

# Private Industry Investment in Logistics

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## Abstract

**With the development of logistics in China, private industry ramps up investment in both hardware and software logistics facilities. Based on the analysis of logistics investment history and changes of the investment methods, this report analyzes the impact of the investment on business logistics and Chinese industry. In recent years, types and methods of logistics investment are various, this report selects three typical private industry investments in logistics-DRP II, Barcodes and Port facilities-to critically analyze the overall impacts on business logistics and Chinese industry. Several suggestions are proposed to improve the current industry investors to benefit Chinese business logistics.**

## Keywords

**Private Industry; Logistics Investment; Chinese Logistics Business.**

## 1. Introduction

With the development of China's economy, the demand for logistic support is constantly growing. To satisfy the increasing demands, more private enterprises are looking at investment in logistic business. Since 20th century, the investment on logistics has received more attention than ever. To critically analyze the trend and its spinoff effect to China's industry, the history of investment has been listed with typical examples support. The impacts on China's logistic industry are described from the angle of current process perfection and business extension. This report has critically analyzed the current investments through several ICT systems which are designed for logistics. Based on which, practical investment recommendations in logistics are documented for improving China's logistic investment. All the points are illustrated with data and graph for comprehensively and clearly supporting its main topic.

## 2. Private Industry Investment for Chinese Logistics

It is recognized that there are two main orientation for private industry investment in logistics enterprises, one is to strengthen the distribution center and the construction of the main line capacity, and the second is to improve the level of informatization [1].

### 2.1. Line Capacity Expansion

For one thing, domestic private enterprises have dedicated to line capacity expansion such as port, road, rail, inland waterways, air freight and warehousing. Private logistics companies in China's coastal cities, such as Dalian, Tianjin, Qingdao, Shanghai, Ningbo, Guangzhou and Shenzhen have been heavily invested in constructing port facilities and have taken action to increase capacity significantly since Chinese ports were opened to overseas investment in March 2002 [2].

### 2.2. Logistics Informatization

For another, with the increasing demand for business logistics, private industry investment on information technology, communication technology, automatic identification technology, big data analysis and cloud computing to optimize its own resources configuration, management and decision-making are increasing significantly. Sponsored by medium-sized private

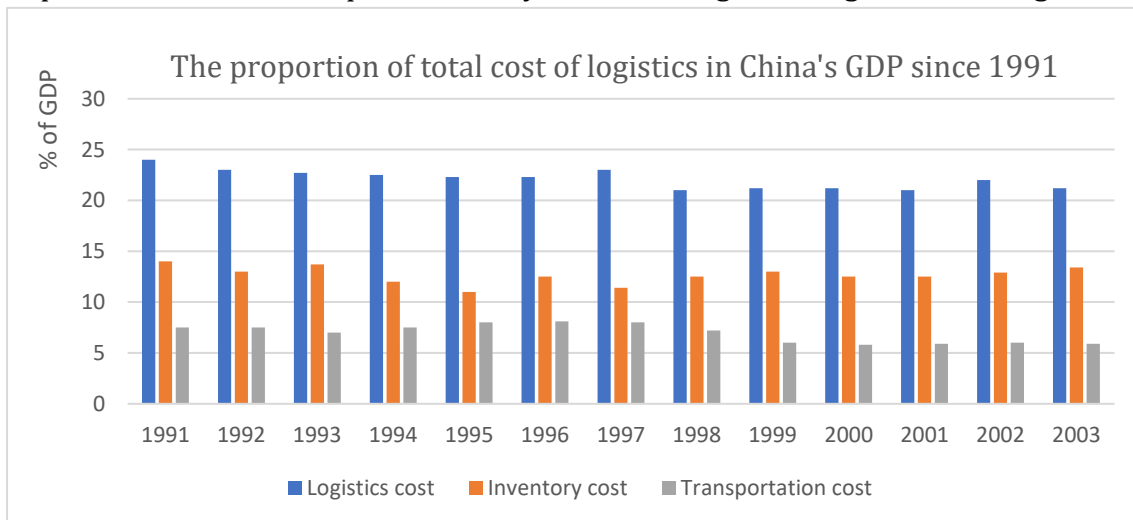
companies, cold chain logistics systems based on cloud computing are used to remote temperature tracking, detection and recording as well as connect the database between cold chain logistics and external customers so that each terminal can be tracked and updated [3].

