

Development Status of the C2C E-commerce Express in China: Case Study on Taobao

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Abstract. Taobao is the biggest platform for C2C e-commerce in China. Based on the data of expresses from taobao.com, this paper conducts a statistical analysis about the C2C express in China under 31 provinces, three economic zones and eight economic regions, respectively. C2C expresses related with each area are classified into outbound expresses and inbound expresses according to their recipient addresses and sender addresses. The development of C2C expresses in China is unbalanced and the difference of outbound expresses between areas is much higher than the inbound expresses. Concepts of express surplus and express deficit are put forward based on the definition of trade surplus and trade deficit. Statistical results show only 4 provinces' C2C expresses are surplus, the rest are all deficit. We found that 84.2% of C2C expresses in China are distributed across different provinces. Delivery distances of C2C expresses across different provinces are calculated as well. Delivery distance for most C2C trans-provincial expresses is bigger than 500km and less than 1500 km.

Introduction

According to the report of China National Bureau of Statistics, the total retail sales of consumer goods in China had exceeded 33 trillion RMB in 2016. The development of the Internet and popularization of information technology promoted the development of e-commerce. Chinese online shopping accounted for 12% of total retail sales of consumer goods in 2016 and the proportion continues to grow. Rapid development of e-commerce accelerates the development of express industry further. The latest data from China Post Bureau shows that Chinese express delivery business reached 31.35 billion in 2016 with an increase of 51.7%, and ranked first in the world.

Electronic commerce is the electronically facilitated transactions. E-commerce can be classified into business-to-business (B2B), business-to-consumer (B2C), and consumer-to-consumer (C2C) commerce, according to the types of participating parties. C2C e-commerce is business between individuals and individuals. Due to the individual sellers, trust and reputation have become a research hotspot in C2C [1-4]. Some researchers focus on the study of purchasing pattern, payment pattern, website evaluation and service quality [5-8].

Taobao (www.taobao.com), provided by Alibaba, is the Chinese largest platform for C2C. It owns 500 million registered users and 120 million daily active users. Taobao has 95.1% market share of C2C in China and plays an absolute dominant position. The features of Taobao represent the development status of C2C e-commerce in China. Spatial and temporal distribution of C2C e-commerce and express delivery industry has received attention from academics. Wang et al. found that there were very significant and positive spatial autocorrelations in the development of C2C e-commerce in different regions of China [9]. Zheng et al. used the spatial autocorrelation model and suitability model to analyze and compare the spatial distribution characteristics of C2C e-shops and logistics nodes [10]. Theil index is applied by Jin et al. to study the difference in the development trend of Chinese regional logistics [11]. There are few study about the space-time difference in the development of express industry. An important reason is that it is difficult to obtain related data. On the one hand, the statistical data of Chinese National Statistical Yearbook and Local Statistical Yearbook are incomplete. On the other hand, most enterprises don't want to open their business data. Based on the business data from a third party logistics company, this paper analyzes the status of C2C express in China.

Data Preprocessing and Area Division

The basement of this paper is the data set supplied by a third party logistics company. This data set includes the company's 4 months delivery businesses for Taobao. There are more than 970,000 C2C expresses of China, covering 31 provinces, municipalities and autonomous regions. The complete information of each express is described as a record in the data set. Due to the trade secrets, information such as sender and recipient are deleted. Because we focus on the geographical distribution and flow direction of express business, for each delivery, only the information about province and city in the detail address is reserved.

In order to find the development status of C2C e-commerce express delivery in different areas in China, three methods for regional division are adopted in this paper. The smallest units are the 31 provinces, municipalities and autonomous regions in the administrative areas of China. The medium units are eight economic regions of China. They are northeast, northern coast, eastern coast, southern coast, middle reaches of the Yellow River, middle reaches of Yangtze River, southwest and northwest respectively. The largest units are three economic zones. They are east zone, middle zone and west zone.

Table 1 Three economic zones

Economic zone	Districts included
East zone	Beijing, Tianjin, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan
Middle zone	Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan
West zone	Guangxi, Inner Mongolia, Chongqing, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang

According to both the level of economic technology and geographical location, China's seventh "Five-year Plan" divided Chinese economic area into three economic zones. China's eleventh "Five-year Plan" divided Chinese economic area into eight economic regions. The provinces, municipalities and autonomous regions that constitute the economic regions and three economic zones are listed in Table 1 and Table 2 respectively.

Table 2 Eight economic regions

Economic regions	Districts included
Northeast	Liaoning, Jilin and Heilongjiang
Northern coast	Beijing, Tianjin, Hebei and Shandong
Eastern coast	Shanghai, Jiangsu and Zhejiang
Southern coast	Fujian, Guangdong and Hainan
Middle reaches of the Yellow River	Shanxi, Inner Mongolia, Shaanxi and Henan
Middle reaches of Yangtze River	Hubei, Hunan, Anhui and Jiangxi
Southwest	Guangxi, Sichuan, Guizhou and Yunnan
Northwest	Xinjiang, Gansu, Qinghai and Ningxia

Outbound Express and Inbound Express

In order to master the direction of C2C expresses, all expresses related with each area are classified into outbound expresses and inbound expresses according to recipient address and sender address. The outbound expresses for an area are the packages whose sender address is in the area and the inbound expresses for an area are the packages whose recipient address is in the area.

