



Design and Implementation of Online Retail Statistics in China

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Abstract

The rapid development of e-commerce has resulted in explosive growth of online retail in China. The traditional trade statistics faces with challenge of e-commerce and big data, which urges the National Bureau of Statistics of China (NBS) to make changes in existing trade statistics. From the beginning of 2014, the NBS carried out the online retail statistics reform. The goal is to build a better system of statistical indicators of online retail, and make quantitative assessment on online retail activities scientifically and systematically, so as to estimate total scale and structure of online retail sales, moreover, analyze the extent that online retail impacts on physical store sale and total retail sales. The general designing idea of online retail statistics includes four points. Firstly, divide the online sellers into three categories, and different categories were treated in different methods. Secondly, implement both seller statistics and buyer statistics, which means not only get data from the seller side but also make surveys on buyer side, so the statistical results could be checked and verified by each other. Thirdly, use the 2013 Third National Economic Census's results as the fundamental data, obtain total scale and important parameters for e-commerce. Fourthly, take full advantage of big data from different channels such as e-commerce companies' transaction data and administrative record, which contribute important reference for online retail sales statistics. In accordance with the above ideas, the NBS modified the original trade statistical forms, added online retail relevant indicators, conducted new surveys, and estimated the online retail sales of China based on the 2013 Third National Economic Census results. This paper introduced the ongoing online retail statistics conducted by the NBS, from the aspects of overall program design, implementation, and data publishing.

Keywords: Online retail statistics; e-commerce; design; implementation.

1. Introduction

As a new type of business model, e-commerce provides new services, new markets and creates new economic organization, which helps a lot in accelerating the economic growth pattern transformation, promoting the traditional industries transformation and upgrading, and stimulating distribution industry modernization. Meanwhile, e-commerce plays an important role in boosting domestic demand and stimulating employment.

In recent years, the coverage and application level of e-commerce have improved significantly in almost all sectors in China. The e-commerce service activities which support the rapid development of e-commerce is becoming a new industry. According to some agency, in 2014 the Chinese e-commerce transaction turnover exceeded 13 trillion yuan (2.12 trillion USD), an increase of 25% over the previous year. At the same time, the online retail market expanded rapidly. According to the National Bureau of Statistics of China (NBS), in 2014, the national online retail sales reached 2.79 trillion yuan (454 billion USD), increased 49.7 percent over the previous year. Take the "Single Day" as an example. "Single Day" is an annually marketing event initially held by Alibaba Group on November 11th 2009. Nowadays, almost all e-commerce companies in China take part in this event from the beginning of November each year, offering big discount to boost sales. The "Single Day" becomes the world's biggest online shopping festival, with sales record being refreshed every year. On November 11th 2014, the transaction



turnover of Alibaba's B2C platform "Tmall" reached 57.1 billion yuan (9.2 billion USD), over 279 million orders were placed. In addition to domestic goods, there are more than 30,000 pieces of oversea merchandise from more than 220 countries and regions, and users from 217 countries and regions made deals on that day. From the commodity type view, goods sold by e-commerce companies varied from the initial standardized books, CDs, 3C products to clothing, daily necessities, vehicles, and even fresh food which e-commerce is not considered to be able to get involved in previously. Online retail has already covered almost all retail fields. In addition to physical trade, e-commerce has entered the catering, accommodation, transportation, ticketing and other service fields. As a fast developing retail formats, online retail has impacted traditional retail industry to some extent, and the online retail data aroused the concern of the government, academics and public. In order to respond to the influence of e-commerce to traditional trade statistics, the NBS carried out online retail statistics reform from 2014. This paper is about the overall program design, organization, implementation, data release and other aspects of the ongoing online retail statistics conducted by the NBS.

2. The general designing idea of online retail statistics

Online retail statistics design followed the principle of top-level design. The NBS developed unified standards, survey system and data estimation method, which could avoid inconsistencies in statistical range, indicator name, indicator meaning, etc., so as to improve the overall effectiveness of the survey and data consistency.

The goal of online retail statistics reform is to build a better system of statistical indicators of online retail, and make quantitative assessment on online retail activities scientifically and systematically, then estimate total scale and structure of online retail sales, moreover, analyze the statistical impact of online retail on physical store sale and total retail sales.

The general designing idea of online retail statistics includes four points. Firstly, divide the online sellers into three categories, units above designated size, units under designated size which in statistical business register, and sellers not in statistical business register. Different kind of units was treated in different method. Secondly, implement both seller statistics and buyer statistics, which mean not only get data from the seller side but also make surveys on buyer side. So the statistical results could be checked and verified by each other. For the buyer side, there are two groups of buyer, consumers and businesses. The former is the main force for online retail. Thirdly, use the 2013 Third National Economic Census' results as fundamental data, obtain total scale and important parameters for e-commerce. Fourthly, take full advantage of big data from multiple channels such as e-commerce companies' transaction data and administrative record, which contribute important reference for online retail sales statistics.

3. Statistics from seller side

All online retail sellers are divided into three categories: (1) units above designated size, (2) units under designated size which in the statistical business register, (3) sellers not in the statistical business register. In China, the units above designated size refer to those wholesale units with an annual revenue from primary business of 20 million yuan and above, those retail units with an annual revenue from primary business of 5 million yuan and above.