### 3. History and Development of Logistics Investment

#### 3.1. The History of Private Investment on Logistics

With the evolution of China's economy and development of international trades, medium-sized Chinese logistics providers such as St-Anda, PGL flourished in the last 10-20 years due to their commitment on geographies, service and customers. According to the investigation on the development of private logistics enterprises by the China Federation of Logistics and Purchasing in 2006, private enterprises with total assets of RMB 200 million or above accounted for 51.85% and total assets of less than RMB 50 million accounted for 29.63% [4].

As the following figure illustrates, private expenditure on logistics, inventory and transportation fluctuated over the years. It is proved that private assets in logistics have been escalated over decades and spread across every market segment of logistics, such as road transportation, domestic express delivery, warehousing and freight forwarding.



**Figure 1.** The proportion of total cost of logistics in China's GDP since 1991

#### 3.2. The Development of Logistics Scope and Cooperation Modes

Most private logistics enterprises started from traditional businesses such as transportation and warehousing, and gradually expand to modern logistics business such as using RFID technology. Moreover, express delivery has been dominated by private companies such as SF Express, STO, and YUNDA in the 2010s. Throughout the past 20 years, the main forms of the cooperative alliance of private logistics enterprises has transformed over the past 20 years (see in Table 1).

**Table 1.** Main cooperative modes of private logistics enterprises over the past 20 years

Introductory phase: Mid-1980s to Mid-1990s	Cooperation between manufacturing enterprises and commercial enterprises.
Development phase: Mid-1990s to Mid-2000s	An independent and open logistics platform.
Escalating phase: Mid-2000s-now	A comprehensive logistics service platform; Franchise chain

## 4. Impacts on Chinese Logistics Business

### 4.1. Current Logistic Perfection

#### 4.1.1. Information System Investment

Private investment in information system has significantly improved efficiency of data gathering, identification, analysis, communication and transmission. The traditional logistics entities separate the department of marketing, packaging, distribution, etc. The decentralized organizational structure has hindered their development because of information postpone, data inconsistencies and duplication, high cost of data integration and inventory monitory, etc. Private industries' investment on the development of information systems has provided a solution to eliminate these problems, by centralizing the departments. It has been proved by Croizat-Viallet, Monits and Monteforte, and summarised in table 2 the cost reduction is significant as shown above.

**Table 2.** Cost reduction in centralized structure in Rottne Industries

Centralized Structure	Cost reduction (SEK)	Cost reduction (%)
Transport cost	2075440	84
Environmental cost	20420	91
Total transportation	2095860	84

The information system provides real-time information for all the departments, eventually increases customer satisfaction and reduces unnecessary costs. For example, the vehicle monitoring technology combing with real-time traffic data, thus enabling logistics companies to optimize route selection and improve vehicle utilization, which directly reduces transportation costs.

#### 4.1.2. Advanced Technology Investment

The advanced technologies of Auto ID technologies including barcodes, RFID and GPS are widely used to benefit logistics industry by supporting more accurate, convenient and reliable approach to monitor the stage of distribution process. In Taiwan, RFID usage in logistics industry accounts for 60%, particularly 66.7% are for warehouse management and 33.3% for production processes [5]. The advanced technologies improve various supply chain stages by effectively tracking inventory and resources of warehouses. The cost reduction rate in different logistic aspects are summarized in table 3.

**Table 3.** Cost Reduction Rate in Different Logistic Stages

Aspects	Cost Reduction
Labour	7.5%
Regional Distribution Centres.	5%-40%
Pallet-Build Time (Wal-Mart)	90% (90 seconds to 11 seconds)
Stock Availability	50%
Safety Stock Requirements	10-30%
Supply Chain Errors	\$10 billion per year
Promotional Execution	29% Increase (leads to 20-60% increase in sales)

With investment on the development of RFID, the cost of RFID sensors has decreased exponentially in recent years [6]. Because of the decreased cost, shipping providers are enabled to provide cheaper prices of services. P&D has saved around \$400 million annually in logistic costs because of wisely utilizing RFID [7].

In addition, the technical development has changed the way of logistic delivery. According to Gartner [8], more than 40% of new logistics application purchases will be delivered through cloud-based software by 2016, which is expected to bring about lower-cost and cloud-based solutions for small and medium-sized logistic organizations.

