。

2003 年后，中国港口实施改革，实现港口属地化管理，并且实现政企分开。此次改革充分发挥了地方政府的积极性，可以看到从 2003 年到 2009 年，中国港口建设力度加大，2001 年与 2002 年沿海港口投资仅 254 亿元，而在港口体制改革后的 2003 年到 2005 年，三年投资超过了 1250 亿元，几乎是前两年的五倍，码头泊位规模在“十五”和“十一五”期间大幅增加管理体制改革 10 年后的 2011 年，沿海港口生产性泊位增加到 5 532 个，其中万吨级以上泊位 1422 个，在万吨级以上泊位中，集装箱专用泊位 302 个，分别增长了 48.8%、110.0%、363.9%。万吨级以上泊位在生产性泊位中的份额从 2001 年的 18.2%提高到 25.7%。集装箱专用泊位在万吨级以上泊位中的比重也从 12.3%提高到 21.2%。

港口下放地方政府管理后，实施政企分开，在组织机构上是将原港务局一分为二，即以原港务局行政管理职能为基础，组建港口行政管理机构，即港口管理局；将原港务局企业职能分离出来，与原港务局所属企业改制组建为港口集团公司，即上港集团。政企分开后，在市场资源的配置下港口功能布局逐步优化。

此次改革，对中国港口发展有着非常重要的意义，也产生了积极的效果，但同时也产生了一些问题。例如，由于管理权下放地方政府，使得地方政府建设港口的积极高涨，加剧了港口之间的恶性竞争，产生了一定的结构性产能过剩现象。面对此问题，中国港口间也采取了相应的举措来合理配置港口资源，港口之间通过行政主导或者市场主导的方式积极探索实现港口资源整合，例如部分港口企业以资本为纽带，通过相互参股的模式实现港口资源的整体，提高港口资源利用效率，避免产生恶性竞争。

In 2003, as per the requirements of the central government, Shanghai Port was divided into SMTPA and SIPG. From then on, port operation is brought closer to markets and undertaken entirely by SIPG, while port administration is in the charge of SMTPA. At present, the government is still playing a vital role in the management of the port (e.g. the right to approval of use of coastal areas), which to some extent has protected coastal resources. Nevertheless, the fact that the terminal freight rates have to be determined by the Ministry of Transport and Shanghai Port Authority has disturbed the markets' functions of freight regulation and resource deployment.

As a state-owned enterprise, SIPG is in fact controlled by State-owned Assets Supervision and Administration Commission of Shanghai Municipal Government (holding 40.80% shores), since the majority of land in the port areas is translated into registered capital of the Commission. Other shareholders include Hong Kong-based Adroit Investments Limited under China Merchants Holdings (International) (a global terminal operator), and Shanghai Tongsheng Group specializing in port construction (a state-owned investment company).

SIPG is also responsible for port operation. It is in a position to set up wholly-owned or joint-venture terminal operators or run terminals on its own, yet such terminal operators have limited autonomy, and the right to berth assignation is within the sole authority of SIPG. Moreover, according to relevant provisions issued by the state, terminal projects cannot get the approval unless the Chinese side shall perform as the holding company. For instance, the container projects of Waigaoqiao Port Area (Phases I, IV and V) and SCT container terminals are controlled by Chinese capital (Table 3.6) despite the involvement of private or international capital. Shanghai is making proactive efforts for freer port operation models which are based more on markets. Shanghai sticks to the development of both "Acting Local and Going Global": On the one hand, introduce global terminal operators such as APM Terminals, Hutchison Whampoa and PSA International Pte to sharpen competition between terminal companies for higher service quality; on the other hand, guide well-financed SIPG to join hands with COSCO Pacific, China Merchants Holdings (International) and other domestic terminal operators in investment management of international ports to strengthen construction of port network system.