The outbound expresses and inbound expresses for 31 provinces, municipalities and autonomous regions are calculated respectively. The top five provinces of C2C outbound express are Guangzhou, Zhejiang, Fujian, Shanghai, and Beijing. These five provinces account for 82.4% of the total. The lowest five provinces of C2C outbound express are Xizang, Gansu, Xinjiang, Ningxia, and Qinghai. They only account for 0.03% of the total. The top five provinces of C2C inbound express are Guangzhou, Jiangsu, Zhejiang, Beijing, and Shanghai. These five provinces account for 51.3% of the total. The lowest five provinces of C2C inbound express are Xinjiang, Gansu, Ningxia, Xizang, and Qinghai. These five provinces only account for 1.67% of total. It can be found that the concentration

of regional distribution of C2C outbound express is more notable than inbound express in provincial regions. Simultaneously, only the C2C express business in eight provinces exceeded the average, which further reflected the striking gap in the development level of C2C express in various provincial regions in China.

The outbound expresses and inbound expresses for eight economic regions and three economic zones are counted as well. The southern coast, eastern coast, and northern coast are top three both in the outbound expresses and the inbound expresses. Their proportions in the total of outbound expresses are 46.4%, 35.4%, and 9.5% respectively. Their proportions in the inbound expresses are 27.0%, 21.5%, and 18.0% respectively. Only southern coast and eastern coast exceeded the average. They account for more than 81.8% of the total amount of outbound expresses and 66.5% of the total amount of inbound expresses. These numbers show coast areas are dominated in the eight economic regions.

For three economic zones, east zone accounts for 92.2% of the total amount of outbound express and 69.6% of the total amount of inbound express. Middle zone accounts for 4.5% and 15.1%, west zone accounts for 3.3% and 15.3%.

Express Surplus and Express Deficit

According to the definition of trade surplus and trade deficit, we introduce the express surplus and express deficit into the analysing of C2C express in China. For an area, if the number of its outbound expresses is bigger than its inbound expresses, it is called an express surplus, positive balance, or a "favorable balance". Conversely, if an area's inbound expresses is greater than its outbound expresses, it is called an express deficit, negative balance, or "unfavorable balance".

For 31 provinces, municipalities and autonomous regions, only four of them are express surplus. They are Zhejiang, Guangdong, Fujian, and Shanghai. The rest 27 provinces, municipalities and autonomous regions are express deficit. For eight economic regions, eastern coast and southern coast are express surplus. For three economic zones, only east zone is express surplus.

Delivery Distance

We call the express whose recipient address and sender address belong to one province, as provincial express. The express whose departure province and destination province are different is named as trans-provincial express. Provincial express only accounted for 15.8% of the entire C2C expresses. This paper focuses on the analysis of the delivery distance of the trans-provincial expresses.

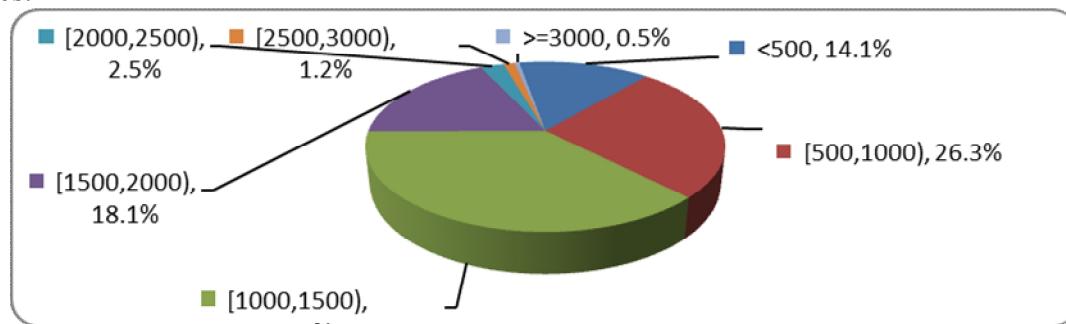


Figure 1 Proportion for delivery distances of trans-provincial expresses

The shortest distance is the delivery between Beijing and Tianjin and the longest distance is the delivery between Xizang and Heilongjiang. Fig.1 illustrates the proportions of distances that less than 500km, between 500km and 1000km, between 1000km and 1500km, between 1500km and 2000km, between 2000km and 2500km, between 2500km and 3000km respectively. The result shows that most C2C expresses are trans-provincial expresses. The distance for most trans-provincial expresses is between 500km and 1500km.

Conclusions

The development level of C2C express between Chinese 31 provincial regions is very different. The differences among regions decrease with the increasing of dipartite granularity. The classification of express delivery can better analyze the profitability and consumption capability of C2C e-commerce in each region in China. Hence, statistic and analyze the departure, arrival and the total respectively is necessary. The difference of the C2C outbound express is significantly higher than the inbound express, indicating that the difference of profitability level of C2C e-commerce in Chinese is huge while the difference of purchasing ability of C2C e-commerce in Chinese is slight. Chinese C2C e-commerce expresses are mainly trans-provincial expresses. The delivery distance for most trans-provincial expresses is between 500 km and 1500 km.

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