### 4.2. Logistic Business Extension

Traditionally, the logistics was widely defined as transportation by trucks and infrastructure. The new area of real estate logistic has been controlled by overseas-funded enterprises for over 10 years like ProLogis. Standing as the second largest client, JD has an explosively growth of rental area from 27,000 square meters only in one country in 2012 to 407,000 square meters in 40 countries in 2015 (as shown in Figure 2), with CAGR increased to 117% [9].

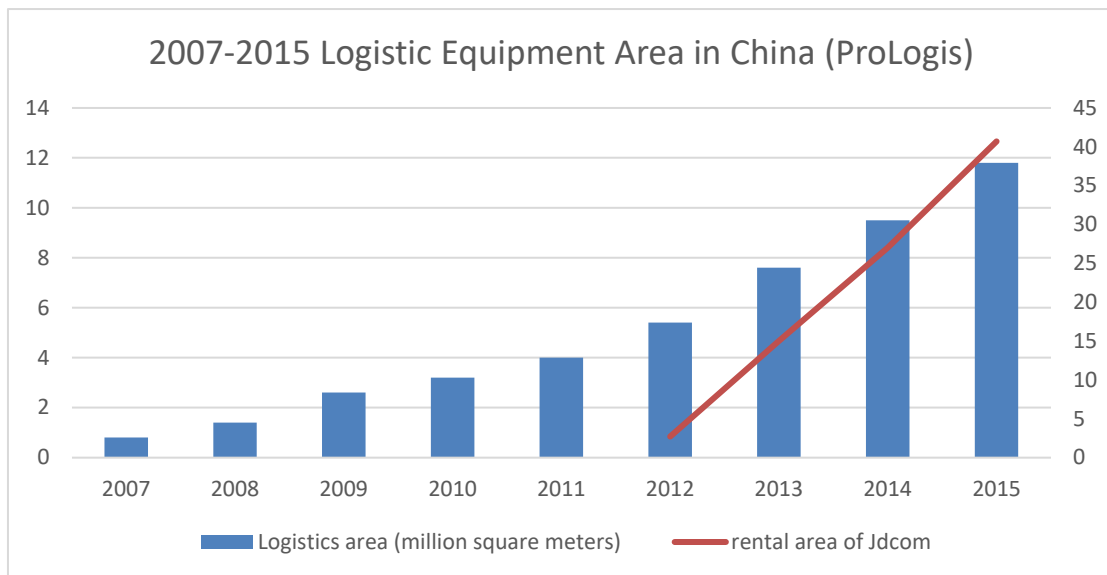


Figure 2. 2007-2015 Logistic Equipment Area in China (ProLogis)

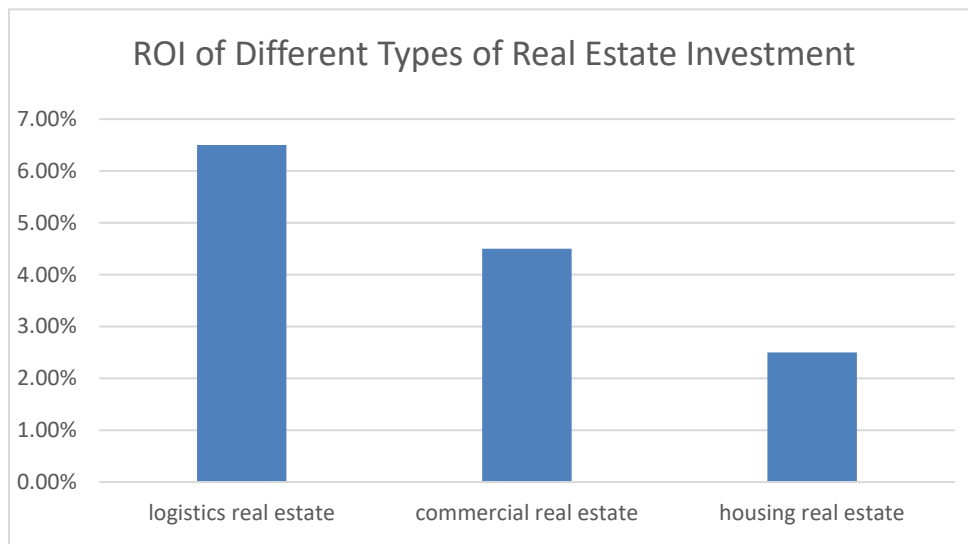


Figure 3. ROI of Different Types of Real Estate Investment

While the private investment in logistic business is changing the situation. In July 2017, the consortium comprised by Vanke, Hopu Investment, etc. invested around ¥ 78.5 billion for ProLogis's acquisition, directly brings advanced logistic technologies, equipment, business, etc. along with about 55 million square meters logistics real estate area for China. As a response to Chinese property developers' strong ambition for diversified transformation Figure 3 and housing restriction policy, there are more real estate firms investing on building warehouse rather than constructing commercial buildings.