2003 年，上海港根据中央的要求实施“政企分开”，将原上海港务局按行政职能和社会职能分离为上海市交通运输与港口管理局与上海国际港务（集团）有限公司。自此，港口生产运营更加市场化，完全由上港集团承担；而港口的行政管理职能由地方政府的主管部门上海交港局负责。目前，政府在上海港管理中仍发挥非常重要的作用（例如岸线审批权），这在一定程度上保护了岸线资源。但码头费率也需由交通运输部和上海港口管理局共同制定，某种程度上破坏了市场调节费率的资源配置规律。

上海港务集团属于地方国有企业，集团公司实际控股股东为上海市国有资产监督管理委员会，持股比例达到 40.80%，主要是由于大部分港区土地的价值成为国资委在集团内的注册资本。其余股本较高的投资者分别为注册在香港的全球码头运营商招商局国际的亚吉投资有限公司与专门从事港口建设的上海同盛集团（市级国有投资公司）。

从港口的生产环节看，作为国有企业的上海国际港务集团直接负责港口的生产运营。港务集团可以成立全资或合资码头公司运营码头，也可以直接管理码头，但这些码头公司的自由度很低，集团通过资本的纽带，直接对下属公司的生产经营进行管理，上海港的码头指泊权由港务集团统一行使。而且，在与外商的合资中按国家规定必须为中方控股，否则运营码头的审批将得不到通过。例如，上海港外高桥港区Ⅰ期、Ⅳ期、Ⅴ期和 SCT 集装箱码头虽然都有私有资本或国际资本的参与，但中资仍处于绝对控股地位（表 3.6）。尽管目前港口运营的开放程度有限，但上海港正对更加市场化和自由化的运作模式进行积极的探索。例如，坚持“引进来和走出去”双管齐下的发展模式，一方面通过引进 AP 穆勒、和记黄埔、新加坡国际等全球码头运营商以增强各码头公司间的竞争，提升港口市场服务质量；另一方面可以引导资本雄厚的上港集团联手中远太平洋、招商局国际等中国码头运营商一同参与到国际港口的投资管理中，加强港口网络体系建设。

Table 3.6 Output Capacity and Proprietary of Container Terminal Assets in Shanghai

Wharf	Port Capacity	SIPG Equities	Equities of Other Investor(s)
Jungong Road Wharf	100	100%	—
Zhanghuabang Wharf	120	100%	—
Baoshan Wharf	5	100%	—
Luojing Wharf	10	100%	—
Gongqing Wharf	25	100%	—
Yangjing Wharf	35	50%	50% by China Shipping Terminal Development
Waigaoqiao Port Area Project Phase I	300	40%	30% by COSCO Pacific 30% by Hutchison Whampoa
Waigaoqiao Port Area Project Phase II & III	600	100%	—
Waigaoqiao Port Area Project Phase IV	400	51%	49% by APM Terminals
Waigaoqiao Port Area Project Phase V	350	50%	50% by Hutchison Whampoa
Waigaoqiao Port Area Project Phase VI	210	100%	—
Yangshan Port Area Project Phase I & II	750	100%	—
Yangshan Project Phase III	650	100%	—

Source: Author's own elaborations based on data from SIPG

表 3.6　上海港集装箱码头资产产能及所有权

码头	港口产能	上港集团股权	其他合资方
军工路码头	100	100%	—
张华浜码头	120	100%	—
宝山码头	5	100%	—
罗泾码头	10	100%	—
共青码头	25	100%	—
洋泾码头	35	50%	中海码头 50%
外高桥Ⅰ期	300	40%	中远太平洋 30%、和记黄埔 30%
外高桥Ⅱ、Ⅲ期	600	100%	—
外高桥Ⅳ期	400	51%	AP 穆勒码头 49%
外高桥Ⅴ期	350	50%	和记黄埔 50%
外高桥Ⅵ期	210	100%	—
洋山Ⅰ、Ⅱ期	750	100%	—
洋山Ⅲ期	650	100%	—

数据来源：作者根据上海港务集团数据整理

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