For units above designated size, the survey method is complete investigatin. Data are collected through online reporting system. Since February 2014, the NBS add online retail relevant indicators in the wholesale and retail corporate enterprises monthly statistical forms. Under "merchandise sales" indicator add "merchandise sales via Internet". Under "retail sales" indicator add "retail sales via Internet". By the end of year 2013, there are 170,000 wholesale and retail corporate enterprises above designated size in



statistical business register. For these units, the online retail sales can be aggregated directly from the monthly forms.

For units under designated size which in the statistical business register, the data are collected by sample survey. There are more than 30 million wholesale and retail units under designated size by the end of year 2013, of which 2.60 million corporate enterprises, and the rest are self-employed households units. From the first quarter of 2014, the NBS add online retail relevant indicators in the quarterly wholesale and retail sampling survey questionnaire for units under designated size. Then the online retail sales for these units can be estimated through sampling survey. During the third National Economic Census, e-commerce relevant indicators were set in the statistical form, so the business register of units that have e-commerce transactions could be obtained. This business register is also the sampling frame. In future, the NBS plan to do sample rotation based on the third National Economic Census, to improve the sample structure and representativeness.

The third category online sellers are those not in the statistical business register, most of which are individual sellers, the amount of these sellers is large and changes frequently. It is difficult for statistical office to make surveys on these sellers directly. In order to estimate this part of online retail sales, the NBS launched an monthly online retail trading platform survey since June 2014. 32 online retail trading platform (the number increased to 44 since January 2015) are selected as the investigation objects, those selected trading platforms account for 98% of the online retail sales in China. Through the survey, the transaction scale and structure of the online retail trading platforms could be obtained, based on these data, the retail sales of the third part of online sellers could be estimated.

4. Statistics from buyer side

The purpose of buyer side statistics is to check and verify the seller side statistical results. Through household surveys and special surveys, the proportion of online purchase in consumption expenditure could be obtained, and the habits and characteristics of online shopper could be described.

In 2014, the indicator of “goods and service purchased via internet” was added in the household surveys of residence consumption expenditure. Through that the online and offline expenditure can be separated, so the online expenditure proportion can be calculated.

In early 2015, the NBS carried out a one-time special survey aimed at online shoppers’ purchase expenditure and habits. The purpose of the survey is to gather the preference for Online Shopping, online shopping evaluate information, so as to analyze the relation between online shopping and entity selling, estimate the replacement rate of online shopping and other parameter, improve online retail survey methodology. The survey scope is the internet users with online shopping. There are two parts of sample, the household survey samples which ever to purchase goods or service online in fourth quarter of 2014, and ordinary internet users which investigators consider with online shopping tendency. Sampling method for the former part is random selection. For the ordinary internet users, sampling method is snowball sampling. Firstly, investigators consider age, occupation, income and other factors, selected a number of internet users which tend to online shopping as survey respondents. Secondly, these respondents provided other objects as new samples until meet the sample size. The sample size for household survey is 3000, and the ordinary internet users is 5000. Survey topics covered basic information, identify questions, online shopping preference, online shopping evaluation, online shopping expenditure, and other background information. The target variable is estimated by the method of post-stratification. At first, the mean values of the subpopulations are calculated according to the survey result. Secondly, get the amount of online shoppers of each subpopulation through the most recent survey conducted by CNNIC. So the target variable could be obtained by multiplying the mean values with the amount. Data collection method included household survey, E-mail questionnaire and telephone survey.



5. Online retail indicators and data release

There are two indicators of online retail. Online retail sales of units above designated size, refers to the retail sales of consumer goods got by units above designated size, through public online trading platform (including self-built websites and third-party platform). On April 16 2014, for the first time, the NBS released online retail sales of units above designated size for January to March of 2014, afterwards release monthly.

Online retail sales, refers to the sales of goods and services got by enterprises (units, individual business households, individuals), through public online trading platform (including self-built websites and third-party platform). Goods and services include physical commodities, virtual commodities and service commodities. On July 16, the NBS released online retail sales of half of 2014, afterwards release every quarter.

In 2014, the total retail sales reached 26,239.4 billion yuan in China, with a nominal growth rate of 12.0 percent year-on-year, and a real growth rate of 10.9 percent. Of which, the retail sales of units above designated size was 13,319.9, increased 9.3 percent. In 2014, the national online retail sales was 2789.8 billion yuan, increased 49.7 percent year-on-year. Of which, the online retail sales of units above designated size was 440.0 billion yuan, increased 56.2 percent.

It should be noted that the statistical scope and standard of online retail sales and total retail sales are different from each other in China. Virtual commodities, service commodities, as well as a small number of commodities used for production and operation or resale, which are covered by online retail sales, are not included in total retail sales. The relation between these two indicators is not including or included.

6. Conclusion

Based on the statistical reality in China, the NBS designed the overall program of online retail statistics, and took it into practice. There are still a lot of work to do in future. Firstly, improve the online retail trading platform statistics. The online retail trading platform's transaction data played an important role in estimating online retail sales. But there are several problems, such as the consistency of goods (services) classification with that of unit statistics, turnover by region and how to get rid of repeat. Secondly, do research on the online purchase's impact to entity store selling, estimate the online purchase replacement rate etc., so as to improve the online retail statistics methodology.

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