## **5. Critically Analyse Business Logistics Investment**

### **5.1. DRP II system Investment on Logistics in Chinese Private Industry**

#### **5.1.1. Chinese Investment Value of DRP II system**

To satisfy the market requirements and optimize resource allocation of the logistics, many manufacturing enterprises invest in Distribution Resource Planning (DRP) II system. DRP II is a closed-loop system, it can configure tasks, effectively account profits and help enterprises to make decisions within a supply chain [10]. DRP II possesses property of integration, it is the integration of multi-function subsystems including stock, delivery, storage, management and decision systems.

#### **5.1.2. Frequency and Cost**

The implementation of DRP II system reduces the frequency of rush orders and rush delivery, which reduce the cost of transportation to logistics center and to customers.

#### **5.1.3. Superior Inventory**

Besides, DRP II plays a significant role in reducing inventory, which helps improve control backlog inventories and mitigate inventory pressure. For example, HONEYWESY, a furniture manufacturer in Shanghai, it optimize the project plan management, controls distribution management and inventory, and makes the goods delivery accelerated dramatically, through implementing DRP II.

#### **5.1.4. Superior Distribution and Manufacturing**

In addition, it can also force distribution department and manufacturing department to coordinate more. Its predictive function can predict the inventory investment, transportation cost, storage requirement and requirement of manpower and equipment, which improves the efficiency of logistics and reduce cost.

#### **5.1.5. Security Level**

Data corruption, system errors and information leakage are difficult to deal with because the DRP II system involves a mass of data. It will cause serious losses once the problem occurs.

#### **5.1.6. Operation Errors and Limitations**

Prediction function of DRP II requires forecasting all distribution centers and SKU and adequate lead-time to move products is also need. Besides, it has three potential errors. The forecast itself may be wrong; it may have predicted demand at the wrong location; it may have been predicted demand at the wrong time. These three errors pose a threat to the whole supply chain.

#### **5.1.7. Human and Financial Resource**

Furthermore, because the development of the DRP II system is difficult, it is hard to control the project costs and project cycle, which will waste lots of manpower and material. A little farther, the DRP II system is not suitable for all manufacturing enterprises. It not only does not make profits but causes enormous losses for the enterprise once wrong using the system.

## 5.2. Ports Investment on Logistics in Chinese Private Industry

### 5.2.1. Chinese Investment Value of Ports

Port plays a pivotal role in water-land transportation, and it is a very important infrastructure to support the economic development of country and district. The handling capacity of port in China is strong and it is continuous increasing (Figure 4 & Figure 5). Many private industry, especially import and export enterprises, invest more money in port facilities to use the advantages of geography to enhance their logistics processes [11].

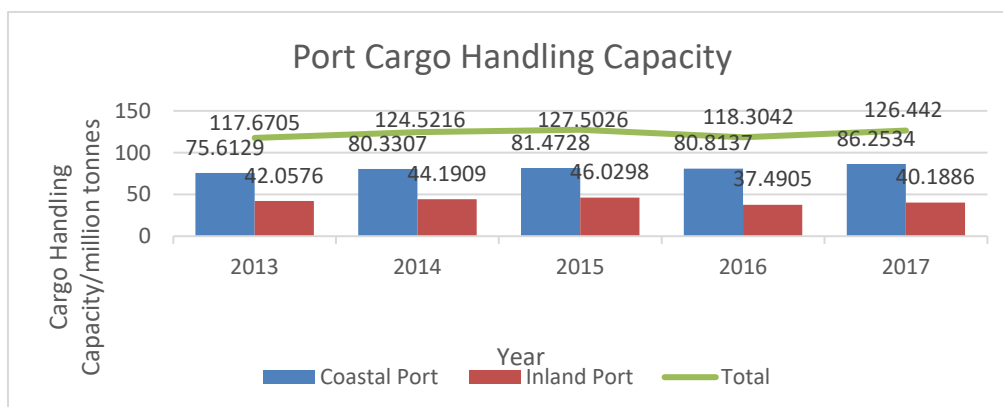


Figure 4. Port Cargo Handling Capacity

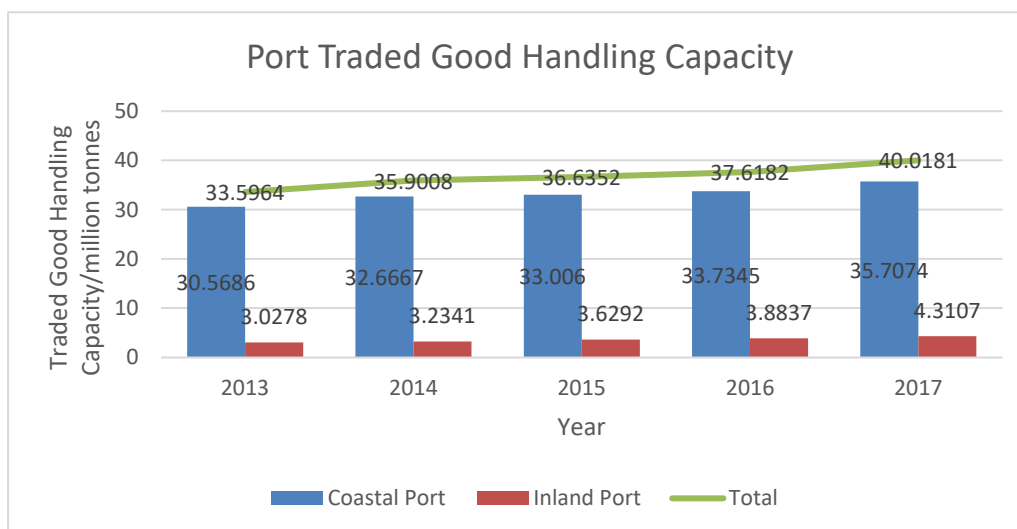


Figure 5. Port Traded Goods Handling Capacity

### 5.2.2. Efficiency and Profits

Ports increase the profits of the enterprises and promotes national economy. Each million tonnes of throughput of cargo contributes 1,100,000 yuan to GDP and provides 20 jobs. As a center of cargo distributing, it speeds up the movement of goods and services, which makes the logistics more efficient. In addition, it promotes the development of relevant enterprises and surrounding areas.

### 5.2.3. Unstable Quality

In China, the port logistics is still at the early stage of the development, lacking network which can deal with goods transactions, shipping transactions, information dissemination, financial settlement and data transmission.

#### 5.2.4. Congestion

Congestion in port is also a significant problem for logistics and supply chain within the enterprise [12]. Furthermore, Water pollution and air pollution are results of the port logistics. Harbor dredging and oil spilling are the main causes of water pollution, and the emissions of ships, trucks and railway locomotives is the main reason of air pollution in the port.

### 6. Options for Improvement

One of the focuses of information revolution on port logistics is EDI. It can improve the communication among vendors, port agencies and the clients, which increases customer satisfaction and the efficiency of information processing. Increasing the level of automation can reduce congestion to some extent. Using robots and autonomous vehicles, such as autonomous trucks, autonomous cars and drone planes, in cargo transportation, security surveillance. Drone ships can be used in sea transportation, which can significantly reduce fuel consumption and exhaust gas emission (20%) to protect the environment. At the meantime, it can increase freight capacity and reduce operating costs (40%) [13]. However, because the technology of drone ship is under developing, safety is still a challenge.

### 7. Conclusion

To conclude, there are two main orientation for private investment on logistics in China: line capacity expansion and logistics informatization. Over the years, private investment on logistic has spread across every market segment of logistics, and the logistics cooperation modes have been evolved. With the increasing investment on information systems, advanced technology and distribution equipment, current logistics business scope has expanded comprehensively and shorten the logistics cycle greatly. Also, the usage of DRP II system, port investment by private enterprises and barcodes have been critically discussed. Several ICT recommendations have been proposed to improve the three aspects of DRP II system: forecast function, information security and decision-making process. As to private port investment, EDI and automation equipment have been suggested to accelerate information flow and solve port conjunction. Also, improving the automation level of RFID and tracing inventory information are advised to improve barcodes. By applying and strengthening advanced information and communications technology recommendations, it is anticipated that overall function of private investment on logistics in China will be improved.

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